



**VOSS**



# VOSS Automate Core Feature Guide

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# 1. What's New



## 2. Conventions Used in this Guide

### 2.1. Formatting Conventions

The table describes formatting conventions in the VOSS Automate documentation:

Component	Formatting
UI buttons and labels	Use the same capitalization as displayed in the user interface, and formatted <b>bold</b> .
Menus and menu paths	Formatted <b>bold</b> , for example, <b>Customer Management &gt; EMCC &gt; EMCC Group</b> , where '>' is the delimiter between the menu levels. <b>Important</b> The menu paths provided in this guide are the default menu paths shipped with the product. A reseller (or higher) administrator can modify these paths.
Asterisk after field name, e.g. Userid *	Indicates that the field is mandatory.

### 2.2. Badges

VOSS Automate Help topics typically display one or more badges (below the topic title) to indicate that the Help content is relevant only to a specific deployment type (Enterprise or Provider), admin level (for example, customer admin, HCS admin, or provider admin), or vendor (for example, Microsoft or Cisco, hybrid or multi-vendor).

A tooltip above the badge indicates the badge type, and links to this topic.

---

**Note:** Badges are used only for exceptions, that is, where functionality is available only for a specific deployment type, vendor type or vendor configuration, or where you must log in with a specific admin role.

---

### Deployment badges

- **provider**

Indicates that this functionality is only available in Provider deployments.

- **enterprise**

Indicates that this functionality is only available in Enterprise deployments.

### Vendor support badges

- **Microsoft**

Indicates that this functionality is relevant for Microsoft.

- **Cisco**

Indicates that this functionality is relevant for Cisco.

### Vendor configuration badges

- **hybrid**

Indicates that this functionality is relevant to hybrid vendor configuration.

- **multi-vendor**

Indicates that this functionality is relevant to a multi vendor configuration.

---

**Note:** If no vendor configuration badge is used, assume single vendor, for example, Microsoft-only environment.

---

### Admin role badges

Admin roles are listed in order of highest access level to lowest access level. Provider and Enterprise admin are at the same level.

You can find more information about VOSS Automate roles and access levels in [User Roles](#)

- **sys-admin**

Log in as sysadmin.

- **hcs-admin**

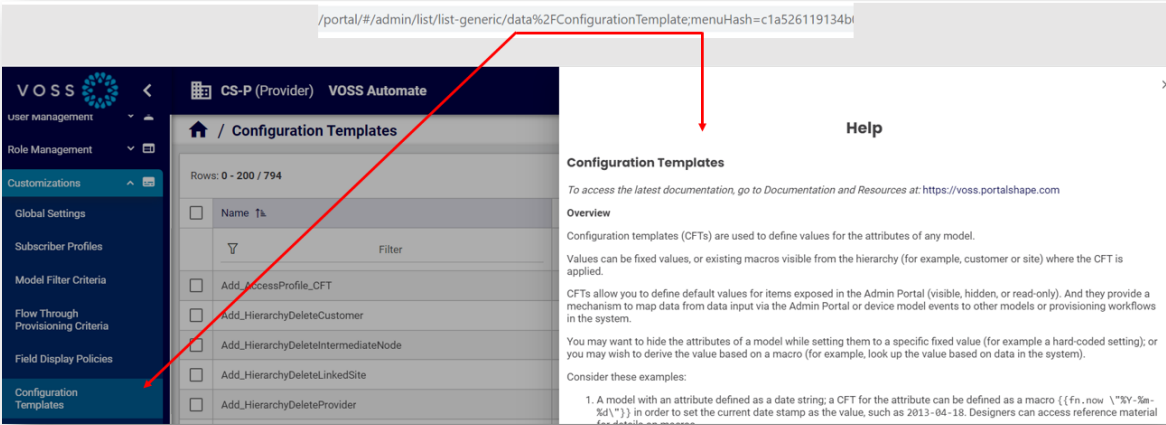
Log in as HCS admin.

- **reseller-admin**  
Log in as Reseller admin.
- **provider-admin**  
Log in as Provider admin.
- **enterprise-admin**  
Log in as Enterprise admin.
- **customer-admin**  
Log in as Customer admin.
- **site-admin**  
Log in as Site admin
- **self-service-admin**  
Log in as Self-service admin

## 2.3. Context-sensitive Help Files

The VOSS Admin Portal ships with context-sensitive help files, which are associated with the relevant menu via the model type (visible in the URL).

The example shows the **Configuration Templates** menu, the model type in the URL (*data/ConfigurationTemplate*), and the Help file topic title, *Configuration Templates*.



In addition to the help topic content, which may describe the feature, provide a task description, and additional details for the user interface, a default, auto-generated description is provided for the model. These model details may be further refined (filtered) via field display policies applied to the menu.

The screenshot shows the VOSS Automate interface. The left sidebar contains navigation options like 'user management', 'Role Management', 'Customizations', 'Global Settings', 'Subscriber Profiles', 'Model Filter Criteria', 'Flow Through Provisioning Criteria', 'Field Display Policies', and 'Configuration Templates'. The main content area is titled 'Configuration Templates' and shows a list of templates with columns for Name, Filter, and checkboxes. The right sidebar displays 'Model Details: data/ConfigurationTemplate' with a table of field information.

**Model Details: data/ConfigurationTemplate**

- An asterisk \* in the title indicates the field is mandatory.
- If a field has a default value, it is shown in the Description column.
- If the field type is an array, the Field Name has a '[n]' suffix, where n is the array index placeholder.
- Object and array field names are listed to provide context. If a field belongs to an object or an array, the full field name is shown in dot separated notation.

Title	Description	Details
Name *	The name that is given to the Configuration Template.	<ul style="list-style-type: none"> <li>• Field Name: name</li> <li>• Type: String</li> </ul>
Description	A description for the Configuration Template instance.	<ul style="list-style-type: none"> <li>• Field Name: description</li> <li>• Type: String</li> </ul>
Custom feature usage identifier	Custom feature usage identifier, is the feature name and is used as an additional filter for rule filtering	<ul style="list-style-type: none"> <li>• Field Name: feature_usage.[n]</li> </ul>

Where models are associated with two or more menus in the user interface, the help file may be a general topic for the model type, or the context of the help file that displays may relate only generally to the menu you're working with. In this case, it is recommended that you view the latest documentation for the menu or feature via the *Documentation and Resources* tab at: <https://voss.portalshape.com>

For example, the data/File model is associated with the following menus:

- Licensing > Audit Report Files
- Administration Tools > File Management
- Auto Attendant > Manage Greeting Files
- Microsoft Subscriber Management > MS-Teams MP3 Files
- Microsoft Subscriber Management > MS-Teams WAV Files

## 3. Introduction

### 3.1. Overview

#### 3.1.1. Welcome to VOSS Automate

##### Overview

VOSS Automate allows you to easily onboard customers and end users with collaboration services. The fulfillment procedures to achieve this objective may involve administrators at the provider, reseller, customer, and site levels of the hierarchy.

This guide provides information about provisioning VOSS Automate, including provisioning steps and interactions between VOSS Automate and the UC applications of vendors that VOSS Automate supports, such as Cisco HCS. This guide also describes user and subscriber management, including LDAP-related move and push operations.

This documentation includes several flowcharts to provide an overview of specific features and workflows for VOSS Automate. See the index (f) for a list of these flowcharts.

##### Compatibility Matrix

See [Compatibility Matrix](#)

#### 3.1.2. Unicode Limitations

For VOSS Automate, Unicode characters are supported only in the following fields:

- User Information in VOSS Automate User Management
- Description
- Contact Information (Address, City, State, Postal Code, Country, Extended Name, External Customer ID, Account ID, and Deal IDs)
- Phone Label

### 3.1.3. Accessibility

VOSS Automate supports Web Content Accessibility Guidelines (WCAG) 2.1 Level AA. A full Voluntary Product Accessibility Template (VPAT) report is available from your VOSS account team.

The table provides examples of features in Automate that are assessed for accessibility to support users with disabilities, including those who require assistive technologies, such as users who are unable to use a mouse, or those who are visually impaired:

Setting	Description
Title display in the browser	When choosing a menu option in the Admin Portal, the title displays in the browser to give screen reader users an overview of the page and to help them to move between open pages in their browser.
Buttons and images have alternative text	Buttons and images have accessible names and can be read by screen readers. For example, paginator buttons that allow a user to navigate to the first, next, previous, and last page on a form. The alternative text displays when the mouse pointer hovers over an image. Visually impaired users who are using screen readers can hear the alternative text read out. Users who have turned off images to speed up downloads or to save bandwidth can view the alternative text.
Heading elements appear in a sequentially-descending order	Headings are properly ordered and do not skip levels. This conveys the semantic structure of the page, making it easier to navigate and understand when using assistive technologies. For example, the Login page contains a level-one heading, and landmarks for the logo, input fields, and labels.
Elements meet minimum color contrast ratio thresholds and can be changed	Low-contrast text is difficult or impossible for many users to read. While some people need high contrast, for others, bright colors (high luminance) are not readable. A Chrome plugin can be installed (on the Chrome browser), which allows the user to change the default colors on a page.
Zoom capability	VOSS Automate supports zooming without losing any information or functionality.
Keyboard access and alternative visual focus	<p>Many people cannot use a mouse and rely on the keyboard to interact with the Web. People who are blind and some sighted people with mobility impairments rely on the keyboard or on assistive technologies and strategies that rely on keyboard commands, such as voice input.</p> <p>In a browser that supports keyboard navigation with the Tab key (for example, Firefox, IE, Chrome, and Safari):</p> <ol style="list-style-type: none"> <li>1. Click in the address bar, then put your mouse aside and do not use it.</li> <li>2. Press the 'Tab' key to move through the elements on the page.</li> <li>3. To move within elements such as select boxes or menu bars, press the arrow keys.</li> <li>4. To select a specific item within an element such as a drop-down list, press the Enter key or Spacebar.</li> </ol>
ARIA roles have allowable attributes	<ul style="list-style-type: none"> <li>• Children of ARIA roles, such as form arrays, panel title bars, and tabs, are announced</li> <li>• Landmarks and IDs are unique</li> <li>• Table headers have text labels that are visible to screen readers</li> <li>• Interactive controls are not nested</li> <li>• Toggle fields have accessible names, for example, <i>Element: List checkbox</i></li> </ul>

Setting	Description
Dynamic forms	<ul style="list-style-type: none"> <li>• All buttons, including those used for pagination on dynamic forms, have discernible text labels that can be read by a screen reader</li> <li>• Links with the same name have a similar purpose to facilitate keyboard navigation and the use of screen readers</li> </ul>
Breadcrumb navigation elements	Breadcrumbs have machine-readable labels to allow those using assistive technologies to understand the site structure, to facilitate navigation, and to provide context for their current location.
Pop-up dialogs	<p>Form elements have accessible labels that properly identify the element, for example, a screen reader is able to announce a <i>Close</i> button as well as the header and content text on <i>Confirmation</i> dialogs and other messages, and on <i>Search</i> and <i>Hierarchy</i> pop-ups.</p> <p>Relationships between parent/child elements can be determined, for example, in the hierarchy tree.</p>

### 3.1.4. Multi Vendor Support

VOSS Automate supports provisioning and management of all unified communications (UC) applications, across multiple UC vendors, including Cisco, Microsoft, and Avaya.

VOSS Automate supports single vendor and multi vendor installations.



Vendor	Solution
Cisco	Provides for customized UC app management via the following capabilities: <ul style="list-style-type: none"> <li>• Webex App management</li> <li>• Onboarding workflows</li> <li>• Cisco contact center support</li> <li>• Flow-through provisioning</li> <li>• Multiple MACD use cases and workflows</li> <li>• ServiceNow integration</li> <li>• Northbound notification</li> <li>• Generic drivers</li> <li>• Supports complementary systems and applications to work alongside Cisco UC apps</li> </ul>
Microsoft	See <a href="#">Introduction to Microsoft UC Integration</a> Provides a single, integrated, synchronized interface for managing the existing Microsoft Teams collaboration service, through the web portal, bulk-loading, or the REST API. <ul style="list-style-type: none"> <li>• Connects to adjacent service management platforms</li> <li>• Configurable deployment templates support automated business processes</li> <li>• Workflows for migrating users</li> <li>• End-to-end management of Microsoft Teams, UC and collaboration solutions</li> <li>• License management</li> <li>• Extends Microsoft Teams</li> <li>• Supports complementary systems and applications to work alongside Microsoft Teams, such as Cisco Call Recording or Contact Center.</li> </ul>
Avaya	Manage Avaya enterprise voice, extended into Microsoft Teams.

### Related Topics

- Multi Vendor Subscribers in the Core Feature Guide
- Microsoft Overview in the Core Feature Guide

### 3.1.5. Default and Custom Menus in VOSS Automate

VOSS Automate ships with three sets of pre-built menus:

- Default menu layouts
- Best practice menus (enhanced menus)
- Menu layouts for a Business Admin role

For details on these, see [Menu Layouts](#).

Menu layouts are combined with a number of elements (such as permissions, dashboards, access profiles, and themes) to define the look and feel of the system for particular user roles.

The VOSS Automate documentation is based on the default, predefined menu layouts that ship with the system, for a Provider role. You can clone and customize the pre-built menus to create new, custom menus.

---

**Note:** The new search functionality shipped with VOSS Automate 21.4 allows you to search for models, functionality, and other entities, so that you won't need to remember any particular menu paths.

---

#### Related Topics

- [Menu Layouts](#)
- [User Roles](#)
- [Manage Themes](#)
- [Menu Diff Tool](#)

### 3.1.6. Product License Management

#### Introduction

This topic covers the licensing of the VOSS Automate software product. License enforcement is enabled on all Automate deployments, including production and lab environments.

Starting with Automate 21.4, a 7-day temporary license is issued for new installs or upgrades to allow administrators to carry out the required licensing. You must replace the temporary license with your new license token (license key) within 7 days from install or upgrade.

---

**Important:** You won't be able to log in to the system once the temporary license expires.

---

Each VOSS Automate deployment ships with a unique Deployment or Platform ID. The Platform ID is required to generate a license token. A license token is only valid for a deployment with the related Platform ID.

---

## Licensing Workflow

1. Obtain the license tokens (JSON Web Tokens) from VOSS. These tokens are used to license your product.
2. Choose a licensing method:
  - a. From the **Administration** menu on the GUI, as `sysadmin` user, follow the steps described in [Add a License on Automate via the GUI](#).

---

**Note:** This method is *not* available for license renewal when the existing license token has already expired.

---

- b. From the system Command License Interface (CLI), as `platform` user:

To update a license token from the system CLI, the following commands are available:

- `license add token [<token string>]`
- `license add file <token_file>`

Follow the steps in the Product Licensing topic in the Platform Guide. Follow this method for expired license renewal.

3. When your license expires, follow the steps for your license type to renew it.

## Add a License on Automate via the GUI

This procedure adds a new license token (license key) on Automate, via the GUI.

---

**Note:** You can also add a license via the CLI. See the Platform Guide.

---

1. Obtain your license token from VOSS.
2. Log in as the system administrator user (`sysadmin`), then go to (default menus) **Administration Menu > Licensing > Manage License**.

---

**Note:** You won't be able to log in to the system once your license expires. It is recommended that you renew and apply your license prior to the expiry date.

---

3. Review the **Manage License** form details. The table describes the fields on this form:

---

**Note:** Date format of `<date-time>` is localized to the browser locale.

---

Platform ID	<platform ID> - The ID to submit when renewing a license.
Licensed Application Name	The name of your application, for example, "Automate".
License Status	The status of your license. On install or upgrade, a 7-day temporary license is provided. It is important that you apply your new license before the expiry date. When a valid license exists, and is outside of the expiry alert period, the status is <i>Licensed</i> .
Sync Status Last Changed	<date-time>
License Last Checked	<date-time> - The last time the license was checked. Refer to the Product Licensing topic in the Platform Guide for details on the use of the <code>voss check-license</code> command, which is used to check your license with VOSS.
License Sync Message	The status messages of communication with the License service.
License Token Identifier	<token ID> - Used by VOSS Support.
License Expiry	<date-time>
Current License Token	The <token string> for your current license (the license that will expire or is due to expire).
New License Token	The <token string> for the new license that you obtain from VOSS. Once you paste the new license token into this field and save, it overwrites your current (expired) license.

- At the **New License Token** field, paste your new license token (the license token obtained from VOSS).

The screenshot shows the 'Manage License' interface with the following details:

- Platform ID:** 6009914029c384i (highlighted with a red box)
- Licensed Application Name:** Automate
- License Status:** Grace Period
- Sync Status Last Changed:** November 11, 2022 at 12:20:07 PM! Standard Time
- License Last Checked:** November 17, 2022 at 6:20:06 AM :a Standard Time
- License Sync Message:** (empty text area)
- License Token Identifier:** b0be73ae-8da2-4e9b-a16f-19(.....)
- License Expiry:** November 18, 2022 at 12:20:07 PM :a Standard Time
- Current License Token:** eyJhbGciOiJIUzI1NiIsImtpZCI6Imo4MzRYMm5vS2FaSGQ4M0pRiG5Fift
- New License Token\*:** (empty text area, highlighted with a red box)

5. Click **Save** to apply your new license token.

### License Expiry Alert Notifications

Automate sends alerts to Provider administrators in the Automate Admin Portal to notify these users that the system license will expire. The alert type depends on the number of days before the license expires:

Alert type	When sent?
Info	120 days prior to license expiry
Info	90 days prior to license expiry
Warning	60 days prior to license expiry
Warning	30 days prior to license expiry
Warning	Daily, from two weeks prior to license expiry

### View your Product License Status

This topic describes the ways in which you can access and view the status of your product license.

#### View your Product License in the Automate GUI

You can access and view your product license in the Automate GUI via the Login screen, via alerts sent from the system, via the Licensing menu, and via the Dashboard link (as `sysadmin` user):

- Login screen

You won't be able to log in to the system and access the Admin Portal GUI once your license expires. It is recommended that you renew and apply your new license before the expiry date. Your system administrator may log in via the CLI to update the license. Once the new license is applied, log in via the GUI is re-enabled. See the *Product Licensing* topic in the Platform Guide.

- Alerts

When logging in during the license expiry notification period (up to 120 days prior to license expiry), Provider admins (and above) are shown license expiry notices.

Once logged in, Provider admins (and above) can view pending license expiry notices via the toolbar Notifications icon. These alerts are also posted via the Notifications icon when Automate is unable to communicate with the license service.

Alerts are generated if a license is within 120 days of expiry. The image shows an example of a license expiry warning:

Alert Details	
ID *	AUTOMATE_LICENSE
Code *	12002
Category *	Automate License Expiry
Severity	Warning
Message	Automate license is about to expire in 6 days.
Count	1
Latest Alert	08/11/2022, 02:20:09

Example of license service error message:

```
"alert_id": "AUTOMATE_LICENSE",
"alert_severity": "ERROR",
"alert_category": "Automate License Service Error",
"alert_message": "Automate License Service communication error since <date-time>"
```

---

**Note:**

- Alerts can also be configured to send email messages - see the `notify` command in the Platform Guide.
  - SNMP traps are also generated - see the License section under Notification Messages in the Platform Guide.
- 

- Menu for `sysadmin` user

The `sysadmin` user can view license expiry details via (default menus) **Administration Menu > Licensing > Manage License**.

- Dashboard link for `sysadmin` user

The `sysadmin` user can view license expiry details via the **Manage License** link on their Dashboard.

## View your Product License in the Platform CLI

You can access your product license details via the Automate platform CLI:

- Login display, health display - only on unified nodes in a *unified node* topology and application nodes in a *modular cluster* topology.
- Use CLI command `license token list`, and view the output of this command. See further details in the Product Licensing topic in the Platform Guide.

## Renew a License

You won't be able to log in to the system via the Admin Portal GUI once your license expires. It is recommended that you renew and apply your license before the current license expires.

Your system administrator will need to contact VOSS to renew the license. Provide the platform ID which is shown on the **Manage License** form.

### 3.1.7. Log In to the Admin Portal

#### Overview

Starting with Automate 24.1, "classic" admin portal view of the Automate GUI has been deprecated. On install or upgrade, the default view of the portal is set to the newer admin portal.

You can use the following URLs to log in:

- `https://{hostname}/`
- `https://{hostname}/portal/`

---

#### Important:

- The trailing forward slash `/` is required in the URL after `portal/`.
  - Support is available for additional paths in the URL, for example, for use in a proxy path. The supported format is as follows: `https://{hostname}/{some}/{custom}/{path}/portal/`
  - Users with a business admin role can use the URL, `https://{hostname}/business-admin/`, but this will *always* redirect to `https://{hostname}/portal/`.
- 

#### Related Topics

- [Introduction to the Admin Portal User Interface](#)
- [Change Your Own Password](#)

## Log in for Standard Users

To log in as a standard user:

1. Go to either of:
  - `https://{hostname}/login`
  - `https://{hostname}/portal/login`
2. Enter your username, using either of these formats:
  - `{username}@hierarchy`
  - `{email address}`
  - `{username}`

---

**Important:** If logging in with just `{username}`, your username must be unique at the hierarchy level, else login fails. In this case, log in using either `{username}@hierarchy` or `{email address}`. Email address must be unique in the system.

---

## Log in for LDAP Users

To log in as an LDAP user:

1. Go to either of:
  - `https://{hostname}/login`
  - `https://{hostname}/portal/login`
2. Log in, using either user ID (`{user ID}[@hierarchy]`), or your email address.
  - User ID (`{user ID}`) corresponds to the username mapping in User Field Mapping, for example, email address, user principal name, sAMaccountName. The login attribute name is configured in the authentication attribute of the LDAP device associated with the hierarchy. The authentication attribute value is obtained from the User Field Mapping, and is used to authenticate against LDAP. See [User Field Mapping](#)
  - `@hierarchy` is not required when the user ID corresponds to the user's email address (regardless of the login attribute name specified in the LDAP network connection). The hierarchy is in dot notation and corresponds with the hierarchy to which the user belongs. Hierarchy level is the level at which the user is created.

## Log in for SSO Users

To log in as SSO user:

1. Go to either of:
  - `https://{host name}/sso/{SSO login URI}/login`
  - `https://{hostname}/portal/sso/{SSO login URI}/login`
2. Log in using the relevant SSO identity provider credentials.

The SSO URLs provided redirect to the Admin portal with endpoint: `/portal/`.



## Related Topics

- SSO Users and Login in the Core Feature Guide
- LDAP Users and Login in the Core Feature Guide

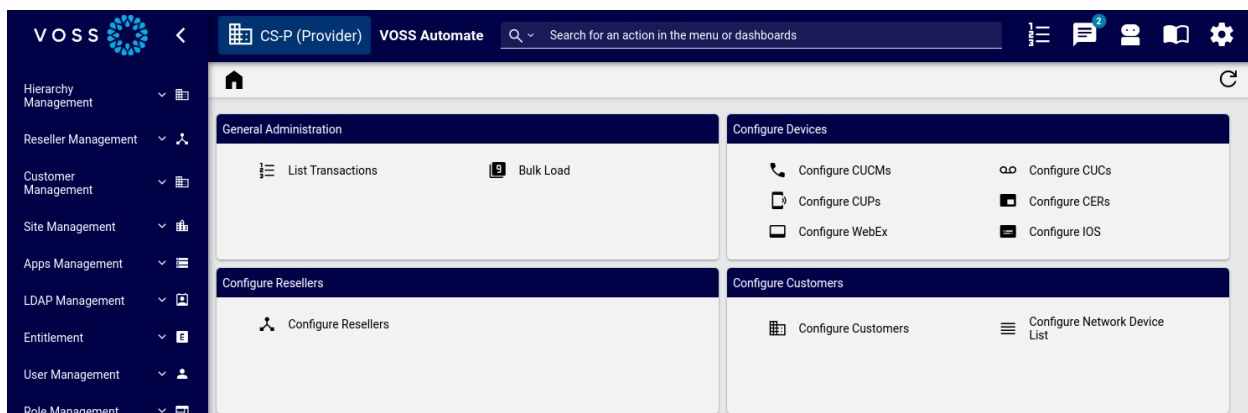
## 3.2. Getting Started

### 3.2.1. Introduction to the Admin Portal User Interface

#### Overview

This topic is a guide to the VOSS Automate Admin Portal user interface.

**Tip:** To easily copy data from a drop-down list or in a list view (provided you're using a mouse), highlight the value while keeping the mouse button pressed down and use the keyboard shortcut **CTRL-C** to copy, then release the mouse and paste the data where required.



## Related Topics

- Introduction to Themes in the Core Feature Guide
- Theme Customization topics in the Advanced Configuration Guide
- Search in VOSS Automate in the Core Feature Guide
- [Working with Lists](#)

## Admin Portal Toolbars

In the VOSS Automate Admin Portal, icons on the main toolbar are always available, regardless of the form or list you're viewing.

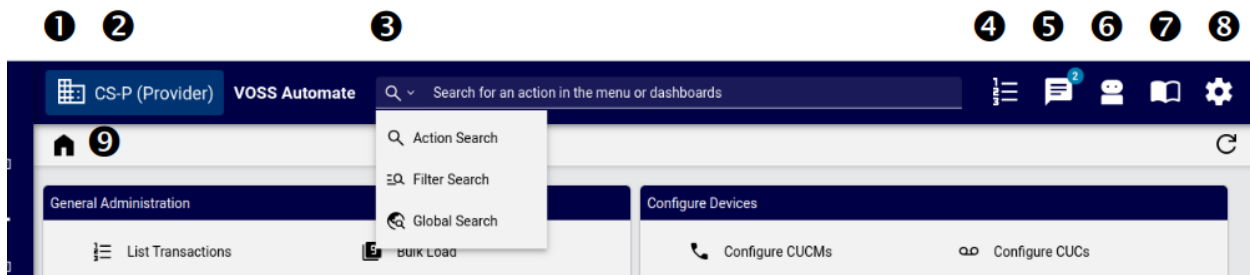
**Important:** Some icons (and related functionality) are available only if your access profile permissions allow it. For example:

- The **Transaction** icon is available only if you have read permissions on tool/Transaction
- The **Saved Searches** panel is available only if you have read permissions on data/UserSavedSearch
- You'll only receive alert notifications if you have read permissions on data/Alert
- The **Help** book icon displays only when you have access to the general help (Misc Permissions)

A form/list-based toolbar displays additional icons, depending on the model you're working with (which defines the content on the form or list you're viewing), and on your access profile and permissions. For example, if it's not possible or allowed that you move certain items, the **Move** icon won't display.

## Main Toolbar

The table describes the graphical controls and icons on the main Admin Portal toolbar:



The table describes the icons on the main toolbar in the Admin Portal:

1. Organization Selection	<p>Launches a hierarchy (organization) tree view that displays a tree or list of available nodes. See <a href="#">Navigating the Hierarchy</a></p> <p>Note that the accent color is used for this element.</p>
2. Hierarchy element	<p>A hierarchy element displaying the highest hierarchy level. The associated child hierarchy element display in a similar field display box adjacent to the main hierarchy element.</p> <p>If there is more than one level or node at a specific hierarchy, you can search and navigate the hierarchy. See <a href="#">Navigating the Hierarchy</a>.</p>
3. Search	<p>Search bar. Fill out search criteria to use the default search (Action search), or click the down arrow at the filter icon to choose an alternative search mode:</p> <ul style="list-style-type: none"> <li>• Action search - perform a fuzzy, free text, actions search, for example, <i>Modify Voicemail</i> or <i>Create subscriber</i>.</li> <li>• Filter search - choose from a predefined list of entities</li> <li>• Global search - available only to users with appropriate permissions; allows querying of the API for models and search criteria</li> </ul>
4. Transactions list	<p>Opens the transactions list, where you can view a list of in progress and recent completed transactions, and drill-down to view transaction details.</p> <p>The pulsing counter above the icon indicates the number of transactions currently in progress. The spinner adjacent to the icon indicates that your transactions are in progress.</p>
5. Notifications indicator	<p>A notification indicator and menu for accessing the Transaction log and Alerts (if alerts are enabled). A pop-up notification displays when a transaction is done. You can click on the message to inspect transactions. Alert notifications display until all alerts are removed from the list.</p>
6. Wingman	<p>Opens Wingman Chat if enabled. Refer to <a href="#">VOSS Wingman</a>.</p>
7. Help button	<p>Opens the system online Help in a new browser tab.</p>

## 8. User profile (Cog icon)

Provides a menu with items for:

- The logged in user's **Account Settings** (read-only), **Quick Actions** to sign out or change password, and **Preferences** where you can set the **Browser Console Log Level**.

If the **Browser Console Log Level** is set to Debug, your browser console (**Inspect** menu) provides additional details when selecting menu items and instances on the GUI, for example:

```
Model Type: relation/User, Field_
↔Display Policy: default,
Configuration Template: undefined,
↔Fixed Filters: undefined
```

This setting reverts to None (default) when you sign out. When set to None, the browser console **Inspect** menu does not show these details. See the note below this table for more information about this setting.

- **About** form with version details - see: [About \(System details\)](#).
- **Sign out** button to log out the user.

## 9. Home

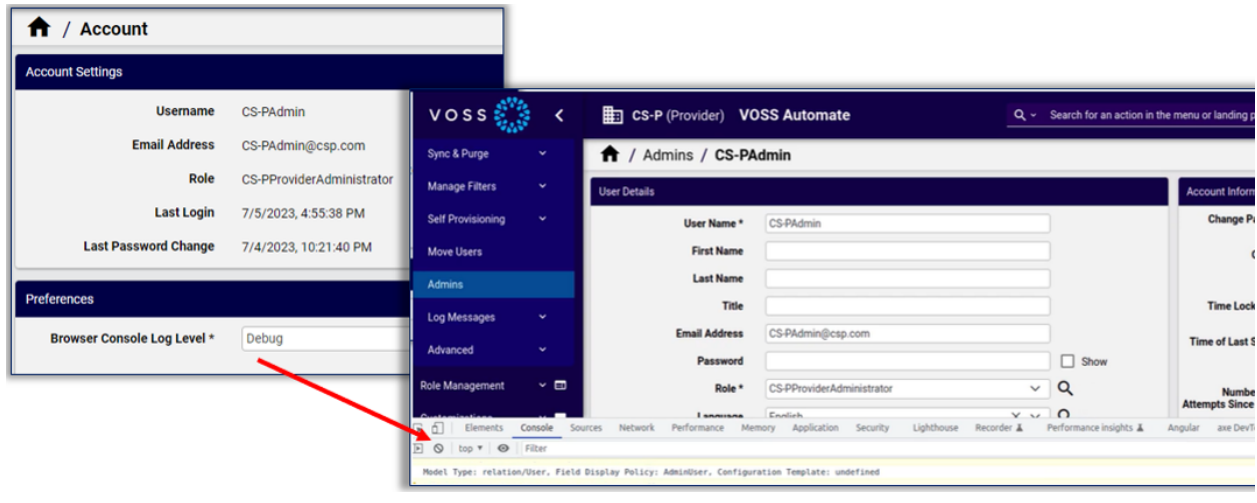
A Home navigation button to return to a customizable dashboard that serves as a landing page. See “Automate Dashboards” for details.

- The system displays a welcome message the first time a user logs in with a new account.
- When a non-SSO or non-LDAP user logs in, a system message alerts the user to any failed login attempts.
- When SSO or LDAP users log in, the system displays the last successful login time.

**Note:** To view details for:

- the model
- field display policy
- configuration template
- fixed filters

applied to any page in the GUI, in **Account > Preferences** set **Browser Console Log Level** to Debug, and save your changes. Then open the page where you want to view these details, right click, and choose **Inspect** to open the browser console.



## Forms and Lists Toolbar

For certain models, such as Roles or Credential Policy, the list view or detail view of the record in the Admin Portal displays an additional toolbar with a number of controls.

The icons that display on this secondary toolbar depend on your access profile and based on the functionality available for data on the form or list (the model you're working with).


## Standard Icons

The table describes standard icons that typically display on all forms and lists.

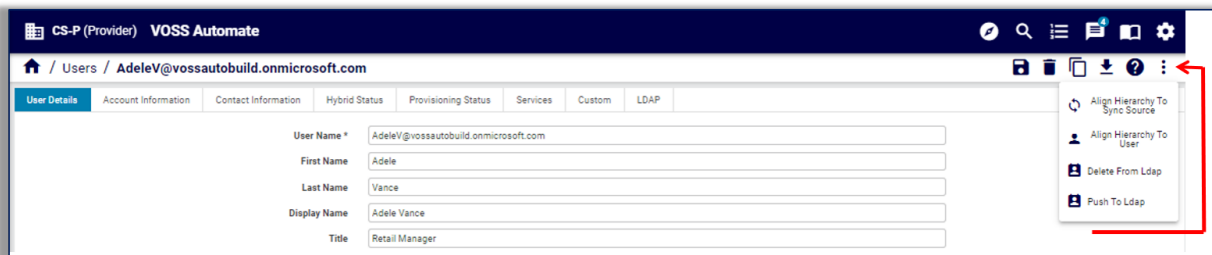
Icon	Description
Filter	Allows you to filter items on a list.
Plus icon (+)	Creates a new record from a list view.
Delete	From a list, remove an entry or the selected entries.
Move	You can move some model instances (by default, device models) from the current hierarchy to another hierarchy. When moving device models, the system won't allow you to move a device model instance to a hierarchy node with a different device. For data models, move is allowed if you edit the data model's definition in the Operations section.
Clone	Make a copy of the current item, and rename it to create a new instance.
Export	From search results or any list view in the system, it is possible to select the entities required and export them with all attributes. The selected data can be exported to: <ul style="list-style-type: none"> <li>• A JSON file that is archived into .json.zip format for external use.</li> <li>• Excel - an export containing data and Excel columns for all fields as shown in the JSON export format.</li> <li>• Excel(formatted) - an export containing data and Excel columns as arranged by any Field Display Policies that apply.</li> </ul>
Save	Saves a new or updated record.
Cancel	Cancels triggered events such as transactions or bulk loads.
Back	On forms, this icon returns to the original list page position. The browser's back button also carries out this action.
Help	Open the on-line help page for the current model.

## Overflow Actions Menu

On forms and lists that allow multiple actions, icons for key actions (for example, Filter, Add, Create, Update, Delete), are always visible on the toolbar, whereas other available actions are accessible via a vertical ellipsis

toolbar icon (  ), which displays a drop-down menu of the additional (overflow) actions available for data on the form or list.

The image shows non-key actions available in the overflow menu when viewing or updating a user, for example:



**Note:** Accessibility support is provided for the overflow actions menu so that you can tab through the actions

---

and press **Enter** or space bar to select an action in the menu.

---

The table lists actions that may be available in an overflow actions menu on a form or list, if relevant for the record and allowed for your access profile:

Action	Description
Bulk Load File	Only used in <b>Administration Tools &gt; Bulk Load</b> , when bulk loading a preselected file.
Bulk Modify	On the list view of certain items, the button displays a form to enter modifications to any selected list items and carries out a Bulk Modify. This is only available if your administrator has given you the required permissions.
Configuration Template	For a form, create a Configuration Template for a model or carry out a task such as an advanced search.

Action	Description
Export Bulk Load Template	Export a model structure to a MS Excel bulk load file format. The file can be used as a template to bulk load instances of the model. Refer to the Bulk Load topic help.
Field Display Policy	Add a Field Display policy to a selected model. The detail view of a Transaction displays this button to show sub-transactions.
Execute	For an executable model such as a Provisioning Workflow, Macro, Wizard or for a script, run the execution.
Import	For supported Network Devices, carry out an import of data from the device.
Package	Create a package containing selected search results.
Refresh	Click this button on the Transaction list to refresh the list of transactions. This would for example update the Progress of the transaction.
Refresh User	On the <b>User Management</b> page, click <b>Refresh User</b> to align user data in relation/User with user data from source, caching from the UC application. This option is not exposed by default in the access profiles.
Replay	Transactions that have failed can, under certain circumstances, be replayed. This means that the transaction is re-submitted with the original request parameters.
Edit and Replay	Available for completed transactions. Similar to the <b>Replay</b> button, but allows you to first make changes to the previously submitted form before the transaction is resubmitted.
Reset Phone	Reset a phone.
Return	Return - From the detail display of a selected instance of a model, select this button to return to the list display of the model instances.
Tag	For a selected model instance, add a tag to it.
Tag Version	For a selected model instance, add a version tag to it.
Test Connection	For instances of models representing connection parameters such as connections to devices, click the button to test the connection.
Visualize	Deprecated.
Purge	Removes a record entirely.
JSON Editor	Update a JSON file.
Apply	Saves and updates the record.
Lock	Disables editing.
Reset	Clears the record.
Restart	
Vendor Config	
Wipe	








## Forms and Lists



The Admin Portal displays information in forms and lists.

- Detail forms: during input, mandatory fields are highlighted in a red frame.
- List views of details. If the text in a column exceeds the defined column width, it is truncated with an ellipsis (...), except for any column showing the row entry hierarchy.

## Form Controls

The following controls are typically available on forms.

Icon	Description
	Open another instance of the current form field or open a pop-up screen to add an item.
	Delete the current instance of a field from a form or open a pop-up screen to confirm.
	Move the selected instance on a form down in the order of field entries. In the case where a Position field is available, for example for Lines, the entered value determines the order in the object.
	Move the selected instance on a form up in the order of field entries. In the case where a Position field is available, for example for Lines, the entered value determines the order in the object.
	Collapse or expand all array items, for form arrays with multiple items. Arrays are collapsed by default. You can expand or collapse selected array items in a form array, or expand/collapse all from the form array header.

Icon	Description
	On multi-tabbed forms, navigate to the previous or next tab.
	A warning icon, for example if a mandatory field is not filled in.
*	Next to an input control on a form, the asterisk indicates that the field is mandatory.
[Browse]	Next to an input control on a form, a button to open a file selection dialog.
[ V ]	Drop-down input box. Typing into the box filters the drop-down list choices.

**Note:** On some parts of the user interface, when adding or deleting items via pop-up screens, clicking the **OK** button typically completes the update; that is, you won't need to also click **Save** on the main form.

## Switching Form Layouts

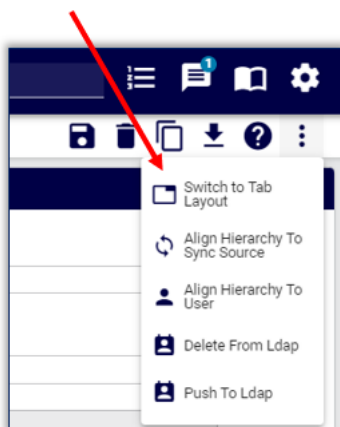
The layout of forms in VOSS Automate is defined via a number of field display policies (FDPs). For groups of fields, the default layout for the field display policies setting, **Display Groups As**, is *Panels*, except for the forms associated with the following models, which have their default layout as *Tabs*:

- view/GlobalSettings
- data/SiteDefaultsDoc
- data/ucprep\_UC\_Profiles
- relation/DP\_REL
- data/HcsDpDialPlanSchemaDAT
- data/HcsDpDialPlanSchemaGroupDAT

On forms where you're able to change the layout (depending on your user type and the model type), you can click the layout change icon (**Switch to Panel Layout** / **Switch to Tab Layout**) to switch between a tab layout and a panel layout. The layout you choose is preserved when you log out and log in again.



On some forms, the action element to use for switching between tabs and panels may display in the overflow actions menu.



---

**Note:** This guide refers to the default layout for the model, unless otherwise specified.

---

Some form views do not have the action element available to switch between tabs and panel form views. For details and the list, see the “Display Groups As” topic at: [Field Display Policies](#).

## Related Topics

- [Field Display Policies](#)

## Slide out notifications

A **Cached** slide-out notification at the top right of the interface displays when the locally cached data of a resource is used.

This slide-out notification can be minimized to a narrow bar on the side of the screen.

## Accessibility

To support accessibility, when using keyboard navigation, a black bar is enabled above the toolbar. When the cursor is in the URL box and the Tab key is pressed, this bar is displayed and has three menu items corresponding to three areas of the main user interface:

Home screen	From any form on the interface, return to the main user interface. This is equivalent to the Home button on the main toolbar, and can, for example be accessed by means of a screen reader shortcut.
Skip to content	On the main user interface, move the focus to the dashboard menu items. Press <Tab> to move the focus to the first dashboard link.
Skip to navigation	On the main user interface, move the focus to the menu bar. The first menu item receives focus.

## Sessions and Authentication

Since VOSS Automate sessions are cookie based, it is possible to share the same session across different tabs or windows of the same browser. However, it is not possible to have different authentication sessions in different tabs. In other words, login as different users in different browser tabs is not supported.

## On-line Help

To access the full online help website from the Automate Admin Portal, press the toolbar Book icon. To access help for a page you’re viewing in the system, click the **Help** icon.

The page-level (context) help also includes a **Full HTML Help** link for the entry on the online help website and the model help (as seen in the GUI tooltips).

### Note:

- In order to have access to the online help website URL, you may need to request that the website be made accessible by your network administrator.
- Your view of the system help depends on your hierarchy level, role-based access permissions, and the field display policies applied to your system.

---

## About (System details)

The **About** menu provides details for your system, including version, patches, and adaptations.

---

**Note:** The **About** toolbar icon provides only version details.

---

## Version

- **Release:** Installed product release version.

The version naming convention is:

- **new:** <YY>.<num>, for example: 19.3 is the 3rd release of 2019.
- **legacy:** <major>.<minor>.<revision>, where major=YY,minor=num,revision=revision of num.

- **Patch Bundle:** The installed Patch Bundle (PB) number, if any.
- **Build Number:** Product build number.
- **Release Date:** Date when this version was released.
- **Deployed Mode:** Current deployment mode type, for example:
  - Provider
  - Enterprise

---

**Note:** You can use the toolbar Copy icon to copy version release text to the clipboard.

---

## Patches

If any patches have been installed on the system, these are listed under the **Patches** menu. Details of installed patches are also provided for reference and enquiries, for example:

- **Version:** in this context, the patch version (there can be multiple versions of the same patch).
- **Defect IDs:** VOSS Automate internal IDs for reference
- **Models:** any models and model **Instances** added or affected by the patch

## Adaptations

If any adaptations are installed on the system, these are listed. Select an adaptation from the list to see more details, for example:

- **Adaptation Tag(s):** the tags can be used to find all models that are a part of the adaptation, using a search query such as

```
(tag IS <tag1>) or (tag IS <tag2>)
```

where <tag1> and <tag2> are the names of tags.

---

**Note:** The search for models is carried out from the user hierarchy and down.

---

- **Upgrade Risk:** an indication of the impact of an adaptation on an existing system:
  - High: Core changes
  - Medium: Standalone adaptation using core workflows
  - Low: Standalone feature

## License

This menu provides details for your current license, including the platform UUID, license status, and expiry date. See also, [Product License Management](#).

## License Counts

This menu provides details of overall license counts following daily license audits. For details, see the [Licensing and Subscriber Data Export Guide](#).

### 3.2.2. Manage Items

#### Editing Items

##### Edit on GUI Forms

Provided you have the necessary user and model permissions, you can edit and save items directly on the GUI forms. Note the following:

- Displayed field names are customizable and provide tooltips according to a Field Display Policy for the model.
- Form GUI rules control the default field availability and pre-populated values.
- When opening a form, form details are initially rendered using cached data. Save is disabled while non-cached data loads, and is enabled once the non-cached data has been loaded.
- Most forms provide a Help button for editing guidance.

##### Edit in the JSON Editor

You can edit items in the JSON editor if your high-level administrator has enabled the **Json Editor** permission for your access profile. See [Access Profile Permissions and Operations](#).

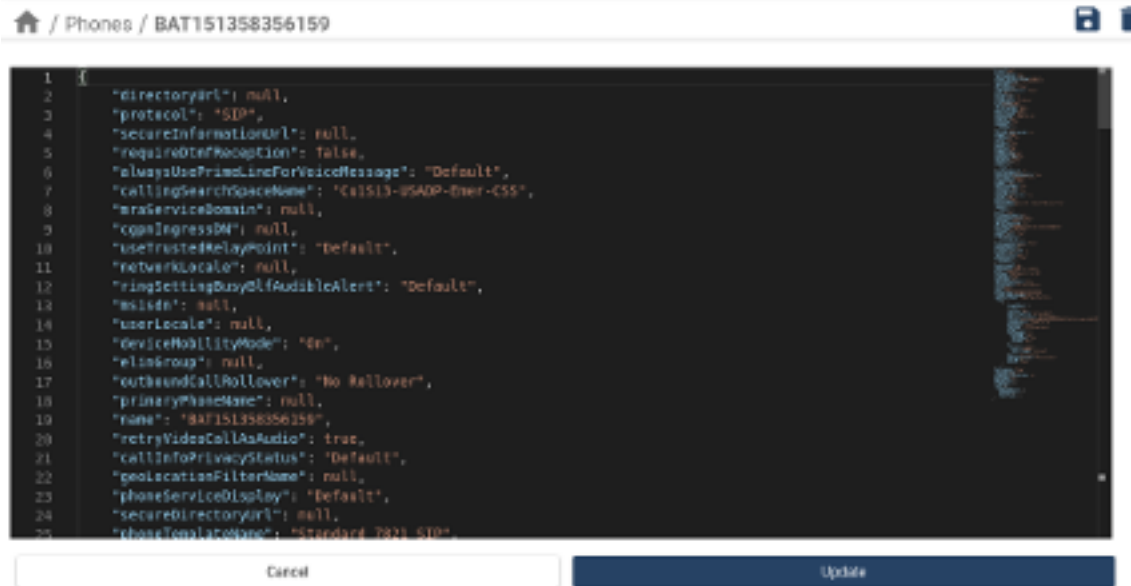
If you have the required permissions, the **JSON Edit** button displays on the toolbar. 

---

**Note:** The JSON Editor is available only in the new Admin Portal. See [Conventions Used in this Guide](#).

---

1. Navigate to a page that provides access to a JSON editor, for example, transactions, or phones.
2. Click the **JSON Edit** button to open the JSON editor.
3. Edit the JSON format data on the form.
4. Click **Update** to update data on the GUI input form.
5. Click **Save** to commit your changes.



---

### Important: Accessibility Options in the JSON Editor

When using the JSON editor with a screen reader application, note the following:

- Pressing **ALT+F1** enables accessibility options.
- Pressing the **Escape** key closes the accessibility help dialog.
- Pressing **Ctrl+M** enables and disables editor tabbing.
- Pressing **SHIFT+TAB** while inside the editor allows you to move focus to various components and controls inside the editor. For example, to update modified data, press **SHIFT+TAB** until focus reaches the **Update** button; then, press the **Enter** key to update the data.

At the time of writing (21.2), the JSON editor does not support the use of the **TAB** key on its own to move focus from one component to another within the editor. The workaround is to use **SHIFT+TAB** for navigation within the editor.

---

---

## Create a Clone

VOSS Automate allows you to create copies (clones) of certain items, such as roles, credential policies, devices, and phones. Cloning provides a quick way to create new items, based on data from the cloned item.

You can create a clone wherever you see a **Clone** button in the Admin Portal. For example, you can't create a clone in the list views. Saving a new cloned item creates the clone.

If an item refers to other items, only the current item is cloned, and not the referenced items. For example, when cloning a phone, referenced device models (Phone and Remote Destination) aren't added to the clone.

On the cloned item, you will need to edit the cloned key field(s), such as *Name*, and provide new values to create the new item in the system. If you don't change a key field value, the system displays the following error message: "Error, Duplicate Resource Found."

### To clone an item:

1. Log in to the Admin Portal.
2. Choose the hierarchy level of the item to be cloned.
3. Choose the item you want to clone.
4. Click **Clone**. The page refreshes and the form displays the cloned item.
5. Edit the required details.
6. Click **Save** to create the new item.

## Selecting Items

You can select one or more existing items in a list to delete or modify these items at once.

- To delete or modify one item in a list view, click on the relevant item, and click the action, for example, the Delete button.
- To delete or modify multiple items in a list view, select the checkbox for each item. If the list view spans multiple pages, you can select items on each page before performing the bulk action. The table header displays the number of selected items. Once you have all the items selected, click the action, for example, Export.

---

### Note:

- Actions such as **Export Bulk Load Template**, **Field Display Policy**, and **Configuration Template** apply to the *type of item* and are not affected by the item selection.
  - Actions such as **Bulk Modify** depend on whether your administrator has given you the required permissions.
- 

When selecting items, note the following:

- Items selected across multiple pages remain selected until the transaction (or export) is complete, at which time all selected items are cleared.
- Items selected while on a specific menu, e.g. Subscribers, are automatically cleared as soon as you select a different menu.
- Items selected across multiple pages are automatically cleared when you select the 'All' checkbox in the header of the first column (on any of the list pages).

- Manually clear selected items on one or more pages by selecting and then clearing the checkbox located on the left of the *first* column in the header row.

Where the Admin Portal user interface provides a list of check boxes, a “toggle all” checkbox allows you to quickly select or deselect of all checkboxes.

### Transfer Boxes

Side-by-side transfer boxes (Available / Selected) are used on various forms in the system, such as Audit Number Inventory, Reskill Agents (Contact Center) and Upload Multiple Files to MOH Clusters.

Transfer boxes allow you to select only certain items to process in a specific transaction. For example, you may want to perform an audit on numbers from selected sites only.

A maximum of 200 items can be displayed in the **Available** transfer box. In cases where there are more than 200 available items, VOSS recommends that you use the bulk load functionality and populate a bulk load template with the required entries. You can then load this into VOSS Automate using the Bulk Load administration tool. Refer to [Bulk Load Template Export](#) and associated topics for more information.

### Bulk Delete and Modify

When more than one item is selected from the list view of items, the selected items can be deleted in bulk by using the **Delete** button on the button bar.

If your administrator has given you the required permissions, you can also bulk modify certain items, for example Roles.

Select the check boxes of the items you want to modify and choose the **Bulk Modify** action on the button bar. The input form for the item is opened. Values entered on this form (which is an update template) are modified for all selected items when you choose the **Bulk Modify** action.

---

**Note:** When opening the form for the bulk modify, boolean flags do not take a value by default.

To unset a boolean field:

- After opening the form for bulk modify, toggle the field to on (set) and then off (unset) again. This forces the value in the boolean field to be set with a value of false (or unset).

---

## 3.2.3. Working with Lists

### Overview

Summary views of resources and services are shown in lists in the VOSS Automate Admin Portal. For example, you can view a list of components in your system hierarchies, or to view a list of customers, sites, users, subscribers, servers, or device types.

The lists include functionality that allows you to sort, order, and filter items, and to navigate across multiple pages.



<input type="checkbox"/>	User Name ↑	First Name ↑↓	Last Name ↑↓	Email Address ↑↓
	Filter	Filter	Filter	Filter
<input type="checkbox"/>	#username	#user	#ln	
<input type="checkbox"/>	00test1SparkUser.Autonomy11_2376@voss-solutions.com	00test1SparkUser	Autonomy8	00test1SparkUser.Autonomy11
<input type="checkbox"/>	02test1SparkUser_2343Auto5@voss-solutions.com		Auto5	02test1SparkUser_2343Auto5@
<input type="checkbox"/>	03test1SparkUser_2341Auto10@voss-solutions.com		Auto10	03test1SparkUser_2341Auto10
<input type="checkbox"/>	03test1SparkUser_2353Auto10@voss-solutions.com		Auto10	03test1SparkUser_2353Auto10
<input type="checkbox"/>	03test1SparkUser_2405Auto10@voss-solutions.com		Auto10	03test1SparkUser_2405Auto10
<input type="checkbox"/>	03test1SparkUser_2406Auto10@voss-solutions.com		Auto10	03test1SparkUser_2406Auto10
<input type="checkbox"/>	2233		2233	
<input type="checkbox"/>	2243		2243	
<input type="checkbox"/>	_AAbattery		Battery	
<input type="checkbox"/>	_qasThu10h19@mail.com	Sponge	Bob2	_qasThu10h19@mail.com

## Related Topics

- [Introduction to the Admin Portal User Interface](#)

## Get Total

A **Get Total** link is available at the top of list views to show the total number of rows in a list in the case where there are more than the default 200 rows shown on a page. Pagination controls will then be adjusted accordingly.

The purpose of this control is to speed up the initial display of long lists.

## Refresh Lists

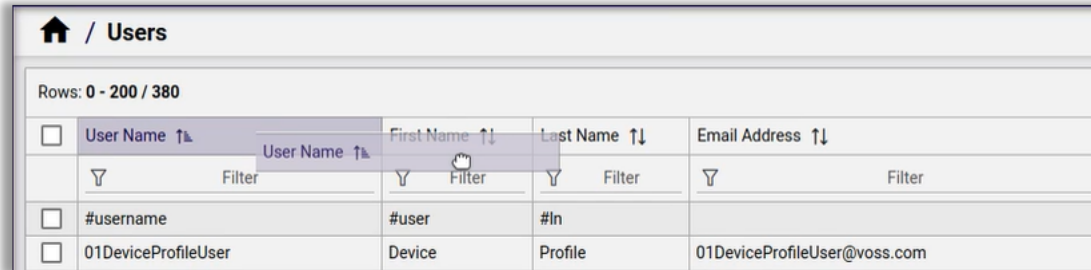
List views refresh by default, when:

- A transaction (related to items you're viewing on the list) completes.
- Clicking again on the menu option for the list. For example, when looking at a list of phones (default menus: **Cisco Subscriber Management > Phones**), clicking the **Phones** menu in the left navigation refreshes the list.

**Note:** If you have a filter applied to the list, refreshing the list displays the new item if it matches any applied filters. In the scenario described above, if you have a filter applied to only show phones containing the characters *123*, the refreshed list view will show any new phones containing these characters.

## Reorder Columns

VOSS Automate allows you to select and drag a column to a new position in the list view, to rearrange the order of the columns. The updated column order is retained for you in your browser's local storage, until that storage is cleared.



The screenshot shows a web interface for 'Users'. At the top, there is a home icon and the text '/ Users'. Below that, it says 'Rows: 0 - 200 / 380'. The main table has four columns: 'User Name', 'First Name', 'Last Name', and 'Email Address'. Each column header has a small icon indicating sort order (up/down arrows). The 'User Name' column is highlighted, and a mouse cursor is shown dragging it to a new position between 'First Name' and 'Last Name'. Below the table, there are checkboxes for '#username' and '01DeviceProfileUser', and some data rows are visible.

## Sort and Order Lists

Columns in the list views may contain string values or numeric values. The default sort order is on the first column, either alphabetically (descending) for string value columns, or numerically (descending) for numeric value columns.

To sort the list based on values in a column, click on any column header. Click again to change the direction of the sort order. An up/down arrow in the column header indicates the sort order.

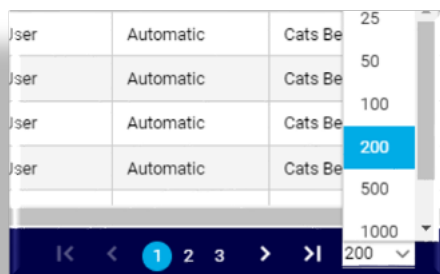
When sorting:

- Cells with no value move to the top or bottom of the list, depending on the sort order (ascending or descending).
- Upper case letters sort before lower case letters.
- Any column can be sorted, provided no filter is applied.
- Applying a filter to two or more columns disables sort.
- Leading spaces in field values are dropped from the list view. This may affect the sort order.
- Values in the **Located At** column are sorted according to the string value, and not the hierarchy path.

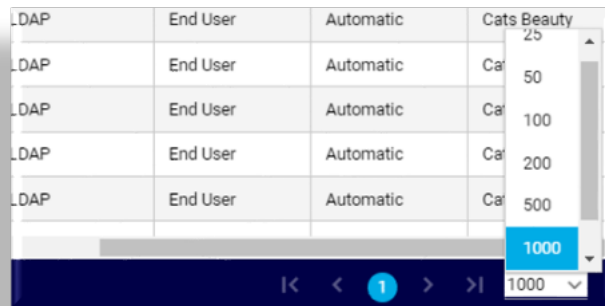
## Navigate Lists

Lists with many items may display across two or more pages.

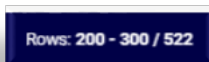
- To navigate across a multiple page list, click the right/left arrow to scroll to the next/previous page, or click a page number.



- To view more items per page, specify the number of items to display on each page, from 25 to 2000. This includes lists of transactions, logs and sub-transactions.



- The header row displays the number of the rows you're viewing out of the total.




---

**Note:** Search results that display as lists return a maximum of 1,000 items. A system message at the bottom of the list indicates this limitation. Change the search criteria for result lists exceeding 1000 items.

---

## Filter Lists

This topic describes filtering on resource and service summary lists. For details around filtering transactions, sub-transactions, and log lists, see [Filter Transactions](#).

A filter remains active until you remove it or until your user session ends (even if you navigate away from the page). If you're not seeing all data on a list, clear the filter by clicking the X icon adjacent to the **Filter** button, or open the dialog and remove filters.

---

**Note:** In the Admin Portal, when opening a list via a menu, and you create and apply a filter to this list, the filter is not retained for this list when you open the same list from a dashboard. The filter is retained for the list only when opening the list from a menu (any menu where that list is available).

The same applies for lists that you launch from a dashboard, when you create and apply a filter to the list you opened from the dashboard. In this case, the filter is only retained on the list when you open that list from a dashboard (any dashboard where that list is available)

---

The Automate Admin Portal provides two options to filter a list view:

- Advanced filter
- Quick filter

**To filter lists in the Admin Portal:**

1. Log into the Admin Portal.
2. Open a list view for a resource or service. For example, (default menus) **User Management > Users**.
3. Add or modify filter criteria. The table describes the options:

---

**Note:** You can also sort the columns of filtered lists.

---

Filter option	Description
Advanced filter	<ol style="list-style-type: none"> <li>1. Click the toolbar Filter icon to launch the <b>Filter</b> dialog.</li> <li>2. Specify filter criteria: <ul style="list-style-type: none"> <li>• Select a field and a condition, and enter a filter value.</li> <li>• To run a case-insensitive search, clear <b>Ignore Case</b>, else, leave the checkbox selected (default).</li> <li>• Click <b>Add Filter Condition</b>. To filter for empty rows in a specific column containing string values, choose <b>Equals</b> with “None” as value. To filter for non-empty rows in a specific string value column, choose <b>Does Not Equal</b> with “None” as value. Note that this condition does not apply to columns containing numeric or boolean values.</li> </ul> </li> <li>3. To add another filter, click <b>Add Another Filter</b>, then repeat the steps above to select another field and condition.</li> <li>4. Click <b>Filter</b>.</li> <li>5. View filter criteria you added. <ul style="list-style-type: none"> <li>• The filter is applied to the list.</li> <li>• Filter criteria is added to the top of the page (as well as in the Filter field at the top of the relevant column).</li> <li>• To add more filter criteria, click the Plus icon (+) adjacent to the criteria at the top of the page to open the <b>Filter</b> dialog, or click in the Filter field for the relevant column to add new criteria.</li> <li>• To edit individual filter criteria, click on the filter to open the <b>Filter</b> dialog, or edit the criteria in the Filter row for the relevant column.</li> <li>• To remove a filter, click the Delete icon (x) for the relevant filter criteria at the top of the page, or click the red X icon in the row to remove all filters.</li> </ul> </li> <li>6. To save your filters as a search, click the Save icon adjacent to the filters. Saved searches are added to the user <b>Account</b> (from your <b>Settings</b> icon), under <b>Saved Searches</b>.</li> </ol>

Filter option	Description
Quick filter	<ol style="list-style-type: none"> <li>1. Click in the <b>Filter</b> field below the header of the column you want to filter on.</li> <li>2. Type in filter criteria (one or more characters). <ul style="list-style-type: none"> <li>• The filter is applied to the list.</li> <li>• Filter criteria is added to the top of the page (as well as in the Filter field at the top of the relevant column).</li> <li>• To add more filter criteria, click the Plus icon (+) adjacent to the criteria at the top of the page to open the <b>Filter</b> dialog, or click in the Filter field for the relevant column to add new criteria.</li> <li>• To edit individual filter criteria, click on the filter to open the <b>Filter</b> dialog, or edit the criteria in the Filter row for the relevant column.</li> <li>• To remove a filter, click the Delete icon (x) for the relevant filter criteria at the top of the page, or click the red X icon in the row to remove all filters.</li> </ul> </li> <li>6. To save your filters as a search, click the Save icon adjacent to the filters. Saved searches are added to the user <b>Account</b> (from your <b>Settings</b> icon), under <b>Saved Searches</b>.</li> </ol>

## Filter Examples

- Specify advanced filter criteria in the **Filter** dialog.

The screenshot shows a web interface for managing users. At the top, there is a breadcrumb 'Home / Users' and a status bar indicating 'Rows: 0 - 522 / 522'. Below this is a table with columns: User Name, First Name, Last Name, Email Address, Role, and Entitlement Profile. Each column has a 'Filter' field below its header. A modal dialog titled 'Filter' is open, allowing for advanced filtering. The dialog has three main sections: 'Select Field', 'Select Condition', and 'Enter Filter Value'. In 'Select Field', 'Sync Source' is selected. In 'Select Condition', 'Does Not Equal' is selected. In 'Enter Filter Value', 'LDAP' is entered. There is a checked checkbox for 'Ignore Case?'. Below the input fields are 'Add Filter Condition', 'Cancel', and 'Filter' buttons. At the bottom of the dialog, a blue bar shows an existing filter: 'Telephone Number contains +44' with a red 'X' to remove it.

- Advanced and quick filter criteria you add displays at the top of the page, and to the top of the relevant column/s.

Site Name	Description	Site ID	Internal ID	External ID	City	State
LOC	Filter	Filter	Filter	Filter	Filter	Filter
LOC001	Site added by automation.		1	LOC001eid	RTP	NC
LOC002	Site added by automation.		2	LOC002eid	RTP	NC

- Advanced and quick filter saved searches display on the user **Account** (from your **Settings** icon), under **Saved Searches**.

### 3.2.4. Search in VOSS Automate

#### Overview

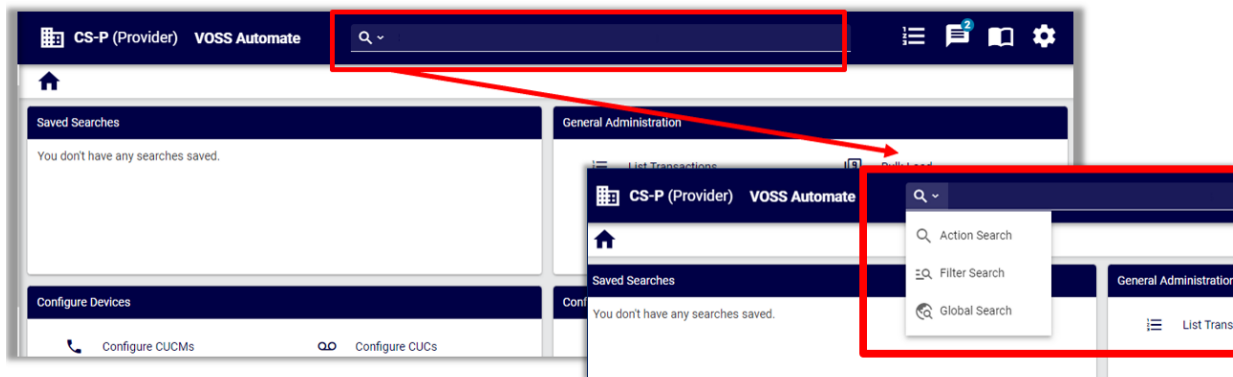
You can run three types, or modes, of search from the search bar in the VOSS Automate GUI:

Search Mode	Description
Action search	Default. Searches for entries or actions available on the menus and dashboards.
Filter search	Choose from a predefined list of entities to launch a <b>Filter</b> dialog, where you can add additional criteria to filter results.
Global search	Performs a search based on all or part of a search term that queries the API for the relevant model and search criteria.

For further details, see:

- [Action Search](#)
- [Filter Search](#)
- [Global Search](#)

For details on using VOSS Wingman for chat, see: [VOSS Wingman](#). To toggle between search modes, click the down-arrow at the search icon. The last used search mode and search criteria text is retained during the current session in the browser and when you log out and log in again.



#### Related Topics

- [Working with Lists](#)
- [Searchable Fields](#)
- [Case Insensitive Search Fields](#)

## Search Modes

### Action Search

Action search is the default search mode in VOSS Automate. It is a case-insensitive, fuzzy, free text search that includes the *contains* condition. Search results are based on the menus and dashboard links for your role, as well as on the menu or dashboard path (where to find the entry), and descriptions (when populated).

You can use the Action search to fill out a search phrase or single word to navigate quickly to a relevant form, view, or list. All relevant items are returned. For example:

- When searching for *subscriber*, results include *Phones* because *Phones* is an item included under the (Cisco) *Subscriber Management* menu.
- When searching for *settings*, the search result includes the macro entry for **Emergency and CLI Settings**, since the word *settings* is included in the name.

Including *add* in your search phrase generates results for *create* and *add*.

You can click on a search result to open it in the system.

The screenshot shows the VOSS Automate interface with a search bar containing 'add user'. The search results are displayed in a table with 7 rows. The table has three columns: Name, Path, and Description.

Name	Path	Description
User Calling Settings	MS Subscriber Management	
User Management logs	User Management > Log Messages	
User Management logs	Overbuild > Log Messages	
User Phone Associate Tool	Overbuild	
User Profile	User Management > Self Provisioning	
Users	User Management	
Users	Cisco Subscriber Management > Webex App	

The screenshot shows the VOSS Automate interface with the 'Users' list view. The list has 484 rows and 16 columns. The columns are: User Name, First Name, Last Name, Email Address, and Role. The list is filtered to show 5 rows.

User Name	First Name	Last Name	Email Address	Role
#username	#user	#ln		AAAGlobalSelfService
*specialUser		SpecialUser		LOC001SelfService
01_qas_10h23	01_qas_10h23fn	01_qas_10h23ln	01_qas_10h23@mail.com	LOC003SelfService
01DeviceProfileUser	Device	Profile	01DeviceProfileUser@voss.com	LOC003SelfService
02DeviceProfileUser	Device	Profile	02DeviceProfileUser@voss.com	LOC003SelfService
03DeviceProfileUser	Device	Profile	03DeviceProfileUser@voss.com	LOC003SelfService
04DeviceProfileUser	Device	Profile	04DeviceProfileUser@voss.com	LOC003SelfService

### Note:

- Menu entry results display in the following **Path** format: *xx > xx*
- Dashboard results display in the following **Path** format: *Dashboard: yyy*



- Verbs in the search phrase return results when matching the same word in a menu or dashboard (for your role).
- Since the Action search uses title text in menus, Dashboards, and actions, a best practice when creating these is to ensure they contain useful text for finding actions.

---

### Important:

- Plural keywords may not return all relevant results. If you don't see the results you expect, change the keyword to singular, for example, *phone* instead of *phones*, or *add subscriber*, instead of *add subscribers*.
  - Using generic terms, such as *subscriber* or *phone*, returns all items relating to this keyword.
  - Avoid search phrases that include *the*, *a* or *an*. For example, use *add user* instead of *add a user*.
  - Search phrases that refer to a device, such as CUCM, returns all items (including device models) that have the device name in the label or description. Additionally, the phrase *add device* returns a list of results where the label starts with *device*, where the role allows the add operation, and (in this case), labels, descriptions, or models containing the full string, *add device*.
  - For best results (depending on the permissions you have on the model types), use the following verbs in search phrases:
    - create, add
    - update, edit, modify, change
    - delete, remove
- 

Search criteria supports abbreviations, model type keywords (such as view, relation, model), and matches for the first character of words in a string. For example, *QAS* returns *QAS - MS Teams*, as well as *Quick Add SIP Gateway*.

**Note:** Including numerical digits in the search criteria only returns menus with digits in the menu or dashboard name. For example, search criteria including the digits *1*, *6*, or *4* returns menus with these digits in their name, such as *E164 Inventory* (by default, a sub-menu in the **Number Management** menu).



The screenshot shows the VOSS Automate search results page. The search term is '64'. The results table has 4 rows and 3 columns: Name, Path, and Description.

Name	Path	Description
Add E164 Inventory	Number Management	
E164 Associations ( N to 1 DN )	Number Management	
E164 Associations ( N to N DN )	Number Management	
E164 Inventory	Number Management	

### Best Practices for Meaningful Search Results (Action Search)

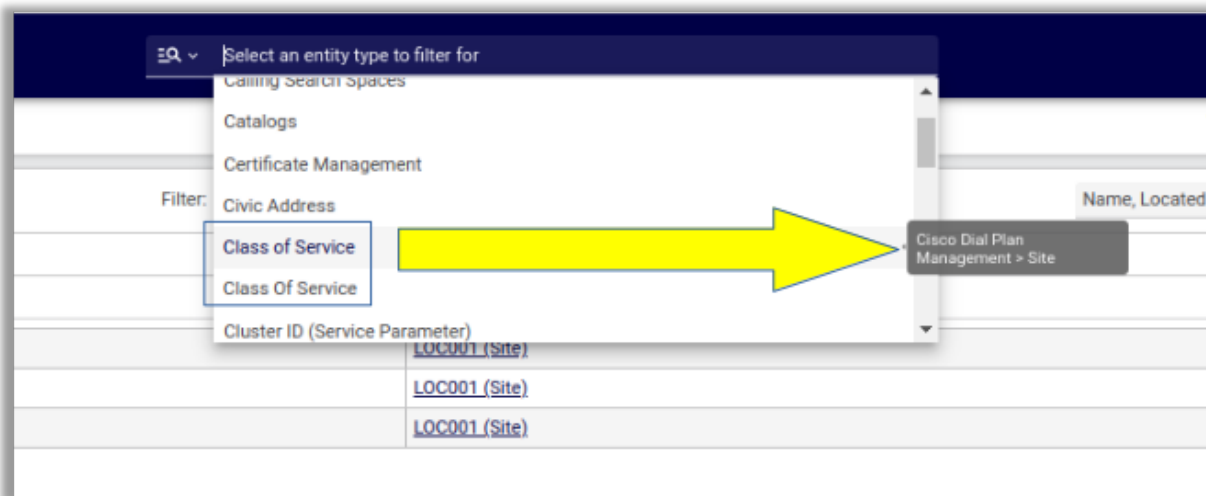
Administrators should align naming conventions and the setup of items for user navigation with terms that are familiar to users. For example:

- Adjust the names of menus, dashboards, tasks, and quick actions if these prove to be unintuitive.
- Configure relevant dashboards for quick actions, based on user roles.
- Use the Action search to quickly find actions that aren't available on dashboards and menus.

### Filter Search

In a Filter search you choose from a predefined list of entities (based on your role) to launch a **Filter** dialog, where you can further refine the criteria to filter results.

Tooltips for the entity display the path to the entity. Where duplicate entities appear in the list, the tooltip indicates the difference.



Select an entity to open a **Filter** dialog, where you can refine search criteria, if required.

For further details around using a filter search, see *Filtering lists in the Admin Portal* in [Working with Lists](#).

### Global Search

**Note:** The Global search from the **Search** bar is only available to a user with a role that has an access profile with **Permitted Type** containing `tool/*` (and no restriction on `tool/Search`) or **Type Specific Permissions** containing `tool/Search`. Otherwise, the search bar is hidden.

For details on Access Profiles, see: [Introduction to Access Profiles](#).

A Global search from the **Search** bar performs a search based on all or part of a search term that queries the API for the relevant model and search criteria. Results display as a list of links, showing the models.

The screenshot shows the 'Search Results' page in the Voss Automate interface. The page is divided into several sections, each with a list of search results. Each result has a checkbox for selection and a 'Located At' field with a link to the item's details.

Uc Service [CUCM]	
Name	Located At
<input type="checkbox"/> MS-UCService-01	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>
<input type="checkbox"/> MS-UCService-02	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>
<input type="checkbox"/> MS-UCService-03	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>

Service Profile [CUCM]		
Name	Description	Located At
<input type="checkbox"/> ServiceProfile-02	EKB-10072 - Testing service profiles	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>

Data Sync							
Name	Description	Device Type	Sync Type	Model Type List	Sync Order	Refresh Existing Data	Located At
<input type="checkbox"/> SyncMS365_MHS	Syncs MS365 data for MHS	data/MSGraph	pull	MS365Data	MS365DataSyncOrder	True	<a href="#">gva_hcs_CS-P-CS-NB_MHS</a>
<input type="checkbox"/> SyncMS365Users_MHS	Syncs MS365 Users data for MHS	data/MSGraph	pull	MS365UsersData	MS365UsersDataSyncOrder		<a href="#">gva_hcs_CS-P-CS-NB_MHS</a>
<input type="checkbox"/> SyncMSExchangeOnline_MHS	Syncs MSExchangeOnline data for MHS	data/MSExchangeOnline	pull	MSExchangeOnlineData	MSExchangeOnlineDataSyncOrder	True	<a href="#">gva_hcs_CS-P-CS-NB_MHS</a>

Language Mapping [CUC]	
Uri	Located At
<input type="checkbox"/> /languagemap/2110	<a href="#">gva_hcs_CS-P</a>
<input type="checkbox"/> /languagemap/2110	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>
<input type="checkbox"/> /languagemap/2110	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>
<input type="checkbox"/> /languagemap/2110	<a href="#">gva_hcs_CS-P-CS-NB_Overton</a>
<input type="checkbox"/> /languagemap/2110	<a href="#">gva_hcs_CS-P-CS-NB_MHS</a>
<input type="checkbox"/> /languagemap/1086	<a href="#">gva_hcs_CS-P</a>
<input type="checkbox"/> /languagemap/1086	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>

Certificate		
Name	Description	Located At
<input type="checkbox"/> MSGraph1	Single Sign On Certificate	<a href="#">gva_hcs_CS-P-CS-NB_MHS</a>

You can select the checkbox adjacent to a search result (one or more), then click a toolbar action, such as **Delete**, or select an option from the **Action** drop-down (for example, **Export** or **Tag**). Actions allowed on search results are permissions-based, depending on your access profile, with caveats on the number of items, relations, and device models:

This screenshot is similar to the previous one, but with a red arrow pointing to the 'Data Sync' section. In this section, the checkboxes for 'SyncMS365\_MHS' and '/languagemap/2110' are checked.

Data Sync							
Name	Description	Device Type	Sync Type	Model Type List	Sync Order	Refresh Existing Data	Located At
<input checked="" type="checkbox"/> SyncMS365_MHS	Syncs MS365 data for MHS	data/MSGraph	pull	MS365Data	MS365DataSyncOrder	True	<a href="#">gva_hcs_CS-P-CS-NB_MHS</a>
<input type="checkbox"/> SyncMS365Users_MHS	Syncs MS365 Users data for MHS	data/MSGraph	pull	MS365UsersData	MS365UsersDataSyncOrder		<a href="#">gva_hcs_CS-P-CS-NB_MHS</a>
<input type="checkbox"/> SyncMSExchangeOnline_MHS	Syncs MSExchangeOnline data for MHS	data/MSExchangeOnline	pull	MSExchangeOnlineData	MSExchangeOnlineDataSyncOrder	True	<a href="#">gva_hcs_CS-P-CS-NB_MHS</a>

Language Mapping [CUC]	
Uri	Located At
<input checked="" type="checkbox"/> /languagemap/2110	<a href="#">gva_hcs_CS-P</a>
<input type="checkbox"/> /languagemap/2110	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>
<input type="checkbox"/> /languagemap/2110	<a href="#">gva_hcs_CS-P-CS-NB_AAAGlobal</a>

- In a global search the maximum number of rows the system returns is 2000. The page size limit is 200 rows.
- Search results are returned for your current hierarchy and below.
- Click on a search result to open it and view its details.

- From a selected search result, you can click on the **Search Results** breadcrumb to see all results again.
- Search results for a simple string search matches the *contains* condition in the text of a component.
- Simple search strings match values in data and device models (relations instances are not returned). To search the relation model instances, specify the model as a part of the query.
- Case-insensitive searches on field names are supported on several models. See [Case Insensitive Search Fields](#).
- You can search on the summary attributes of any models, and for some models you can also search on a subset of their attributes. See: [Searchable Fields](#).
- Selecting a data or device model instance returned in a search displays the full model details; that is, without a Field Display Policy applied.

## Constructing Search Queries for Global Search

### Search Syntax

For Global Search, you can construct search queries to search for specific items, based on VOSS Automate search syntax filters.

Search queries can contain:

- Model type and model name references
- Model attribute and nested model attribute references
- Key words
- Brackets, for grouping
- Query string, using valid query string characters, as follows:
  - alphanumeric characters
  - Any of:

```
!@#$%^&*-_+=<, .>/? \ | [ {} ] ~ `
```

- To search for single quote in a string, wrap the string in double quotes
- To search for double quote in a string, wrap the string in single quotes

Search queries are carried out on models, so you can specify the model type and the model name in a query, using the syntax `type/name` as the full reference to a model type (for example, `relation`, `data`, or `device`) and model name (for example, `Countries`).

## Search Keyword Types

Various keywords can be used to construct a search query. Available keywords are categorized by type, either of the following:

- Specification - WITH
- Matching - IS, LIKE
- Grouping - AND, OR

Keyword	Description and Examples
WITH	<p>Restricts the search to look for only specific data types. In the example below we have specified the data type Countries and so only countries will be returned.</p> <pre>((data/Countries WITH country_name LIKE Kingdom) AND (data/Countries WITH country_name LIKE Unite ))</pre>
IS	<p>For a result to be returned the data attribute must match exactly the 'input'. In the example below the 'input' is Spain and only a Country with the attribute country_name Spain will be returned. If 'North Spain and South Spain existed they would not be returned. In the example below we have specified the data type Countries and so only countries will be returned. If we had not specified a data type then the search would cover all data types looking for an attribute country_name.</p> <pre>country_name IS Spain  data/Countries WITH country_name IS Spain</pre> <p>Another example with a model tag as reference:</p> <pre>tag IS "feature"</pre>
CONTAINS	<p>Matching is done by substring and is the default parameter. For a result to be returned, the data attribute must contain 'input'. In the example below, the 'input' is 'Sw' and the search would find both 'Sweden' and 'Switzerland'.</p> <pre>data/Countries WITH country_name CONTAINS Sw</pre>

Keyword	Description and Examples
LIKE	<p>Matching is done by fuzzy search. For a result to be returned, the data attribute must nearly match 'input'. In the example below, the 'input' is 'swe' and the search would find both 'Sweden' and 'Switzerland'.</p> <pre>data/Countries WITH country_name LIKE swe</pre>
AND	<p>This grouping term allows you to combine different searches and only finds a result where both conditions are met. The example below the search would find 'United Kingdom' but not the 'Kingdom of Bhutan' as in this case the second condition (LIKE Unite) is not true.</p> <pre>((data/Countries WITH country_name LIKE Kingdom) AND (data/Countries WITH country_name LIKE Unite ))</pre>
OR	<p>This grouping term allows you to combine different searches and matches a result where any one or both of the conditions are met. The example search below would find 'United Kingdom', 'United States' and 'Kingdom of Bhutan'.</p> <pre>((data/Countries WITH country_name LIKE Kingdom) OR (data/Countries WITH country_name LIKE Unite))</pre>

### Search Examples

Where the attribute of a model is nested in an object, the reference to the attribute in the search query requires a model type specification.

For example, for a model `data/User` with an attribute in a nested object called `account_information`, the query should take the model type (`data`) specifier:

```
data/User WITH data.account_information.credential_policy IS Default
```

The following query *will not* yield results:

```
data/User WITH account_information.credential_policy IS Default
```

Brackets should be used in a query with matching and grouping operators. In a query containing no model references, brackets are evaluated first. The order of bracket evaluation is inner to outer brackets.

Example Queries (line breaks added):

```
((data/Countries WITH pstn_access_prefix IS 9) AND
(data/Countries WITH emergency__access_prefix IS 112))
OR (data/Countries WITH international_access_prefix IS 00))
```

## Search String Format

The string to search for can be specified with the following properties:

- Multi-word and quotes

When searching for a multi-word string value like "United States", the value must be enclosed in either single quotes: 'United States', or double quotes: "United States".

When single word or multi-word values contain a single or double quote, the string needs to be enclosed in double or single quotes respectively, for example: "L'Amour".

- Case sensitivity

Use the appropriate operator (LIKE)

In a query containing model references, brackets and grouping keywords, the query is evaluated in the order shown in the table below.

Order	Element	Description
1	WITH	Model reference is evaluated first.
2	brackets	Brackets evaluate before grouping keywords.
3	AND	AND grouping evaluates before OR grouping.
4	OR	Evaluates last.

A number of attributes from the meta data of a model can also be searched:

- `__device_pkid`: if a device pkid is known, then for example:  
`device/cucm/Line WITH __device_pkid IS 55c32b59a6165451e04f392a`
- `pkid`: if a pkid is known, then for example:  
`data/CallManager WITH pkid IS 55c32b59a6165451e04f392a`
- `tags` (can also use "tag"): if the tag name is known, then for example:

```
((data/FieldDisplayPolicy WITH tag IS feature_tag_add_customer) AND
(data/FieldDisplayPolicy WITH tags IS applicationendtoend))
```

**Note:** Only lower-case tags are searchable.

## Search in Drop-Down Lists

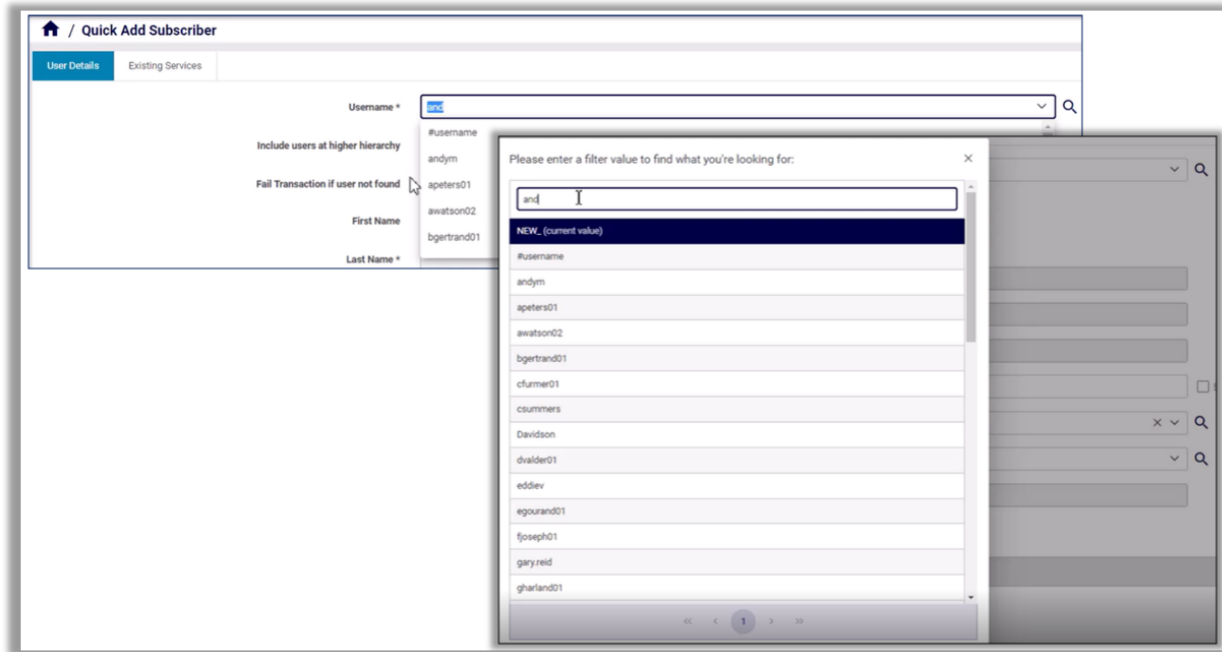
On forms where you select values from pre-populated, editable drop-down lists, VOSS Automate allows you to run a case-insensitive search to filter results.

### Run a 'Contains' Search

You can start typing in a drop-down field to run a **contains** search on the *first 1000* results.

### Run a 'Starts with' Search

If you don't find the result you're looking for, click the magnifier icon adjacent to the drop-down to perform a **starts with** search on *all results*.



### 3.2.5. Searchable Fields

All models can be searched for by using their summary attributes. In addition, a number of models can also be searched on by a subset of their attributes.

Below is the list of these models and their searchable fields:

- device/cuc/AlternateExtension
  - DtmfAccessId
  - IdIndex
  - UserObjectId
  - ObjectId
- device/cuc/Callhandler
  - templateObjectId
  - DisplayName
  - ObjectId
  - DtmfAccessId



- Language
- TimeZone
- VoiceName
- RecipientSubscriberObjectId
- device/cuc/CallhandlerMenuEntry
  - DisplayName
  - CallHandlerObjectId
  - TouchtoneKey
  - TransferType
  - TransferNumber
  - Action
- device/cuc/CallhandlerOwner
  - TargetHandlerObjectId
  - ObjectId
- device/cuc/CallhandlerTransferOption
  - URI
  - TransferOptionType
  - CallHandlerObjectId
  - TransferOptionType
  - Extension
  - Action
  - TransferType
- device/cuc/Greeting
  - GreetingType
  - CallHandlerObjectId
- device/cuc/HtmlDevice
  - DeviceName
  - DisplayName
  - SubscriberObjectId
  - ObjectId
  - SntpAddress
  - CallbackNumber
- device/cuc/PagerDevice
  - DeviceName
  - PhoneNumber
  - DisplayName

- ObjectId
- SubscriberObjectId
- device/cuc/PhoneDevice
  - DeviceName
  - PhoneNumber
  - DisplayName
  - ObjectId
  - SubscriberObjectId
- device/cuc/SmsDevice
  - DeviceName
  - DisplayName
  - SubscriberObjectId
  - ObjectId
  - SmppProviderObjectId
  - RecipientAddress
  - SenderAddress
- device/cuc/SmtpDevice
  - DeviceName
  - PhoneNumber
  - DisplayName
  - SubscriberObjectId
  - ObjectId
  - SmtAddress
- device/cuc/User
  - Alias
  - FirstName
  - LastName
  - DtmfAccessId
  - EmailAddress
  - TimeZone
  - templateAlias
  - ObjectId
  - MailboxStoreObjectId
  - CallHandlerObjectId
- device/cuc/UserPassword
  - Alias

- UserObjectId
  - CredentialType
- device/cuc/UserPin
  - Alias
  - UserObjectId
  - CredentialType
- device/cucm/DeviceProfile
  - class
  - description
  - lines
  - loginUserId
  - name
  - phoneTemplateName
  - product
  - protocol
  - services
  - softkeyTemplateName
- device/cucm/EnterpriseFeatureAccessConfiguration
  - pattern
  - routePartitionName
- device/cucm/Line
  - alertingName
  - description
  - asciiAlertingName
  - pattern
  - routePartitionName
  - shareLineAppearanceCssName
  - callPickupGroupName
  - presenceGroupName
  - usage
- device/cucm/Phone
  - callingSearchSpaceName
  - class
  - description
  - devicePoolName
  - digestUser

- lines
- locationName
- name
- ownerUserName
- phoneTemplateName
- presenceGroupName
- primaryPhoneName
- product
- protocol
- subscribeCallingSearchSpaceName
- ip\_address
- status
- device/cucm/PhoneButtonTemplate
  - name
  - basePhoneTemplateName
- device/cucm/PhoneSecurityProfile
  - description
  - name
  - protocol
  - phoneType
- device/cucm/PhoneType
  - PhoneType
  - ProtocolTemplates
  - PhoneNamePrefix
- device/cucm/RemoteDestination
  - destination
  - name
  - ownerUserId
  - remoteDestinationProfileName
  - dualModeDeviceName
  - ctiRemoteDeviceName
- device/cucm/RemoteDestinationProfile
  - devicePoolName
  - description
  - class
  - lines

- name
- primaryPhoneName
- product
- protocol
- userId
- device/cucm/RoutePattern
  - routePartitionName
  - pattern
  - destination
  - description
- device/cucm/RoutePlan
  - dnOrPattern
  - partition
- device/cucm/TransPattern
  - pattern
  - routePartitionName
  - calledPartyTransformationMask
- device/cucm/User
  - userid
  - mailid
  - firstName
  - lastName
  - associatedDevices.device
  - lineAppearanceAssociationForPresencesdepartment
  - lastName
  - primaryDevice
  - primaryExtension
  - phoneProfiles
  - status
  - userIdentity

### 3.2.6. Case Insensitive Search Fields

Case insensitive searches and macro lookups can be carried out for some model types and fields.

This topic lists these models and their field name case variants:

- data/NormalizedUser
  - username
  - mail
- data/User
  - username
  - sso\_username
  - email
  - username\_avaya\_system\_manager
  - username\_broadworks
  - username\_cuc
  - username\_cucm
  - username\_hcmf
  - username\_ldap
  - username\_microsoft
  - username\_ms\_365
  - username\_ms\_ldap
  - username\_ms\_teams
  - username\_open\_ldap
  - username\_uccx
  - username\_webex\_teams
  - username\_zoom
- device/avayaes/Agent
  - Name
  - name
- device/avayaex/User
  - LoginID
  - loginid
  - FirstName
  - firstname
  - LastName
  - lastname
  - EMail

- email
- device/avayaol/User
  - FirstName
  - firstname
  - LastName
  - lastname
  - UserName
  - username
- device/avayasm/User
  - loginName
  - loginname
  - userName
  - username
  - givenName
  - givenname
  - middleName
  - middlename
  - surname
- device/azureadonline/MsolUser
  - UserPrincipalName
  - userprincipalname
- device/cuc/Callhandler
  - DisplayName
  - displayname
- device/cuc/GlobalUser
  - alias
  - Alias
- device/cuc/User
  - alias
  - Alias
  - emailAddress
  - EmailAddress
- device/cuc/UserPassword
  - alias
  - Alias
- device/cuc/UserPin

- alias
  - Alias
- device/cucm/Phone
  - ownerUserName
  - ownerusername
- device/cucm/RemoteDestination
  - ownerUserId
  - owneruserid
  - name
  - dualModeDeviceName
  - remoteDestinationProfileName
  - ctiRemoteDeviceName
- device/cucm/RemoteDestinationProfile
  - userid
  - useridname
- device/cucm/TodAccess
  - ownerIdName
  - owneridname
- device/cucm/User
  - userid
  - mailid
  - userIdentity
- device/ldap/user
  - samaccountname
  - sAMAccountName
- device/msgraph/MsolUser
  - UserPrincipalName
  - userprincipalname
- device/msteamsonline/CsOnlineUser
  - UserPrincipalName
  - userprincipalname
- device/pexip/Conference
  - primary\_owner\_email\_address
- device/spark/User
  - email
- relation/HcsAdminUserREL



- hcsUname
- relation/HcsUserREL
  - username
- relation/SparkUser
  - email
- relation/Subscriber
  - userid
  - mailid
- relation/SystemUser
  - username
- relation/UccxAgent
  - userID
- relation/User
  - username
  - email
- relation/Voicemail
  - Alias

### 3.2.7. VOSS Wingman

#### Overview and Access

VOSS Automate provides a **Wingman Chat** AI assistant in the Admin portal that can be activated by a user from any form.

This feature is enabled by default, but can be enabled and disabled by `sysadmin` users and admins with access to the `data/Settings` model. For details, see [Enable Wingman Chat](#):

See **\*\*Enable Wingman Chat\*\*** in the **\*Settings\*** topic in the Advanced Configuration Guide.

---

#### Note:

- A user role should also be associated with an **Access Profile** that has **Copilot Chat** enabled under the **Miscellaneous Permissions**. From release 24.1, default administrator roles have this permission enabled and an upgrade to 24.1 enables this permission on all existing access profiles.
- In order to first use VOSS Wingman, an initial manual sync step is required - See: Insights Analytics in the Platform Guide.
- Wingman requires internet access (to Microsoft Azure) and does not currently support connecting via a proxy. Automate Application Nodes will therefore require direct outbound internet access to Microsoft Azure in order to function. An outbound connection via a Web Proxy will be supported in a future release of Automate.

For details on Access Profiles and the required administrator level to manage these settings, see: the Access Profiles chapter in the Core Feature Guide.

### Using VOSS Wingman

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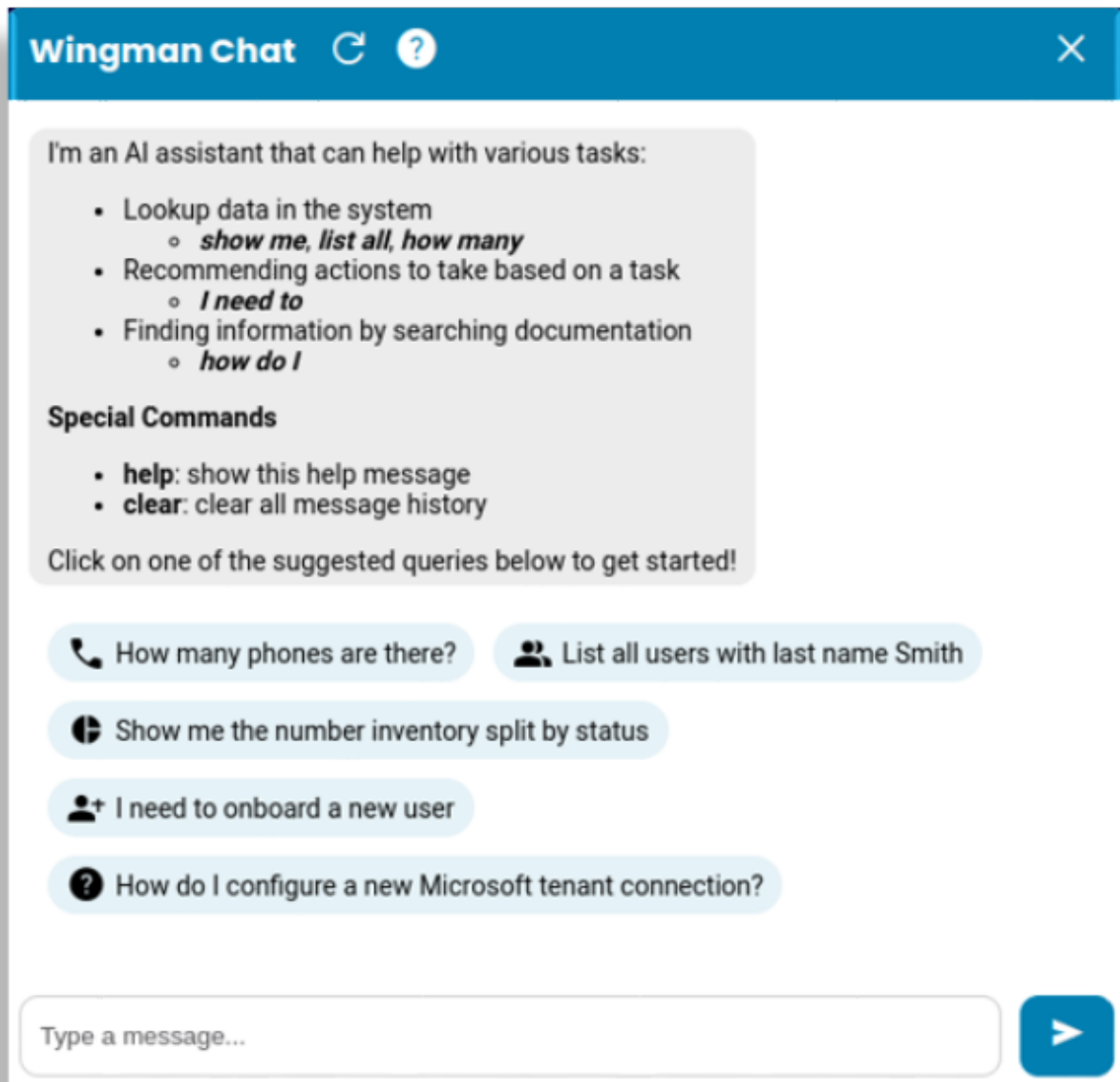
**Note:** While we strive to ensure and will continue to improve on chatbot accuracy in future releases, the correctness, completeness, or reliability of all results and documentation links is not guaranteed.

---

Click the **Wingman** icon on the top toolbar of the interface.



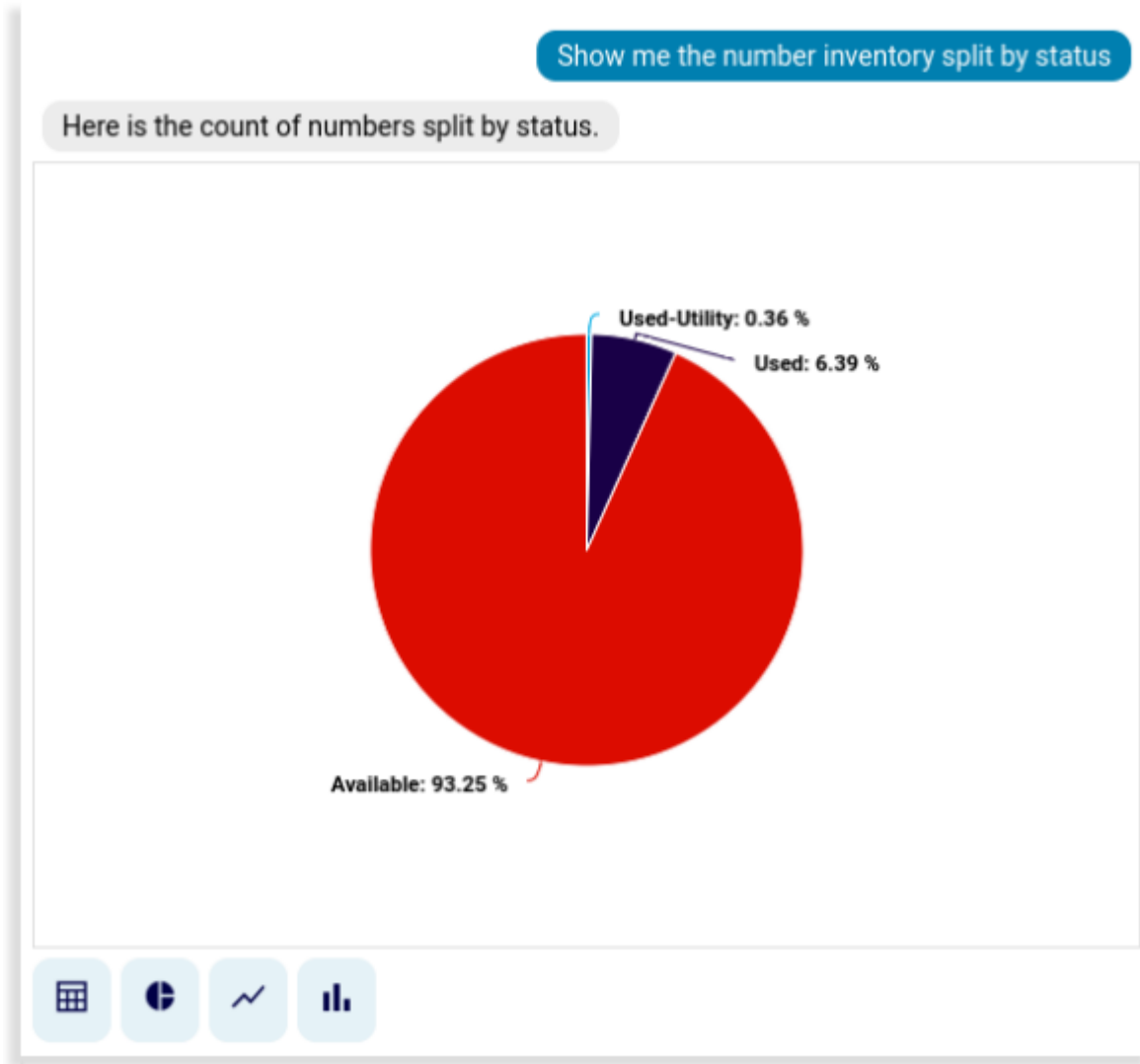
A dialog opens and selecting the help (?) icon next to the title or typing **help** into the message provides guidance on using the Wingman Chat:



Three types of tasks can be carried out - each selected by using an appropriate *prefix phrase* in your chat input:

- **Show me/List all/How many**: look up data on the platform.

For “Show me” questions, the reply can be rendered in a chart.



Date ranges can also be included into questions, for example: “show me transactions for this week”. The list below provides an indication of the calculation of the date range based on the phrase in the question:

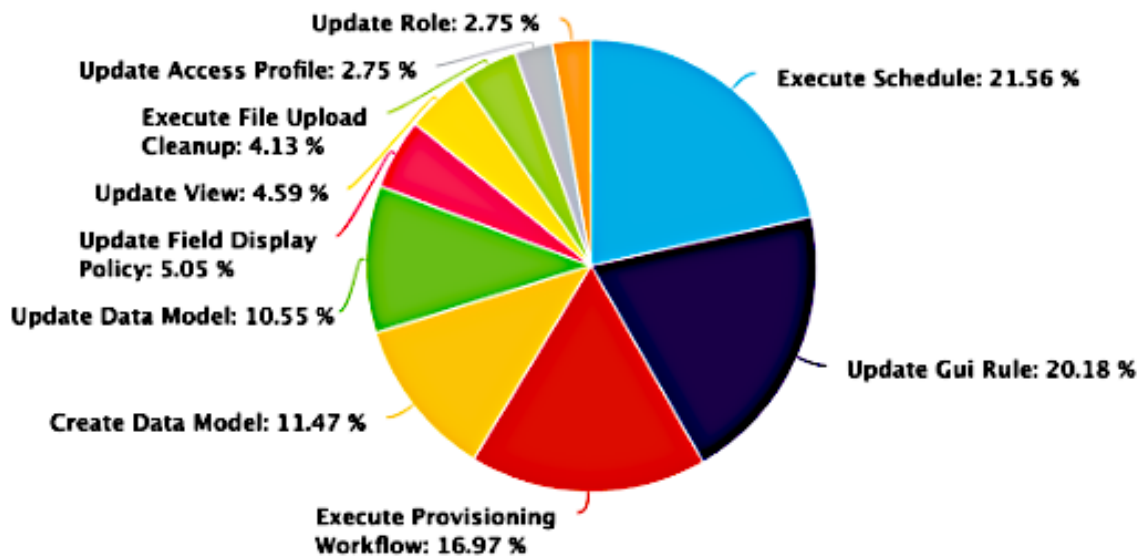
- today: from 00:00:00 (UTC) to 23:59:59 (UTC) of the current day.
- yesterday: from 00:00:00 (UTC) to 23:59:59 (UTC) of the previous day, in other words, the full 24 hour period of the previous day.
- last week: from 00:00:00 (UTC) last Monday to Sunday 23:59:59 (UTC).
- last month: from 00:00:00 (UTC) of the first day of the preceding month to 23:59:59 (UTC) of the last day of the preceding month.
- last year: from 00:00:00 (UTC) of the first day of the previous year to 23:59:59 (UTC) of the last day of the previous year.
- this week: from 00:00:00 (UTC) of the first day of the current week to 23:59:59 (UTC) of the last day of the current week.
- this month: from 00:00:00 (UTC) of the first day of the current month to 23:59:59 (UTC) of the last day of the current month.

- this year: from 00:00:00 (UTC) of the first day of the current year to 23:59:59 (UTC) of the last day of the current year.
- since <specified date>: from 00:00:00 (UTC) of the specified date to 23:59:59 (UTC) of the current day.
- since <phrase>: Match start date time to the phrase, but end date must be today's date time.  
Examples:
  - \* since last week: from 00:00:00 (UTC) last Monday to today's date.
  - \* since yesterday: from 00:00:00 (UTC) to 23:59:59 (UTC) of the previous day to today's date.

When queries are made without an explicit date range, the default behaviour is “since last week”, for example, if a query was made on September 6th, 2024 at 12:55 UTC:

[show me transactions by action](#)

Here is the count of transactions grouped by action from 00:00 on August 26, 2024, to 12:55 on September 06, 2024.



Icons below replies show options to change the chart or output format.

For “How many” questions, Wingman by default responds by showing a bar chart with the count of the data found.

For “List all” questions, Wingman by default responds by showing a table with the data found.

List all users with last name Smith

Here is a list of users with the last name Smith.

	Last Name	username	first_name	email	role
0	Smith	fred.smith@marclight.com	Fred	fred.smith@marclight.com	AAAC
1	smith1	Hagensmith@gmail.com	hagen1	Hagensmith@gmail.com	AAAC
2	Smith	karen.smith@innovia.com	Karen	karen.smith@innovia.com	AAAC
3	Smith	msmith@marclight.com	Mary	msmith@marclight.com	AAAC

**Note:**

- The Wingman will use the permitted dashboard resources in a user’s access profile as valid data lookup options.
- Data sources are: [Wingman Data Sources](#). If a question does not refer to these sources, Wingman responds with the friendly names of these sources as available data sources.
- Count results (in tables or charts) are dependent on the *hierarchy* at which the user is, as well as the user role permissions when using the Wingman chat interface.

The example below shows responses where an admin user navigates down to a site level hierarchy and asks: “List all users with last name Smith” (result: **No Data to display.**) and then navigates to a provider level and repeats the question (result: table):

The screenshot shows the Wingman Chat interface with a dark blue header containing the title "Wingman Chat", a refresh icon, a help icon, and a close icon. The chat history includes:

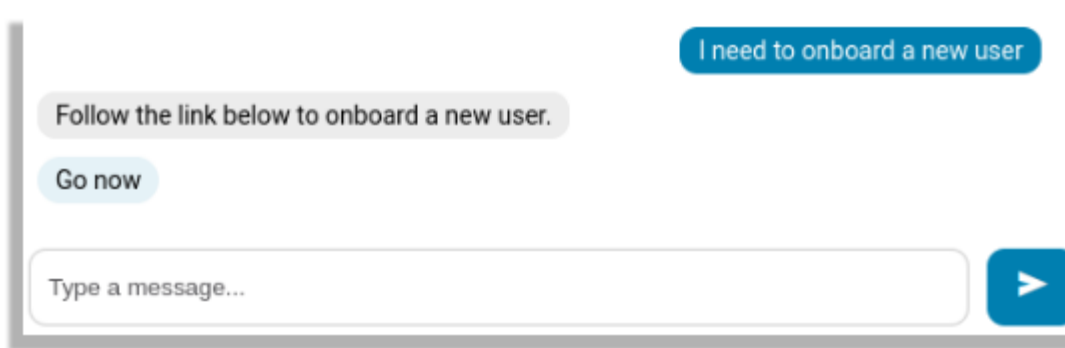
- A question: "Show me the number inventory split by status"
- A question: "I need to onboard a new user"
- A question: "How do I configure a new Microsoft tenant connection?"
- An action button: "List all users with last name Smith"
- A response: "Here is a list of users with the last name Smith."
- A message box: "No Data to display."
- An action button: "List all users with last name Smith"
- A response: "Here is a list of users with the last name Smith."
- A table of user data:

Last Name	username	first_name
Smith	msmith_ab_group	Mark
Smith	DonS@vossautobuild.onmicrosoft.com	Don
Smith	Nadia.Smith@vossautobuild.onmicrosoft.com	Nadia
Smith	TestUser066@gmail.com	Chris
Smith	Peter.Smith@vossautobuild.onmicrosoft.com	Peter

At the bottom, there is a text input field labeled "Type a message..." and a blue send button with a white arrow.

- “How many” and “Show me” questions use the Insights data source that is available from release 24.1 and is also used to create dashboard widgets. For details, see: [Automate Dashboards](#). This means that while questions for data can be refined by also specifying a single provider, reseller or customer or site hierarchy name in the question, questions do not return data when a question specifies all hierarchies.

- **I need to:** **Wingman Chat** responds with instructions and with a **Go now** link to the appropriate form or feature.



The **Go now** links use the following models for the matching tasks:

- Onboard a new multi-vendor user (subscriber)  
`view/AddSubscriberFromProfile`
  - Onboard a new Microsoft user (subscriber)  
`view/MicrosoftSubscriberQas`
  - Onboard a new Cisco user (subscriber)  
`view/QuickSubscriber`
  - Create a new Cisco phone  
`view/AddPhone`
  - Add a range of numbers to the number inventory  
`view/NumberInventoryRangeMgmtVIEW`
- **How do I:** to ask questions about the product and the Wingman responds with a summarized answer as well as with a set of generated reference links to the full documentation on the documentation portal that may be relevant.



? How do I configure a new Microsoft tenant connection?

How do I configure a new Microsoft tenant connection?

To configure a new Microsoft tenant connection, follow these steps:

1. Log in to the Automate Admin Portal as a Provider Administrator. By default, the Provider administrator role is the only role that has the ability to create Tenant connections.
2. Go to (default menus) Apps Management > Microsoft Tenant.
3. Click Add and choose the hierarchy level where you wish to add the tenant. Typically, this is at Customer level.
4. Enter a name and a description for the tenant.
5. Add the PowerShell Proxy connection parameters: Locate the Microsoft Teams Powershell section. In the Host field, enter the FQDN or IP address of a single-node PowerShell Proxy, or the FQDN corresponding to your load balancer's virtual IP address.
6. Fill out a name (mandatory), and a description (optional).
7. Fill out the client ID (application ID) from the Azure AD app registration portal.
8. Fill out the tenant ID (directory ID) from the Azure AD app registration portal.
9. Optionally, fill out the client secret previously created in the Azure AD app registration portal.
10. Optionally, fill out the details of the Microsoft proxy and the Microsoft secure proxy.
11. Click Save to add the new tenant, and wait for the transaction to complete.
12. Click Action > Test Connection to verify that the tenant can connect to Azure.
13. Click Action > Sync to import data.

Source link 1

Source link 2

Source link 3

### Chat History

A user's chat history is available to the user in the **Wingman Chat** form for the duration of the user session: the time that the user is logged in - regardless if the user navigates to another form on the portal.

Use the **[UP]** arrow key to see your previous question.

*However*, if **clear** is typed into the message box or the Replay button on the **Wingman Chat** form is selected, all messages are cleared.

## Wingman Data Sources

The table below show the list of VOSS Automate data sources that are available to Wingman when **Show me/List all/How many** - type questions are asked.

Table 1: Wingman Data Sources

model_type	friendly_name
data/MonitoringCluster	Monitoring Platform Cluster
data/MonitoringQueue	Monitoring Transaction Queue
data/MonitoringSessions	Monitoring Sessions
data/MetricDatabaseCollectionStats	Monitoring Database Stats
data/LicenseAuditCounts	Automate License Counts
data/BaseSiteDAT	Site
data/CountLimit	Subscriber Count Limit
data/HcsDpDNE164AssociateDAT	E164 Number Association
data/HcsDpE164InventoryDAT	E164 Number Inventory
data/HcsEntitlementProfileDAT	Entitlement Profile
data/HierarchyNode	Hierarchy
data/InternalNumberInventory	Number Inventory
data/MicrosoftSubscriberQasStaging	Microsoft Subscriber Staging
data/User	User
device/cuc/User	Cisco CUC User
device/cuc/UserLicense	Cisco CUC User License
device/cuc/Callhandler	Cisco CUC Call Handler
device/cucm/CallPickupGroup	Cisco UCM Call Pickup Group
device/cucm/DeviceProfile	Cisco UCM Device Profile
device/cucm/Gateway	Cisco UCM Gateway
device/cucm/GatewaySccpEndpoints	Cisco UCM Gateway SCCP Endpoints
device/cucm/HcsLicense	Cisco UCM License
device/cucm/HuntList	Cisco UCM Hunt List
device/cucm/HuntPilot	Cisco UCM Hunt Pilot
device/cucm/LicensingResourceUsage	Cisco UCM Licensing Resource Usage
device/cucm/Line	Cisco UCM Line
device/cucm/LineGroup	Cisco UCM Line Group
device/cucm/Phone	Cisco UCM Phone
device/cucm/PhoneType	Cisco UCM Phone Type
device/cucm/RemoteDestination	Cisco UCM Remote Destination
device/cucm/RemoteDestinationProfile	Cisco UCM Remote Destination Profile
device/cucm/User	Cisco UCM User
device/pexip/Conference	Pexip Conference
device/pexip/ConferenceAlias	Pexip Conference Alias

**continues on next page**

Table 1 – continued from previous page

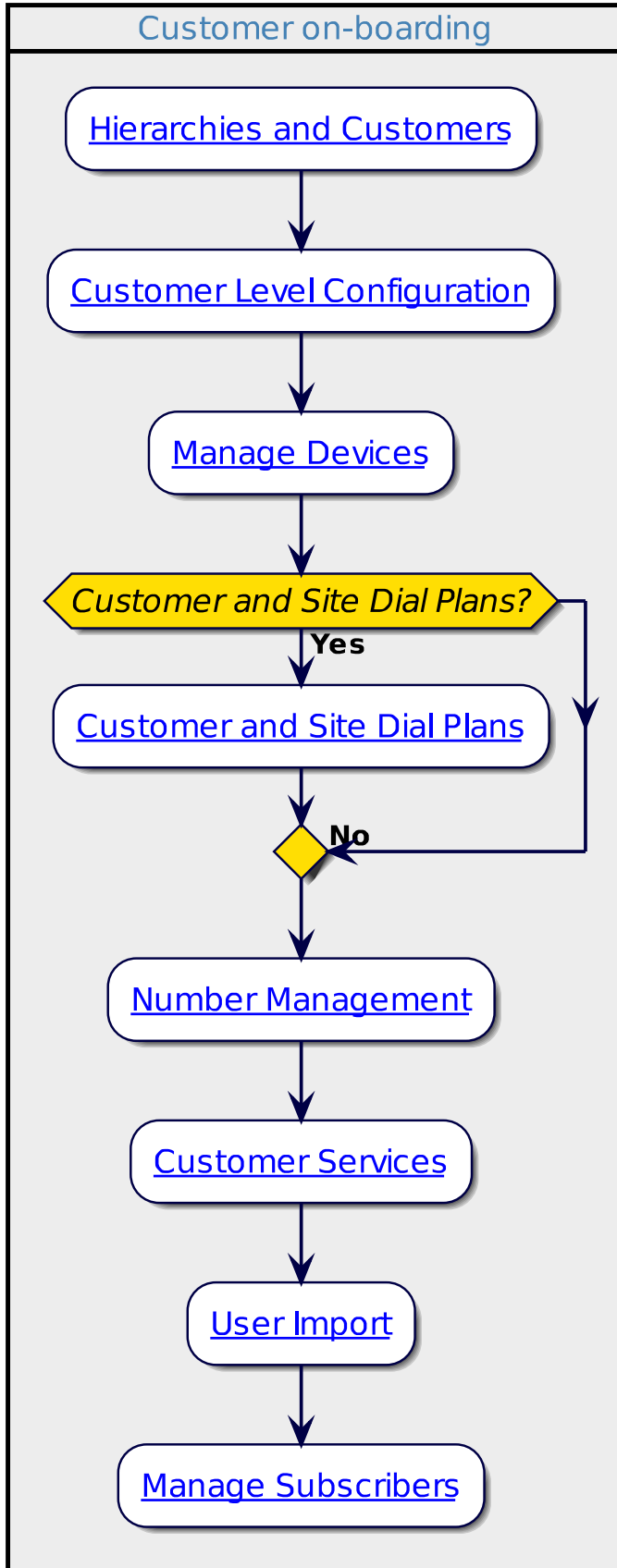
<b>model_type</b>	<b>friendly_name</b>
device/msexchangeonline/UserMailbox	Microsoft Exchange Online User Mailbox
device/msgraph/MsolAccountSku	Microsoft O365 User SKU
device/msgraph/MsolUser	Microsoft O365 User
device/msteamsonline/CsAutoAttendant	Microsoft Teams Auto Attendant
device/msteamsonline/CsCallQueue	Microsoft Teams Call Queue
device/msteamsonline/CsOnlineUser	Microsoft Teams User
device/msteamsonline/CsTeamsClientConfiguration	Microsoft Teams Client Configuration
device/spark/Announcements	Webex Calling Announcements
device/spark/AutoAttendants	Webex Calling Auto Attendants
device/spark/CallParkExtensions	Webex Calling Call Park Extensions
device/spark/CallParkGroup	Webex Calling Call Park Group
device/spark/CallPickup	Webex Calling Call Pickup
device/spark/Device	Webex Calling Device
device/spark/HuntGroup	Webex Calling Hunt Group
device/spark/Group	Webex Calling Group
device/spark/License	Webex Calling License
device/spark/Place	Webex Calling Place
device/spark/Number	Webex Calling Number
device/spark/Schedules	Webex Calling Schedule
device/spark/Team	Webex Calling Team
device/spark/User	Webex Calling User
device/uccx/Agent	Cisco UCCX Agent
device/webex/User	Cisco Webex User

## 4. Quick Start Guides

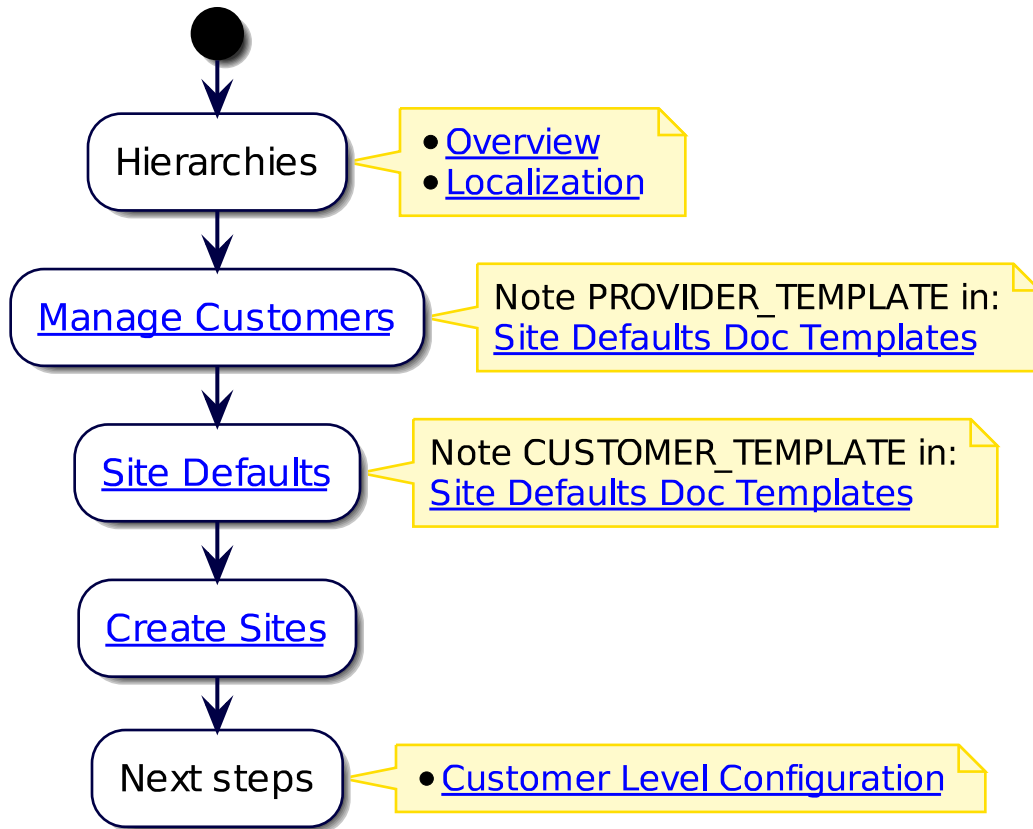
### 4.1. Customer Onboarding Quick Start Guide (Multiple Vendors)

#### 4.1.1. Overview

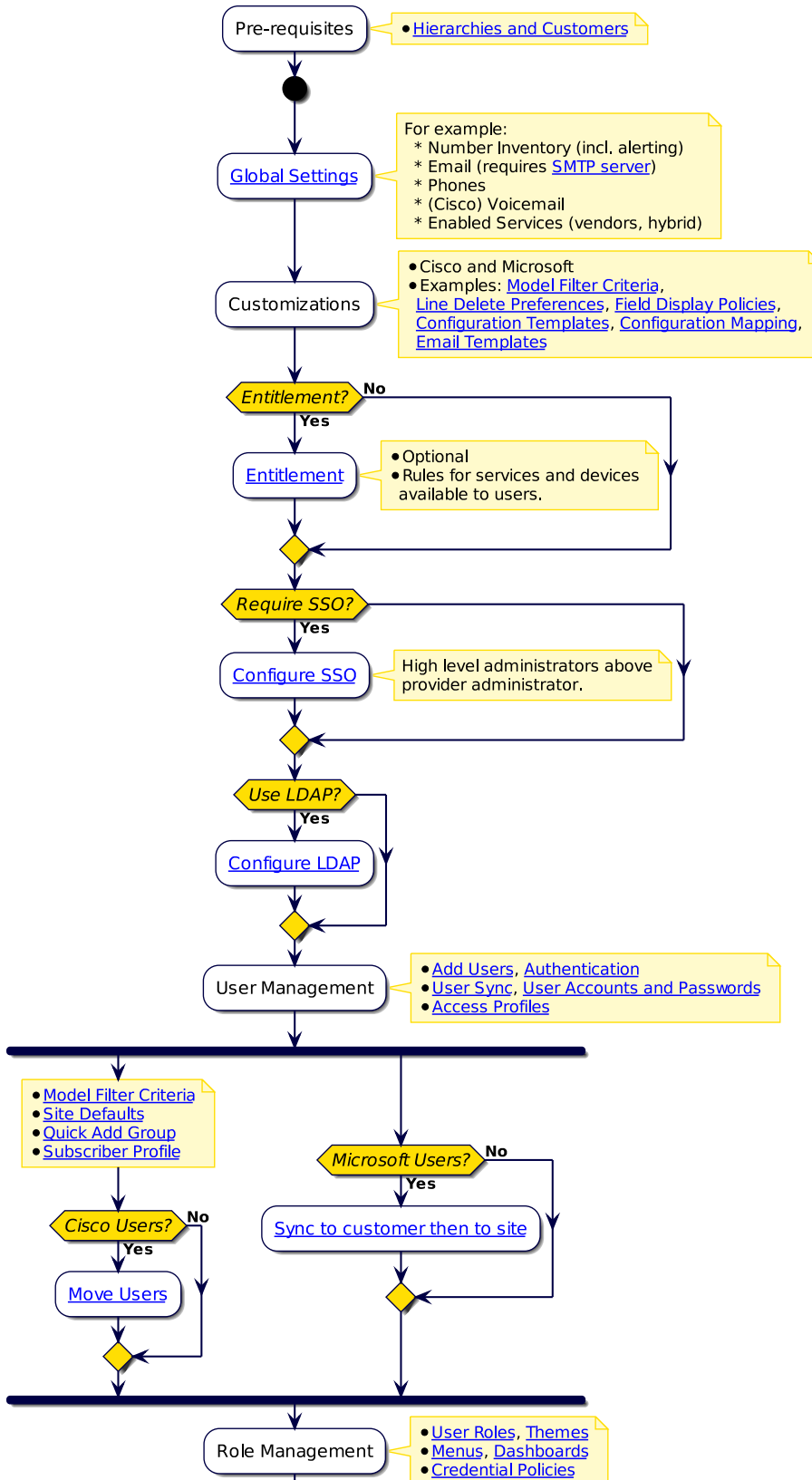
This quick start guide provides a walk through of the steps Provider admins can follow for a complete on-boarding of customers in VOSS Automate, regardless of whether you have a single or multi-vendor deployment.



### 4.1.2. Hierarchies and Customers



### 4.1.3. Customer Level Configuration

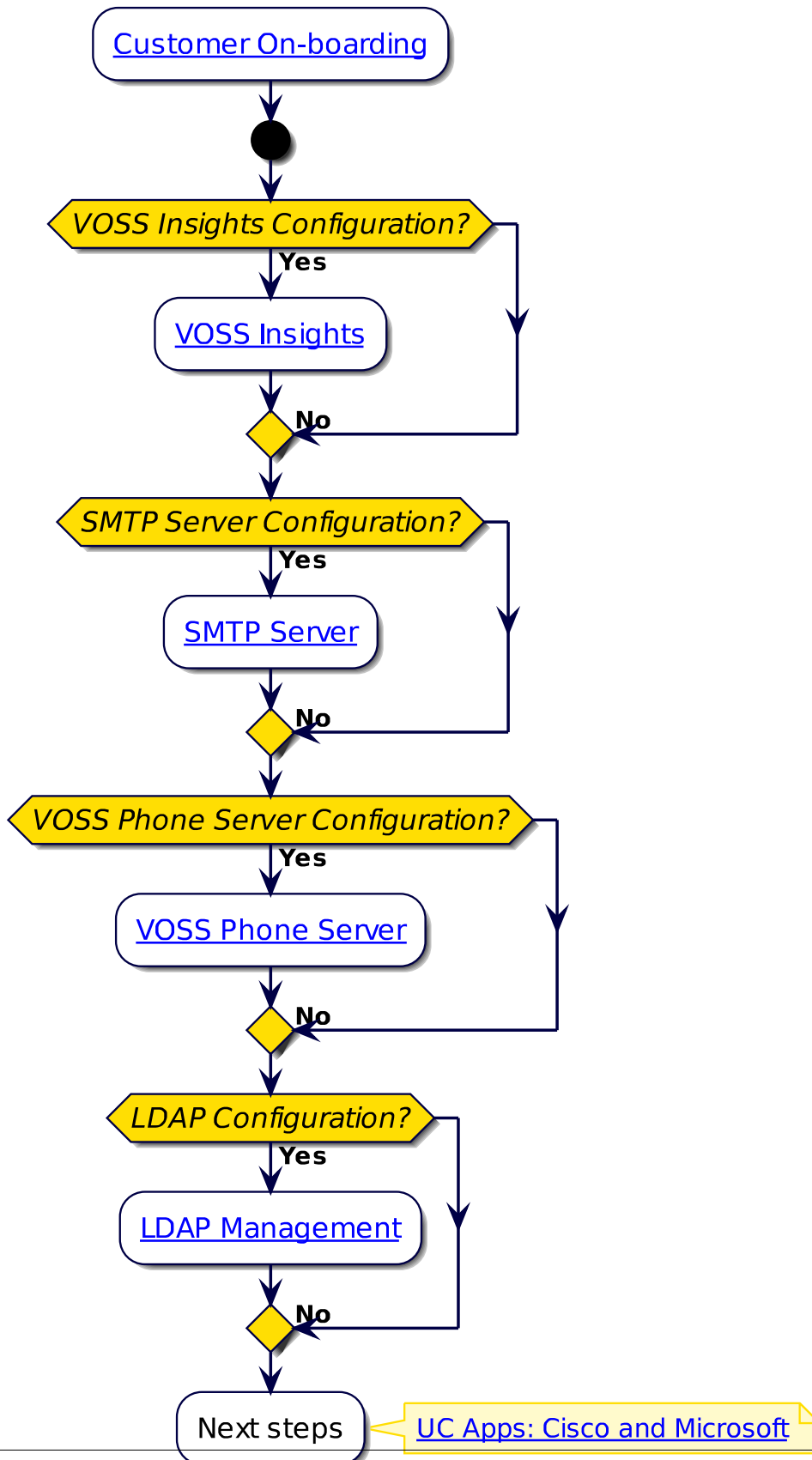


#### 4.1.4. Manage Devices

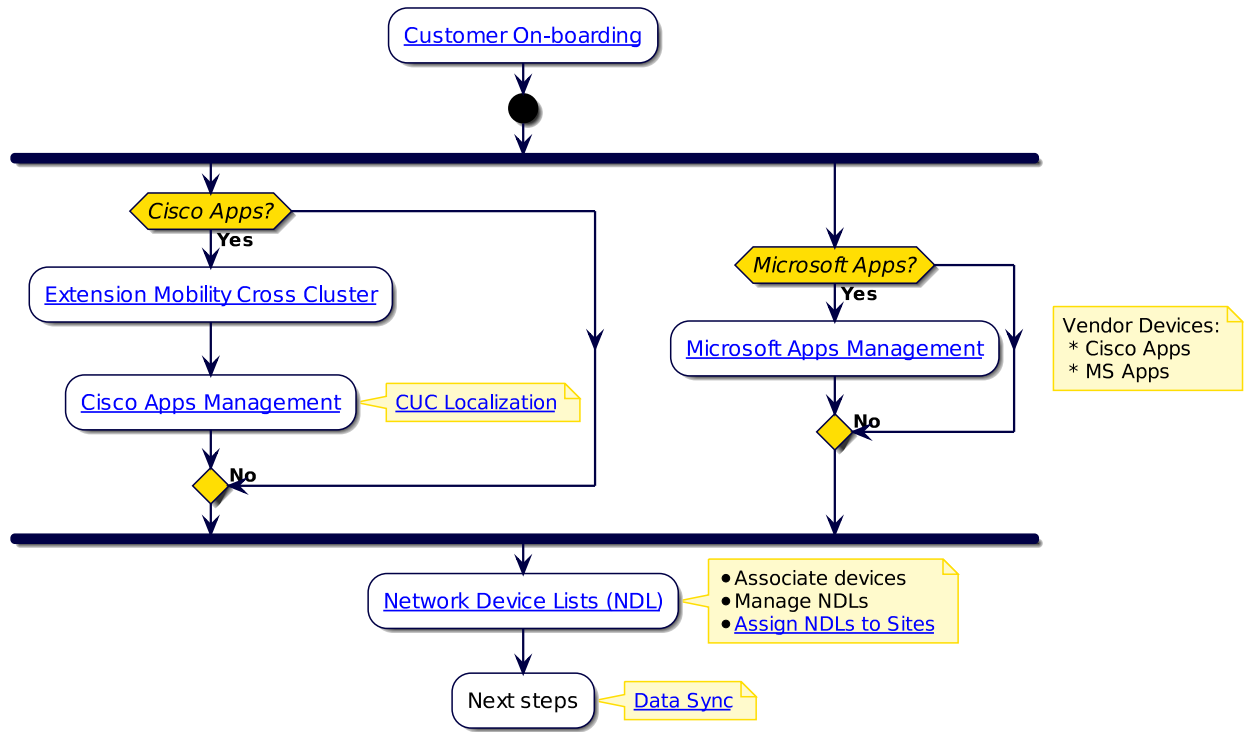
- *General Devices and VOSS Apps*
- *UC Apps: Cisco and Microsoft, Network Device Lists*



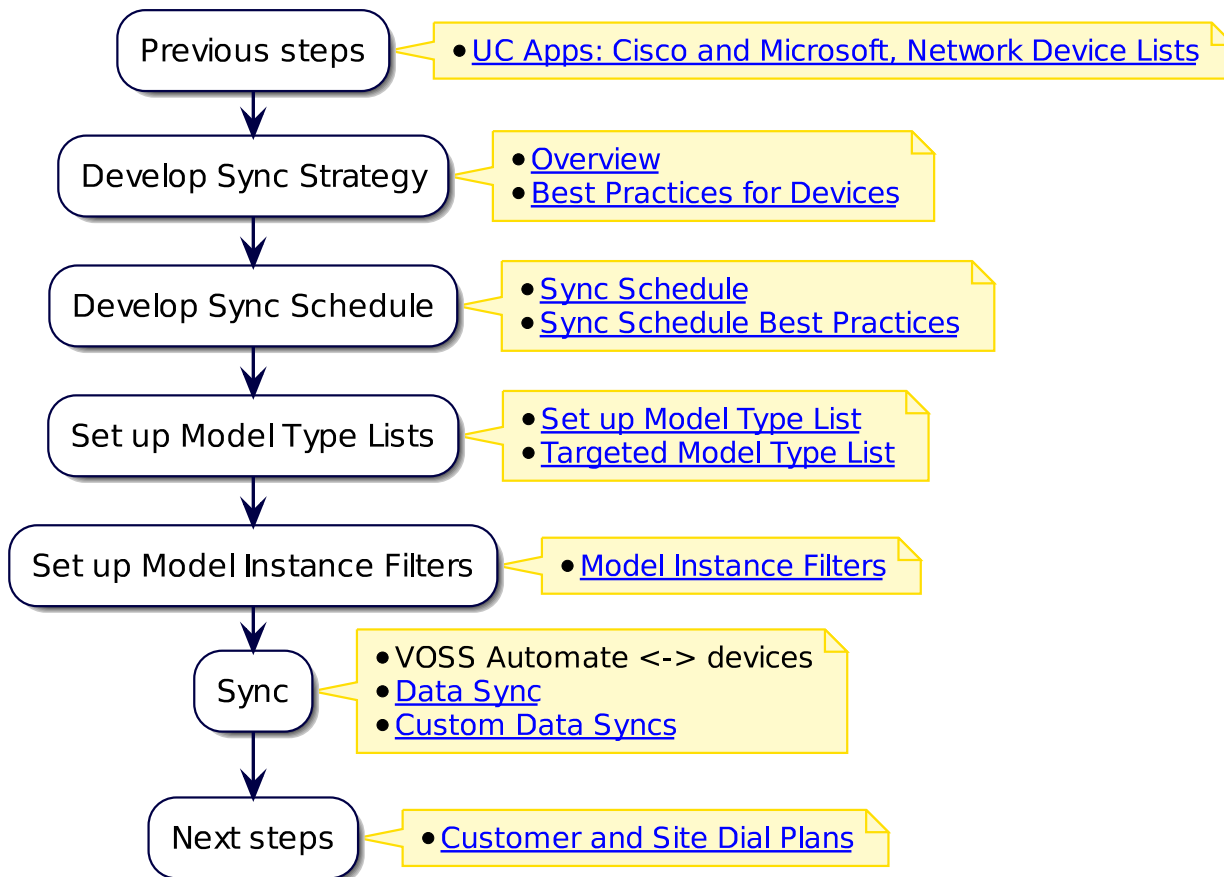
General Devices and VOSS Apps



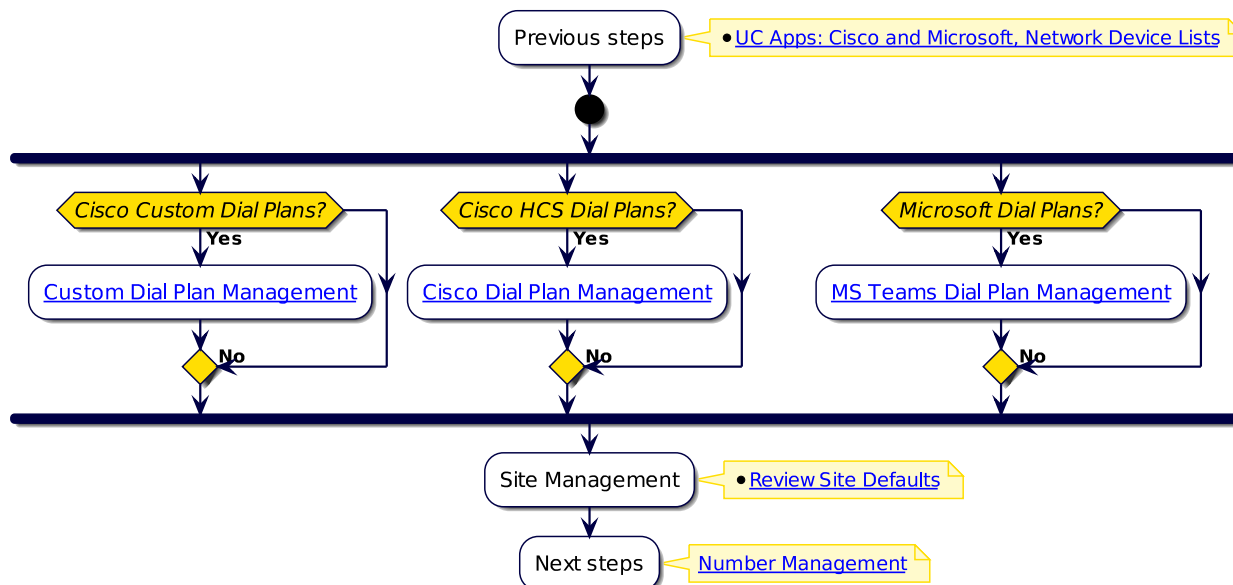
### UC Apps: Cisco and Microsoft, Network Device Lists



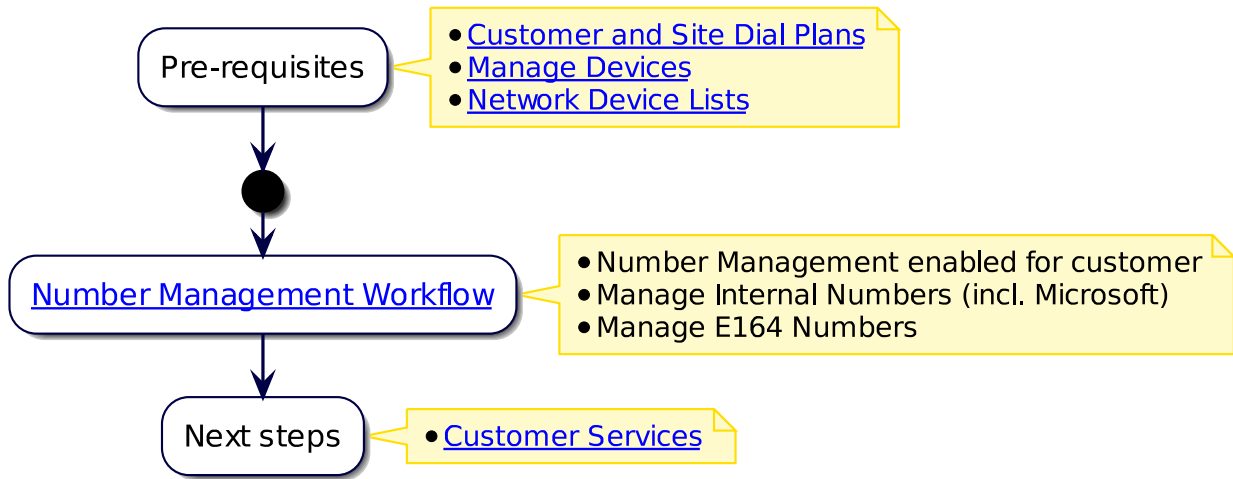
Data Sync



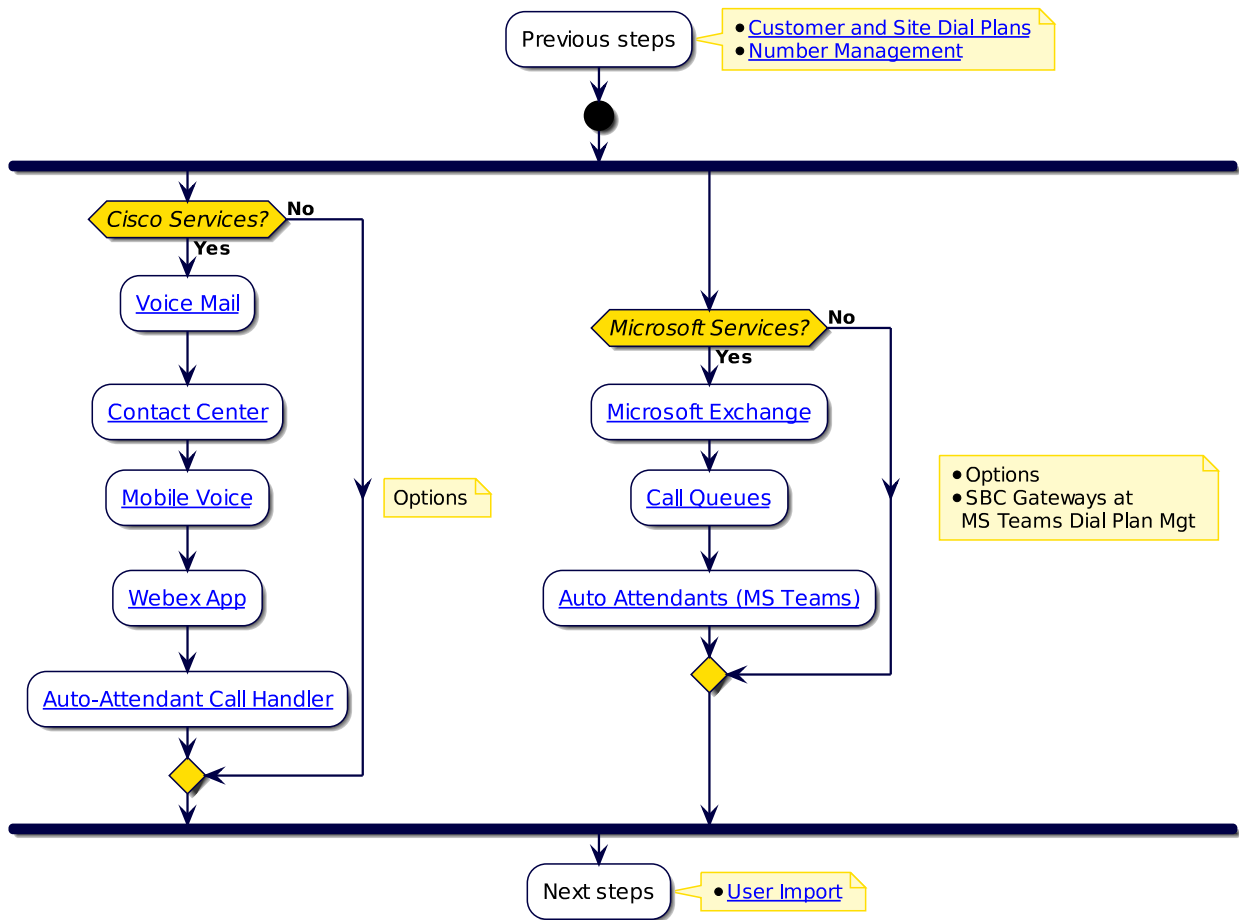
4.1.5. Customer and Site Dial Plans



### 4.1.6. Number Management

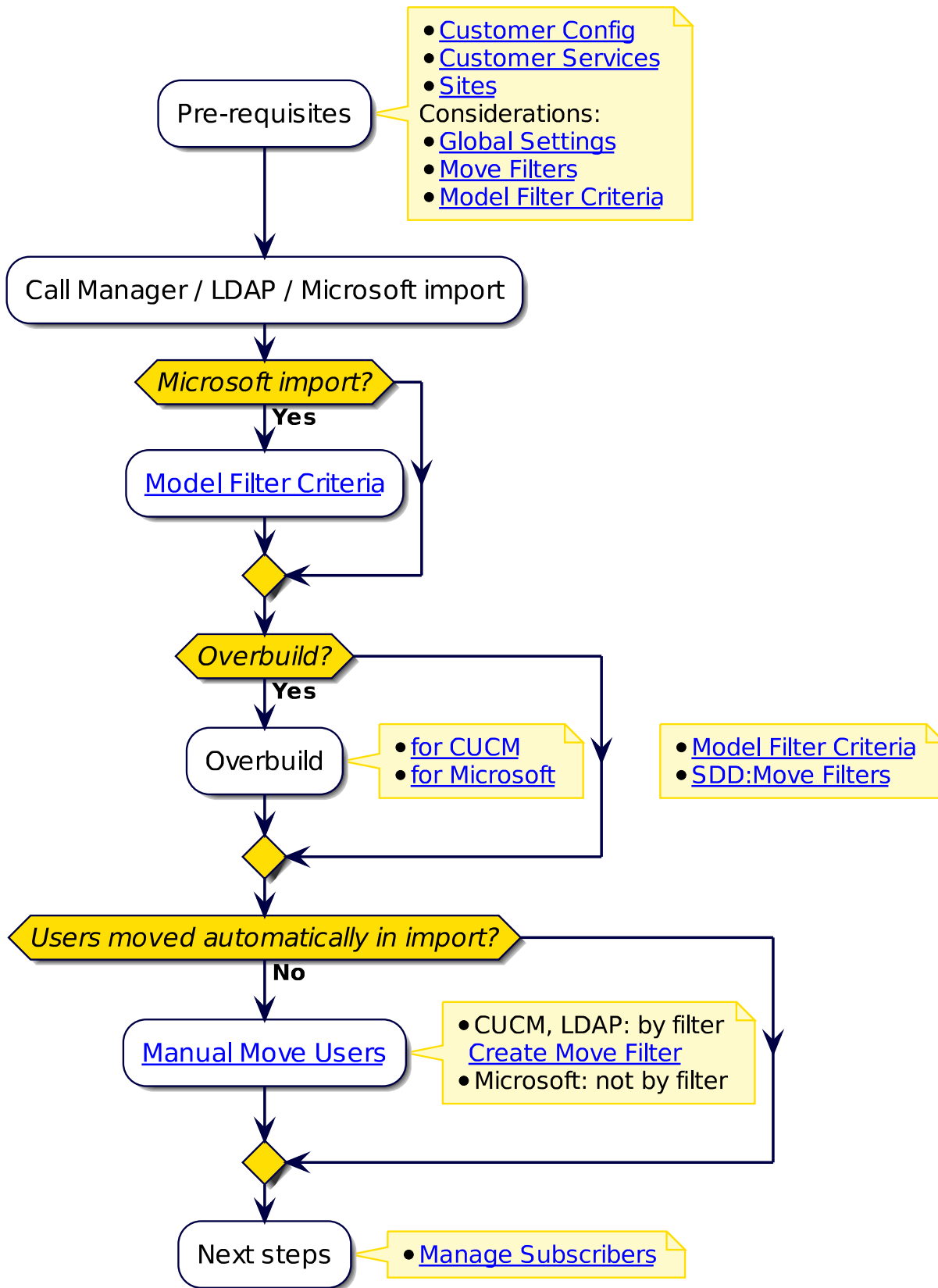


### 4.1.7. Customer Services

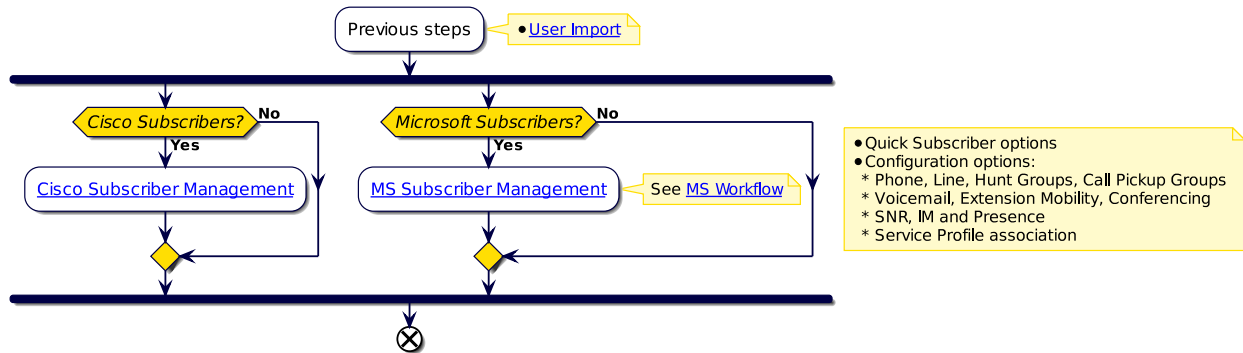




4.1.8. User Import



### 4.1.9. Manage Subscribers



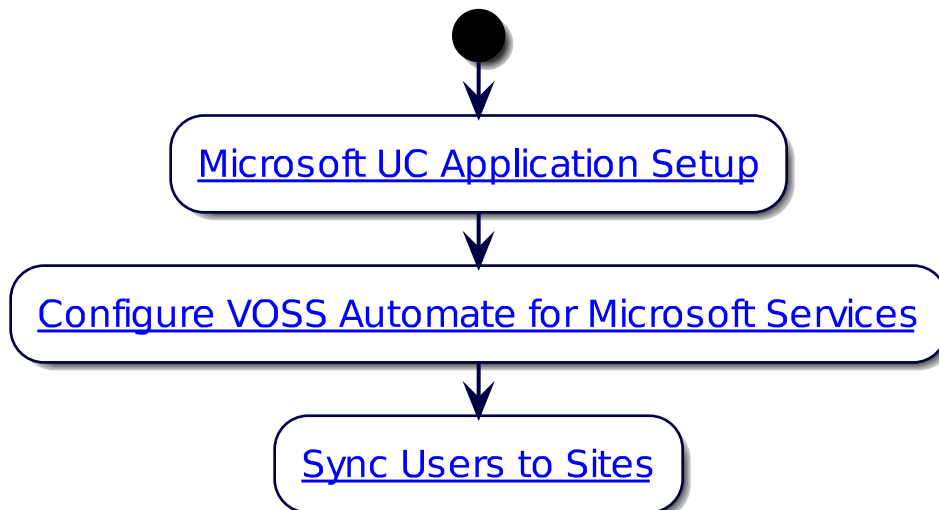
## 4.2. Microsoft Quick Start Guide for VOSS Automate

### 4.2.1. Overview

This quick start will guide you through the steps for setting up VOSS Automate for Microsoft.

The flowchart provides a high-level overview:

- *Step 1: Microsoft UC Application Setup*
- *Step 2: Configure Automate for Microsoft Services*
- *Step 3: Sync Microsoft Users to Sites*



## Related Topics

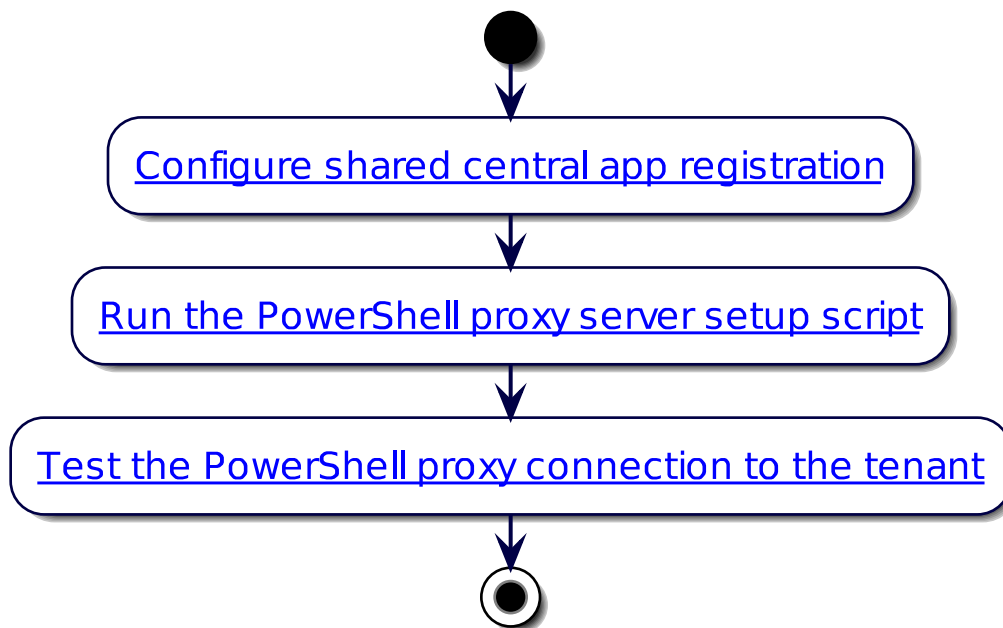
- [Introduction to Microsoft UC Integration](#)

### 4.2.2. Step 1: Microsoft UC Application Setup

Automate must be able to authenticate with Microsoft Entra, PowerShell proxy servers (one or more), Microsoft Teams, and Microsoft Exchange Online in order to manage and provision Microsoft applications.

This step sets up the authentication between MS 365, MS Teams, and Automate, and sets up the PowerShell proxy server.

Some of the details generated during this setup (for example, the client/application ID) is used in VOSS Automate to configure the Microsoft tenant connection parameters.



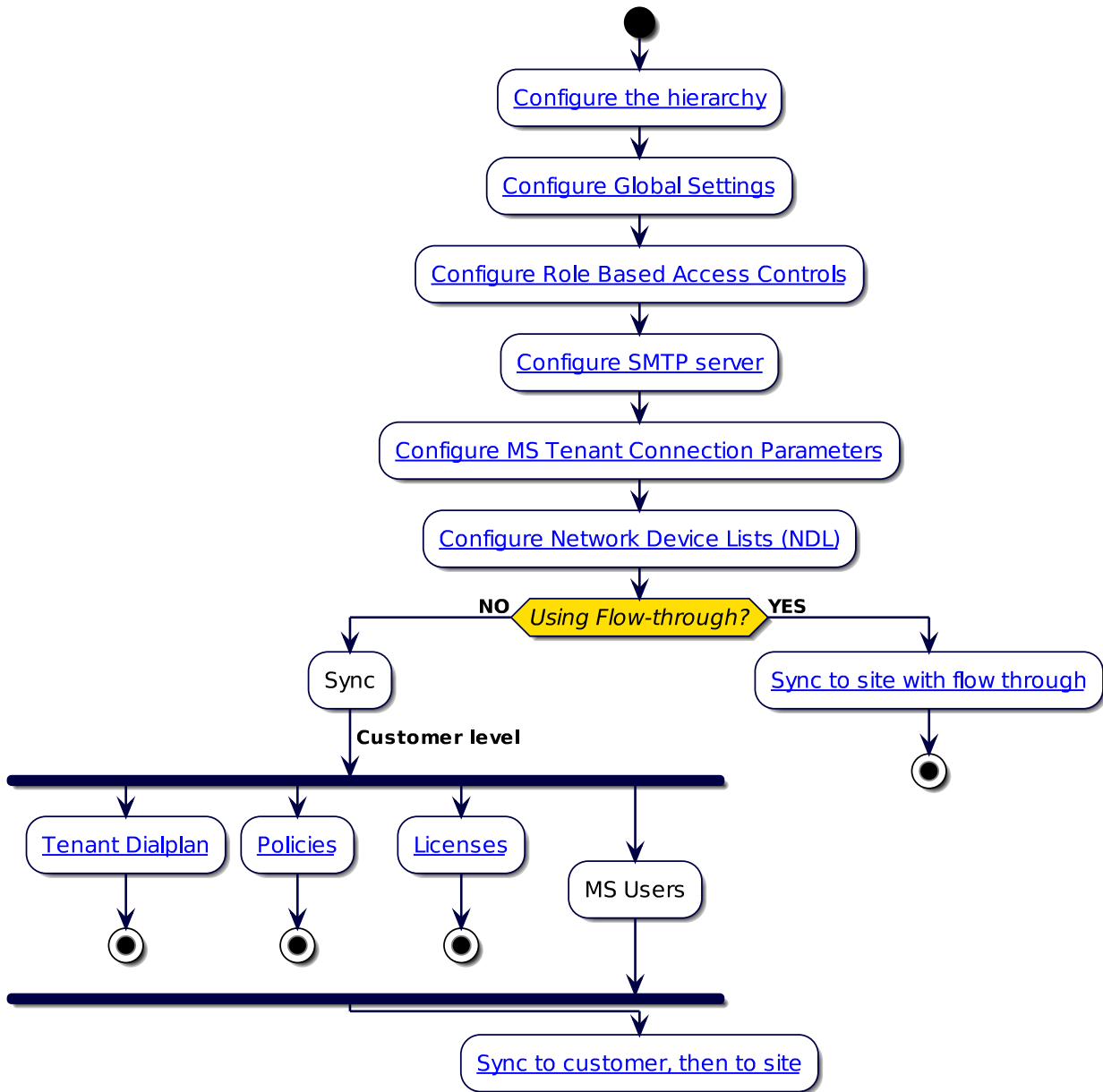
## Related Topics

- [Microsoft UC Application Setup](#)

### 4.2.3. Step 2: Configure Automate for Microsoft Services

The flowchart sets out the steps for configuring Automate before you can import Microsoft users, licenses, policies, and dialplans.





The steps in the workflow are as follows:

1. Configure the hierarchy to create customers for tenant setup
2. In the Global Settings, enable Microsoft, and disable *Enable HCS Dialplan Rules*
3. Configure role-based access controls (add Microsoft admin users, roles, and menu layouts)
4. Configure the SMTP server to allows emails to users
5. Configure the Microsoft tenant.
6. Add Microsoft tenant details to Network Device Lists (NDLs)
7. Sync in Microsoft users

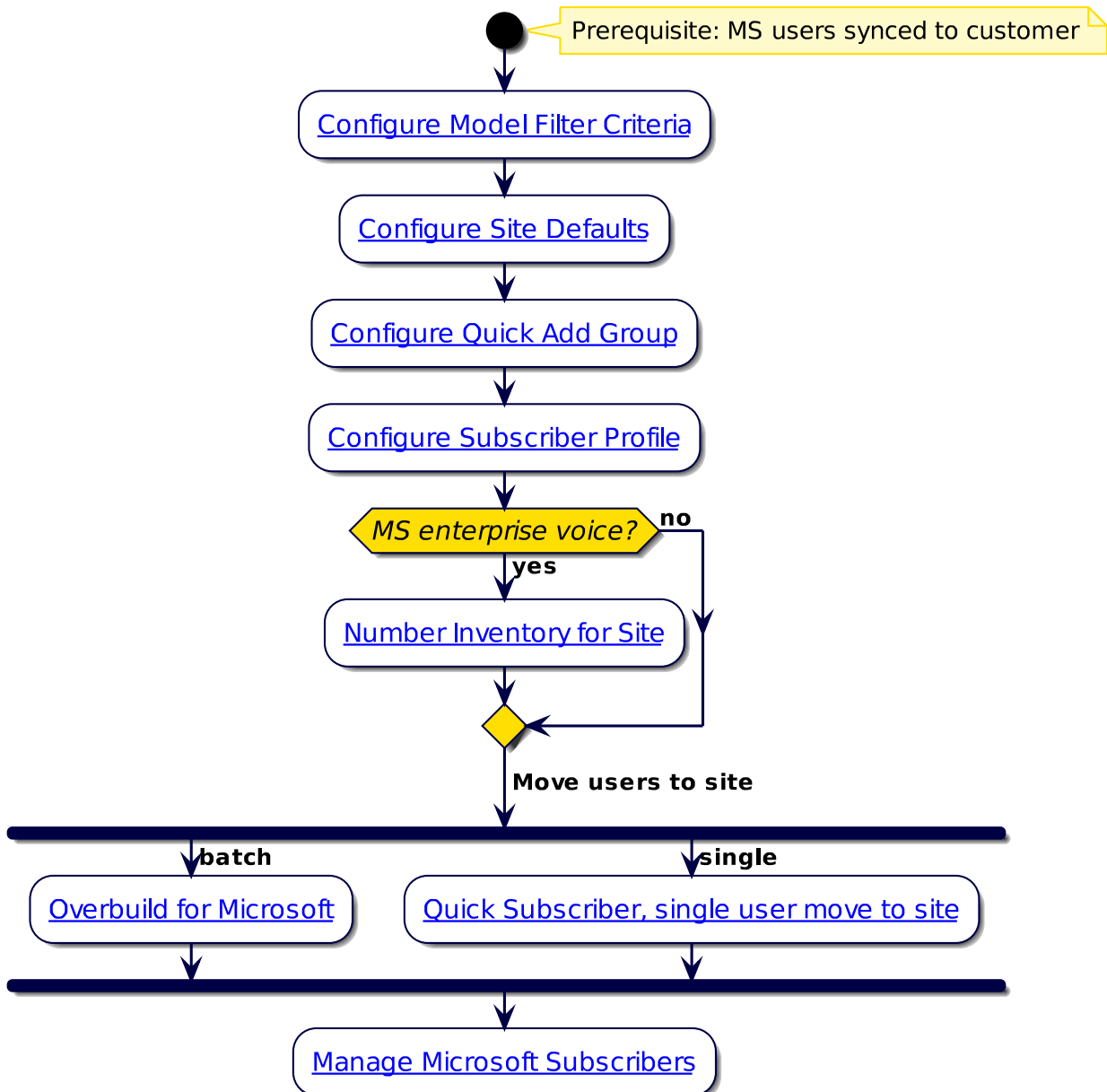
## Related Topics

- [Configure Automate for Microsoft Services](#)

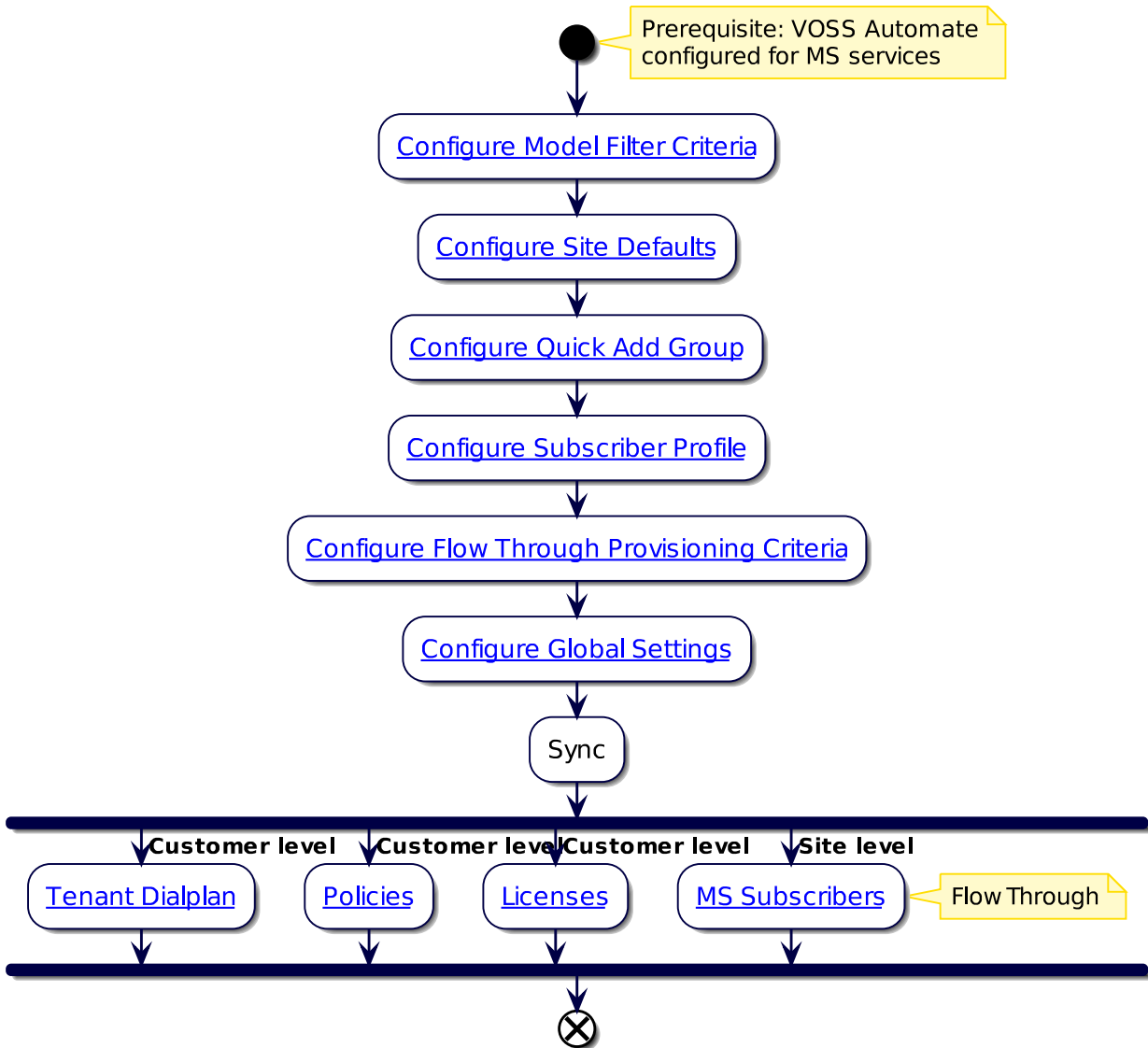
### 4.2.4. Step 3: Sync Microsoft Users to Sites

You can choose to either directly sync in the tenant dialplan, policies, licenses and Microsoft users to the customer, or configure sync with flow through provisioning before syncing in Microsoft data and users:

#### Sync to customer, then to sites



## Sync to site with flow through provisioning



## Related Topics

- *Sync Microsoft Users to Sites*

## 5. Hierarchy Management

### 5.1. Introduction to Hierarchies

#### 5.1.1. Overview

Configurable hierarchy nodes in VOSS Automate allows you to partition data in a multi-tenant system. Together with user roles, data partitioning via hierarchies also provides data security.

#### Related Topics

- [Working with Lists](#)

#### 5.1.2. Hierarchies Mapped to Business models

Hierarchies may be used to model the hierarchical nature of various types of businesses via hierarchy nodes, hierarchy node types, and hierarchy rules. Hierarchy rules can be applied to various models in the system. An example of a hierarchy rule is that sites can only be created under a customer.

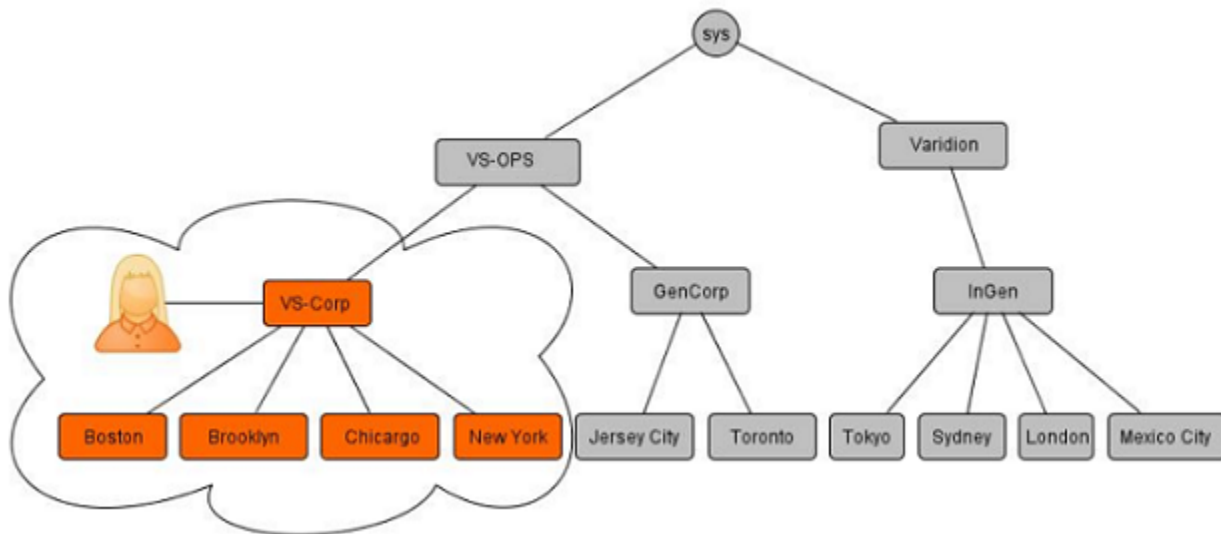
Hierarchy nodes and node types may include:

- Provider
- Reseller
- Customers
- Shared buildings
- Sites
- Divisions
- Branches

A hierarchical structure allows you to manage the allocation of infrastructure (such as network device lists), users, and other entities.

The diagram illustrates an example of a system that hosts two managed service providers: *Varidion* and *VS-OPS*.

- *VS-OPS* hosts two customers: *VS-Corp* and *GenCorp*
- *VS-CORP* operates from these locations: Boston, Brooklyn, Chicago and New York.



### 5.1.3. Data Partitioning and Hierarchies

Using hierarchies to partition data means that an administrator user is only allowed to view and perform operations on entity instances that are provisioned at the parent hierarchy of the hierarchy where they have access.

Access to resources is thus based on the user's parent hierarchy. This restriction is enforced in API middleware for every requested operation. Partitioning is enforced across the various system interfaces, for example loaders, API, and the Admin Portal. This means that an administrator user for customer "VS-Corp" cannot view or act on data at customer "GenCorp". The "VS-Corp" administrator can only view and act on entities assigned to "VS-Corp" or its child hierarchy levels (sites).

**Note:** When an administrator navigates to a particular hierarchy they may have read-only access to model instances created at a higher level of the hierarchy. For example, a provider administrator's view of the list of menu layouts may show instances created *above* the provider's hierarchy. In this case, the administrator requires read-only access in order to have the ability to clone a field display policy at a lower level of the hierarchy. This administrator will not be able to edit the model instance created at the higher level of the hierarchy. However, a provider administrator viewing the list of model instances below the provider level is able to edit model instances created at the provider hierarchy.

When the model is designed, the following setting is enabled: **Visible at Lower Hierarchy**

This setting is available for Data, Domain, and Relation definitions. For Relations, the setting overrides the setting in any related models. See the table below.

### 5.1.4. Hierarchies and User Roles

VOSS Automate secures access to data with the concepts of data partitioning via hierarchies, and user roles. You can create administrators with different roles for different types of hierarchy nodes for devolved administration. For example:

- An administrator is responsible for the setup of the overall system.
- Provider administrators own and manage infrastructure and define services available to resellers.
- Resellers offer the infrastructure and services to customers or enterprises.
- Customers and enterprises are grouped into various groupings.
- Groupings such as divisions or branches belong to customers.
- Physical locations hold users and phones.
- End users consume services and manage their own configurable settings.

A flexible hierarchy allows you to:

- Define as many levels as you need
- Create hierarchy node instances of different types
- Define the required business rules

### 5.1.5. Parent-Child Relationships

All entities in the system reside at a specific hierarchy and the data displayed is within the scope of the specified hierarchy. This means that every entity in the system (including users, device models and network components) has a parent hierarchy defined. A user is for example provisioned with a specific hierarchy node in a parent-child relationship. User names must be unique within a specific hierarchy.

### 5.1.6. User Roles, Access Profiles, and Data Security

Access profiles define the read and write permissions assigned to user roles. The access profile defines how the user can interact with specific system entities. Permissions include details of each entity type in the system, as well as the relevant privileges related to that entity type. See [Role-based Access](#).

- Hierarchy - defines the specific instances of the various entities that the user can interact with
- User's role and access profile - determines the permitted operations that can be performed on these instances.

The table describes models with **Visible at Lower Hierarchy** set to *true*:

Name	Model Type
AccessProfile	data/DataModel
Adaptation	data/DataModel
AdaptationLog	data/DataModel
BulkAdminDataRefreshPerHierarchy	data/DataModel

**continues on next page**

**Table 1 – continued from previous page**

<b>Name</b>	<b>Model Type</b>
BulkAdminFullDataRefresh	data/DataModel
BulkAdminScheduleDataRefresh	data/DataModel
Bundle	data/DataModel
Bundle	data/Relation
ConfigurationTemplate	data/DataModel
Countries	data/DataModel
CredentialPolicy	data/DataModel
FeatureConfigProfile	data/DataModel
FieldDisplayPolicy	data/DataModel
HcsCommandBuilderDAT	data/DataModel
HcsDeviceGroupDAT	data/DataModel
HcsDeviceTypeDAT	data/DataModel
HcsDpDialPlanSchemaDAT	data/DataModel
HcsDpDialPlanSchemaGroupDAT	data/DataModel
HcsLocalizedStringDat	data/DataModel
HcsMovePhoneCustomizationsDAT	data/DataModel
HcsMoveSubCustomizationsDAT	data/DataModel
HcsPrimeCollabREL	data/Relation
Dashboard	data/DataModel
Macro	data/DataModel
MenuLayout	data/DataModel
Patch	data/DataModel
ProvisioningWorkflow	data/DataModel
QuickAddGroups	data/DataModel
Role	data/DataModel
SelfServiceFeatureDisplayPolicy	data/DataModel
SelfServiceLinks	data/DataModel
SelfServiceTranslation	data/DataModel
Theme	data/DataModel

## Related Topics

- Network Device Lists in the Core Feature Guide
- Automate Configuration and Sync in the Core Feature Guide

## 5.2. Navigating the Hierarchy

### 5.2.1. Overview

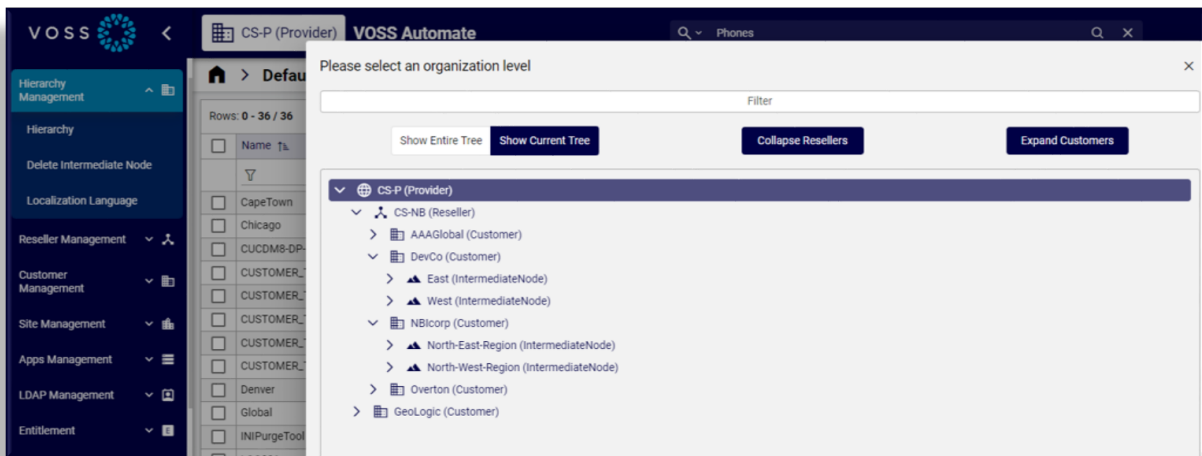
The Automate Admin Portal provides several ways to navigate to a required hierarchy level, and to set the context for various actions in the system at that level.

### 5.2.2. Hierarchy Tree View

Use the **Organization Selection** icon on the toolbar at the top of the page to open a tree view of the entire hierarchy. Choose a hierarchy node on the tree to easily navigate to that node.

Nodes in the tree also show their hierarchy type, either Provider, Reseller, Customer, or Site.

**Note:** Nodes in the tree view are sorted alphabetically at all levels (Provider, Customer, Reseller, and Site).



### 5.2.3. List View Hierarchy Links

For list views, the hierarchy level to which an object belongs is indicated in the hierarchy column is called **Located At**.

The hierarchy level name and type shows as the column hierarchy link, for example Overton (Customer).

All the entries in the list that the logged in user's hierarchy rules allows for, will show as hyperlinks. This also applies to list views of search results. Clicking on the hierarchy link will set the hierarchy to the selected hierarchy in the top "bread crumbs" bar and the items in the list view are filtered accordingly.



Last Name	Email	User Type	Entitlement Profile	Located At
Pjones	pjones@voss-solutions.com	CUCM Local		Overton (Customer)
Bulld001	OscarBulld001@aaaglobal.com	CUCM Local		Overberg (Site)
Bulld002	OscarBulld002@aaaglobal.com	CUCM Local		Overberg (Site)
Bulld003	OscarBulld003@aaaglobal.com	CUCM Local		Overberg (Site)
Jones	pjonesss@voss-solutions.com	CUCM Local		Overberg (Site)

**Note:** The hierarchy bar is not refreshed automatically when for example Customers or Sites are deleted by another administrator user on another browser. The bar is refreshed when refreshing the browser.

## 5.3. View the Hierarchy

### 5.3.1. Role-based Access to the Hierarchy

An administrator can view the portion of the hierarchy they have access to.

- A provider administrator can view the complete hierarchy.
- A customer administrator can view the customer, any intermediate nodes beneath the customer, and customer sites.

### 5.3.2. View, Sort, and Search the Hierarchy

- You can view the hierarchy on the relevant hierarchy list view. Hierarchy nodes visible to the administrator display in a table:

Field	Description
Name	Node name
Description	Node description
Hierarchy Node Type	Either Provider, Reseller, Customer, or Site. Blank for an intermediate node.
Located At	The node location in the hierarchy, in dot notation.

- To view a subset of the visible hierarchy, adjust the hierarchy path. For example, if a provider administrator sets the path to point to a particular customer, they can see only the hierarchy nodes for that customer.
- To sort hierarchy nodes, click on the field headers.
- To search hierarchy nodes, click the search icon on the field headers.

## Related Topics

Navigating the Hierarchy in the Core Feature Guide

## 5.4. Create a Provider

This procedure creates a provider hierarchy node in VOSS Automate and, optionally, a default provider administrator.

1. Log in to VOSS Automate:
  - Enterprise deployment: Log in as entadmin at sys.hcs.
  - Provider deployment: Log in as hcsadmin at sys.hcs.
2. Go to (default menus) **Provider Management > Providers**.
3. On the **Providers** page, click **Add**.
4. On the **Service Provider Details** tab, complete the following fields:

Field	Description
Name	The service provider name. Note: <ul style="list-style-type: none"> <li>Once you've saved the provider you can't change their name.</li> <li>Any spaces in the provider name are converted to underscores in the provider local administrator name and email, if the <b>Create Local Admin</b> check box is selected.</li> </ul>
Description	A description of the provider.
Domain Name	Mandatory. The service provider's directory domain, for example, "provider.com". Used when creating the default local administrator so the administrator can log in with an email ID such as <a href="mailto:ProviderAdmin@provider.com">ProviderAdmin@provider.com</a> .
Create Local Admin	Defines whether a default local administrator is created.
Cloned Admin Role	For Provider deployments, the HCS default Provider role used to create a new role prefixed with the provider name. For Enterprise deployments, the ENT default Provider role used to create a new role prefixed with the provider name. The Provider role, shown in Default Admin Role field, is assigned to the default local administrator. This field appears only if the <b>Create Local Admin</b> check box is selected.
Default Admin Role	The created provider role that is assigned to the default local administrator. This field is read-only and appears only if the <b>Create Local Admin</b> check box is selected.
Default Admin Password	The password to assign to the default local administrator. This mandatory field appears only if the <b>Create Local Admin</b> check box is selected.
Repeat Default Admin Password	Confirm the default local administrator password. This mandatory field appears only if the <b>Create Local Admin</b> check box is selected.

4. On the **Contact Information** tab, enter address, email, and phone information, as appropriate.
5. Click **Save**.

## 5.5. Create a Reseller

This procedure creates a reseller.

**Note:** Once Automate is installed, the *entadmin`* administrator (Enterprise deployment) or *hcs* administrator (Provider deployment) creates the provider.

Creating a reseller is optional.

1. Log in as Provider administrator.  
Log in with the provider administrator's email address (case-sensitive). The *hcsadmin`* adminis-

trator can find the Provider administrator's email address on the **Admins** form (default menu **User Management > Admins**, then click on the Provider's name).

2. Go to (default menus) **Reseller Management > Resellers**.
3. On the **Resellers** form, click **Add**.
4. On the **Reseller Details** tab, complete the following fields:

Option	Description
Name	Mandatory. The name of the reseller. <ul style="list-style-type: none"> <li>• This name can't be changed once you've saved it.</li> <li>• Any spaces in the reseller name are converted to underscores in the reseller local administrator name and email.</li> </ul>
Description	Reseller description
Directory Domain	Reseller's directory domain. This field is used to create an email address for the reseller default local administrator, for example <a href="mailto:Reseller1Admin@reseller1.com">Reseller1Admin@reseller1.com</a> . If omitted, the domain of the Provider is used.
Create Local Admin	Defines whether a default local administrator is created for the reseller.
Cloned Admin Role	The Provider role used to create a new role prefixed with the reseller name. The created reseller role, shown in the <b>Default Admin Role</b> field, is assigned to the default local administrator user. This field appears only if the <b>Create Local Admin</b> checkbox is selected.
Default Admin Role	The created reseller role that is assigned to the default local administrator. This field is read-only and appears only if the <b>Create Local Admin</b> checkbox is selected.
Default Admin Password	The password to assign to the default local administrator. This field displays and is mandatory only when <b>Create Local Admin</b> is selected.
Repeat Default Admin Password	Confirm the default local administrator password. This field appears and is mandatory only when <b>Create Local Admin</b> checkbox is selected.

4. On the **Contact Information** tab, enter address, email, and phone information as appropriate.
5. Click **Save**.

## 5.6. Create Intermediate Node

An intermediate node is an optional node in the VOSS Automate hierarchy. It is located between the standard hierarchy nodes (Provider, Reseller, Customer, and Site).

An intermediate node can be used to logically group other nodes, and to restrict access by administrators to a defined subset of nodes. For example, intermediate nodes could be used to group customers by industry, or sites by geography.

When an intermediate node is created, no default administrator is created for it. Adding an administrator for an intermediate node is a separate step.

### To create an intermediate node:

1. Log in as an administrator at the hierarchy level where you want to create the intermediate node.

For example, to create an intermediate node to group sites, log in as the customer administrator.

2. From the **Hierarchy** form click **Add**.
3. Enter the following information for the node:

Field	Description
Name	The name of the node. This field is mandatory. Note: Once you enter a name, it cannot be changed.
Description	A detailed description of the node (optional).

4. Click **Save**.

The intermediate node is created in the hierarchy.

### Next Steps

- Define a local administrator for the intermediate node.
- Then create nodes underneath the intermediate node that the intermediate node local administrator can manage.

## 5.7. Delete a Hierarchy

**Caution:** Unintentionally deleting a hierarchy can have serious effects on the system. Proceed with caution.

A utility is available under a hierarchy management menu to delete a hierarchy (Provider, Reseller, Customer, Site, IntermediateNode) and all data under it.

If the utility is used at a higher level hierarchy, then select the lower level hierarchy to delete from the drop-down list.

Check box options are available to:

- remove data on selected UC Apps configured on the hierarchy
- remove the hierarchy data from the VOSS Automate system database completely

### Note:

- If a site is deleted, an additional cleanup workflow step also removes site related data above the site level.

The table below indicates the DN and E164 Inventory state after a site is deleted.

DN	E164	E164 Association	DN Inventory	E164 Inventory	E164 Association Flag	E164 Associations
Site	Site	Site	Removed	Removed	N/A	Removed
Site	Customer	Site	Removed	Remain	set to false	Removed
Site	Customer & Site	Site	Removed	Remain at customer Removed at site	set to false	Removed

- If no check boxes are selected, the transaction is successful and no data is deleted.

Since there is a risk in using this utility, a confirmation of the action is required by selecting the **Confirmation** drop down box. Click **Save** to carry out the transaction.

## 5.8. Delete Issues and Purges

Cisco

### 5.8.1. Overview

Whenever CUCM and CUCX data is synced into VOSS Automate, it assumes management of the data and, as a result, that data would be deleted by any hierarchy delete performed in VOSS Automate. These deletes can fail if your CUCM model dependencies don't reflect the additional data contained in existing, provisioned dial plans brought into VOSS Automate.

### 5.8.2. Preventing Delete Failures

There are two ways to prevent delete failures:

- (Provider deployments) Work with a Cisco System Integrator to update your HcsCucmWrapperCascadeDelPWF workflow to handle the dependencies in your existing dial plan.
- Perform a purge instead of a delete.

Purging deletes all users, subscribers, phone, profiles, and devices from a brownfield customer's VOSS Automate while leaving these objects on the Unified CM and the Cisco Unity Connection.

### 5.8.3. Execute a Purge

To execute a purge:

1. Log in as a Reseller administrator or higher.
2. Go to (default menus) **Administration Tools > Data Sync** to open the **Data Sync** page.
3. From the hierarchy drop-downs, select the customer whose data you need to purge. If the data was created at the Site hierarchy, the purge only takes place at site level.
4. Click **HcsPurge-<IP address + fully qualified domain name + hostname>**.
5. From the **Sync Type** drop-down, choose **Purge Local Resources**. All other default values remain unchanged.
6. Click **Execute**.
7. Repeat steps 4-6 for the CUCM.
8. Verify that the instances and device models are deleted by checking Phones, Users, and Voicemail.

---

**Note:** Now you can attempt to migrate the customer into VOSS Automate by executing HcsPull from the same menu for CUCM and Unity Connection, and then running the overbuild.

---

## 5.9. Localization Language

### 5.9.1. Overview

A default language can be set at any hierarchy. Users and local administrators inherit the default language from the nearest hierarchy with the default language set.

#### Example

A Provider admin has not set a default language at the Provider level.

The provider has a reseller in Germany, so the default language at the reseller is German. This reseller has a customer in France, so the default language at that customer level is set to French. In addition, the customer in France has a site in Italy, so the default language for that site is set to Italian.

In this scenario, users that are not under the reseller have English as their language by default.

### 5.9.2. User Default Language

If a user's language is not explicitly set, the language is inherited from the nearest hierarchy node (at or above the user node) that has a default language configured. If no default language is set anywhere in the hierarchy at or above the user node, the language is set to English.

The default language can be overridden for an individual user or local administrator via (default menus) **User Management > Users** (on the **User Details** tab).

### 5.9.3. Configure Localization Language

1. Log in as Provider, Reseller, Customer, or Site administrator.
2. Set the hierarchy path to point to the node where you want to set a default language.
3. Go to (default menus) **Hierarchy Management > Localization Language**.
4. Click **Add**.
5. From the **Language** drop-down, choose the default language.
6. Click **Save**.



## 6. Customer Management

### 6.1. Customers

#### 6.1.1. Overview

Customers exist as a node in VOSS Automate's hierarchical structure. Typically, the structure has the following order (from highest level to lowest level).

- Provider
- Reseller
- Customer
- Site

Optional intermediary nodes can also be created.

---

**Note:** VOSS Automate employs hierarchies (organization levels), user roles, and access profiles to control and secure access to resources in the system. You can find out more about hierarchies at *Introduction to Hierarchies* in the Core Feature Guide.

---

In the hierarchical structure, sites (locations) can only be created under a customer. However, you will need to set up the customer-level configuration before adding sites. The complete on-boarding of a customer is done at the Provider hierarchy. You can find the customer on-boarding details in the *Customer On-boarding Quick Start Guide* in the Core Feature Guide.

#### Related Topics

- Introduction to Hierarchies in the Core Feature Guide
- Customer On-boarding Quick Start Guide in the Core Feature Guide
- Network Device Lists in the Core Feature Guide

## 6.1.2. Add and Update Customers

This procedure adds a new customer, and updates an existing customer.

**Note:** If required, you can disable number management for the customer.

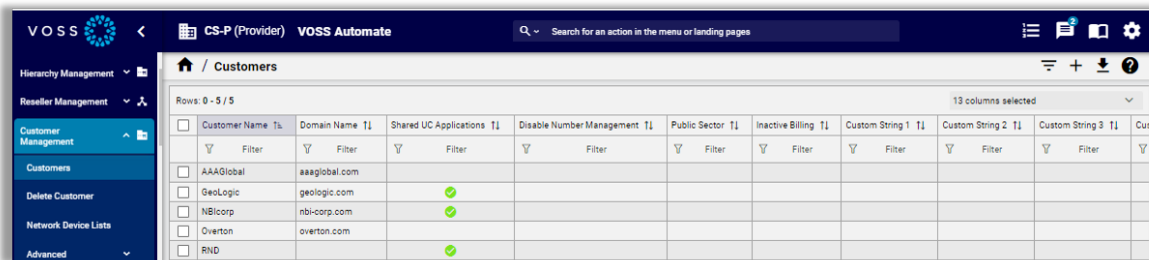
1. Log in as Provider or Reseller administrator (depending on which organization manages the customer).

**Note:** Log in using the Provider or Reseller admin's email address (case-sensitive). You can find this email address via (default menus) **User Management > Admins**. Click on the admin's name to view the email address.

2. Choose the hierarchy.

**Note:** If logged in as Provider and the Customer is to be added under a Reseller, set the hierarchy path to the Reseller.

3. Go to (default menus) **Customer Management > Customers**.

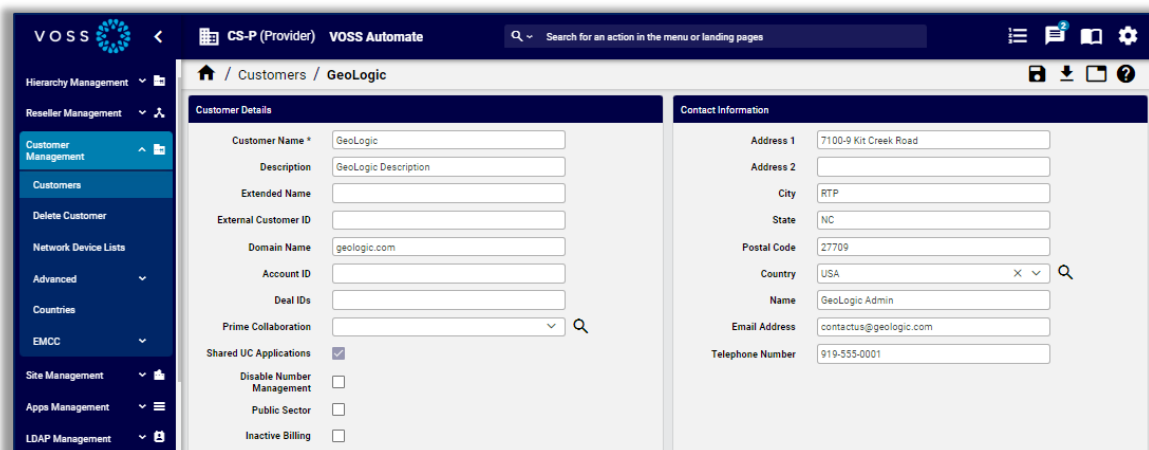


The screenshot shows the 'Customers' page in the VOSS Automate interface. The table displays a list of customers with columns for Customer Name, Domain Name, Shared UC Applications, Disable Number Management, Public Sector, Inactive Billing, and three Custom String columns. The 'GeoLogic' customer is highlighted in blue.

Customer Name	Domain Name	Shared UC Applications	Disable Number Management	Public Sector	Inactive Billing	Custom String 1	Custom String 2	Custom String 3
AAAGlobal	aaaglobal.com							
GeoLogic	geologic.com	✓						
NBicorp	nbi-corp.com	✓						
Overton	overton.com							
RND		✓						

4. On the **Customers** page:

- To add a new customer, click the Plus icon (+) to open the configuration screen.
- To update an existing customer, click on the customer name to open the configuration screen.



The screenshot shows the configuration screen for the 'GeoLogic' customer. The form is divided into two main sections: 'Customer Details' and 'Contact Information'.

**Customer Details:**

- Customer Name: GeoLogic
- Description: GeoLogic Description
- Extended Name: (empty)
- External Customer ID: (empty)
- Domain Name: geologic.com
- Account ID: (empty)
- Deal IDs: (empty)
- Prime Collaboration: (dropdown menu)
- Shared UC Applications:
- Disable Number Management:
- Public Sector:
- Inactive Billing:

**Contact Information:**

- Address 1: 7100-9 Kit Creek Road
- Address 2: (empty)
- City: RTP
- State: NC
- Postal Code: 27709
- Country: USA
- Name: GeoLogic Admin
- Email Address: contactus@geologic.com
- Telephone Number: 919-555-0001

---

**Note:** To switch the page layout from panels to tabs or from tabs to panels, you can click the **Switch to Tab/Panel Layout** toolbar icon.

---

5. Fill out or update the fields on the page (Customer Details and Contact Information tabs/panels):
- Customer Details (see field descriptions below)
  - Contact Information - fill out the customer address and contact details (email address and telephone number)

---

**Important:** Additional custom string and boolean fields may be exposed via field display policies for the **Customers** configuration form. For details, see [Add Custom Fields to Customer Configuration Screens](#)

---

Customer Details	Description
Customer Name	Mandatory. The name of the customer. Note that when <b>Create Local Admin</b> is selected, any spaces in the customer name are converted to underscores in the Customer local administrator name and email.
Description	Customer description
Extended Name (Provider)	Descriptive name for the customer, used by external clients to correlate their own customer records with customer records stored in HCS.
External Customer ID (Provider)	External customer ID used by the Service Inventory service, and included as a column in the customer record of the service inventory report. Specify an External Customer ID in this field that matches the customer ID used by the external inventory tool that receives the Service Inventory reports. If the Service Inventory service is not being used, this field is not required. However, it can be used to correlate customer records in external systems with customer records in HCS.
Domain Name	Customer domain. This field is used to create email addresses for: <ul style="list-style-type: none"> <li>• The customer default local administrator, for example: <a href="#">Customer1Admin@customer1.com</a></li> <li>• Site default local administrators under the customer, for example: <a href="#">Site1Admin@customer1.com</a></li> </ul> If the customer domain is omitted, the provider domain (or reseller domain, if the customer is under a reseller in the hierarchy and the reseller domain was provided) is used instead.
Account ID	The Account ID is used by external clients to correlate their own customer records with the customer records stored in HCS. This Account ID value is synced to the Customer record in the Shared Data Repository.
Deal IDs	Deal IDs are used by the Hosted License Manager (HLM) service. HLM supports Point of Sales (POS) report generation. The report includes all customers on the system with aggregate license consumption at customer level. The optional <b>Deal ID</b> field associated with the customer is included in the report. Each customer can have zero or more Deal IDs. The <b>Deal ID</b> field is free text format and each deal ID is separated by a comma.

Customer Details	Description
Shared UC Applications	Indicates whether the customer can use Shared UC Apps. If selected, the customer sites can use Network Device Lists that contain Shared UC Apps. Shared UC Apps are UC Apps that are defined above the Customer hierarchy level.
Disable Number Management	Enable or disable Number Management for this customer. <ul style="list-style-type: none"> <li>• If selected, you cannot add Directory Numbers and E164 Numbers to inventories for this customer.</li> <li>• If <i>not</i> selected, you can add Directory Numbers and E164 Numbers to inventories for this customer.</li> </ul>
Public Sector	Set the Customer as a Public Sector customer. Used for License Reporting.
Inactive Billing	Exclude customer from billing (for testing). Used for License Reporting.

Customer Details	Description
Create Local Admin	Defines whether a default local administrator is created for the customer.
Cloned Admin Role	The Provider or Reseller role used to create a new role prefixed with the customer name. The created customer role, shown in the <b>Default Admin Role</b> field, is assigned to the default local administrator user. This field appears only if the <b>Create Local Admin</b> checkbox is selected.
Default Admin Role	The created customer role that is assigned to the default local administrator. This field is read-only, and appears only if the <b>Create Local Admin</b> checkbox is selected.
Default Admin Password	The password to assign to the default local administrator. This field appears and is mandatory only if the <b>Create Local Admin</b> checkbox is selected.
Repeat Default Admin Password	Confirm the default local administrator password. This field appears and is mandatory only if the <b>Create Local Admin</b> checkbox is selected.

6. If you enable Number Management for a customer after it was disabled, run the DN Audit Tool. See [Audit Number Inventory](#).
7. Click **Save**.

---

**Note:** When deleting a customer, remove any entities associated with the customer, such as LDAP, SSO providers, Devices, and NDLs.

---

### 6.1.3. Add Custom Fields to Customer Configuration Screens

VOSS Automate allows you to add up to ten custom string fields and up to 10 custom boolean fields to the field display policy you apply to the Customer data model (*relation/HcsCustomerREL*). This provides flexibility to add additional details for a customer, if required.

The summary attributes in the **Customers** list view always display three Boolean fields and three String fields, regardless whether they've been included in the FDP. If you wish to change the title of these fields in the summary attributes you can add a field override entry in the FDP.

When configuring a customer (add or update), you may specify field values or use named macros to populate values for these fields.

Macros for custom string fields for relation/HcsCustomerREL:

- macro.HcsVossCustomerDAT\_custom\_string\_1
- macro.HcsVossCustomerDAT\_custom\_string\_2
- macro.HcsVossCustomerDAT\_custom\_string\_3
- macro.HcsVossCustomerDAT\_custom\_string\_4
- macro.HcsVossCustomerDAT\_custom\_string\_5
- macro.HcsVossCustomerDAT\_custom\_string\_6
- macro.HcsVossCustomerDAT\_custom\_string\_7
- macro.HcsVossCustomerDAT\_custom\_string\_8
- macro.HcsVossCustomerDAT\_custom\_string\_9
- macro.HcsVossCustomerDAT\_custom\_string\_10

Macros for custom boolean fields for relation/HcsCustomerREL:

- macro.HcsVossCustomerDAT\_custom\_boolean\_1
- macro.HcsVossCustomerDAT\_custom\_boolean\_2
- macro.HcsVossCustomerDAT\_custom\_boolean\_3
- macro.HcsVossCustomerDAT\_custom\_boolean\_4
- macro.HcsVossCustomerDAT\_custom\_boolean\_5
- macro.HcsVossCustomerDAT\_custom\_boolean\_6
- macro.HcsVossCustomerDAT\_custom\_boolean\_7
- macro.HcsVossCustomerDAT\_custom\_boolean\_8
- macro.HcsVossCustomerDAT\_custom\_boolean\_9
- macro.HcsVossCustomerDAT\_custom\_boolean\_10

The macros can be applied in workflows and configuration templates to reference the custom field values. For example, executing *macro.HcsVossCustomerDAT\_custom\_string\_1* will return the value in the field where the macro is used.

### To expose custom fields for *relation/HcsCustomerREL*

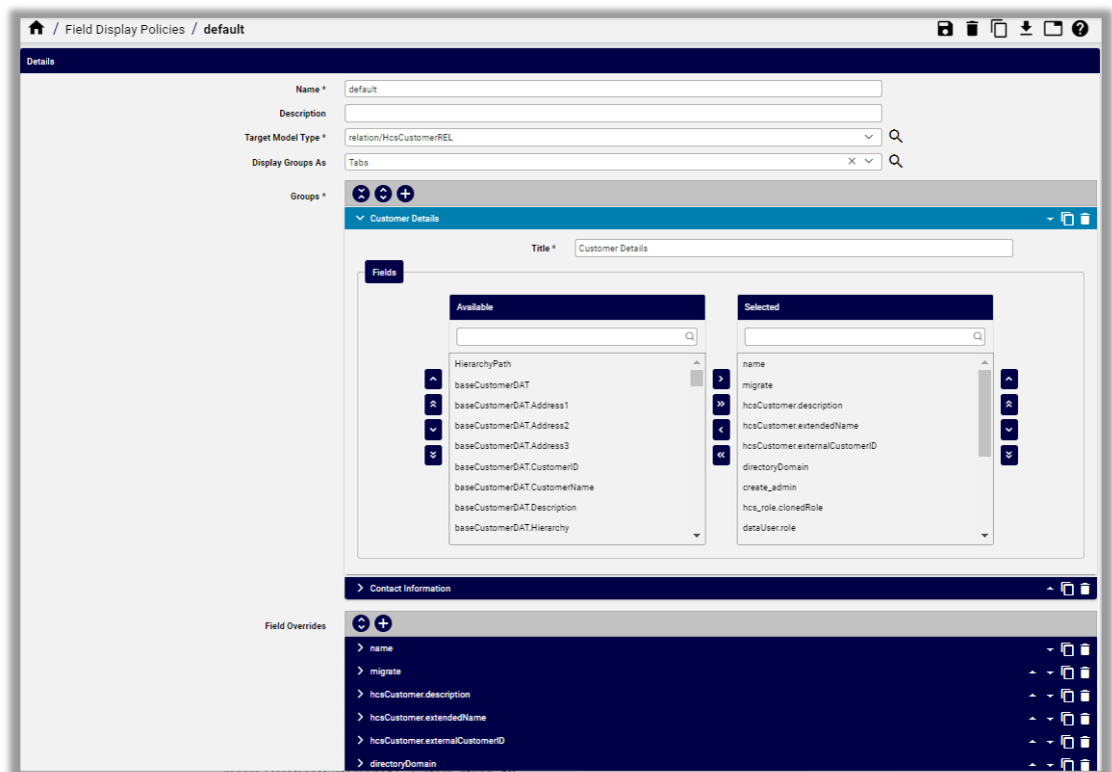
1. Log in to VOSS Automate as Provider admin or higher.
2. Create or update the Customers data model field display policy:
  - Go to (default menus) **Customization > Field Display Policies**, and locate the entry for target model type *relation/HcsCustomerREL*.
  - Click on the default field display policy (FDP) for the model (the FDP named *default*).
  - Clone (copy) the default FDP for the model, and give the clone a new name.

**Note:** You cannot modify default FDPs that ship with the system. This allows you to refer to or revert to a system default at any time, if required.

- Modify the new FDP (the clone).

**Note:** You can add a new group of fields containing only the new custom fields, or add fields to existing field groups.

You can also create field overrides, which allow you to define that a custom field value will be referenced in place of an existing field.



- Save your changes.
3. Update the menu layout to apply the field display policy:
    - Go to (default menus) **Role Management > Menu Layouts**, and locate the Provider admin menu layout (HcsProviderMenu).

- Click on **HcsProviderMenu**, and create a clone with a new name.

---

**Note:** You cannot modify default menu layouts that ship with the system. This allows you to refer to or revert to a system default menu layout at any time, if required.

---

- Modify the clone (copy) of **HcsProviderMenu**:
  - Expand the **Customer Management** menu.
  - At **Customers**, click in the **Field Display Policy** cell, and choose the FDP you configured to add the custom fields.
- Save your changes.

#### 4. Log out, then log in again as Provider admin.

This allows the role-based access profile changes to refresh so that you can view the updated menu layouts and field display policies you applied, including new custom fields.

## 6.2. Network Device Lists (NDLs)

A network device list (NDL) is a list of network devices that are assigned to a site. NDLs are defined at the customer hierarchy level, and a customer can have multiple NDLs.

Only a Provider or Reseller administrator may create NDLs.

Shared UC applications (UC apps defined above the customer hierarchy level) can be included in an NDL. However, to use that NDL, the customer must be defined as allowing shared UC applications.

Each NDL can contain one instance each of the available devices. For example, for Cisco, one of each of the following: CUCM, CUC, Cisco WebEx.

---

**Note:** UC application clusters are linked to a customer only once the NDL is created.

---

### 6.2.1. Network Device Lists at Sites

The following rules apply to NDLs, network devices, and device models at site hierarchies:

For a site which references a NDL, device models cannot exist at this site if these belong to a network device not referenced in the NDL.

Therefore:

1. A device model from a device cannot be added to it if it has a NDL referencing a different device.
2. A NDL cannot be added to it if it has device models that references a different network device than the one referenced in the NDL.

### 6.2.2. Choosing a Network Device List (NDL)

If an administrator at a hierarchy has access to more than one NDL, the option to choose a specific hardware group or list may be needed in order to provision a set of devices.

The Rule Model Device Selection Type model solves this problem, and instances of it are a set of rules for views and relations at a hierarchy level. A particular NDL can then be selected from a popup form before the Add form of these model types are shown. In this way, the administrator can then select the specific required NDL.

When an instance of the Rule Model Device Selection Type model is added, the target relation or view is specified and more than one set rules can be added for it - one for each relevant Hierarchy Node Type.

In addition, a default GUI Rule that is applied to the Relation or View is reflected as the default value for the Permitted Hierarchy Node Type.

In addition to this behavior, these rules apply:

- The NDL popup is only available for Relations and Views.
- Device form fields are filtered according to the device listed in the selected NDL.
- More than one type of device is supported for the selected NDL.
- Any Provisioning Workflow Network Device Filters (NDF) override a selected NDL device choice.
- Only the Add operation supported.
- For details on NDL popups, refer to the topic on Network Device List Selection Rules Advanced Configuration in the Advanced Configuration Guide.

### 6.2.3. Add a Network Device List (NDL)

This procedure adds a new network device list (NDL).

1. Log in as a provider or reseller administrator.
2. Go to (default menus) **Customer Management > Network Device Lists**.
3. Choose a customer on the hierarchy tree where the NDL is to be created.
4. Click **Add**.
5. Enter a name for the NDL, and optionally a description.
6. For each available network device that you wish to add to the NDL:
  - Click the Plus (+) to display the search field.
  - Click the down-arrow at the search field to select the reference instance.

---

**Note:** For CUCM and CUC, only publisher nodes display in the drop-downs.

---

- Click **Save**.



### 6.2.4. Edit or Delete a Network Device List (NDL)

Once you've assigned a NDL to any site, you can't delete it; you can only make the following changes:

- The NDL name can be changed.
- The NDL description can be changed.
- New devices can be added.

Deleting an unassigned NDL does not remove the associated customer dial plans or the assigned UC apps.

#### Related Topics

- Automate Configuration and Sync in the Core Feature Guide

## 6.3. CUCM Group Selection

Provider level administrators can manage the Default CUCM Group setting in a customer's Site Defaults:

- The least utilized Group can be calculated, in other words the group with the least number of phones can automatically be determined.

In this case, the administrator can set the Default CUCM Group in the customer's Site Defaults to automatically be the least utilized group so that CUCM Groups are optimally assigned whenever a site is created.

- The current device utilization of customer CUCM Groups can be inspected. Device utilization is calculated by inspection of the Device Pools that belong to a CUCM Group of a CUCM cluster and the number of Phones in these Device Pools.

The administrator can therefore inspect the CUCM Group counts and then choose a Default CUCM Group to be the Default CUCM Group in the customer's Site Defaults.

High level administrators carry out these tasks from the **Customer Management > Advanced > CUCM Group Selection** and **CUCM Group Counts** menus.

### 6.3.1. Select a CUCM Group

1. Log in as a Provider administrator and select **Customer Management > Advanced > CUCM Group Selection**.
2. The list of existing CUCM Group Selection configurations at the Provider hierarchy are listed.  
Click **Add** to create a configuration. A hierarchy pop-up will show to choose the customer hierarchy at which the configuration should apply.
3. Choose a Name for the configuration. The default name is the hierarchy name.
4. Choose an Algorithm to apply to the CUCM Group Selection:
  - If Use Default is selected, the Site Defaults doc is updated if necessary so that the Default CUCM Group is applied.

Note: The CUCM Group called Default is always used when adding a Site unless the “Least utilized” algorithm has been selected. Default will also be the fallback CUCM Group in the event that all CUCM Groups have been excluded from the selection.

- If Least utilized CUCM Group is selected from the Algorithm drop-down, options are available to include and exclude specific CUCM groups from the algorithm.
  - If no groups are included or excluded, *all* groups available at the customer hierarchy are considered by the algorithm.
  - If groups are added to the CUCM Groups to Include, only these groups are considered by the algorithm.
  - If groups are added to the CUCM Groups to Exclude, these groups are not considered by the algorithm, *unless* they have also been added to the Groups to Include.

The table below summarizes the options and outcomes:

Group Selection	Algorithm	Include List	Exclude List	Result	Comment
No	Use Default	N/A	N/A	Default	Falls back to Default always
Yes	Use Default	None	None	Default	
Yes	Least utilized	None	None	Least utilized	
Yes	Least utilized	Yes	None	Least utilized	From the groups in the included list.
Yes	Least utilized	None	Yes	Least utilized	Least utilized from all groups except in the exclude list.
Yes	Least utilized	Yes	Yes	Least utilized	From the groups in the included list. Note that the exclude list will be ignored in this case.

5. Click **Save** to save the configuration for the customer hierarchy. When a new site is created, the Default CUCM Group in the Site Defaults Doc is updated to reflect the configuration, so that any sites that are now created under this customer hierarchy will apply the calculated CUCM Group.

Note that an administrator can override this calculated CUCM Group by manually updating the Site Defaults Doc.

## 6.4. CUCM Group Counts

1. Log in as a Provider administrator and choose **Customer Management > Advanced > CUCM Group Counts**.
2. From the **CUCM** drop-down, choose a CUCM instance to show the CUCM Group counts for.
3. The **CUCM Group counts** field shows all CUCM groups and the count of devices in the format: `<group_name>[*<count>]`.

If a CUCM Group has no device pool, in other words it has no devices, the group shows as `<group_name>[0 no device pools]`.

The administrator can use the CUCM Group Count data to inspect CUCM Group utilization at a customer, or to choose a Default CUCM Group that will be assigned to a customer's Site Defaults Doc.

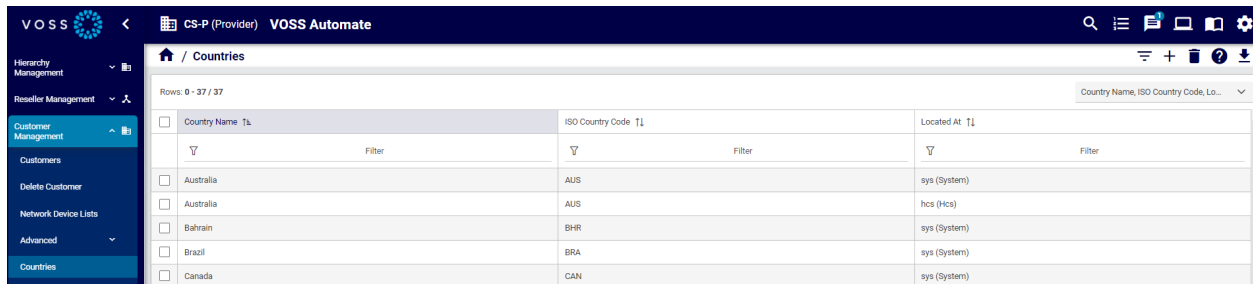
**Note:** Group Counts values are Phone counts per Device Pool per CUCM Group.

## 6.5. Countries

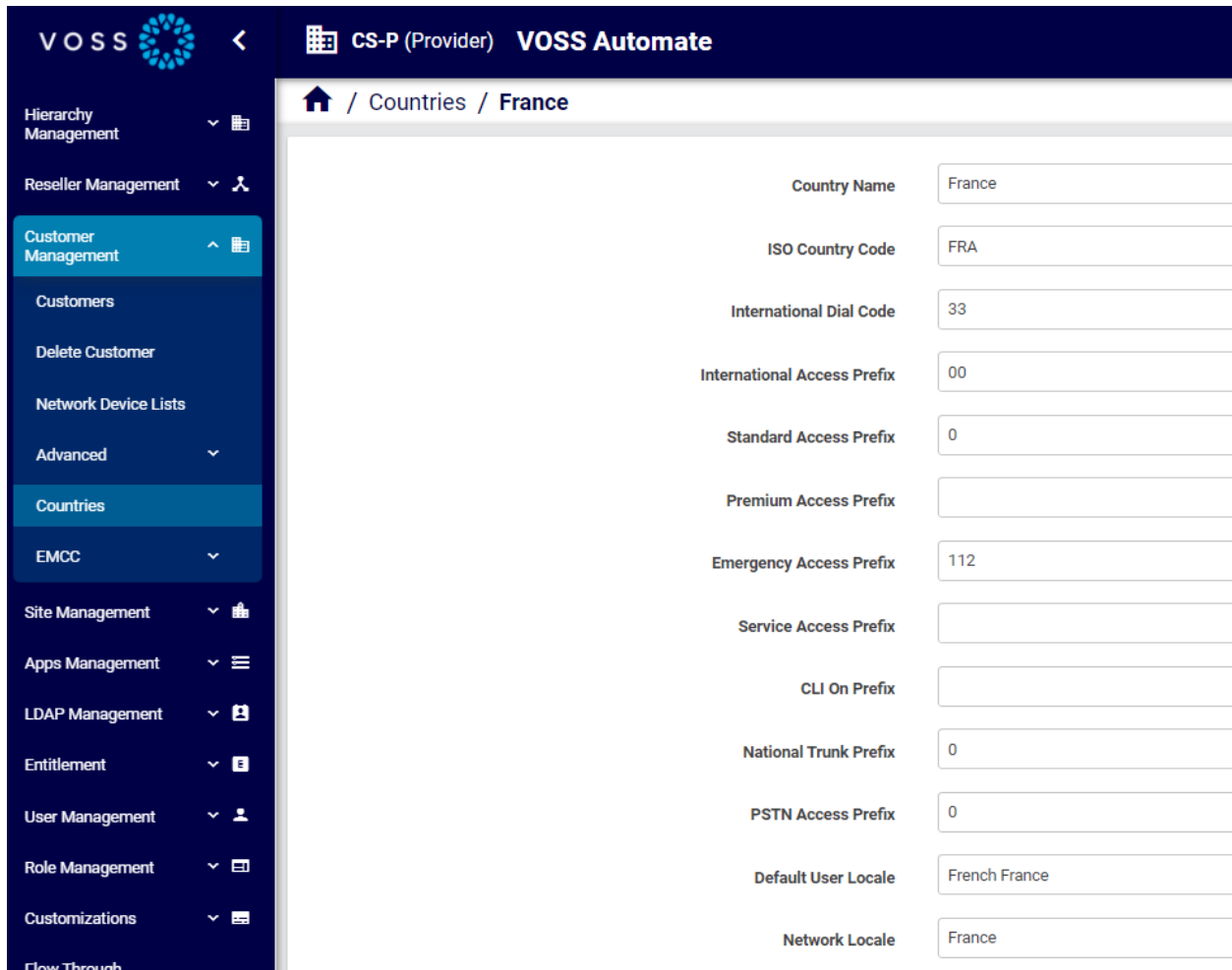
The **Countries** page in VOSS Automate allows you to view, add, or delete country data for your system. This page displays details such as country codes, international dial codes, access prefixes, and network and user locale information.


You can add, update, or delete country data, perform bulk actions (such as bulk delete, or export the list), and filter data by country name, ISO country code, and located at (hsc or system).

To access this page, go to **Customer Management > Countries**.



Country Name	ISO Country Code	Located At
Australia	AUS	sys (System)
Australia	AUS	hcs (Hcs)
Bahrain	BHR	sys (System)
Brazil	BRA	sys (System)
Canada	CAN	sys (System)



VOSS  < CS-P (Provider) VOSS Automate

Home / Countries / France

Country Name	<input type="text" value="France"/>
ISO Country Code	<input type="text" value="FRA"/>
International Dial Code	<input type="text" value="33"/>
International Access Prefix	<input type="text" value="00"/>
Standard Access Prefix	<input type="text" value="0"/>
Premium Access Prefix	<input type="text"/>
Emergency Access Prefix	<input type="text" value="112"/>
Service Access Prefix	<input type="text"/>
CLI On Prefix	<input type="text"/>
National Trunk Prefix	<input type="text" value="0"/>
PSTN Access Prefix	<input type="text" value="0"/>
Default User Locale	<input type="text" value="French France"/>
Network Locale	<input type="text" value="France"/>

## 6.6. Extension Mobility Cross Cluster (EMCC)

### 6.6.1. Introduction to EMCC

#### Overview

Extension Mobility Cross Cluster (EMCC) extends VOSS Automate's current extension mobility functionality to allow a user to log in to a device from within a connected cluster, anywhere in the world. This allows the user to retain the settings, services, and lines they're familiar with at their home location.

VOSS Automate automates most of the EMCC provisioning to enable this feature to work on all dial plans across multiple Cisco Unified Communications Manager (CUCM) clusters that are managed by the same platform instance. A small number of manual configurations remain, specifically around network security, which is outlined in a separate section. VOSS Automate only automates provisioning of the home cluster in cases where the CUCM clusters are managed by separate platforms, that is, cross-cluster configuration across multiple platforms is not supported.

## EMCC Use Case

The table describes a scenario where a user from the HOME cluster goes to the VISITING cluster and logs on to a phone. The two clusters can be in different countries/territories. The cluster is EMCC-enabled. The user is also subscribed to the EMCC service.

In this scenario:

- The user cannot be authenticated in the VISITING cluster, but since the cluster is EMCC enabled, and the phone is subscribed to the EMCC service, the cluster searches for the user in defined EMCC remote clusters.
- Once the user (also subscribed to the EMCC service) is authenticated, the phone is unregistered from the VISITING cluster, and re-registered to the HOME cluster.
- The geolocation of the phone is sent to the HOME cluster, which allows the HOME cluster to associate the relevant roaming device pool to the user's phone using the geolocation filter.
- The phone behaves and dials exactly the same as if the user is logged in at the HOME cluster. Additionally, all the user's settings and preferences are preserved.
- Calls to the HOME cluster emergency numbers as well as the VISITING cluster emergency numbers break out at the VISITING cluster (physical location).

### Note:

- Various other elements (such as trunks and EMCC countries) must be configured on both the HOME cluster and the VISITING cluster to ensure that this feature works.
- Refer to the "Cisco Unified Communications Manager Features and Services Guide" for more information about the EMCC feature.

HOME Cluster	VISITING Cluster
User Profile	Phone (with Geolocation)
Geolocation Filter	
Roaming Device Pool (with Geolocation)	

## Configuring EMCC using VOSS Automate

Before configuring EMCC using VOSS Automate, ensure that the following parameters have already been configured on each required EMCC cluster (CUCM) located at the relevant Customers:

- EMCC feature configuration, such as Default TFTP Server for EMCC Login Device, EMCC Geolocation Filter

## 6.6.2. EMCC Groups

### Overview

An Extension Mobility Cross Cluster (EMCC) group is a collection of clusters and countries that essentially forms an 'EMCC Cloud', which determines the specific clusters between which a user can roam.

---

**Note:** A cluster can only be included in one group.

---

EMCC groups typically cater for situations where all the clusters are in different countries, and are managed by the same platform instance. To support multiple clusters in the same country, you need to refine the geolocations and geolocation filters to uniquely identify the clusters in the default provisioning of country. This is supported by using the home cluster setup for each of the clusters in the group.

The EMCC Group screen allows a provider administrator to add or remove clusters and countries to or from an EMCC group, or to modify/delete an existing EMCC Group.

### Add an EMCC Group

When adding an EMCC Group, the cluster the user is on when taking this action is automatically selected/included in the new group.

#### Prerequisites:

- Create the required route patterns. See [Add EMCC Route Pattern](#).

#### Perform these steps:

1. Log in as Provider administrator or higher.
2. Choose **Customer Management > EMCC > EMCC Group**.
3. Click **Add**.
4. Choose the required customer from the **Hierarchy** drop-down list.
5. On the **EMCC Group** screen, enter the mandatory EMCC Group Name in the **Name** field.
6. Choose the required CUCM Clusters and Countries to include in the EMCC Group by selecting single or multiple entries in the **Available** areas of the screen, and then clicking **Select** to move them to the **Selected** area of the screen. Use the Remove, Move Up and Move Down buttons as required to assist in creating the EMCC Group. An EMCC Group **must contain** a minimum of two clusters.
7. Ensure that the required CUCM Clusters and Countries are listed in the CUCM Clusters and Countries areas of the screen respectively.
8. Click **Save** to add the EMCC group to VOSS Automate.

Once the EMCC Group is created, the following elements are provisioned per country and EMCC route pattern:

- Route list
- Geolocation filter
- SIP profile
- IP phone services
- SIP trunk

- Geolocation
- Route partition
- CSS
- Device pool
- Route pattern

### Modify an EMCC Group

1. Log in as Provider administrator or higher.
2. Choose **Customer Management > EMCC > EMCC Group**.
3. Click on the EMCC Group that you want to modify.
4. On the **EMCC Group** screen, add or remove the CUCM Clusters and Countries within the EMCC Group by selecting single or multiple entries in the **Available** or **Selected** areas of the screen, and then clicking **Select** or **Remove** to include or exclude them from the group as required. Use the Move Up and Move Down buttons as required to assist in creating the EMCC Group.
5. Click **Save** to save the modified EMCC group to the VOSS Automate database.

### Delete an EMCC Group

To delete an EMCC Group, click on the Group to delete on the EMCC Group screen and then click **Delete** on the button bar.

## 6.6.3. EMCC Route Patterns

### Add EMCC Route Pattern

1. Log in as provider administrator or higher.
2. Make sure that the hierarchy path is set to the correct customer node.
3. Choose **Customer Management > EMCC > EMCC Route Patterns**.
4. Click **Add** to add an EMCC Route Pattern. The **EMCC Route Patterns** screen is displayed.
5. Enter the following fields as required:
  - a. **Country**. Choose the relevant ISO country code from the drop-down list.
  - b. **Pattern**. Enter the route pattern, including numbers and wild cards. Do **not** use spaces in your route pattern.
  - c. **Called Party Transformation Mask**. Enter a transformation mask value. Valid entries include digits 0 to 9, the wild card character X. Note that if this field is left blank, no calling party transformation takes place.
6. Click **Save** when complete to add the EMCC Route Pattern.

### Modify EMCC Route Pattern

1. Log in as provider administrator or higher.
2. Make sure that the hierarchy path is set to the correct customer node.
3. Choose **Customer Management > EMCC > EMCC Route Patterns**.
4. Click the EMCC Route Pattern that you want to modify.
5. Update the following fields as required:
  - a. **Country**. Choose the relevant ISO country code from the drop-down list.
  - b. **Pattern**. Enter the route pattern, including numbers and wild cards. Do **not** use spaces in your route pattern.
  - c. **Called Party Transformation Mask**. Enter a transformation mask value. Valid entries include digits 0 to 9, the wild card character X. Note that if this field is left blank, no calling party transformation takes place.
6. Click **Save** when complete to save the changes to the EMCC Route Pattern.

### Delete EMCC Route Pattern

To delete an EMCC Route Pattern, click on the pattern to delete on the **EMCC Route Patterns** list view, and then click **Delete** on the button bar.

## 6.6.4. EMCC Templates

Extension Mobility Cross Cluster (EMCC) templates allow you to define the common EMCC attributes to add a group of new EMCC.

### Related Topics

- [Configuration Templates](#)

### Clone and Add EMCC Template

#### Prerequisites:

- Before creating the template, ensure the EMCC settings are already configured in Cisco Unified Communications Manager (CUCM) Administration.

#### Perform these steps:

1. Log in as Provider administrator or higher.
2. Set the hierarchy path to the correct customer or location node.
3. Choose **Customer Management > EMCC Templates**.
4. Click on the EMCC Template from which you want to create a new EMCC Template.
5. Click **Action > Clone**. The selected EMCC Template is cloned. See also [Configuration Templates](#) for more information.
6. (Mandatory) Enter a new **Name** for the EMCC Template.



7. Edit existing fields, and add new fields as required.
8. Click **Save** to add the EMCC Template.

### Modify EMCC Template

1. Log in as Provider administrator or higher.
2. Set the hierarchy path to the correct customer or location node.
3. Choose **Customer Management > EMCC Templates**.
4. Click on the EMCC Template that you want to edit. See also *Configuration Templates* for more information.
5. Edit and add the required fields, making sure that all mandatory fields are complete.
6. Click **Save** to save the modified EMCC Template.

### Delete an EMCC Template

To delete an EMCC Template, click on the template to delete on the EMCC Templates list view, and then click **Delete** on the button bar.

## 7. Site Management

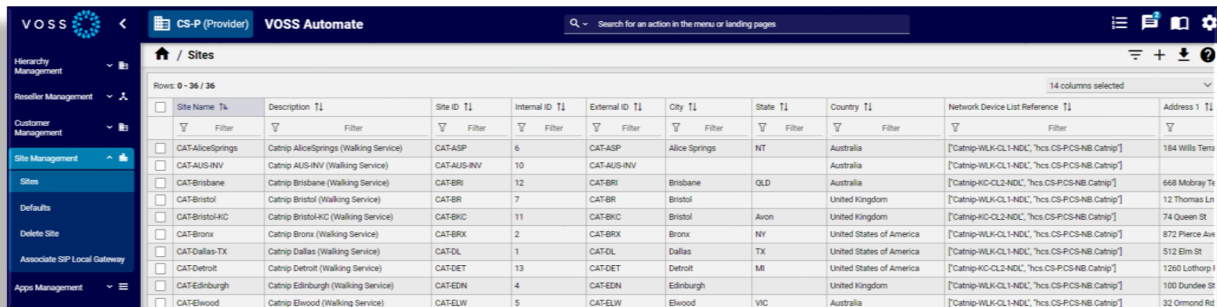
### 7.1. Manage Sites

#### 7.1.1. Overview

Sites are a node on the hierarchy (organization) structure of VOSS Automate.

#### Related Topics

- [Site Defaults Doc Templates](#)
- [Site Defaults](#)
- [Introduction to Hierarchies](#)



Site Name T1	Description T1	Site ID T1	Internal ID T1	External ID T1	City T1	State T1	Country T1	Network Device List Reference T1	Address T1
<input type="checkbox"/> CAT-AliceSprings	Catrip AliceSprings (Walking Service)	CAT-ASP	6	CAT-ASP	Alice Springs	NT	Australia	[Catrip-WLK-CL1-NDC, Tics-CS-FCS-NB.Catrip]	184 Wills Tern
<input type="checkbox"/> CAT-AUS-INV	Catrip AUS-INV (Walking Service)	CAT-AUS-INV	10	CAT-AUS-INV			Australia	[Catrip-WLK-CL1-NDC, Tics-CS-FCS-NB.Catrip]	
<input type="checkbox"/> CAT-Brisbane	Catrip Brisbane (Walking Service)	CAT-BRI	12	CAT-BRI	Brisbane	QLD	Australia	[Catrip-WLK-CL2-NDC, Tics-CS-FCS-NB.Catrip]	668 Mobrai Tr
<input type="checkbox"/> CAT-Bristol	Catrip Bristol (Walking Service)	CAT-BR	7	CAT-BR	Bristol		United Kingdom	[Catrip-WLK-CL1-NDC, Tics-CS-FCS-NB.Catrip]	12 Thomas Ln
<input type="checkbox"/> CAT-Bristol-KC	Catrip Bristol-KC (Walking Service)	CAT-BKC	11	CAT-BKC	Bristol	Avon	United Kingdom	[Catrip-WLK-CL2-NDC, Tics-CS-FCS-NB.Catrip]	74 Queen St
<input type="checkbox"/> CAT-Bronx	Catrip Bronx (Walking Service)	CAT-BRX	2	CAT-BRX	Bronx	NY	United States of America	[Catrip-WLK-CL1-NDC, Tics-CS-FCS-NB.Catrip]	872 Pierce Ave
<input type="checkbox"/> CAT-Dallas-TX	Catrip Dallas (Walking Service)	CAT-DL	1	CAT-DL	Dallas	TX	United States of America	[Catrip-WLK-CL1-NDC, Tics-CS-FCS-NB.Catrip]	512 Elm St
<input type="checkbox"/> CAT-Detroit	Catrip Detroit (Walking Service)	CAT-DET	13	CAT-DET	Detroit	MI	United States of America	[Catrip-WLK-CL2-NDC, Tics-CS-FCS-NB.Catrip]	1260 Lothrop P
<input type="checkbox"/> CAT-Edinburgh	Catrip Edinburgh (Walking Service)	CAT-EDN	4	CAT-EDN	Edinburgh		United Kingdom	[Catrip-WLK-CL1-NDC, Tics-CS-FCS-NB.Catrip]	100 Dundee St
<input type="checkbox"/> CAT-Elwood	Catrip Elwood (Walking Service)	CAT-ELW	5	CAT-ELW	Elwood	VIC	Australia	[Catrip-WLK-CL1-NDC, Tics-CS-FCS-NB.Catrip]	32 Ormond Rd

#### 7.1.2. Create a Site

This procedure creates a site.

**Note:** The following additional fields display as summary fields:

- City
- Postal Code
- State
- Extended Name
- External ID

- SiteId
- InternalSiteID(Disabled)

1. Log in as either provider, reseller, or customer admin.
2. Set the hierarchy to the customer where you're creating the site.
3. Go to (default menus) **Site Management > Sites** to open the **Sites** page.
4. Click **Add**, then fill out the following fields:

Option	Description
Site	The name of the site. This field is mandatory. Note: Any spaces in the site name are converted to underscores in the site local administrator name and email, if the <b>Create Local Admin</b> check box is selected. You cannot migrate a customer location to a site if the customer for the site is different than the customer associated with the customer location. When migrating a customer location to a site, an NDL is not selected for the site. You can set the NDL for the site later.
Description	A description for the site
Extended Name	Provider deployments. External clients can use the extended name of the site if needed. This field is not used by other components within Cisco HCS.
External ID	Provider deployments. External clients can use the External ID of the site if needed. This field is not used by other components within Cisco HCS.
Create Local Admin	Defines whether a default local administrator is created for the site.

Option	Description
Cloned Admin Role	The customer role used to create a new role prefixed with the site name. The created site role, shown in the <b>Default Admin Role</b> field, is assigned to the default local administrator user. This field appears only if the <b>Create Local Admin</b> check box is selected.
Default Admin Role	The created site role that is assigned to the default local administrator. This field is read-only and appears only if the <b>Create Local Admin</b> check box is selected.
Default Admin Password	The password to assign to the default local administrator. This field appears only if the <b>Create Local Admin</b> check box is selected.
Repeat Default Admin Password	Confirm the default local administrator password. This field appears only if the <b>Create Local Admin</b> check box is selected.
Country	The country is used to determine which dial plan to download to the site when the dial plan is configured on the site. This field is mandatory.
Network Device List	Choose the NDL containing the UC applications and WebEx to be used by the site. Once an NDL has been set for the site, it cannot be removed from the site, nor can the NDL be changed to another NDL.
Auto Push Users to CUCM	Disabled by default. When enabled, users are automatically pushed to the CUCM associated with the NDL at the site. You can also edit the site after it's been created: <ul style="list-style-type: none"> <li>• To automatically push users at the site to the CUCM.</li> <li>• To execute auto push to CUCM when an NDL (with a CUCM) is added to the site.</li> <li>• To execute auto push to CUCM when a CUCM is associated with the NDL at the site.</li> </ul>

5. Click **Save**.

- A Site hierarchy node is created.
- A location is created.
- Optionally, a default site administrator is created.
- If **Auto Push Users to CUCM** is selected:
  - All users associated with the NDL, provided they are user type *End User*, are pushed to the CUCM associated with the NDL.
  - A user's surname is required by the CUCM and must be set for that user to be successfully pushed to the CUCM.
  - A Cisco user is created when onboarding Cisco users but not when onboarding Microsoft or Webex users (for sites with this setting enabled).

### 7.1.3. Add Custom Fields to Site Configuration Screens

VOSS Automate allows you to add up to ten custom string fields and up to 10 custom boolean fields to the field display policy you apply to the Site model (*relation/HcsSiteREL*). This provides flexibility to add additional details for a site, if required.

The summary attributes in the **Sites** list view always display three Boolean fields and three String fields, regardless whether they've been included in the FDP. If you wish to change the title of these fields in the summary attributes you can add a field override entry in the FDP.

When configuring a site (add or update), you may specify field values or use named macros to populate values for these fields.

Macros for custom string fields for relation/HcsSiteREL:

- macro.BaseSiteDAT\_custom\_string\_1
- macro.BaseSiteDAT\_custom\_string\_2
- macro.BaseSiteDAT\_custom\_string\_3
- macro.BaseSiteDAT\_custom\_string\_4
- macro.BaseSiteDAT\_custom\_string\_5
- macro.BaseSiteDAT\_custom\_string\_6
- macro.BaseSiteDAT\_custom\_string\_7
- macro.BaseSiteDAT\_custom\_string\_8
- macro.BaseSiteDAT\_custom\_string\_9
- macro.BaseSiteDAT\_custom\_string\_10

Macros for custom boolean fields for relation/HcsSiteREL:

- macro.BaseSiteDAT\_custom\_boolean\_1
- macro.BaseSiteDAT\_custom\_boolean\_2
- macro.BaseSiteDAT\_custom\_boolean\_3
- macro.BaseSiteDAT\_custom\_boolean\_4
- macro.BaseSiteDAT\_custom\_boolean\_5
- macro.BaseSiteDAT\_custom\_boolean\_6
- macro.BaseSiteDAT\_custom\_boolean\_7
- macro.BaseSiteDAT\_custom\_boolean\_8
- macro.BaseSiteDAT\_custom\_boolean\_9
- macro.BaseSiteDAT\_custom\_boolean\_10

The macros can be applied in workflows and configuration templates to reference the custom field values. For example, executing *macro.BaseSiteDAT\_custom\_string\_9* will return the value in the field where the macro is used.

### To expose custom fields for *relation/HcsSiteREL*

1. Log in to VOSS Automate as Provider admin or higher.
2. Create or update the Customers data model field display policy:
  - Go to (default menus) **Customization > Field Display Policies**, and locate the entry for target model type *relation/HcsSiteREL*.
  - Click on the default field display policy (FDP) for the model (the FDP named *default*).
  - Clone (copy) the default FDP for the model, and give the clone a new name.

---

**Note:** You cannot modify default FDPs that ship with the system. This allows you to refer to or revert to a system default at any time, if required.

---

- Modify the new FDP (the clone).

---

**Note:** You can add a new group of fields containing only the new custom fields, or add fields to existing field groups.

You can also create field overrides, which allow you to define that a custom field value will be referenced in place of an existing field.

---

- Save your changes.

3. Update the menu layout to apply the field display policy:
  - Go to (default menus) **Role Management > Menu Layouts**, and locate the Provider admin menu layout (HcsProviderMenu).
  - Click on **HcsProviderMenu**, and create a clone with a new name.

---

**Note:** You cannot modify default menu layouts that ship with the system. This allows you to refer to or revert to a system default menu layout at any time, if required.

---

- Modify the clone (copy) of **HcsProviderMenu**:
  - Expand the **Site Management** menu.

- At **Sites**, click in the **Field Display Policy** cell, and choose the FDP you configured to add the custom fields.
  - Save your changes.
4. Log out, then log in again as Provider admin.

This allows the role-based access profile changes to refresh so that you can view the updated menu layouts and field display policies you applied, including new custom fields.

## 7.2. Site Defaults Doc Templates

When a provider hierarchy is created in VOSS Automate, a workflow creates a default Site Defaults Doc Template (SDD template) called `PROVIDER_TEMPLATE` at the provider level.

The data in this template is in turn used to generate a customer-level default SDD template called `CUSTOMER_TEMPLATE` for each customer added to the system under the respective provider hierarchy.

When creating a site, a SDD instance is created on the site using the `CUSTOMER_TEMPLATE`. The site level SDD is useful for managing multi-site, multi-country customers and allows a provider administrator (or higher) to define geo-specific information at a site level, allowing multinational sites to stay in sync.

The site level SDD has the same name as the new site, and is also pre-populated with several default values. Site level SDDs provide the default values for several of the tasks performed during onboarding.

For Provider deployments, when creating a Cisco HCS site dial plan, the site defaults on the site are updated with dial-plan-related attributes that are affected by the deployed site dial plan. Any related existing values are overwritten. When the site dial plan is removed, these values are reset (set to empty) in the site defaults.

Administrators with the required permissions can modify the `PROVIDER_TEMPLATE` and `CUSTOMER_TEMPLATE` SDD templates as required in order to customize SDD settings in the template during the creation of lower level SDDs and SDD templates. The default SDD templates are shown in the list view of the **Site Defaults** menu.

### Related Topics

- [Site Defaults](#)

## 7.3. Site Defaults

### 7.3.1. Overview

Site defaults provide the default values for several of the tasks performed during onboarding. When creating a site, a site defaults instance is created on the site, having the same name as the new site, and pre-populated with several default values.

For Provider deployments, when creating a Cisco HCS site dial plan, the site defaults on the site are updated with dial-plan-related attributes that are affected by the deployed site dial plan. Any related existing values are overwritten. When the site dial plan is removed, these values are reset (set to empty) in the site defaults.

The Site Defaults Doc (SDD) is useful for managing multi-site, multi-country customers. A SDD allows a Provider administrator (or higher) to define geo-specific information at a site level, allowing multinational sites to stay in sync.

Geo-specific information includes CUCM user-locale and network-locale defaults, as well as the CUC time zone and language defaults.

Site defaults may also be used to include a site for the overbuild, a VOSS Automate process that syncs in users, and which may include moving users to sites (based on model filter criteria chosen for the site defaults), and assigning services to subscribers at the sites (when flow through provisioning is enabled).

### 7.3.2. Configure Site Defaults

This procedure displays and updates site defaults.

1. Log in to VOSS Automate (Admin Portal), as Provider, Reseller, or Customer administrator.
2. Go to (default menus) **Site Management > Defaults** to open the **Defaults** page; then, select the relevant site to open the **Defaults[site name]** page.
3. Click through the tabs on the Defaults page to modify site default values - refer to the Defaults Page section below.
4. Save your changes.

---

**Note:**

- Field descriptions for the tabs on this screen are documented below.
- Note that the SDD also contains ten custom string fields and ten custom boolean fields, which are, by default, untitled and hidden:
  - custom\_string\_1 to custom\_string\_10
  - custom\_boolean\_1 to custom\_boolean\_10

To enable and use these fields, higher-level administrators can modify the field display policy (FDP) for the SDD (at a specific hierarchy). Once the fields are available, designers can reference the fields in custom configuration templates and workflows.

---

#### Related Topics

- Site Defaults Doc Templates in the Core Feature Guide.

### 7.3.3. Defaults Page

On the Defaults page (**Site Management > Defaults**) you can view and edit a site's default settings (the site defaults document, or SDD).

You can select the following tabs on this page:

- [General Defaults Tab](#)
- [Device Defaults Tab](#)
- [Line Defaults Tab](#)
- [User Defaults Tab](#)
- [CUC Defaults Tab](#)



- [HotDial Defaults Tab](#)
- [Overbuild Defaults Tab](#)
- [Move Filter Criteria Tab](#)
- [MS Teams Tab](#)
- [Webex Tab](#)

### General Defaults Tab

Option	Default Value
Name	Mandatory. The same name as the site. Only one instance of site defaults exists for a site.
Default CUCM Device Pool	Cu{CustomerId}Si{SiteId}-DevicePool
Default CUCM Location	Cu{CustomerId}Si{SiteId}-Location
Default CUCM Region	Cu{CustomerId}Si{SiteId}-Region
Default CUCM Date/Time Group	CMLocal For Provider deployments, choose from the drop-down list.
Default User Locale	The user locale identifies a set of detailed information to support users at the specific location, including language and font. Choose the required user locale from the drop-down list, which contains all user locales available on the CUCM at the selected location.
Default Network Locale	The network locale contains a definition of the tones and cadences that the phones and gateways use at the specific location. Choose the required network locale from the drop-down list, which contains all network locales available on the CUCM at the selected location.
Default User Profile (for User Self Provisioning)	Choose from the drop-down list.
Default CUCM Hunt Pilot Partition	Cu{CustomerId}Si{SiteId}-Feature-PT
Default CUCM Call Pickup Partition	Cu{CustomerId}Si{SiteId}-Feature-PT
Default CUCM Call Park Partition	Cu{CustomerId}Si{SiteId}-Feature-PT
Default CUCM MeetMe Partition	Cu{CustomerId}Si{SiteId}-Feature-PT
Default CUCM Group	Defined via a macro in the CUSTOMER_TEMPLATE and the algorithm chosen for CUCM Group selection, either <i>Least Utilized</i> or <i>Default</i> . See CUCM Group Selection in the Core Feature Guide for details.

## Related Topics

- CUCM Group Selection in the Core Feature Guide.
- Configure CUCM Groups in the Provider HCS Dial Plan Management Support Guide.

## Device Defaults Tab

Values on the **Device Defaults** tab are applied to the configuration template associated with adding a subscriber (SubscriberPhonePrePopulate).

Option	Default Value
Default CUCM Phone Product	Cisco 9971
Default CUCM Phone Protocol	SIP
Default CUCM Phone Button Template	Standard 9971 SIP
Default CUCM Phone Security Profile	Cisco 9971 - Standard SIP Non-Secure Profile
Default CUCM Phone Softkey Template	Standard User
Default CUCM Phone SIP Profile	Standard SIP Profile
Default CUCM Phone Presence Group	Standard Presence Group
Default CUCM Phone Common Profile	Standard Common Phone Profile
Default CUCM Phone Line E164 Mask	Enter a E164 mask value that will be applied as a default when devices have not been configured with static values.
Default CUCM Device CSS	Cu{CustomerId}Si{SiteId}-{countryIsoCode}- DP-Emer-CSS
Default CUCM User Subscribe CSS	Internal-CSS
Default CUCM Phone Subscribe CSS	Cu{CustomerId}Si{SiteId}-InternalOnly-CSS
Default CUCM Device Profile Product	Cisco 9971
Default CUCM Device Profile Protocol	SIP When adding a phone (or when choosing a phone for a subscriber), the phone type you choose must support the protocol you wish to use (SIP or SCCP). If the phone type does not support the protocol, the protocol defaults to the protocol value set up in the site defaults (if the phone type supports the default protocol).
Default CUCM Device Profile Button Template	Standard 9971 SIP

Option	Default Value
Default CUCM Device Profile Line E164 Mask	None. Enter a E164 mask value that will be applied as a default when devices have not been configured with static values.
Default CUCM Device Profile EMCC CSS	None
Default CUCM Remote Destination Profile CSS	None
Default CUCM Remote Destination Profile ReRouting CSS	None
Default CUCM Remote Destination Profile Line E164 Mask	None. Enter a E164 mask value that will be applied as a default when devices have not been configured with static values.
Use National Mask Format	<p>When this check box is selected, the E164 Mask will use the National format of the associated E164 Number.</p> <p>For example, if the E164 Number has been added in the format +44 1234 5000, and this check box is selected, the E164 Mask on the device will have the International Dialing Code prefix removed e.g. +44, and a '0' will be prefixed to the number e.g. 012345000.</p> <p>Note: For Quick Add Subscriber, set the following value in the <b>E164 Mask</b> field of the relevant phone, device profile and remote destination profile configuration template <code>{{ macro.SDD_QAS_E164Number_MCR }}</code>. See the "Reference CUCM Phone Template" CFT for an example configuration.</p>

### Line Defaults Tab

Values on the **Line Defaults** tab are applied to the configuration template associated with adding a line (line-cft).

Option	Default Value
Default CUCM Line BLF Presence Group	Standard Presence Group
Default CUCM Line Voice-mail Profile	None
Default CUCM Line Partition	
Default CUCM Line Alternate E164 Partition	None
Default CUCM Line CSS	Cu{CustomerId}Si{SiteId}-InternalOnly-CSS
Default CUCM Line Call Forward CSS	Internal-CSS
Default CUCM Line Call Forward No Answer CSS	Internal-CSS
Default CUCM Line Call Forward All CSS	Internal-CSS
Default CUCM Line Call Forward No Answer Internal CSS	Internal-CSS
Default CUCM Line Call Forward Busy CSS	Internal-CSS

Option	Default Value
Default CUCM Line Call Forward Busy Internal CSS	Internal-CSS
Default CUCM Line Call Forward No Coverage CSS	Internal-CSS
Default CUCM Line Call Forward No Coverage Internal CSS	Internal-CSS
Default CUCM Line Call Forward On Failure CSS	Internal-CSS
Default CUCM Line Call Forward On Failure Internal CSS	Internal-CSS
Default CUCM Line Call Forward Not Registered CSS	Internal-CSS
Default CUCM Line Call Forward Alternate Party CSS	CU1-DummyBlk-CSS
Default CUCM Line Call Forward Secondary CSS	Internal-CSS

### User Defaults Tab

Option	Default Value
Default System User Role	{SiteName}SelfService
Default CUCM User BLF Presence Group	Standard Presence group
Default CUCM Service Profile	None
Default Self-service Language	Choose from the drop-down list of installed Self-service languages. Default is English (en-us).

**Note:** When selecting the **Default System User Role**, the selection options include roles where the **Hierarchies Allowed** list includes sites.

See the topic called Add and Edit Roles in the Core Feature Guide.

### CUC Defaults Tab

For more information about the settings on this tab, see:

Cisco Unity Connection Localization in the Core Feature Guide.

Option	Default Value
Default CUC Phone System	This field is populated by the Voice Mail workflow when a Voice Mail pilot number is associated with a site. Likewise, the field is reset (Empty) when the Voice Mail pilot number is disassociated from a site.
Default CUC Subscriber Template	This field is populated by the Voice Mail workflow when a Voice Mail pilot number is associated with a site. Likewise, the field is reset (Empty) when the Voice Mail pilot number is disassociated from a site.
Default CUC HTML Notification Template	Default_Dynamic_Icons
Default CUC SMPP Provider	None
Default CUC TimeZone	None. Choose from the drop-down list, for example: GMT-05:00-America-New_York. The timezones available in this drop-down are those added in <b>Services &gt; CUC Localization &gt; CUC TimeZone Filters</b> (see cross reference below). You can also manually enter a valid timezone index value in this field, for example 035 for (GMT-05:00) Eastern Time (US and Canada). Note that the code entered must already be installed on the CUC server associated to this site.
Default CUC Language	None. Choose from the drop-down list, for example: English-US. The languages available in this drop-down are those in <b>Services &gt; CUC Localization &gt; CUC Language Filters</b> (see cross reference below). You can also manually enter a valid Locale ID (LCID) value for the language in this field, for example 1036 for French - France. Note that the code entered must already be installed on the CUC server associated to this site.
Default Language That Callers Hear	None. Choose from the drop-down list: <ul style="list-style-type: none"> <li>• Inherit Language From Caller</li> <li>• Use System Default Language</li> <li>• [Use the User Language] e.g. English (United States). See “Default CUC Language” above.</li> <li>• [Choice of Languages] e.g. Spanish (Spain Traditional). See “Default CUC Language” above).</li> </ul>

### HotDial Defaults Tab

Option	Default Value
Default PLAR CSS	None
Default HotDial TimeZone	None

### Overbuild Defaults Tab

This tab defines how imported objects are moved to the site hierarchy during an overbuild.

---

**Note:** The Overbuild Defaults tab in the Site Defaults is accessible only to Provider and Reseller administrators.

---

---

**Important:** It is recommended that you request support from a system integrator for all managed services, Day 2 overbuild projects).

---

The table describes the settings on this tab:

Field	Description
Include Site for Overbuild	Defines whether the site is included in the overbuild.
Create Internal Number Inventory at Customer	<p>Defines whether to create the internal number inventory only at the site level, or only at the customer level.</p> <p>When set to True (checkbox selected), the internal number inventory is created only at the customer level, and will be used by all sites belonging to that customer.</p> <p>The default is False.</p> <p>CAUTION: If overbuild has already been run for a site and the internal number inventory has been created for the site, if <i>Create Internal Number Inventory</i> is enabled and you run overbuild for the same site, a duplicate set of internal number inventory is created at the customer. The same applies if Create Internal Number Inventory at Customer is enabled when the overbuild is run for the site, if it is then disabled and overbuild is run again, a duplicate set of internal number inventory is created at the site.</p>
Additional Device Pools	<p>By default, if a site is included for overbuild, the Default CUCM Device Pool on the General Defaults tab must match the device pool of phones that have been imported in order for these and their related objects to be moved to the site at which the Site Defaults Doc exists.</p> <p>The Run Overbuild tool uses the device pool to determine the devices and models to move to the site where the site defaults are defined. You can however add additional device pools, so that more than one device pool from those of the imported phones can be moved to the same site.</p> <p>Additional device pools are selected from the Device Pool Name drop-down, as instances of the Additional Device Pools group control.</p> <p>The names of the additional device pools can be renamed to the Default Device Pool name (as defined on the General Defaults tab) if Replace with Default Device Pool is selected.</p>
Overbuild Device Control	<p>Options are:</p> <ul style="list-style-type: none"> <li>• Move all devices - when True, all matching and related imported devices are moved to the site.</li> <li>• Limit moved devices - when True, options display to choose devices to import to the site (as on Run Overbuild page)</li> </ul>



---

## Related Topics

- Overbuild for Microsoft in the Core Feature Guide

## Move Filter Criteria Tab

This tab defines the rules the system uses to match users to sites when syncing in users, and to determine whether users should be moved directly to the site as subscribers.

- The **MS 365 Model Filter Criteria** model filter criteria you can choose (depending on the user type you're syncing in, for example, Microsoft, LDAP, CUCM, Cisco Webex), is configured in the Admin Portal, via (default menus):
  - Customizations > Model Filter Criteria, or in:
  - Flow Through Provisioning Configuration > Model Filter Criteria
- The **Move by Number** check box (unchecked by default) is used for MS Teams users. When checked:
  - it requires that all numbers are pre-loaded
  - *only if* the synced-in MS Teams user's LineUri matches a pre-loaded internal number at a site, will user data be moved to that site
  - current users at customer level will be moved to the site during Overbuild (if the **Include Site for Overbuild** check box is enabled on the [Overbuild Defaults Tab](#)).
  - MS Teams users will be moved directly to the site during MS Teams user sync.

---

**Note:** The order of processing of these two options are:

1. **MS 365 Model Filter Criteria** is processed first if it is selected and the filter exists.
2. **Move by Number** is processed second.

In other words, when a user's details match the model filter criteria, the system will move the user according to the filter criteria. Otherwise, the system will attempt to move the user by number. If neither option is applicable, the user is not moved and remains at the current hierarchy.

---

## Related Topics

- Flow Through Provisioning in the Core Feature Guide
- Model Filter Criteria in the Core Feature Guide
- Overbuild for Microsoft in the Core Feature Guide

## MS Teams Tab

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**Important:** From release 21.4-PB2 onwards, License Management has been removed and is no longer used to control the logic with managing licenses. VOSS Automate will honor any license-related configuration in the Configuration Templates and related Workflows. This includes Quick Subscriber, Quick Offboard Subscriber, associated Quick Add Groups and general Subscriber Management.

It is advised that administrators evaluate their current Configuration Templates and ensure that if any licensing logic exists in the templates, that this is correct as it will be applied when invoked.

Also see the *Licensing Users for MS Teams and Teams Phone by Group Membership* topic in the Core Feature Guide.

The table describes settings on this tab:

Option	Description
Enterprise Voice	Defines whether to provision MS Teams users with the Enterprise Voice service.
MS Teams Direct Routing	Defines whether MS Teams Direct Routing is disabled on the PBX or in the SBC.
Default Tenant Dial Plan	Defines the default tenant dial plan for the site. For details, see <i>Configure Microsoft Tenant Dialplan</i> in the Core Feature Guide.
Default MS Teams Policies	<p>These drop-downs allow you to choose the MS Teams policies to use as defaults in the SDD.</p> <p>Policies are synced in to VOSS Automate from MS Teams.</p> <p>Choosing a default policy for a site in the SDD automatically assigns the policy to subscribers at the site. When creating a subscriber via Quick Subscriber, the SDD is used, but you can also edit the configuration template for the Quick Add Group (QAG) to use a policy different to the SDD, or you can edit a subscriber directly to choose a different policy for that subscriber.</p> <p>Note that Teams Upgrade Policy is read-only in the Admin Portal as (at the time of writing) it is deprecated in the Teams online portal.</p> <p>See <i>Introduction to Microsoft Teams Policies</i> in the Core Feature Guide</p>
Default Calling Line Identity	
Default Usage Location	The country for default usage.

### Webex Tab

The table describes settings on this tab:

Option	Description
Webex Location ID	<p>The Webex location to which the site is mapped. Webex locations, numbers and users with location ID matching this site, will be synced to it.</p> <p>This dropdown allows selection of Webex locations at higher hierarchies.</p>
Webex App - Use Organization's Domain	<p>Displays only when:</p> <ul style="list-style-type: none"> <li>• The entitlement profile allows the Webex App service</li> <li>• A Webex App server is configured</li> <li>• The subscriber and Webex App user have the same email address</li> <li>• Subscriber does not already have Jabber clients</li> <li>• CUCM calling behavior is not yet configured for the Webex App user</li> </ul> <p>Enabling this option hides the following field: <b>Webex App - UC Manager Profile</b></p> <p>Default (when displayed) is unchecked (clear).</p> <p>When enabled, Webex App provisioning via QAS refers to values generated via the following named macros in the <b>device/spark/User</b> configuration template (CFT):</p> <ul style="list-style-type: none"> <li>• SDD_WtCallBehaviourUcManagerProfile</li> <li>• SDD_WtUseOrgDomain</li> </ul> <p>When the CFT with these macros is chosen for the QAS, the QAS uses site default values to provision Webex App (the macros allow QAS to determine whether the user has a Jabber client and whether CUCM calling behavior is configured).</p>
Webex App - UC Manager Profile	<p>Displays only when the following checkbox is clear (not selected): <b>Webex App - Use Organization's Domain</b></p> <p>Choose the UC Manager profile from the drop-down.</p> <p>Options in the drop-down are the UC manager profiles added via <b>UC Manager Profile</b> (device/spark/CallingProfile).</p>

For Webex Location ID, also see Webex Locations in the Core Feature Guide.

### Related Topics

- Configure Microsoft Tenant Dialplan in the Core Feature Guide.
- Introduction to Microsoft Teams Policies in the Core Feature Guide.
- Quick Subscriber for Microsoft Users in the Core Feature Guide.
- Microsoft Licenses in the Core Feature Guide

## 7.4. Associate or Disassociate SIP Local Gateway to a Site

provider

### 7.4.1. Overview

Associating a SIP Local gateway to a site triggers registered IOS Builder events and triggers registered dial plan schema group custom workflows. Only SIP Local gateways that share a common CUCM cluster as specified in the site NDL and have the same country as the site can be associated with a site hierarchy node.

#### Note:

- Sites with the same area code(s)

In this scenario, there are two possibilities:

- All sites share the same TDM trunks to the provider – this is supported with the default IOS Command Builder templates
- Each site has its own TDM trunk to the provider – this is not supported with the default IOS Command Builder templates

- Sites with different area codes

In this scenario, it is unlikely the sites will be sharing the same TDM trunks. However even if they do share the same TDM trunks, it is not currently supported without having to manually modify the default IOS Command Builder templates. If the admin does deploy a shared LBO gateway to two or more sites with different area codes using the default IOS Command Builder templates, calls from one of these sites to a number that is in the same area code as another site sharing the same trunk will be treated as a local/subscriber call.

A site with its own trunk is also not supported without modifying the default IOS Command Builder templates.

### 7.4.2. Associate a SIP Local Gateway to a Site

This procedure associates a SIP Local Gateway with a site.

#### Prerequisites:

- The SIP Local Gateway and the target site must be in the same country.
- The SIP Local Gateway and the target site must have the same CUCM Publisher.
- The target site must have a site dial plan deployed.

#### Note:

- A SIP Local Gateway can be associated with multiple sites given the prerequisite conditions are met.
- A site can be associated with multiple SIP Local Gateways given the prerequisite conditions are met.
- If a SIP Local Gateway is deleted, all existing site associations are disassociated.

- If a site is deleted through **Site Management > Delete Site** and at least "Remove Dial Plan Items" is selected, all SIP Local Gateway associations for that site are disassociated.
  - If a site dial plan is deleted, all SIP Local Gateway associations are disassociated.
- 

### Perform these steps:

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the site for which you want to associate a SIP Local Gateway.  
If you do not have the path set to a site, you are prompted to select the site.
3. Choose **Site Management > Associate SIP Local Gateway**.
4. Click **Add**.
5. Select the SIP Local Gateway you want to associate with the site from the menu.  
Only SIP Local Gateways that have the same country and CUCM Publisher configuration as the site are available to be selected.
6. Click **Save**. View transaction progress and details in the Transaction Logs. See [Transaction Logging and Audit](#)
  - The SIP Local Gateway appears in the **Associate SIP Local Gateway** list view.
  - The HcsSipLocalGwAddSitePstnEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
  - For each Area Code defined on the target site's dial plan, the HcsSipLocalGwAddSiteArea-CodeEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
  - If the site has an existing E.164 to DN Association (N to N), either the HcsSipLocalGwAddE164AssociationEVT (for N to N) or the HcsSipLocalGwAddMultiE164AssociationEVT event (for N to 1) is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
  - If the site has an existing Voice Mail Pilot Number Association, the HcsSipLocalGwAddVoice-MailPilotNumberEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
  - If the Dial Plan Schema Group that is associated with the customer dial plan has the associateLboGateway custom workflow provisioned, the associateLboGateway custom workflow is executed.
  - The Site association to the SIP Local Gateway creates a Route Group with the SIP Trunk created and associated to the SIP Local Gateway.

### 7.4.3. Disassociate a SIP Local Gateway from a Site

This procedure disassociates a SIP Local Gateway from a site.

---

**Note:** Prior to VOSS Automate, IOS commands generated at a site were lost when the site was deleted.

---

### Perform these steps:

1. Log in as provider, reseller, or customer administrator.

2. Choose **Site Management > Associate SIP Local Gateway**.
3. Select the check box next to the SIP Local Gateway you want to disassociate, then click **Delete**.
  - The SIP Local Gateway association is removed from the **Associate SIP Local Gateway** list view.
  - The HcsSipLocalGwDelSitePstnEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
  - For each Area Code defined on the site's dial plan, the HcsSipLocalGwDelSiteAreaCodeEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event. If Area Codes are shared across multiple sites and associated with the same gateway, the commands are generated only when the gateway is disassociated from the last site that shares the Area Code.
  - If the site has an existing E.164 to DN Association, either the HcsSipLocalGwDelE164AssociationEVT (for N to N) or HcsSipLocalGwDelMultiE164AssociationEVT (for N to 1) event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
  - If the site has an existing Voice Mail Pilot Number Association, the HcsSipLocalGwDelVoiceMailPilotNumberEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
  - If the Dial Plan Schema Group that is associated with the customer dial plan has the unassociateLboGateway custom workflow provisioned, the unassociateLboGateway custom workflow is executed.

---

**Note:** When a SIP Local Gateway is disassociated from a site because the site is deleted, IOS commands are copied from the site to the customer level before the site is deleted. Select **Device Management > IOS > Commands** to view the copied IOS commands.

---

## 8. Apps Management

### 8.1. Webex Control Hub Access

#### 8.1.1. Add Cisco Webex Service

This procedure adds the Cisco Webex service (Webex Control Hub instance).

##### Prerequisites:

---

**Note:** No action is required to create a Network Device Lists (NDL). When an import from Webex Control Hub is run for the first time, the VOSS Automate workflow creates a blank NDL at the customer if no other NDL exists. When the sites are auto created based on the imported Webex Locations, the sites will use this new blank NDL.

See the Network Device Lists (NDLs) topic in the Core Feature Guide.

---

- To allow VOSS Automate to connect to the Cisco Webex Control Hub, obtain the Webex Control Hub Account Organization ID from the Cisco Webex page.

---

**Important:** For users upgrading to release 21.4-PB2, existing access tokens need to be refreshed in order to update permissions for newly added `workspace_locations`.

---

##### To create the Cisco Webex service:

1. Log in to the Admin GUI as a provider or reseller administrator.
2. Select the relevant customer hierarchy.
3. Go to (default menus) **Apps Management > Webex Control Hub Access** (or search for the page) to open the list view of all configured Webex Organizations.

---

**Note:** Existing accounts added before Automate 21.4-PB3 will show the *internal* account ID as the **Organization Account Number**, while accounts added from Automate 21.4-PB3 onwards, show the *external* account ID.

---

4. Click the Plus icon (+), then, on the new record page:

- Fill out the Webex App customer name (the default is the Automate customer name).
- Fill out your Webex Control Hub Account Organization ID (external account ID).

---

**Note:** You can obtain this value from the Webex Control Hub admin portal (under the Account menu).

---

- Fill out the admin account email to specify the administrator managing the account.

---

**Note:** This field value is informational only.

---

- At **HTTP Proxy String** and **HTTPS Proxy String**, values are mandatory *only* if a proxy server is required to connect to the Cisco Webex Control Hub API, for example: `http://[ip address]:port` or `https://[ip address]:port`

---

**Note:** You'll need to add the Webex organization account details to Automate before access tokens can be obtained.

---

5. Click **Save**.

---

**Note:** When adding a new Webex Control Hub Access entry for a customer, data syncs and schedules are automatically created. Deleting a customer's Webex Control Hub Access automatically deletes these data syncs and schedules.

---

6. Once the new Webex organization is saved, return to the created account to view (in the **Access Tokens** section), the **Connect to Webex Control Hub** link that is used to request the tokens.
7. Click the **Connect to Webex Control Hub** link to obtain the access tokens for the Webex Control Hub account, and to be redirected to the Automate **Transactions** page.

---

**Note:** When first using this link, a Webex admin user (with sufficient privileges) must log in and accept the API authorization scope that Automate requires for integration.

---

8. On the **Transactions** page, monitor progress for retrieving the access tokens.

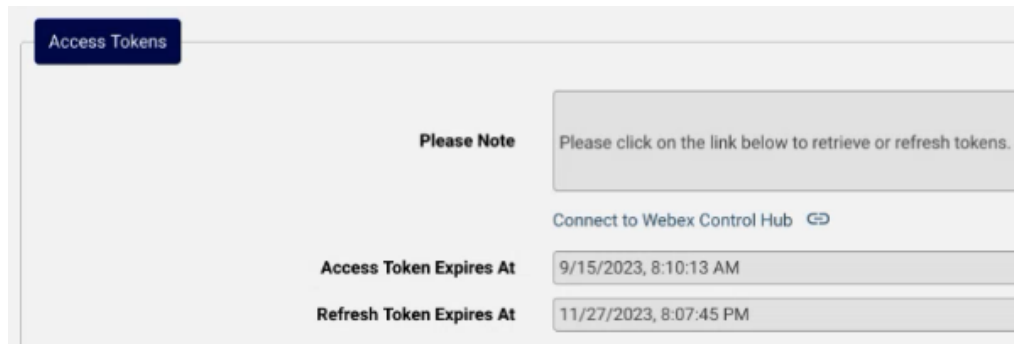
---

**Note:**

- Syncing of roles and licenses into Automate is included in this transaction.
- Once the transaction completes, you can view expiry times for the access token and for the refresh token.
  - Automate automatically refreshes the access tokens every 7 days for 90 days, that is, until the expiry of the Refresh Token.
  - The Refresh Token is valid for 90 days. You can use the **Connect to Webex Control Hub** link to refresh it. Automate **General Settings** provide options for Webex App Tab to send impending expiry notifications and messages. See: [Global Settings](#).

For more information around access token management, see <https://developer.webex.com/docs/integrations>





## Related Topics

- [Introduction to Cisco Webex App](#)
- [Quick Add Subscriber Groups Default Model](#)
- [Webex App Licenses](#)

## 8.2. VOSS Insights

### 8.2.1. Introduction to VOSS Insights Monitoring

#### Overview

Users with both VOSS Automate and VOSS Insights deployed can enable monitoring of UC applications via the VOSS Automate Admin Portal, from an Insights Arbitrator server integrated with VOSS Automate.

**Note:** For details around integrating VOSS Automate with the Insights Arbitrator server, see [Arbitrators](#)

Once the integration is set up, you onboard customer server clusters, comprising one or more Cisco Unified Communication Manager (CUCM) CallManager servers and/or Cisco Unity Connection (CUC) servers, to an Arbitrator server for monitoring, from within the VOSS Automate Admin Portal.

The following servers are supported:

- Cisco Unity Connection (CUC) servers
- Cisco Unified Communications Manager (CallManager, or CUCM) servers

Provisioning is supported for these CUCM server types:

- Voice (VOICE\_VIDEO)
- IM and Presence Service (IM\_P)

**Note:** The image displays a customer with four CallManager servers that are part of the same cluster. The cluster is onboarded to the Arbitrator server for monitoring purposes.

<input type="checkbox"/>	Cluster Name	CUCM Server Name	Located At
<input type="checkbox"/>	ELITE-CUCM-CL1	ELITE-CUCM-PUB	ELITETECHS (Customer)
<input checked="" type="checkbox"/>	ELITE-CUCM-CL1	ELITE-IMP-PUB	ELITETECHS (Customer)
<input type="checkbox"/>	ELITE-CUCM-CL1	ELITE-CUCM-SUB	ELITETECHS (Customer)
<input type="checkbox"/>	ELITE-CUCM-CL1	ELITE-IMP-SUB	ELITETECHS (Customer)

This feature provides the following functionality in the Admin Portal:

- Integrate Arbitrator servers, and view existing integrations, via (default menus) **Apps Management > VOSS Insights > Arbitrators**. See [Arbitrators](#)

**Note:** The Arbitrator server should be at version SP23 or higher.

- View currently configured monitoring set up for server clusters, if any:
  - For CUCM servers, go to (default menus) **Apps Management > CUCM > Servers**, then click on a cluster to view the following:
    - \* On the **Base** tab, view the cluster name and server type (VOICE\_VIDEO or IM\_P), and whether the server is a Publisher server or a Subscriber server.
    - \* On the **Publisher** tab, view monitoring details, including the monitoring Arbitrator server, if any.

The screenshot displays the configuration page for a CUCM server cluster in the Admin Portal. The 'Publisher' tab is selected, showing the following configuration details:

- CUCM Server Name\*:** ELITE-IMP-PUB
- Publisher:**
- Cluster Name:** ELITE-CUCM-CL1
- Server Type\*:** IM\_P
- Sync on Create/Update:**
- Network Addresses:**
  - Address Space\*:** SERVICE\_PROVIDER\_SPACE
  - IPV4 Address:** 172.30.42.17
  - Hostname:** ELITE-IMP-PUB
  - Domain:** (empty)
  - Description:** (empty)
- Credentials:**
  - Credential Type\*:** ADMIN
  - User ID\*:** admin
  - Password\*:** (masked with dots)
  - Repeat Password\*:** (masked with dots)
  - Description:** (empty)

- For CUC servers, go to (default menus) **Apps Management > CUC > Servers**, then click on a cluster to view monitoring details, including the monitoring Arbitrator server, if any.

- When adding new CUCM or CUC server in a cluster, you can choose an Arbitrator to monitor the servers (via the Monitoring fields for Publisher servers)

**Note:** At the time of writing (VOSS Automate v21.3), modifying any existing monitoring setup on UC apps is not supported. However, deleting a UC app on VOSS Automate will remove the asset and related configuration from all corresponding VOSS Insights Arbitrator servers.

## Onboarding Provisioning

The onboarding process triggers a workflow that finds all the servers in the cluster, then provisions all required monitoring elements (which differ depending on whether the server is CUCM or CUC, Publisher or Subscriber, or CUCM server type VOICE\_VIDEO, or IM\_P).

**Note:** You can view all workflow provisioning steps via the transaction log in the Admin Portal.

Sub Transactions					
Action	Status	Transaction	Submitted Time		Detail
Create Onboard Assurance Asset CUCM Server	Success	<a href="#">Link</a>	April 5, 4:55:55 AM		Onboard ELITE-IMP-SUB CUCM Server onto PROBE
Create Onboard Assurance Asset CUCM Server	Success	<a href="#">Link</a>	April 5, 4:55:31 AM		Onboard ELITE-CUCM-SUB CUCM Server onto PROBE
Create Onboard Assurance Asset CUCM Server	Success	<a href="#">Link</a>	April 5, 4:54:56 AM		Onboard ELITE-IMP-PUB CUCM Server onto PROBE
Create Onboard Assurance Asset CUCM Server	Success	<a href="#">Link</a>	April 5, 4:52:46 AM		Onboard ELITE-CUCM-PUB CUCM Server onto PROBE

The table describes the onboarding provisioning that occurs for the server types supported for Arbitrator monitoring:

Server in the cluster	Onboarding Provisioning
CUCM VOICE Publisher (PUB)	<p>Provisioning on Arbitrator:</p> <ol style="list-style-type: none"> <li>1. Creates the asset on Arbitrator.</li> <li>2. Adds the asset into an asset group on Arbitrator (or updates the asset group if it already exists)</li> <li>3. Creates a credential for the server.</li> <li>4. Creates a server-specific probe and probe group combination.</li> <li>5. Creates five Arbitrator monitoring profiles, which define the schedule for the probe to run on the asset (for example, every 5 minutes, or once a day): <ul style="list-style-type: none"> <li>• A server-specific PERFMON CUCM group profile that associates the probe and probe group combination with the asset and the credential.</li> <li>• Four profiles that associate static probes (which are always on the Arbitrator) with the asset: RIS, PING Monitor, Version, RTMT</li> </ul> <p>The static probes must exist on the Arbitrator for Arbitrator monitoring to work. The static probes are associated with new assets, using the profiles.</p> </li> </ol> <p>Provisioning on the CallManager:</p> <ul style="list-style-type: none"> <li>• Creates the application user. When onboarding multiple servers, you can ignore a <i>fail</i> status at this step Create CUCM App User, since duplicate user creation is ignored.</li> <li>• Updates service parameters</li> </ul>
CUCM VOICE Subscriber (SUB)	<p>Provisioning on Arbitrator:</p> <ol style="list-style-type: none"> <li>1. Creates the asset on Arbitrator.</li> <li>2. Adds the asset into an asset group on Arbitrator (or updates the asset group if it already exists)</li> <li>3. Creates a credential for the server.</li> <li>4. Creates one Arbitrator monitoring profile (ping test only).</li> </ol>
CUCM IM_P Publisher (PUB)	<p>Provisioning on Arbitrator:</p> <ol style="list-style-type: none"> <li>1. Creates the asset on Arbitrator.</li> <li>2. Adds the asset into an asset group on Arbitrator (or updates the asset group if it already exists)</li> <li>3. Creates a credential for the server.</li> <li>4. Creates a server-specific probe and probe group combination.</li> <li>5. Creates two Arbitrator monitoring profiles, which define the schedule for the probe to run on the asset (for example, every 5 minutes, or once a day): <ul style="list-style-type: none"> <li>• A server-specific PERFMON CUCM group profile that associates the probe and probe group combination with the asset and the credential.</li> <li>• A PING Monitor profile</li> </ul> </li> </ol>

Server in the cluster	Onboarding Provisioning
CUCM IM_P Subscriber (SUB)	Provisioning on Arbitrator: <ol style="list-style-type: none"> <li>1. Creates the asset on Arbitrator.</li> <li>2. Adds the asset into an asset group on Arbitrator (or updates the asset group if it already exists)</li> <li>3. Creates a credential for the server.</li> <li>4. Creates one Arbitrator monitoring profile (ping test only).</li> </ol>
CUC Publisher (PUB)	View the transaction and sub-transaction log for details.
CUC Subscriber (SUB)	View the transaction and sub-transaction log for details.

For details, see [Onboard Assets](#)

**Note:** All provisioned elements can be viewed on the Insights Arbitrator dashboard. For details, see the VOSS Insights documentation.

Groups		Assets				
Group Name		IP Address	Asset Name	Description	Type	Monitor Profile
All groups		172.30.42.17	ELITE-IMP-PUB		Unknown	2 profiles set
AAAGlobal	0	172.30.42.18	ELITE-IMP-SUB		Unknown	1 profile set
AcmeCorp	1	172.30.42.69	ELITE-CUCM-SUB		Unknown	1 profile set
AFD	0	172.30.42.70	ELITE-CUCM-PUB		Unknown	5 profiles set
AUDIO CODES	1	172.30.42.71	ELITE-CUC-PUB		Unknown	2 profiles set
BODYSHOX	5					
CSP Shared Architecture	3					

### Probe Groups, Profiles, and Asset Onboarding

The table describes the probe groups and profiles that are added to the VOSS Insights Arbitrator server when assets are onboarded, and removed when assets are off-boarded.

PERFMON CUCM Group Profile	
Probe name	axlGetPerfmonCounters_CUCM_INTF (<CUCM Cluster name>)
Probe Group Name	<customer_name>-CUCM Perfmon AXL (<CUCM Cluster name>)
Frequency	600 sec (10 min)
For Publisher Server	Yes
For Subscriber Server	No

<b>PERFMON CUC Group Profile</b>	
Probe name	axlgetperfmon (<CUCxn Cluster name>)
Probe Group Name	<customer_name>-Cisco Unity AXL (<CUCxn Cluster name>)
Frequency	300 sec (5 min)
For Publisher Server	Yes
For Subscriber Server	No

<b>RIS Group Profile</b>	
Probe Group Name	1-Cisco CUCM RIS CmDevice_creds
Frequency	300 sec (5 min)
For Publisher Server	Yes
For Subscriber Server	No

<b>PINGMON Group Profile</b>	
Probe Group Name	1b-PING Monitor
Frequency	300 sec (5 min)
For Publisher Server	Yes
For Subscriber Server	Yes

<b>VERSION Group Profile</b>	
Probe Group Name	4-Cisco CUCM Version
Frequency	86400 sec (24 hr)
For Publisher Server	Yes
For Subscriber Server	No

<b>RTMT Group Profile</b>	
Probe Group Name	5-Cisco RTMT
Frequency	1800 sec (30 min)
For Publisher Server	Yes
For Subscriber Server	No

## Offboarding Assets

Should you wish to disable monitoring and remove data from the Arbitrator server, you can offboard these assets (and their related configuration) from the Arbitrator server. For details see [Offboard Assets](#)

### 8.2.2. Arbitrators

#### Overview

Managing VOSS Insights Arbitrators in VOSS Automate requires the following:

- Set up Arbitrators
- Set up host connection details and credentials (the admin user and password from the Arbitrator)

---

**Note:** See the VOSS Insights documentation for Arbitrator setup.

---

#### Add a Connection to the Arbitrator Server

This procedure provides connection details to the Arbitrator server to integrate VOSS Automate with the Arbitrator server.

---

**Note:** Once the integration is complete, the Arbitrator is available to onboard and offboard assets that are added or are available in VOSS Automate.

---

1. In the VOSS Automate Admin Portal, go to (default menus) **Apps Management > VOSS Insights > Arbitrator**.
2. Click the Plus icon (+) to add an Arbitrator.
3. Fill out Arbitrator details:

<b>Server Name</b>	Name of the VOSS Insights Arbitrator server in VOSS Automate. Field tooltip provides naming convention.
<b>Description</b>	Optional. Provide a description.
<b>Host Name</b>	Host name or IP address of this Arbitrator server, which is used to connect to the Arbitrator.
<b>User Name</b>	Username for a valid admin account; an admin user allowed to log in to the Arbitrator server.
<b>Password / Repeat Password</b>	Password credential of a valid admin account; an admin user allowed to log in to the Arbitrator server.
<b>Data Center</b>	The name of the data center where the Arbitrator server is deployed. Used as the location when Arbitrator assets are created.
<b>Sync on Create/Update</b>	When enabled (selected) Arbitrator server (based on <b>Host Name</b> ) data is synced in to VOSS Automate (pull sync).

4. Click **Save**.

- A data sync instance is created: SyncAssuranceArbitrator\_\_<arbitrator-name>

- A data sync instance is created: `PurgeAssuranceArbitrator__<arbitrator-name>`
- A test connection is automatically carried out when saving the arbitrator details and it can also be used to manually verify input details and connection to the Arbitrator host (via the **Action** menu).
- The new Arbitrator server is added to the list of Arbitrators displayed on the **Arbitrator** summary list view.

### Next Steps

CUCM and CUC servers can now be onboarded and enabled for monitoring. See [Onboard Assets](#)

### Related Topics

- [Onboard Assets](#)
- [Offboard Assets](#)

### Remove an Arbitrator Server

This procedure removes an Arbitrator server from the list of Arbitrator servers configured for integration with VOSS Automate.

1. In the VOSS Automate Admin Portal, go to (default menus) **Apps Management > VOSS Insights > Arbitrator**.
2. View the summary list of available Arbitrators set up for integration with VOSS Automate.
3. Select the relevant Arbitrator, then click **Delete**.
  - The Arbitrator server is removed from VOSS Automate app servers (Unified CM, Unity Connection).
  - The integration details for this Arbitrator server is removed from VOSS Automate.
  - On the **Monitoring** group of the UC app server publisher form, the **Insights Arbitrator** checkbox is removed.
  - Created pull/purge data syncs on VOSS Automate are removed.

### 8.2.3. Onboard Assets

If VOSS Insights Arbitrator servers are configured at a hierarchy, you can manage the clusters and Arbitrator servers in a batch, for existing UC app clusters (CUCM and CUC) in VOSS Automate.

---

**Note:** At the time of writing (VOSS Automate 21.3), modification of any existing monitoring on UC Apps is not supported. However, once a CUCM or CUC server is created, use the Onboard/Offboard Asset tools to enable/disable monitoring.

---

1. In the VOSS Admin Portal, go to **Apps Management > VOSS Insights > Onboard Assets**.
2. Choose a Customer hierarchy.



3. From the **Credential Type** drop down, keep the default, ADMIN, or choose a different credential type.

---

**Note:** This field defines the credential type of the UC server to use for asset configuration on the Arbitrator.

---

4. View available CUCM and CUC clusters and Arbitrators, then select options in the **Available** fields and move these to the **Selected** fields in the relevant transfer boxes.
5. Click **Save**.
  - You can inspect the onboarding workflow transaction log to view the updates and import of the CUCM and CUC server service parameters and all provisioning workflow steps. See [Onboarding Provisioning](#)
  - All servers (assets) in the selected cluster are onboarded (created on Arbitrator). Servers that are already onboarded are skipped.
  - One asset group is created per customer (required by Arbitrator).
  - For details on probe groups, see [Probe Groups, Profiles, and Asset Onboarding](#)
  - Credentials created on Arbitrator use the chosen credential type user credentials you chose. These credentials are used to make the request to the asset, for example AXL user for CUCM.
  - For CUCM, service parameters are updated for each server:
    - Setting up remote syslog
    - Enable CDR and related settings
    - Create the application user, if this is a Publisher
  - If an existing CUCM is updated, it is updated to show it is monitored by the Arbitrator.

## Related Topics

- [Probe Groups, Profiles, and Asset Onboarding](#)
- [CUCM Servers](#)
- [Servers \(CUC\)](#)

## Additional Onboarding Tools for Single Clusters and Servers

VOSS Automate provides a number of additional *views* that are not, by default, exposed in the default menus, but which have access profiles enabled for Provider and higher-level administrators. These views allow you to onboard single assets.

You can add these views to the menus, if required:

- Onboard Insights Asset CUCM Server
- Onboard Insights Asset CUC Server
- Onboard Insights Asset CUCM Cluster
- Onboard Insights Asset CUC Cluster

These tools do not direct you to a particular hierarchy and the views allow you to carry out the tasks on the page by selecting the following:

- Credential Type

- CUCM/CUC Server or cluster
- Arbitrator Server

The views offer the same functionality as the transfer boxes available via the **Onboard Assets** and **Offboard Assets** menus. However:

- You won't be forced to choose a particular hierarchy.
- Tasks can be carried out for a shared architecture; for example, if the cluster is located at a reseller hierarchy.

## 8.2.4. Offboard Assets

### Overview

CUCM and CUC server clusters that have been integrated with VOSS Insights Arbitrator servers can be offboarded in two ways:

- Offboard the asset
- Delete the UC app

---

**Note:** While an asset can be offboarded, the feature does not currently allow for the *modification* of any existing monitoring on UC Apps.

---

### Related Topics:

- [Introduction to VOSS Insights Monitoring](#)
- [Arbitrators](#)
- [Onboard Assets](#)

### Offboard Assets

This procedure allows a batch removal of the clusters associations by Arbitrator server.

1. In the VOSS Admin Portal, choose the relevant customer hierarchy.
2. Go to (default menus) **Apps Management > VOSS Insights > Offboard Assets**.
3. On the **Offboard Assets** page, choose relevant options:
  - From the **Arbitrator Server** drop-down, choose the Arbitrator server where you wish to remove (offboard) an asset.
  - In the **Available** field, select assets to remove (which are currently associated with the Arbitrator), and click the right-pointing arrows to move these items to the **Selected** field.
4. Click **Save**.

---

### Note:

- View the transaction log to ensure assets are off-boarded as required.

- 
- VOSS Automate makes the following updates on the associated Arbitrator when a CUCM or CUC server (asset) is unassociated from a VOSS Insights Arbitrator:
    - Removes asset (the server)
    - Removes or refreshes asset group
    - Removes probe (performance monitoring)
    - Removes probe group (customer specific). See *Probe Groups, Profiles, and Asset Onboarding*
    - Removes relevant credentials on Arbitrator (by default the ADMIN user credentials set up on VOSS Automate)
    - Removes profiles in VOSS Insights Arbitrator (**Probe Group > Templates/Profiles**). See *Probe Groups, Profiles, and Asset Onboarding*
    - For CUCM, removes the application user, if this is a Publisher.
- 

**Note:** Off-boarded CUCM and CUC servers in a cluster remain, and show **Monitoring** details with specific **Assurance Arbitrator Server** instances disabled.

The UC app server add/update page displays the unchecked (removed) Arbitrators. See the **Monitoring** section on the **Publish** page, via the **Apps Management** menu (for CUCM or CUC > Server).

---

### Delete a UC App to Offboard the Asset

When a CUCM or CUCM server or cluster that was integrated with a VOSS Insights Arbitrator server is deleted, the asset, customer-specific probes, profiles, credentials, and related data are removed from the Arbitrator.

The VOSS Insights Arbitrator data syncs for the UC app are also removed.

### Additional Offboard Tool for Single Servers

VOSS Automate provides a *view* that is not, by default, exposed in the default menus, but which has access profiles enabled for Provider and higher-level administrators. This view allows off-boarding of a single asset.

You can add this view to the menus, if required:

- Offboard One Assurance Asset

This tool allows you to select the following on the page to perform off-boarding:

- Assurance Arbitrator Server
- Asset: Cisco UCM/CUC Server

## 8.3. SMTP Server

### 8.3.1. Add a SMTP Server

This procedure adds a SMTP server at a hierarchy level.

**Prerequisites:**

- Enable email in the Global Settings (Email tab).

**Perform these steps:**

1. Log in to the Admin Portal.
2. Choose the relevant hierarchy.

---

**Note:** Configure the SMTP server at the hierarchy where you want to allow VOSS Automate to send email messages.

You may only set up one SMTP server at each hierarchy level. The SMTP server will be available at the current hierarchy and below. For example, for a SMTP set up at a specific customer, the sites below that customer can use that SMTP server.

---

3. Go to (default menus) **Apps Management > SMTP Server**.
4. Click the toolbar Plus sign (+) to add a new SMTP server.
5. On the **SMTP Server** form, fill out details for the new SMTP server in the form fields:

Field	Description
Name	The SMTP server name.
Description	A description for the email account.
Port	The port number.
Secure	Relevant only for SSL connections to the SMTP server. Select the checkbox (enable) to use the SSL protocol for connections to the SMTP server. Default is disabled (checkbox is left clear), for TLS and unsecure logins to the SMTP server.
Username	The username credential for establishing a connection to the SMTP server.
Password	The password credential for establishing a connection to the SMTP server.

6. Save your changes.

## Related Topics

- Email in the Core Feature Guide
- Global Settings in the Core Feature Guide

## 8.4. VOSS Phone Server Management

### 8.4.1. VOSS Phone Server Overview

The VOSS phone server provides a method of hosting SIP compliant devices such as phones and softclients where it is not possible or desirable to connect these devices into other vendor platforms.

In an HCS environment, full integration management is provided where all trunk and dialplan related configuration is automatically applied. Other CUCM dialplan designs may be utilised through the VOSS4UC dialplan additions templating feature.

The VOSS Phone Server provides three functions:

1. A SIP registrar allows the use of SIP devices from any compliant vendor, thereby allowing for a wide choice of phones with various feature sets, including the re-use of existing devices from systems such as Cisco Unified CM and others. Since the registrar requires only account definition per line, there is no phone concept in the Phone Server itself. Phones are represented in VOSS Automate and are a local construct only.
2. A SIP Switch handling SIP call traffic. Calls between phones hosted on the VOSS Phone Server are handled locally and calls to other extensions or PSTN destinations are offloaded over a SIP Trunk
3. Configuration File Management (Optional). Phone configuration files may be created and hosted in the VOSS Phone Server's tftp server. This allows unconfigured phones (i.e. new unused phones, or factory defaulted old phone stock) to obtain their configuration automatically when connected to the network.

Sample configuration files for phones from SNOM, Grandstream and Cisco are included.

VOSS Automate utilities include:

1. System setup and Country dialplan management
2. Evaluation of the number of re-usable Cisco CUM hosted phones
3. Conversion of Cisco configuration to phone server configuration

The VOSS Phone Server is deployed as an OVA, typically alongside CUCM Virtual Machines in an HCS/CUCM environment. Redundancy is an option, providing data replication between servers.

### 8.4.2. Managing VOSS Phone Servers

Adding phones requires three areas of configuration. These are all automated by VOSS Automate during the phone addition:

## Set up call routing

In HCS mode, the CUCM dial plan is created to provide call routing of the chosen numbers towards VOSS Phone Server. This allows incoming call routing. Outbound calling Class of Service and routing are also configured to allow internal extension and E164 call routing. Number inventory and CLI management through transformation patterns are maintained.

### 1. Set up the VOSS Phone Server

VOSS Phone Servers are managed on the customer hierarchy - verify that you are at the customer hierarchy.

- **Version:** there is currently only 1.0.0 (base release version).
- **Deployment Mode:** two options are available:
  - HCS - VOSS Automate manages the Cisco CUCM dial plan and trunking, removing the need for manual integration. Use HCS to configure Unified CM call routing to the VOSS Phone server. Standard Cisco dial plan integration uses a dial plan templating facility. Other dial plans may be supported by creating custom dial plan templates suitable for the dial plan in use.
  - Standalone - manual integration with other call routing devices such as SBCs or other PBX and trunking services is required.
- If the HCS deployment mode is selected, the **HCS CUCM** must be selected.
- **Network Addresses:**
  - The SERVICE\_PROVIDER\_SPACE IPv4 address is the address as viewed from VOSS Automate, so could be an address viewed through NAT.
  - The APPLICATION\_SPACE IPv4 addresses is the local address of the Phone Server in the customer network.

Both addresses are required, even where the address is the same as would be found if NAT was not in use to provide access from the service provider network.
- **Virtual Machine:** name is optional and is used for administrator data purposes. It is not used by VOSS Automate.

### 2. Add country support.

Country support must be added in HCS mode in order to integrate with the HCS dialplan. A template is required for each supported country. GBR and USA are provided by default, and other countries may be created or provided by VOSS as required.

To add HCS country support, use the “phone server countries” menu item and select the template for the required country. There are no user parameters required.

### 3. Configure the physical phone

In HCS mode, sites must be created with site dialplan and number inventory in the same way as when using Cisco Phones registered directly to CUCM. It is possible to host both CUCM and Phone Server phones at the same site.

The phone itself requires configuration in order to register and handle calls.

Soft clients will likely be manually configured locally on the hosting PC, and a “generic soft client” device type allows for locally configured devices.

Other hardware devices such as phones from SNOM, Cisco and Grandstream may be configured using configuration files hosted on the VOSS Phone Server and downloaded at start up by the phone. TFTP

is used to download these files. VOSS Phone Server hosts such files for fully automated configuration of the device.

See:

- [VOSS Phones](#)
- [Adding Phone Types](#)

### 8.4.3. Adding Phone Types

New phone types (brands) can be created by creating a new phone type definition. This phone type defines the behavior of the Admin Portal when adding a phone, and defines sample configuration files and configuration templates to apply to this configuration file.

The sample file provides the layout of the phone configuration file but does not have values specific to each phone. Values such as the telephone number to apply are populated with a default value.

The configuration template allows access to any parameter in the sample file, and can be used to set the correct value for each phone, such as setting the telephone number. VOSS Automate has sample files and configuration for the SNOM D120 and D717 phones. This provides full configuration for these phones so that a new “out of the box” phone can be connected to the network and reach an operational state with no user intervention.

Adding a new phone type requires firstly creating a sample file. Many SNOM phones allow the export of the configuration which has been previously created through the phone web interface. This file can be used as the sample file, although values should be changed to make the file anonymous prior to uploading as a sample file. Once loaded, a configuration template can be created or cloned from the existing templates. This will allow modification of any value in the sample file, setting a value suitable for each phone. Using this technique, new phones types may be evaluated and added to VOSS4UC without the need for software updates or patches.

## 8.5. Conferencing

### 8.5.1. Introduction to Conferencing

VOSS Automate supports the following conferencing services:

- Webex
- Pexip (see [Pexip Conference Users](#))
- Zoom

Site administrators manage the conferencing credentials of users if a Conferencing server is available at the site level. The Conferencing server on which users are administered can be identified with the Network Device Reference of the site, or else (according to the common reference resolution process) with the first such server in the current or higher up hierarchy level.

The default Conferencing input form that provides the interface to Conferencing users displays the minimum of Conferencing user properties that are mandatory. The Field Display Policies and Configuration Templates for this Conferencing input form can be modified according to the suggested customization procedure for Policies and Templates.

For Conference Workflows to function, make sure that the following is done at the Customer:

- A Conferencing server is added.
- The Conferencing server is added to a Network Device List (NDL).
- The required site references the relevant NDL.

### WebEx Conferencing for Subscribers

If conferencing was added for a Subscriber user when the Subscriber was added, the WebExId is defaulted to the userid. Note that the WebEx user properties that are shown on the Subscriber form may not correspond with those shown on the Conferencing input form. If the Conferencing feature is to be added for an existing subscriber, make sure that the WebExId is the same as the userid.

### 8.5.2. Conference Workflows

User details can be added if a valid server is available.

When adding Conferencing from this input form, the mandatory fields are entered on the Conferencing server.

Conferencing details can also be added as part of Subscriber Management.

Modify Conferencing details on the selected item, or also add and delete details from the Subscriber Management form.

Deleting a Conference item will remove the details from the Conferencing tab of Subscriber Management if the user is a Subscriber.

### 8.5.3. Pexip Server

For an overview, see: [Pexip Conference Users](#).

1. Log in as provider or reseller administrator.
2. Choose **Apps Management > Pexip Conferencing > Pexip Server**.
3. Click **Add**.
4. Complete, at minimum, the mandatory fields as in the field reference table.
5. Click **Save**.

Title	Field Type	Description
Server name*	name	The descriptive server name used to identify.
Description	description	Additional details to describe the server.
Host Name*	host	The host name or IP address of the server.
Version*	version	Version. Default: 1.0.0
User Name*	username	The administrator user name.
Password*	password	The password for the administrator.
Sync on Create/Update	sync	A full Pull Sync from the Pexip Server is run if enabled.



When a Pexip server is created, the following are also created:

- On the **Data Sync** menu:
  - A pull sync instance of data sync with the name format: *SyncPexip\_<Pexip server name>*.
  - A purge sync instance of data sync with the name format: *PurgePexip\_<Pexip server name>*.
- On the **Scheduling** menu:
  - An inactive schedule instance with the name format: *SchedulePexip\_<Pexip server name>*.  
When the schedule is set to be active, it executes the *SyncPexip\_<Pexip server name>* pull data sync.
- To test the connection to the Pexip server, choose **Test Connection** action on the menu.
- To modify the server, select it and update the fields as needed.
- To delete the server, select it from the list and then select **Delete**.

Virtual Meeting Rooms are set up as a part of User management - see:

- [Add a Pexip Virtual Meeting Room \(VMR\)](#)
- [Provision the Pexip Conference Service](#)

## 8.6. AudioCodes

### 8.6.1. AudioCodes Devices

Administrators with the required permissions to the `relation/AudioCodesConnection` and `data/AudioCodes` models can add entries to menu layouts to expose these models and allow for the configuration of the device.

#### Connection Details

If the `relation/AudioCodesConnection` model is available from the menu, the **Connection Details** input form allows for the configuration of the AudioCodes device in VOSS Automate.

1. Add a descriptive **Name** for the connection.
2. Add connection details and credentials:
  - **Audio Codes Routing Manager**: IP address or a hostname
  - **Username** and **Password**: credentials for the routing manager host
  - **Authentication Method**: select the type of authentication to use with the host
3. Select **AudioCodes Connection sync on Create/Update** if an immediate data sync from the device is required.

## Data Syncs and Schedules

When the connection details for the device is added, two default Data Sync instances and a Schedule also become available to be modified and enabled as required:

- **SyncAudioCodes\_\_<connection-name>**
- **PurgeAudioCodes\_\_<connection-name>**
- **ScheduleAudioCodes\_\_<connection-name>**

The data sync workflows would then update internal number inventory entries for the **Vendor** field set as *AudioCodes* in accordance with updates to changes (add, delete, update) to AudioCodes **RegisteredUsers** (device/audiocodes/RegisteredUsers).

## Related Topics

- *AudioCodes Device Number Integration*

## 9. Cisco Apps Management

### 9.1. Cisco Unified Communications Manager (CUCM)

#### 9.1.1. CUCM Configuration

##### Overview

Cisco Unified Communications Manager (CUCM) devices provide the core call processing capabilities for HCS, and are a critical part of the VOSS Automate provisioning workflows. You must configure the CUCM devices before you complete the dial plan (if applicable), user, subscriber, line, and phone configuration.

CUCM devices can be dedicated to a specific customer, or they can be shared between multiple customers. CUCM devices must then be assigned to one or more Network Devices Lists (NDLs), and the NDL is then assigned to one or more sites. The NDL is used to select which CUCM is used for configuration based on the site selected in the hierarchy context.

##### Related Topics

- [Flow Through Provisioning in the Core Feature Guide](#)

##### Shared versus Dedicated

To share the CUCM across multiple customers, add the CUCM at the provider or reseller level. To dedicate the CUCM to a single customer, add the CUCM at the customer level.

When setting up CUCM as a dedicated instance, you can choose to set up CUCM after you create the customer.

##### Servers within a CUCM Cluster

Within a CUCM cluster, you can configure the following nodes:

- Cisco Unified Communications Manager Publisher
- Cisco Unified Communications Manager Subscriber
- IM and Presence Service Publisher
- IM and Presence Service Subscriber

Configure a CUCM Publisher node before configuring any other type node.

Configure an IM and Presence Service Publisher node before configuring an IM and Presence Service Subscriber node.

### Sync with VOSS Automate

Configuring a CUCM device on VOSS Automate creates a scheduled data sync to import model data from the device into VOSS Automate. The scheduled data sync ensures that the VOSS Automate cache maintains the most current view of the configured device. Any changes to the configuration occurring on the device, including additions, deletions, or modifications, will be reflected in VOSS Automate after the next data sync.

---

#### Note:

- There is no immediate data sync upon update or modification.
- The scheduled data sync fails if the CUCM administrator account credential has expired. Expiration of the administrator account credential can cause failures in subscriber management activities as well.
- Some license-related models are excluded from CUCM imports by default:
  - device/cucm/LicensedUser
  - device/cucm/LicensingResourceUsage
  - device/cucm/HcsLicense
  - device/cucm/CiscoCloudOnboarding
  - device/cucm/RegistrationDynamic
  - device/cucm/RoutePlan

---

The recurring sync is scheduled to occur every 14 days, but is disabled by default. You can enable the sync and modify the schedule via (default menus) **Apps Management > CUCM > Schedules**. When determining the appropriate schedule setting, the frequency of the sync must be weighed against the additional processing and network activity associated with the data sync. You can also manually run the data sync at any time via (default menus) **Apps Management > Advanced > Perform Publisher Actions**, or from **Administration Tools > Data Sync**.

---

**Important:** Allow the initial data sync to complete before doing more configuration on VOSS Automate that requires information from CUCM.

---

To improve the performance of a data sync, control the types of data synced in. See [Controlling a Data Sync with a Model Type List](#) for more information.

For details on Change Notification Sync in VOSS Automate and on switching between Full Sync and Change Notification Sync, refer to the topic on the Change Notification Feature (CNF) following [Introduction to Change Notification Sync](#).

## Field Mappings in CUCM

When setting up a CUCM device with LDAP integration, you can map CUCM user data to VOSS Automate user data for any field, based on the Field Mappings in the CUCM server. These mappings are configured at the LDAP Directory in CUCM. The mapped user data, for example location data, can later be used in a filter used to move users to sites.

On the Field Mappings tab, you can modify the mappings except for hard-coded mappings. Hard-coded mappings appear in gray and are read-only.

---

**Note:** The field name entered in the mapping on VOSS Automate must exactly match the field name entered in the mapping in the CUCM in the Custom User Field Name field. If the field names do not match, the field is skipped during the sync.

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## Related Topics

- User Field Mapping in the Core Feature Guide

## 9.1.2. CUCM Servers

### Add a CUCM Server

This procedure adds and configures a Cisco Unified Communications Manager (CUCM) server within a CUCM cluster.

1. Log in to the Automate Admin portal with the appropriate hierarchy administrator credentials.

---

**Note:**

- Log in as a Provider or Reseller administrator if you're creating a shared instance.
  - Log in as a Customer, Provider, or Reseller administrator to create a dedicated instance.
- 

2. Set the hierarchy path to the correct level:
  - Create a shared instance at the Provider or Reseller level.
  - Create a dedicated instance at the Customer level.
3. Go to (default menus) **Apps Management > CUCM > Servers**.
4. Click **Add**.
5. Configure server details on the **Base** tab:
  - a. At **CUCM Server Name**, fill out the CUCM server name.
  - b. If you're configuring a publisher node, select the **Publisher** checkbox. This displays an additional tab (Publisher tab).
  - c. For a CUCM Publisher node, fill out the **Cluster Name** field with the name you want for this cluster. A new cluster is created with this name. For CUCM Subscribers, choose the CUCM cluster from the **Cluster Name** drop-down menu.
  - d. At **Server Type**, choose an option, either **VOICE\_VIDEO** or **IM\_P**.

- e. To trigger a sync (auto-import) of the UC app server when saving the form, select **Sync on Create/Update**.
- f. Expand **Network Addresses**, and add network addresses, one or more:

- At **Address Space** (the type of network address) , choose **SERVICE\_PROVIDER\_SPACE**.

---

**Important:** If NAT is used, you'll need to add an additional network address (click the Plus icon at **Network Addresses**), but choose option **APPLICATION\_SPACE** as the second address space.

Further configuration of NAT on Arbitrator is automated.

For more information around setting up assets and probes on Insights Arbitrator, see the Insights documentation.

---

- The **Hostname** field is automatically populated with the CUCM server name. Edit it if necessary.
- Fill out the IP address of the CUCM server in the **IPv4 Address** field.

---

**Note:** Either the hostname or the IP address is required. Ensure the hostname or IP address does not contain a trailing blank space since VOSS Automate can't validate entries that contain a blank space at the end of the hostname or IP address.

---

- Fill out the domain of the CUCM application.
  - Provide an optional description for the network address.
- g. Expand **Credentials**, then add credentials for PLATFORM, ADMIN, HTTP, and SNMP\_Vx credential types. Click + to add more credentials.

- Fill out the user ID and password that you configured when installing the CUCM.
- For **Access Type**, choose RO (Read-only) or RW (Read or Write). The default is RO.
- Provide an optional description for the credential.

---

**Note:**

- Access type is relevant only for SNMP since SNMP credentials are pushed to the UC application.
  - PLATFORM and ADMIN are also required for Service Inventory to generate reports for UC applications.
  - Expiration of the ADMIN account results in failed data syncs between CUCM and VOSS Automate.
  - The CUCM Admin Account requires the following roles (can be added in a group):
    - \* For normal AXL Add, Update, Delete transactions you need: *Standard AXL API Access*
    - \* For the Extension Mobility Login/Logout you need: *Standard EM Authentication Proxy Rights*
    - \* For querying the Phone Status via RIS API, uploading MOH files via GUI (Selenium Driver) and enabling Headset Service (also RIS API) you need: *Standard CCM Admin Users*
-

6. Fill out fields on the **Publisher** tab:

---

**Note:** This tab displays only if you've selected the **Publisher** checkbox on the **Base** tab.

---

Field	Description
Call Processing ID	The Call Processing ID of this cluster
SDR Cluster ID	The SDR CUCM cluster ID, as shown on <b>SDR Configuration &gt; SDR CUCM Clusters</b> .
Version	Choose the version of the CUCM servers in this cluster.
Multi-Tenant	Read-only. If creating at Provider level, this field is set to Shared. If creating at customer level, this field is set to Dedicated.
Port	The port on the CUCM server to connect to. Default is 8443.
User Move Mode	Choose <b>Automatic</b> to automatically move synced in users to sites, based on the filters and filter order defined in <b>User Management &gt; Manage Filters</b> . Choose <b>Manual</b> if you want an Administrator to manually move synced in users to a Site.
User Entitlement Profile	Choose the Entitlement Profile that specifies which devices and services users synced from this Unified CM are entitled to. Note: A violation of the Entitlement Profile does not prevent a user from being synced to VOSS Automate from Unified CM. However, subsequent updates to the user fail until the user's configuration satisfies the restrictions set in the Entitlement Profile.
Enable Change Notification Sync	Select this check box to enable Change Notification. By enabling this, a Change Notification data sync and corresponding Schedule will be created. The Schedule is initially created as Disabled and needs to be manually enabled from the Scheduling menu. The Change Notification Sync interval is set to 14 days by default.
Monitoring	For new servers and if Arbitrator servers are available, monitoring can be enabled for this CUCM on VOSS Insights. The Arbitrator server checkboxes can be selected to add the server as an asset. The Arbitrator server will be updated. Existing servers can be managed from the Onboard Assets and Offboard Assets menus under VOSS Insights. The arbitrator checkboxes will then reflect the asset status.

- Inspect the default mappings and modify if required, see [User Field Mapping](#).
- Click **Save**. A CUCM network device is created in VOSS Automate. (If installed, a cluster and CUCM are created in the SDR.)
- Test the connection between CUCM and VOSS Automate.

## Related Topics

- For details on monitoring and VOSS Insights, refer to [Introduction to VOSS Insights Monitoring](#).
- For more information on Change Notification Feature (CNF) see [Introduction to Change Notification Sync](#).

## Test Connection - CUCM Server to VOSS Automate

Once you've added a CUCM server, you should test the connection between the CUCM server and VOSS Automate.

1. In the VOSS Automate Admin Portal, to to (default menus) **Apps Management > Advanced > CUCM Network Device**.
2. Click the CUCM you just added.
3. Choose **Action > Test Connection**.
4. If the test fails, and you used a hostname, ensure that VOSS Automate has the correct DNS and Domain set. Refer to the *Network services* topic in the Platform Guide.
  - a. Log in to the platform CLI.
  - b. Query the current DNS setting: **network dns**.
  - c. Set the DNS if needed: **network dns <dns\_server\_ip\_address>**.
  - d. Query the current domain setting: **network domain**.
  - e. Set the domain if needed: **network domain <domain>**.

---

### Note:

- Use the **CUCM Network Device** page only for testing the connection. Do not edit CUCM from this page. To change any configuration of the CUCM, edit it via **Apps Management > CUCM > Servers** in VOSS Automate.
  - After updating DNS servers, you'll need to restart the selenium service on the platform CLI:  

```
app start selenium
```
- 

## Delete a CUCM Server

Deleting a Cisco Unified Communications Manager (CUCM) server in VOSS Automate also deletes local data that has been synced to it from the CUCM server, including:

- Users
- Configuration parameters
- Dial Plan Information (if applicable)



## Set Up IM and Presence Service Servers

This procedure configures IM and Presence Service servers within a Cisco Unified Communications Manager (CUCM) cluster.

1. Log in as the appropriate hierarchy administrator.

Only a provider or reseller administrator can create a shared instance. A customer, provider, or reseller administrator can create a dedicated instance.

2. Set the hierarchy path to the correct level:
  - Create a shared instance at the Provider or Reseller level.
  - Create a dedicated instance at the Customer level.
3. Go to (default menus) **Apps Management > CUCM > Servers**.
4. Click **Add**.
5. Enter the IM and Presence Service server name in the **CUCM Server Name** field.
6. From the **Server Type** drop-down, choose **IM\_P**.
7. To configure a publisher node, select the **Publisher** check box.

---

**Note:** The **Publisher** tab is not populated for an IM and Presence Service publisher node.

---

8. Select the CUCM cluster from the **Cluster Name** drop-down.
9. Expand **Network Addresses**.
  - a. Select the SERVICE\_PROVIDER\_SPACE address space.
  - b. The **Hostname** field is automatically populated with the IM and Presence Service Server Name. Edit it if necessary.
  - c. Enter the IP address of the IM and Presence Service server in the **IPv4 Address** field.

---

**Note:** Either the hostname or the IP address is required. Ensure that the hostname or IP address does not contain a trailing blank space. VOSS Automate cannot validate an entry that contains a blank space at the end of the hostname or IP address.

---

- d. Fill in the domain of the IM and Presence Service application.
    - e. Provide an optional description for the network address.
- If NAT is used, also configure an APPLICATION\_SPACE network address.
10. Expand **Credentials**.
    - a. Add credentials for PLATFORM, ADMIN, HTTP, and SNMP\_Vx credential types. Click + to add more credentials.
    - b. Fill in the user ID and password that you configured when you installed the IM and Presence Service.
    - c. Choose RO (Read-only) or RW (Read or Write) for the Access Type. The default is RO.
    - d. Provide an optional description for the credential.

PLATFORM and ADMIN are required for Service Inventory to generate reports for UC applications.

11. Click **Save**.

### 9.1.3. Headset Enablement

To enable the Cisco Headset Service for a Unified CM server listed under **Apps Management > CUCM > Servers**. Choose **Enable Services** from the **Action** menu.

A **Headset Enablement** menu option is also available to carry out this action by means of transfer boxes for all the **Available** servers in a **Call Manager Cluster**.

A data sync instance is also created for each server, in the format: *HcsPull-<host>-headset\_models* that can be used to schedule a move of new Headset Inventory instances down to the matching user's hierarchy when it is run.

See: [Headsets](#).

### 9.1.4. Add a CUCM Group

Provider deployments only.

To create a Cisco Unified Communications Manager (CUCM, or CallManager) group:

1. Choose the Customer in the hierarchy.
2. Choose **Apps Management > CUCM > Unified CM Groups** and click **Add**.
3. From the **Network Device List** drop-down, choose the appropriate NDL to add a new Region, and then click **OK**.
4. In the **Name** field, enter **RSMSimPhone** for the CUCM group name.
5. Select the **Auto-registration Cisco Unified Communications Manager Group** check box if required. Only use this when setting **TFTP Default** to true, which will result in setting all other Unified CM groups to false.
6. Click '+' next to **Unified CM Group Items** to add CUCM group items.
7. From the **Call Manager Name** drop-down, choose the required CUCM and then enter the priority.
8. Click **Save**.

### 9.1.5. Clone an Instance of a CUCM Device Model

To save time, make a copy of an existing instance of a device model rather than adding a new one. To do this, use the clone operation. When you create a clone, give it a new unique name and modify other device model fields as needed before saving.

**Note:** You can clone an instance of a device model to the same Cisco Unified CM or to a different Cisco Unified CM.

If you clone to a different Cisco Unified CM, make sure that all device model fields have values that are appropriate for the target Cisco Unified CM. For example, make sure calling search spaces specified in the source instance exist on the target Cisco Unified CM.

**Perform these steps:**

1. Log in as provider, reseller, or customer administrator.
2. Do one of the following:
  - If you logged in as provider or reseller administrator, choose **Apps Management > CUCM > {device\_model\_type}**.
  - If you logged in as customer administrator, choose **Apps Management > Advanced > {device\_model\_type}**.
3. From the device model list, click the instance to be cloned.
4. Click **Action > Clone**.
5. Depending on the device model, do one of the following:
  - When prompted, choose the NDL that contains the target Cisco Unified CM.
  - choose the target Cisco Unified CM from the **CUCM** drop-down menu.
6. Enter a unique name for the new instance of the device model in the **Name** field.
7. Modify other fields as required.
 

For more detailed information about the fields, see the corresponding topic on configuring a new instance of the device model. For example, if you are cloning a SIP trunk, see under [SIP Trunks](#) for the SIP trunk field descriptions.
8. Click **Save** to save the cloned instance.

The new instance appears in the list. The new instance is created on the target Cisco Unified CM.

### 9.1.6. Multi-Cluster or Single Cluster Configurations

#### Overview

Previously, IM and Presence Service (previously known as CUP) was set up in a cluster separate from the Cisco Unified Communications Manager (CUCM) cluster, in a configuration known as *multi-cluster*.

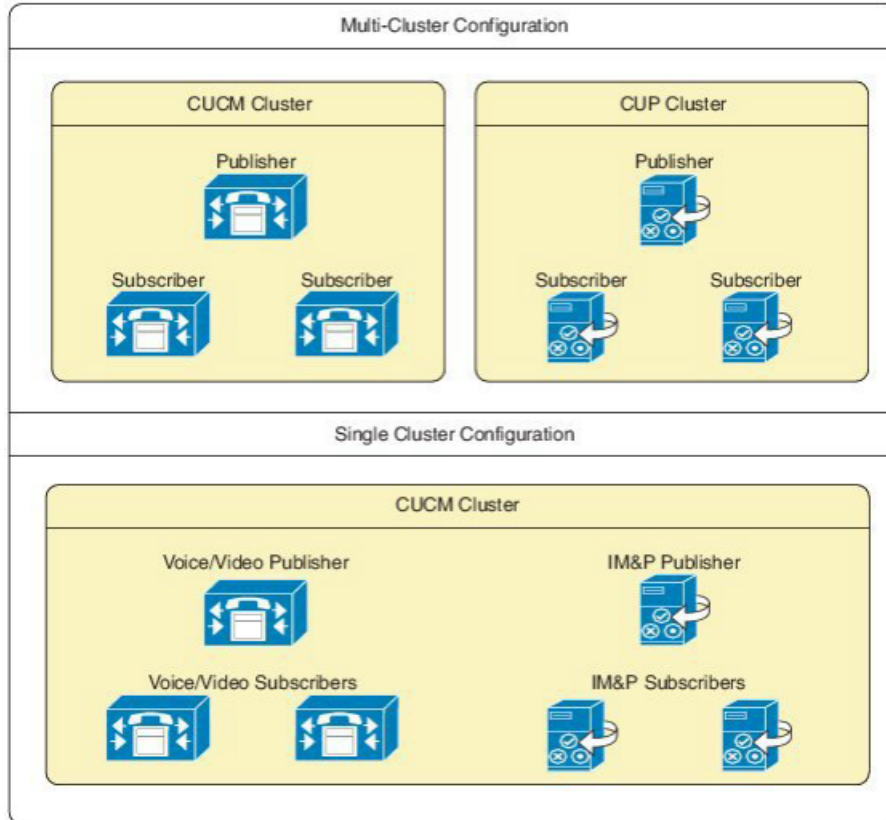
However, the IM and Presence Service servers are set up as part of the CUCM cluster itself, in what is called a *single-cluster* configuration.

#### Benefits of a Single-Cluster Configuration

VOSS Automate recommends a single-cluster configuration, which service providers are encouraged to use for any new clusters.

Single-cluster configurations have these benefits:

- Correctly represents the CUCM cluster with its IM and Presence Service servers in the management layer
- Eliminates the confusion that *multi-cluster* configurations can cause for administrators when these servers are shown in different clusters.



### Deprecation of Multi-Cluster Configurations

Multi-cluster configurations are deprecated and strongly discouraged. However, VOSS Automate continues to support multi-cluster configurations for backward compatibility and upgrades.

### Converting Multi-Cluster Configurations to Single Cluster

This procedure migrates your CUP (also known as IM and Presence Service) nodes to a CUCM cluster (single-cluster configuration - the recommended option).

Migrating CUP nodes to a CUCM cluster is hierarchy-specific:

- A Customer CUP node can only be migrated to a Customer CUCM cluster (not to a Provider or Reseller cluster)
- A Publisher IM\_P node is added first, then Subscriber nodes.

Conditions that apply when migrating your CUP to a CUCM cluster:

- Cluster versions must be the same for both the clusters
- The IPv4 address or hostname and domain configuration must not be duplicated within the cluster
- Two devices cannot have the same server name
- No more than one CUP publisher can be migrated to the same CUCM cluster
- Multiple subscribers can be migrated to the same CUCM cluster

**To convert existing multi-cluster configurations to single-cluster configuration:**

1. Log in as Provider, Reseller, or Customer administrator, depending on the hierarchy level where the CUP cluster was configured.
2. Set the hierarchy path to the hierarchy node where the CUP cluster was configured.
  - For a shared configuration, set the hierarchy to Provider or Reseller node.
  - For a dedicated configuration, set the hierarchy to a Customer node.
3. Go to (default menus) **Apps Management > CUP (deprecated) > Migrate CUP to CUCM Cluster**.
4. From the **From CUP Cluster** drop-down, choose the CUP cluster you wish to migrate.
5. From the **To CUCM Cluster** drop-down, choose the CUCM cluster to which you want to migrate the CUP cluster.
6. Click **Save**.

The migrated CUP server is removed from the list under **Apps Management > CUP > Servers** and now appears under **Apps Management > CUCM > Servers** as server type **IM\_P**.

The cluster name for the migrated servers is now the same as the CUCM cluster name.

### 9.1.7. Date Time Groups

#### Overview

Date Time Groups define time zones for the various devices that are connected to CUCM. Each device exists as a member of only one device pool, and each device pool has only one assigned Date Time Group.

CUCM automatically configures a default Date Time Group, called **CMLocal**, which syncs to the active date and time of the operating system on the server where CUCM is installed. You can change the settings for **CMLocal**, as required. Normally, adjust server Date and Time to the local time zone date and time.

---

**Tip:** For a worldwide distribution of Cisco Unified IP phones, create one named Date Time Group for each of the time zones in which you deploy endpoints.

---

#### Add Date Time Groups

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to a customer or site level.
3. If prompted, select the NDL that contains the Cisco Unified CM on which you are configuring the Date Time Group.
4. Choose an option:
  - Logged in as Provider or Reseller admin? Go to (default menus) **Apps Management > CUCM > Date Time Groups**.
  - Logged in as Customer admin? Go to (default menus) **Apps Management > Advanced > Date Time Groups**.
5. Click **Add**.

6. Provide the following information:

Field	Description
Group Name	Enter the name that you want to assign to the new Date Time Group. This field is mandatory.
Time Zone	Choose the time zone for the group that you are adding. This field is mandatory.
Separator	Choose the separator character to use between the date fields. This field is mandatory.
Date Format	Choose the date format for the date that displays on the Cisco Unified IP Phones. This field is mandatory.
Time Format	Choose a 12-hour or 24-hour time format. This field is mandatory.
Selected Phone NTP References	To ensure that a phone that is running SIP gets its date and time configuration from an NTP server, select the phone NTP references for the Date Time Group.

7. Click **Save**.

### 9.1.8. Time Periods

#### Overview

A time period specifies a time range that includes a start time and end time. Time periods also specify a repetition interval either as days of the week or a specified date on the yearly calendar. You define time periods and then associate the time periods with time schedules. A particular time period can be associated with multiple time schedules.

**Note:** VOSS Automate provides one **All the time** time period, which is a special, default time period that includes all days and hours, and cannot be deleted.

#### Configure Time Periods

1. Log in to the Admin Portal as a Provider, Reseller, or Customer administrator.
2. Set the hierarchy path to the node where you wish to configure the new time period.
3. Choose an appropriate option, based on your login:
  - Provider or Reseller administrator? Go to (default menus) **Apps Management > CUCM > Time Periods**.
  - Customer administrator? Go to (default menus) **Apps Management > Advanced > Time Periods**.
4. Choose an appropriate option:
  - To add a new time period, click **Add**, then go to Step 5.
  - To edit an existing time period, choose the time period to be updated by clicking it in the list of time periods, then go to Step 6.

5. To add a new time period, if the **Network Device List** popup window appears, choose the NDL for the time period from the drop-down menu. The window appears when you are on a nonsite hierarchy node. If you are at a site hierarchy node, the NDL associated with the site is automatically used.

---

**Note:** The **Network Device List** drop-down menu only appears when a time period is added; it does not appear when you edit a time period.

---

6. When adding or editing a time period, add or update a unique name for the time period in the **Name** field. This field is mandatory. Enter a name in the **Time Period Name** field. The name can comprise up to 50 alphanumeric characters. It can contain any combination of spaces, periods (.), hyphens (-), and underscore characters (\_).

Use concise and descriptive names for your time periods. The hours\_or\_days format usually provides a sufficient level of detail and is short enough to enable you to quickly and easily identify a time period. For example, office\_M\_to\_F identifies a time period for the business hours of an office from Monday to Friday.

7. Complete the other fields as appropriate.

Option	Description
Description	Enter a description for the time period.
Time of Day Start	From the drop-down list, choose the time when this time period starts. The available listed start times comprise 15-minute intervals throughout a 24-hour day. Default: No Office Hours Note: To start a time period at midnight, choose the 00:00 value.
Time of Day End	From the drop-down list, choose the time when this time period ends. The available listed end times comprise 15-minute intervals throughout a 24-hour day. Default: No Office Hours Note: To end a time period at midnight, choose the 24:00 value.

8. Choose a repetition period, and complete the required information:

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**Note:** If choosing to repeat the time period by the week, the **Repeat Every Year** fields are read-only. If choosing to repeat the time period by the year, the **Repeat Every Week** fields are read-only.

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**Repeat Every Week** - For time periods defined by the week

- From the **Start Day** drop-down menu, choose a day of the week on which this time period starts.
- From the **End Day** drop-down menu, choose a day of the week on which this time period ends.

**Repeat Every Year** - For time periods defined by the year

- From the **Start Month** drop-down menu, choose a month of the year on which this time period starts.
- Enter a number from 1 to 31 in the **Start Date** field to define the day of the month on which this time period starts.

- c. From the **End Month** drop-down menu, choose a month of the year on which this time period ends.
  - d. Enter a number from 1 to 31 in the **End Date** field to define the day of the month on which this time period ends.
    - For weekly time intervals, choose a Start Day on Mon and End Day of Fri for a time period starting on Mondays and ending on Fridays.
    - For weekly time intervals, choose Start Day and End Day values of Sat to define a time period that applies only on Saturdays.
    - For yearly time intervals, choose Start Month value of Jan and Start Date of 15, and End values of Mar and 15 to choose the days from January 15 to March 15.
    - For yearly time intervals, choose Start and End values of Jan and 1 to specify January 1 as the only day during which this time period applies.
9. Click **Save** to save the new or updated time period.

**Next steps:** Associate time periods with time schedules. See “Configure Time Schedules”.

---

**Note:** You can't delete time periods if they're used by any time schedules. Before deleting a time period that is currently in use, perform either or both of these tasks as appropriate:

- Assign a different time period to any time schedule that is using the time period that you want to delete.
  - Delete the time schedules that are using the time period that you want to delete.
- 

### 9.1.9. Time Schedules

#### Overview

A time schedule includes a group of time periods. Time schedules are assigned to partitions to set up time-of-day call routing. Time schedules determine the partitions where calling devices search when they are attempting to complete a call during a particular time of day. Multiple time schedules can use a single time period.

#### Configure Time Schedules

This procedure assigns a time period to a time schedule.

#### Prerequisites:

- Configure a time period. You can only assign the time period to a time schedule after you have configured a time period.

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**Note:** VOSS Automate provides one ‘All the time’ schedule. The ‘All the time’ schedule is a special, default time schedule that includes all days and hours, and cannot be deleted.

---

#### Perform these steps:

1. Log in to the Admin Portal as a Provider, Reseller, or Customer administrator.
2. Set the hierarchy path to the node where you want to create the new time schedule.



3. Choose an appropriate option, based on your login:
  - Provider or Reseller administrator? Go to (default menus) **Apps Management > CUCM > Time Schedules**.
  - Customer administrator? Go to (default menus) **Apps Management > Advanced > Time Schedules**.
4. Choose an appropriate action:
  - To add a new time schedule, click **Add**, then go to Step 5.
  - To edit an existing time schedule, choose the time schedule to be updated by clicking it in the list of time schedules. Go to Step 6.
5. If the **Network Device List** popup window appears, select the NDL for the time schedule from the drop-down menu. The window appears when you are on a nonsite hierarchy node. If you are at a site hierarchy node, the NDL associated with the site is automatically used.

---

**Note:** The **Network Device List** drop-down only appears when a time schedule is added; it does not appear when you edit a time schedule.

---

6. Enter a unique name for the new time schedule in the **Name** field, or modify the existing Name if desired. This field is mandatory. The name can comprise up to 50 alphanumeric characters. The name of the time schedule can contain any combination of spaces, periods (.), hyphens (-), and underscore characters (\_).
7. (Optional) Enter a description for the time schedule in the **Description** field.
8. Click the Plus icon (+) to open the **Time Periods** form.
9. From the **Time Period** drop-down box, choose a time period for the time schedule.
10. Repeat Steps 8 and 9 to add another time period to the time schedule.

---

**Note:**

- If multiple time periods are associated with a schedule where the time periods overlap, time periods with Day of Year settings take precedence over time periods with Day of Week settings. Day of Year is applicable when Year Start value is set and the End value is left blank.

Example: If a Time Period configured for January 1 is configured as No Office Hours and another time period is configured for the same day of the week (for example, Sunday to Saturday) as 08:00 to 17:00, the time period for January 1 is used. In this example, No Office Hours takes precedence.

- Time interval settings take precedence over No Office Hour settings for the same day of the year or day of the week.

Example: One time period specifies for Saturday as No Office Hours. Another time period specifies Saturday hours of 08:00 to 12:00. In this example, the resulting time interval specifies 08:00 to 12:00 for Saturday.

- If multiple time periods are associated with a schedule where the time periods overlap, time periods with Day of Week settings take precedence over time periods with Range of Days settings. Range of Days applies to when Year Start and End values are set, even if they are configured for the same day.

Example: If a Time Period configured for Day of Week (for example, Sunday to Saturday) is configured as No Office Hours and another time period is configured for January 1 until December

31 as 08:00 to 17:00, the time period for Day of Week is used. In this example, No Office Hours takes precedence.

---

11. To save the new time schedule, click **Save**, or to update time schedule, click **Update**.
12. Repeat Steps 3 to 11 to configure another time schedule.

### Next Steps

You cannot delete time schedules that partitions are using. Before deleting a time schedule that is currently in use, perform either or both of the following tasks:

- Assign a different time schedule to any partitions that are using the time schedule that you want to delete.
- Delete the partitions that are using the time schedule that you want to delete.

**Warning:** Before you delete a time schedule, check carefully to ensure that you are deleting the correct time schedule. You cannot retrieve deleted time schedules. If you accidentally delete a time schedule, you must rebuild it.

## 9.1.10. Locations

### Overview

Locations are used to implement call admission control in a centralized call-processing system. Call admission control enables you to regulate audio quality and video availability by limiting the amount of bandwidth that is available for audio and video calls over links between the locations.

**Important:** Locations are different to sites. Locations are used by CUCM to manage call admission control. Sites are used by VOSS Automate to logically group resources.

---

### Add Locations on CUCM

This procedure adds CUCM locations.

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to a customer or site level.
3. If prompted, select the NDL that contains the CUCM on which you are configuring the location.
4. Choose an option:
  - Logged in as Provider or Reseller admin? Go to (default menus) **Apps Management > CUCM > Locations**.
  - Logged in as Customer admin? Go to (default menus) **Device Management > Advanced > Locations**.
5. Click **Add**.
6. On the **Location Information** tab, enter the **Name** of the Location. This field is mandatory.

7. Click the **Intra-Location** tab, and complete at minimum, the mandatory *Intra-Location Fields*.
8. Click the **Between Locations** tab, and complete at minimum, the mandatory *Between Locations Fields*.
9. Click the **RSVP Settings** tab, and complete at minimum, the mandatory *RSVP Settings Fields*.
10. Click **Save**.

### Intra-Location Fields

Field	Description
Audio Bandwidth	Enter the maximum amount of audio bandwidth (in kb/s) that is available for all audio calls on the link between this location and other locations. For audio calls, the audio bandwidth includes overhead. Valid values are 0 to 2147483647, where 0 means unlimited bandwidth. This field is mandatory. Note: To improve audio quality, lower the bandwidth setting, so fewer active calls are allowed on this link.
Video Bandwidth	Enter the maximum amount of video bandwidth (in kb/s) that is available for all video calls on the link between this location and other locations. For video calls, the video bandwidth does not include overhead. Valid values are 1 through 2147483647, where 0 means unlimited bandwidth and 1 means no bandwidth. Setting the value to 1 means you cannot make video calls within this location. This field is mandatory.
Immersive Video Bandwidth	Enter the maximum amount of immersive video bandwidth (in kb/s) that is available for all immersive video calls on the link within this location. For video calls, the immersive video bandwidth does not include overhead. Valid values are 1 through 2147483647, where 0 means unlimited bandwidth and 1 means no bandwidth. Setting the value to 1 means you cannot make immersive video calls within this location. This field is mandatory.

**Between Locations Fields**

Field	Description
Location	Select a location from the list. This field is mandatory.
Weight	Enter the relative priority of this link in forming the Effective Path between any pair of Locations. The Effective Path has the least cumulative Weight of all possible paths. Valid values are 0-100. This field is mandatory.
Audio Bandwidth	Enter the maximum amount of audio bandwidth (in kb/s) that is available for all audio calls on the link between this location and other locations. For audio calls, the audio bandwidth includes overhead. Valid values are 0 to 2147483647, where 0 means unlimited bandwidth. You can also select Unlimited Bandwidth. This field is mandatory.
Video Bandwidth	Enter the maximum amount of video bandwidth (in kb/s) that is available for all video calls on the link between this location and other locations. For video calls, the video bandwidth does not include overhead. Valid values are 1 through 2147483647, where 0 means unlimited bandwidth and 1 means no bandwidth. You can also select Unlimited Bandwidth or None. Setting the value to <b>None</b> means you cannot make video calls between this location and other locations. This field is mandatory.
Immersive Video Bandwidth	Enter the maximum amount of immersive video bandwidth (in kb/s) that is available for all immersive video calls on the link between this location and other locations. For video calls, the immersive video bandwidth does not include overhead. Valid values are 1 through 2147483647, where 0 means unlimited bandwidth and 1 means no bandwidth. You can also select <b>Unlimited Bandwidth</b> or <b>None</b> . Setting the value to <b>None</b> means you cannot make immersive video calls between this location and other locations. This field is mandatory.

## RSVP Settings Fields

Field	Description
Location	To change the RSVP policy setting between the current location and a location that displays in this pane, choose a location in this pane. This field is mandatory.
RSVP Setting	<p>To choose an RSVP policy setting between the current location and the location that is chosen in the Location pane at left, choose an RSVP setting from the drop-down list. This field is mandatory.</p> <p>Choose from the following available settings:</p> <ul style="list-style-type: none"> <li>• <b>Use System Default</b> - The RSVP policy for the location pair matches the clusterwide RSVP policy. See topics related to clusterwide default RSVP policy in the Cisco Unified Communications Manager System Guide for details: <ul style="list-style-type: none"> <li>– <b>No Reservation</b> - No RSVP reservations can get made between any two locations.</li> <li>– <b>Optional (Video Desired)</b> - A call can proceed as a best-effort audio-only call if failure to obtain reservations for both audio and video streams occurs. RSVP Agent continues to attempt RSVP reservation and informs Cisco Unified Communications Manager if reservation succeeds.</li> <li>– <b>Mandatory</b> - Cisco Unified Communications Manager does not ring the terminating device until RSVP reservation succeeds for the audio stream and, if the call is a video call, for the video stream too.</li> <li>– <b>Mandatory (Video Desired)</b> - A video call can proceed as an audio-only call if a reservation for the video stream cannot be reserved.</li> </ul> </li> </ul>

### 9.1.11. Configure Regions

#### Overview

Regions can only be added at a Customer or Site hierarchy level. Regions added directly on CUCM are synced in at the hierarchy level the CUCM is configured at in VOSS Automate.

Regions can be modified or deleted at any hierarchy level. When deleting a region, related regions can't be removed from a region. They exist until either region is deleted.

#### Add or Manage Regions

This procedure adds, edits, and deletes regions.

1. Log in as Provider, Reseller or Customer administrator.
2. Go to (default menus) **Apps Management > CUCM > Regions**.
3. Choose the hierarchy (Customer or Site).
4. Choose an option:
  - To delete a region, click on the name of the relevant region, then click **Delete**. Click **Yes** to confirm.
  - To edit an existing region, click on the name of the relevant region. Go to step 5.

- To add a new region, click **Add**. Go to step 5.
5. At **CUCM** drop-down menu, choose or modify the CUCM (network device) for the region.
  6. At the **Name** field, for a new region, enter a unique name for the region, or to edit the region, update the name, if required.

---

**Note:** If region is for a CUCM group, use **AR\_RSMSimPhone** as the region name.

---

7. At **Related Regions**, add or update the following details, as required:

Option	Description
Region Name	Drop-down menu with list of available regions. This field is mandatory.
Audio Codec Preference List	This is a drop-down containing available Audio Codec Preference Lists. The default codec is G.711.
Audio Bandwidth	Maximum Audio Bit Rate (kbps). This field is mandatory. If region is for a CUCM group, choose 64 kbps (G.711)
Video Bandwidth	Maximum Session Bit Rate for Video Calls (kbps). This field is mandatory.
Immersive Video Bandwidth	Maximum Session Bit Rate for Immersive Video Calls (kbps). This field is mandatory.

8. Click **Save**.

## 9.1.12. Device Pools

### Overview

Device pools define sets of common characteristics for devices. The device pool structure supports the separation of user and location information. The device pool contains system, device, and location-related information.

After adding a new device pool, you can use it to configure devices, such as Cisco Unified IP Phones, gateways, conference bridges, transcoders, media termination points, voice-mail ports, and CTI route points.

### Add or Manage Device Pools

1. Log in to the Admin Portal as Provider, Reseller, or Customer administrator.
2. If you're logged in as:
  - Provider or Reseller administrator: Go to (default menus) **Apps Management > CUCM > Device Pools**.
  - Customer administrator: Go to (default menus) **Apps Management > Advanced > CUCM > Device Pools**.
3. Choose an option:

**To add a new device pool**

- Click **Add**.
- Choose the network device list (NDL) where you want to add the new device pool.

---

**Note:** You won't need to choose a NDL if you're adding the device pool at a site. In this case, you will use the NDL associated with the site.

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- Click **OK**.
- On the **Device Pool Settings** tab, at **Device Pool Name**, fill out the device pool name as **RSMSimPhone\_DP**.
- From the **Cisco Unified CM Group** drop-down, choose **RSMSimPhone**.
- On the **Roaming Sensitive Settings** tab, from the **Date/Time Group** drop-down, choose the appropriate date/time group.
- From the **Region** drop-down, choose **AR\_RSMSimPhone**.
- From the **SRST Reference** drop-down, choose **Disable**.

**To edit a device pool**

- Click on the relevant device pool in the list.
- Go to step 4.

**To delete a device pool**

- In the list view, select the checkbox adjacent to the **Name** column for the device pool you want to remove.
- Click **Delete**.

4. To configure or update device pool properties, click through the tabs on the page and fill out at least the mandatory fields:

- Device Pool Settings tab
- Local Route Group Settings tab
- Roaming Sensitive Settings tab
- Device Mobility Related Information tab
- Geolocation Configuration\*\* tab
- Incoming Calling Party Settings tab
- Incoming Called Party Settings tab
- Caller ID for Calls from This Phone tab
- Connected Party Settings tab
- Redirecting Party Settings tab

5. Click **Save**. The route partition appears in the device pool list.

### Associate a Local Route Group to a Device Pool

This procedure associates a local route group with an existing device pool for each site.

This allows calls from a device that is tied to a device pool to go out on a specific route group based on the call type. For example, you can associate multiple local route groups such as Emergency Route Group, Primary Local Route Group (for site A), Secondary Local Route Group (for site A), Primary Local Route Group (for site B), and Secondary Local Route Group (for site B).

Local Route groups allow you to specify different route groups for each site (site A and site B) for the respective device pool. Also, you can define a separate call routing option for emergency calls when you associate the Emergency Route Group with a different route group. Hence you can easily define separate call routing options for emergency calls and PSTN calls.

1. Log in as Provider, Reseller, or Customer administrator.

**Warning:** When associating a local route group, ensure that you select a valid site under your customer in the hierarchy node breadcrumb at the top of the view. If you attempt to associate a local route group at any other node in the hierarchy, a popup alerts you to select a site hierarchy node.

2. Choose an option:
  - Logged in as Provider or Reseller admin? Go to (default menus) **Apps Management > CUCM > Device Pools**.
  - Logged in as Customer admin? Go to (default menus) **Apps Management > Advanced > Device Pools**.
3. Click the device pool to be associated.
4. From the **Cisco Unified CM Group** drop-down menu, select a specific Cisco Unified Communications Manager group or leave the Cisco Unified CM Group as Default.
5. Configure setting in the **Local Route Group Settings** tab/panel:
  - a. In the grid, from the **Local Route Group** drop-down menu, select the local route group.
  - b. In the grid, from the **Route Group** drop-down menu, select the route group or gateway.
6. Save the new local route association.

### Device Pools Configuration Settings

#### Device Pool Settings

The table describes the device pool settings and values on the Device Pool Settings tab/panel:



Option	Description
Device Pool Name *	Enter the name of the new device pool that you are creating. You can enter up to 50 characters, which include alphanumeric characters, periods (.), hyphens (-), underscores (_), and blank spaces. Default value: None
Cisco Unified CM Group *	Choose the Cisco Unified Communications Manager group to assign to devices in this device pool. A Unified CM group specifies a prioritized list of up to three Unified CMs. The first Unified CM in the list serves as the primary one for that group. The other members of the group serve as backup Unified CMs for redundancy.
Calling Search Space for Auto-registration	Choose the calling search space to assign to devices in this device pool that auto-register with Unified CM. The calling search space specifies partitions that devices can search when attempting to complete a call.
Adjunct CSS	From the drop-down list, choose an existing Calling Search Space (CSS) to use for the devices in this device profile as an adjunct CSS for the Extension Mobility Cross Cluster (EMCC) feature. To configure a new CSS or modify an existing CSS, choose <b>Call Routing &gt; Class of Control &gt; Calling Search Space</b> in Unified CM Administration. When configuring the EMCC feature, the administrator must configure a device pool for each remote cluster. If the remote cluster is located in a different country, the adjunct CSS must embrace the partition with which the emergency patterns of that country associate. This configuration facilitates country-specific emergency call routing. Default value: None
Reverted Call Focus Priority	Choose a clusterwide priority setting for reverted calls that the hold reversion feature invokes. This setting specifies which call type, incoming calls or reverted calls, have priority for user actions, such as going off hook. <ul style="list-style-type: none"> <li>• <b>Default</b>-If you choose this option, incoming calls have priority.</li> <li>• <b>Highest</b>-If you choose this option, reverted calls have priority.</li> </ul> The <b>Not Selected</b> setting specifies the reverted call focus priority setting for the default device pool at installation. At installation, incoming calls have priority. You cannot choose this setting in Unified CM. Note: This setting applies specifically to hold reverted calls; it does not apply to parked reverted calls.
Intercompany Media Services Enrolled Group	Choose an <b>Intercompany Media Services Enrolled Group</b> from the drop-down list.

### Local Route Group Settings

The table describes the device pool settings and values on the Local Route Group Settings tab/panel:

Option	Description
Local Route Group	From the drop-down, choose the name of the local route group to associate with this device pool.
Route Group	From the drop-down, choose the value for the local route group to associate with this device pool.

## Roaming Sensitive Settings

The table describes the device pool settings and values on the Roaming Sensitive Settings tab/panel:

Option	Description
Date/Time Group *	Choose the date/time group to assign to devices in this device pool. The date/time group specifies the time zone and the display formats for date and time. Default value: None
Region *	Choose the Unified CM region to assign to devices in this device pool. The Unified CM region settings specify voice codec that can be used for calls within a region and between other regions. Default value: None
Media Resource Group List	From the drop-down list, choose a media resource group list. A media resource group list specifies a prioritized list of media resource groups. An application selects the required media resource (for example, a music on hold server, transcoder, or conference bridge) from the available media resource groups according to the priority order defined in a media resource group list. Default value: None
Location	Use locations to implement call admission control (CAC) in a centralized call-processing system. CAC enables you to regulate audio quality and video availability. It works by limiting the amount of bandwidth that is available for audio and video calls over links between locations. The location specifies the total bandwidth that is available for calls to and from this location. From the drop-down list, choose the appropriate location for this device pool. A location setting of <b>None</b> or <b>Hub_None</b> means that the locations feature does not track the bandwidth that the devices in this pool consume. A location setting of <b>Phantom</b> specifies a location that enables successful CAC across intercluster trunks that use H.323 protocol or SIP. Default value: None
Network Locale	From the drop-down list, choose the locale that is associated with phones and gateways. The network locale contains a definition of the tones and cadences that the phones and gateways in the device pool in a specific geographic area use. Make sure that you select a network locale that all of the phones and gateways that use this device pool can support. Note: If the user does not choose a network locale, the locale that is specified in the Unified CM clusterwide parameters as Default Network Locale applies. Note: Choose only a network locale that is already installed and supported by the associated devices. The list contains all available network locales for this setting, but not all are necessarily installed. When a device is associated with a network locale that it does not support in the firmware, the device fails to come up. Default value: None

Option	Description
SRST Reference *	<p>From the drop-down list, choose a survivable remote site telephony (SRST) reference to assign to devices in this device pool. Choose from these options:</p> <ul style="list-style-type: none"> <li>• <b>Disable</b> - When you choose this option, devices in this device pool do not have SRST reference gateways that are available to them.</li> <li>• <b>Use Default Gateway</b> - When you choose this option, devices in this device pool use the default gateway for SRST.</li> <li>• <b>Existing SRST references</b> - When you choose an SRST reference from the drop-down list, devices in this device pool use this SRST reference gateway.</li> </ul> <p>Default value: None</p>
Connection Monitor Duration	<p>This setting defines the time that the Cisco Unified IP Phone monitors its connection to Unified CM before it un-registers from SRST and re-registers to Unified CM.</p> <p>To use the configuration for the enterprise parameter, you can enter “&amp;#129;1” or leave the field blank. The default value for the enterprise parameter equals 120 seconds.</p> <p>Tip: When you change the value of the connection monitor duration, it applies only to the device pool that is being updated. All other device pools use the value in their own connection monitor duration fields or use the value that is configured in the enterprise parameter.</p>
Single Button Barge	<p>This setting determines whether the devices or phone users in this device pool have single-button access for barge and cBarge. From the drop-down list, choose from these options:</p> <ul style="list-style-type: none"> <li>• <b>Off</b> - When you choose this option, the devices in this device pool have the Single Button Barge/cBarge feature disabled.</li> <li>• <b>Barge</b> - When you choose this option, the devices in this device pool have the Single Button Barge feature enabled.</li> <li>• <b>cBarge</b> - When you choose this option, the devices in this device pool have the Single Button cBarge feature enabled.</li> <li>• <b>Default</b> - When you choose this option, the devices in this device pool use the service parameter setting for the Single Button Barge/cBarge feature.</li> </ul> <p>Default value: Default</p>
Join Access Lines	<p>This setting determines whether the Join Access Lines feature is enabled for the devices or phone users in this device pool. From the drop-down list, choose from these options:</p> <ul style="list-style-type: none"> <li>• <b>Off</b> - When you choose this option, the devices in this device pool have the Join Access Lines feature disabled.</li> <li>• <b>On</b> - When you choose this option, the devices in this device pool have the Join Access Lines feature enabled.</li> <li>• <b>Default</b> - When you choose this option, the devices in this device pool use the service parameter setting for the Join Access Lines feature.</li> </ul> <p>Default value: Default</p>
Physical Location	<p>Select the physical location for this device pool. The system uses physical location with the device mobility feature to identify the parameters that relate to a specific geographical location.</p> <p>Default value: None</p>

Option	Description
Device Mobility Group	Device mobility groups represent the highest level geographic entities in your network and are used to support the device mobility feature. Default value: None
Wireless LAN Profile Group	Choose a wireless LAN profile group from the drop-down list. Note: You can specify the Wireless LAN Profile Group at the Device Pool level or the individual phone level.

### Device Mobility Related Information

The table describes the device pool settings and values on the Device Mobility Related Information tab/panel:

Option	Description
Device Mobility Calling Search Space	Choose the appropriate calling search space to be used as the device calling search space when the device is roaming and in the same device mobility group. Default value: None
AAR Calling Search Space	Choose the appropriate calling search space for the device to use when automated alternate routing (AAR) is performed. The AAR calling search space specifies the collection of route partitions that are searched to determine how to route a collected (originating) number that is otherwise blocked due to insufficient bandwidth. Default value: None
AAR Group	Choose the automated alternate routing (AAR) group for this device. The AAR group provides the prefix digits that are used to route calls that are otherwise blocked due to insufficient bandwidth. An AAR group setting of <b>None</b> specifies that no rerouting of blocked calls is attempted. Default value: None
Calling Party Transformation CSS	This setting allows you to localize the calling party number on the device. Make sure that the Calling Party Transformation CSS that you choose contains the calling party transformation pattern that you want to assign to this device pool. Tip: Before the call occurs, the device must apply the transformation by using digit analysis. Note: If you configure the Calling Party Transformation CSS as <b>None</b> for the device pool and you select the <b>Use Device Pool Calling Party Transformation CSS</b> check box in the device configuration window, the transformation does not match and does not get applied. Ensure that you configure the Calling Party Transformation Pattern in a non-null partition that is not used for routing. Default value: None
Called Party Transformation CSS	This setting allows you to localize the called party number on the device. Make sure that the Called Party Transformation CSS that you choose contains the called party transformation pattern that you want to assign to this device pool. Note: If you configure the Called Party Transformation CSS as <b>None</b> , the transformation does not match and does not get applied. Ensure that you configure the Called Party Transformation pattern in a non-null partition that is not used for routing. Default value: None

## Geolocation Configuration

The table describes the device pool settings and values on the Geolocation Configuration tab/panel:

Option	Description
Geolocation	From the drop-down list, choose a geolocation. You can choose the Unspecified geolocation, which designates that the devices in this device pool do not associate with a geolocation. Default value: None
Geolocation Filter	From the drop-down list, choose a geolocation filter. If you leave the <None> setting, no geolocation filter gets applied for the devices in this device pool. Default value: None

### Incoming Calling Party Settings

The table describes the device pool settings and values on the Incoming Calling Party Settings tab/panel:

Option	Description
National Prefix	Unified CM applies the prefix that you enter in this field to calling party numbers that use <b>National</b> for the Calling Party Numbering Type. You can enter up to eight characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). You can enter the word "Default" instead of entering a prefix. If the word "Default" displays in the <b>Prefix</b> field, Unified CM applies the service parameter configuration for the incoming calling party prefix, which supports both the prefix and strip digit functionality.
National Strip Digits	Enter the number of digits, up to the number 24, that you want Unified CM to strip from the calling party number of National type before it applies the prefixes.
National Calling Search Space	This setting allows you to globalize the calling party number of National calling party number type on the device. Make sure that the calling search space that you choose contains the calling party transformation pattern that you want to assign to this device. Before the call occurs, the device must apply the transformation by using digit analysis. If you configure the CSS as <b>None</b> , the transformation does not match and does not get applied. Make sure that you configure the calling party transformation pattern in a non-null partition that is not used for routing.
International Prefix	Unified CM applies the prefix that you enter in this field to calling party numbers that use <b>International</b> for the Calling Party Numbering Type. You can enter up to eight characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). You can enter the word "Default" instead of entering a prefix. If the word "Default" displays in the <b>Prefix</b> field in the <b>Device Pool Configuration</b> window, Unified CM applies the service parameter configuration for the incoming calling party prefix, which supports both the prefix and strip digit functionality.
International Strip Digits	Enter the number of digits, up to the number 24, that you want Unified CM to strip from the calling party number of International type before it applies the prefixes.
International Calling Search Space	This setting allows you to globalize the calling party number of International calling party number type on the device. Make sure that the calling party transformation CSS that you choose contains the calling party transformation pattern that you want to assign to this device. Before the call occurs, the device must apply the transformation by using digit analysis. If you configure the CSS as <b>None</b> , the transformation does not match and does not get applied. Ensure that you configure the calling party transformation pattern in a non-null partition that is not used for routing.

Option	Description
Unknown Prefix	Unified CM applies the prefix that you enter in this field to calling party numbers that use <b>Unknown</b> for the Calling Party Numbering Type. You can enter up to eight characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). If the word "Default" displays in the <b>Prefix</b> field in the Device Pool Configuration window, Unified CM applies the service parameter configuration for the incoming calling party prefix, which supports both the prefix and strip digit functionality.
Unknown Strip Digits	Enter the number of digits, up to the number 24, that you want Unified CM to strip from the calling party number of Unknown type before it applies the prefixes.
Unknown Calling Search Space	This setting allows you to globalize the calling party number of "Unknown" calling party number type on the device. Make sure that the calling party transformation CSS that you choose contains the calling party transformation pattern that you want to assign to this device. Before the call occurs, the device must apply the transformation by using digit analysis. If you configure the CSS as <b>None</b> , the transformation does not match and does not get applied. Ensure that you configure the calling party transformation pattern in a non-null partition that is not used for routing.
Subscriber Prefix	Unified CM applies the prefix that you enter in this field to calling party numbers that use <b>Subscriber</b> for the Calling Party Numbering Type. You can enter up to eight characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). If the word "Default" displays in the <b>Prefix</b> field in the <b>Device Pool Configuration</b> window, Unified CM applies the service parameter configuration for the incoming calling party prefix, which supports both the prefix and strip digit functionality.
Subscriber Strip Digits	Enter the number of digits, up to the number 24, that you want Unified CM to strip from the calling party number of Subscriber type before it applies the prefixes.
Subscriber Calling Search Space	This setting allows you to globalize the calling party number of <b>Subscriber</b> calling party number type on the device. Make sure that the CSS that you choose contains the calling party transformation pattern that you want to assign to this device. Before the call occurs, the device must apply the transformation by using digit analysis. If you configure the CSS as <b>None</b> , the transformation does not match and does not get applied. Ensure that you configure the calling party transformation pattern in a non-null partition that is not used for routing.

### Incoming Called Party Settings

The table describes the device pool settings and values on the Incoming Called Party Settings Configuration tab/panel:



Option	Description
National Prefix	<p>Unified CM applies the prefix that you enter in this field to calling party numbers that use <b>National</b> for the Called Party Numbering Type.</p> <p>You can enter up to sixteen (16) characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). You can enter the word "Default" instead of entering a prefix.</p> <p>Tip:</p> <p>If the word "Default" displays in the <b>Gateway</b> or <b>Trunk Configuration</b> window, you cannot configure the <b>Strip Digits</b> field in the Gateway or Trunk Configuration window. In this case, Unified CM takes the configuration for the <b>Prefix</b> and <b>Strip Digits</b> fields from the device pool that is applied to the device. If the word "Default" displays in the <b>Prefix</b> field in the <b>Device Pool Configuration</b> window, Unified CM applies the service parameter configuration for the incoming called party prefix, which supports both the prefix and strip digit functionality.</p> <p>Tip:</p> <p>To configure the <b>Strip Digits</b> field, leave the <b>Prefix</b> field blank or enter a valid configuration in the <b>Prefix</b> field. To configure the <b>Strip Digits</b> fields, do not enter the word "Default" in the <b>Prefix</b> field.</p>
National Strip Digits	Enter the number of digits, that you want Unified CM to strip from the called party number of "Unknown" type before it applies the prefixes.
National Calling Search Space	This setting allows you to transform the called party number of "Unknown" called party number type on the device. If you choose <b>None</b> , no transformation occurs for the incoming called party number. Make sure that the calling search space that you choose contains the called party transformation pattern that you want to assign to this device.
International Prefix	<p>Unified CM applies the prefix that you enter in this field to called party numbers that use <b>National</b> for the Called Party Numbering Type. You can enter up to 16 characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). You can enter the word "Default" instead of entering a prefix.</p> <p>Tip:</p> <p>If the word "Default" displays in the <b>Prefix</b> field in the Gateway or Trunk Configuration window, you cannot configure the <b>Strip Digits</b> field in the Gateway or Trunk Configuration window. In this case, Unified CM takes the configuration for the <b>Prefix</b> and <b>Strip Digits</b> fields from the device pool that is applied to the device. If the word "Default" displays in the <b>Prefix</b> field in the Device Pool Configuration window, Unified CM applies the service parameter configuration for the incoming called party prefix, which supports both the prefix and strip digit functionality.</p> <p>Tip:</p> <p>To configure the <b>Strip Digits</b> field, leave the <b>Prefix</b> field blank or enter a valid configuration in the <b>Prefix</b> field. To configure the <b>Strip Digits</b> fields, do not enter the word "Default" in the <b>Prefix</b> field.</p>
International Strip Digits	Enter the number of digits that you want Unified CM to strip from the called party number of International type before it applies the prefixes.
International Calling Search Space	This setting allows you to transform the called party number of International called party number type on the device. If you choose <b>None</b> , no transformation occurs for the incoming called party number. Make sure that the calling search space that you choose contains the called party transformation pattern that you want to assign to this device.

Option	Description
Unknown Prefix	<p>Unified CM applies the prefix that you enter in this field to called numbers that use <b>Unknown</b> for the Called Party Numbering Type. You can enter up to sixteen characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). You can enter the word "Default" instead of entering a prefix.</p> <p>Tip: If the word "Default" displays in the <b>Prefix</b> in the Gateway or Trunk window, you cannot configure the <b>Strip Digits</b> in the Gateway or Trunk Configuration window. In this case, Unified CM takes the configuration for the <b>Prefix</b> and <b>Strip Digits</b> fields from the device pool that is applied to the device. If the word "Default" displays in the <b>Prefix</b> field in the Device Pool Configuration window, Unified CM applies the service parameter configuration for the incoming called party prefix, which supports both the prefix and strip digit functionality.</p> <p>Tip: To configure the <b>Strip Digits</b> field, leave the <b>Prefix</b> field blank or enter a valid configuration in the <b>Prefix field</b>. To configure the <b>Strip Digits</b> fields, do not enter the word "Default" in the <b>Prefix</b> field.</p>
Unknown Strip Digits	Enter the number of digits, that you want Unified CM to strip from the called party number of "Unknown" type before it applies the prefixes.
Unknown Calling Search Space	This setting allows you to transform the called party number of "Unknown" called party number type on the device. If you choose <b>None</b> no transformation occurs for the incoming called party number. Make sure that the calling search space that you choose contains the called party transformation pattern that you want to assign to this device.
Subscriber Prefix	<p>Unified CM applies the prefix that you enter in this field to called numbers that use <b>Subscriber</b> for the Called Party Numbering Type. You can enter up to sixteen characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). You can enter the word "Default" instead of entering a prefix.</p> <p>Tip: If the word "Default" displays in the <b>Prefix</b> field in the Gateway or Trunk Configuration window, you cannot configure the <b>Strip Digits</b> field in the Gateway or Trunk Configuration window. In this case, Unified CM takes the configuration for the <b>Prefix</b> and <b>Strip Digits</b> fields from the device pool that is applied to the device. If the word "Default" displays in the <b>Prefix</b> field in the Device Pool Configuration window, Unified CM applies the service parameter configuration for the incoming called party prefix, which supports both the prefix and strip digit functionality.</p> <p>Tip: To configure the <b>Strip Digits</b> field, leave the <b>Prefix</b> field blank or enter a valid configuration in the <b>Prefix</b> field. To configure the <b>Strip Digits</b> fields, do not enter the word "Default" in the <b>Prefix</b> field.</p>
Subscriber Strip Digits	Enter the number of digits, that you want Unified CM to strip from the called party number of Subscriber type before it applies the prefixes.
Subscriber Calling Search Space	This setting allows you to transform the called party number of Subscriber called party number type on the device. If you choose <b>None</b> , no transformation occurs for the incoming called party number. Make sure that the calling search space that you choose contains the called party transformation pattern that you want to assign to this device.

### Caller ID For Calls From This Phone

The table describes the device pool settings and values on the Caller ID For Calls From This Phone tab/panel:

Option	Description
Calling Party Transformation CSS	From the drop-down list, choose the CSS that contains the Calling Party Transformation Pattern that you want to apply to devices in this device pool. When Unified CM receives a call from a device in this device pool on an inbound line, Unified CM immediately applies the calling party transformation patterns in this CSS to the digits in the calling party number before it routes the call. This setting allows you to apply digit transformations to the calling party number before Unified CM routes the call. For example, a transformation pattern can change a phone extension to appear as an E.164 number.

### Connected Party Settings

The table describes the device pool settings and values on the Connected Party Settings tab/panel:

Option	Description
Connected Party Transformation CSS	This setting is applicable for inbound calls only. This setting allows you to transform the connected party number on the device to display the connected number in another format, such as a DID or E164 number. Unified CM includes the transformed number in the headers of various SIP messages, including 200 OK and mid-call update/reinvite messages for SIP calls and in the Connected Number Information Element of CONNECT and NOTIFY messages for H.323 and MGCP calls. Make sure that the Connected Party Transformation CSS that you choose contains the called party transformation pattern that you want to assign to this device pool. Note: If you configure the Connected Party Transformation CSS as <b>None</b> , the transformation does not match and does not get applied. Ensure that you configure the Calling Party Transformation pattern used for Connected Party Transformation in a non-null partition that is not used for routing.

## Redirecting Party Settings

The table describes the device pool settings and values on the Redirecting Party Settings tab/panel:

Option	Description
Redirecting Party Transformation CSS	<p>This setting allows you to transform the redirecting party number on the device to E164 format. Unified CM includes the transformed number in the diversion header of invite messages for SIP trunks and in the Redirecting Number Information Element of setup message (for H.323 and MGCP) sent out of Unified CM. Make sure that the Redirecting Party Transformation CSS that you choose contains the called party transformation pattern that you want to assign to this device pool. that the Connected Party Transformation CSS that you choose contains the called party transformation pattern that you want to assign to this device pool.</p> <p>Note: If you configure the Redirecting Party Transformation CSS as <b>None</b>, the transformation does not match and does not get applied. Ensure that you configure the Redirecting Party Transformation CSS in a non-null partition that is not used for routing.</p>

### 9.1.13. SIP Profiles

provider

#### Add or Manage SIP Profiles

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the node where the Cisco Unified Communications Manager (CUCM, or CallManager) is configured.
3. Perform one of the following:
  - If you're signed in as a provider or reseller administrator, choose **Apps Management > CUCM > SIP Profiles**.
  - If you're signed in as a customer administrator, choose **Apps Management > Advanced > SIP Profiles**.
4. Choose an option:
  - To add a new SIP profile, click **Add**, then go to Step 5.
  - To edit an existing SIP profile, choose the SIP profile to be updated by clicking it in the list of SIP profiles. Go to Step 6.
5. If the **Network Device List** popup window appears, select the NDL for the SIP profile from the drop-down menu.

The window appears when you are on a non-site hierarchy node. If you are at a site hierarchy node, the NDL associated with the site is automatically used.

Note:

The **Network Device List** drop-down menu only appears when a SIP profile is added; it does not appear when you edit a SIP profile.

6. Enter a unique name for the new SIP profile in the **Name** field, or modify the existing **Name** if desired.
7. On the **SIP Profile Information** tab, complete at minimum, the mandatory *SIP Profile Information Fields*.
8. On the **SDP Information** tab, complete at minimum, the mandatory *SDP Information Fields*.
9. On the **Parameters used in Phone** tab, complete the required *Parameters used in Phone Fields*.
10. On the **Normalization Script** tab, complete the required *Normalization Script Fields*.
11. On the **Incoming Requests FROM URI Strings** tab, complete the required *Incoming Requests FROM URI Strings Fields*.
12. On the **Trunk Specific Configuration** tab, complete at minimum, the mandatory *Trunk Specific Configuration Fields*.
13. On the **Trunk SIP OPTIONS Ping** tab, complete the required *Trunk SIP OPTIONS Ping Fields*.
14. On the **Trunk SDP Information** tab, complete the required *Trunk SDP Information Fields*.
15. Click **Save** to save a new SIP profile or to update an existing SIP profile.

## SIP Profile Information Fields

Option	Description
Name (Mandatory)	Enter a name to identify the SIP profile; for example, SIP_7905. The value can include 1 to 50 characters, including alphanumeric characters, dot, dash, and underscores.
Description (Optional)	This field identifies the purpose of the SIP profile; for example, SIP for 8865. The description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&), back-slash (\), or angle brackets (<>).
Default MTP Telephony Event Payload Type (Optional)	<p>This field specifies the default payload type for RFC2833 telephony event. See RFC 2833 for more information. Usually, the default value specifies the appropriate payload type. Be sure that you have a good understanding of this parameter before changing it, as changes could result in DTMF tones not being received or generated.</p> <p>Default-101 Range-96 to 127</p> <p>This parameter's value affects calls with the following conditions:</p> <ul style="list-style-type: none"> <li>• An outgoing SIP call from Cisco Unified Communications Manager</li> <li>• For the calling SIP trunk, the <b>Media Termination Point Required</b> check box is checked on the SIP Trunk Configuration window</li> </ul>
Early Offer for G.Clear Calls (Optional)	<p>This feature supports both standards-based G.Clear (CLEARMODE) and proprietary Cisco Session Description Protocols (SDP).</p> <p>To enable or disable Early Offer for G.Clear Calls, choose one of the following options:</p> <ul style="list-style-type: none"> <li>• Disabled</li> <li>• CLEARMODE</li> <li>• CCD</li> <li>• G.nX64</li> <li>• X-CCD</li> </ul>

Option	Description
User-Agent and Server header information (Mandatory)	<p>This feature indicates how Unified CM handles the User-Agent and Server header information in a SIP message.</p> <p>Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Send Unified CM Version Information as User-Agent Header</b> - For INVITE requests, the User-Agent header is included with the CM version header information. For responses, the Server header is omitted. Unified CM passes any contact headers through untouched.</li> <li>• <b>Pass Through Received Information as Contact Header Parameters</b> - If selected, the User-Agent and Server header information is passed as Contact header parameters. The User-Agent and Server header is derived from the received Contact header parameters, if present. Otherwise, they are taken from the received User-Agent and Server headers.</li> <li>• <b>Pass Through Received Information as User-Agent and Server Header</b> - If selected, the User-Agent and Server header information is passed as User-Agent and Server headers. The User-Agent and Server header is derived from the received Contact header parameters, if present. Otherwise, they are taken from the received User-Agent and Server headers.</li> </ul> <p>Default: Send Unified CM Version Information as User-Agent Header</p>
Version in User Agent and Server Header (Mandatory)	<p>This field specifies the portion of the installed build version that is used as the value of the User Agent and Server Header in SIP requests. Possible values are:</p> <ul style="list-style-type: none"> <li>• <b>Major and Minor</b>; for example, Cisco-CUCM10.6</li> <li>• <b>Major</b>; for example, Cisco-CUCM10</li> <li>• <b>Major, Minor and Revision</b>; for example, Cisco-CUCM10.6.2</li> <li>• <b>Full Build</b>; for example, Cisco-CUCM10.6.2.98000-19</li> <li>• <b>None</b>; header is omitted</li> </ul> <p>Default: Major and Minor</p>
Dial String Interpretation (Mandatory)	<p>Possible values are:</p> <ul style="list-style-type: none"> <li>• Phone number consists of characters 0-9, *, #, and + (others treated as URI addresses). This is the default value.</li> <li>• Phone number consists of characters 0-9, A-D, *, #, and + (others treated as URI addresses)</li> <li>• Always treat all dial strings as URI addresses</li> </ul>
Redirect by Application (Optional)	<p>If you select this check box and configure this SIP Profile on the SIP trunk, the Unified CM administrator can:</p> <ul style="list-style-type: none"> <li>• Apply a specific calling search space to redirected contacts that are received in the 3xx response.</li> <li>• Apply digit analysis to the redirected contacts to make sure that the calls get routed correctly.</li> <li>• Prevent a DOS attack by limiting the number of redirection (recursive redirection) that a service parameter can set.</li> <li>• Allow other features to be invoked while the redirection is taking place.</li> </ul> <p>Getting redirected to a restricted phone number (such as an international number) means that handling redirection at stack level causes the call to be routed, not blocked. This behavior occurs if you leave the <b>Redirect by Application</b> check box clear.</p>

Option	Description
Disable Early Media on 180 (Optional)	<p>By default, Unified CM signals the calling phone to play local ringback if SDP is not received in the 180 or 183 response. If SDP is included in these responses, instead of playing ringback locally, Unified CM connects media. The calling phone then plays whatever the called device is sending (such as ringback or busy signal). If you receive no ringback, the device you are connecting to may include SDP in the 180 response, but not send media before 200OK response. In this case, select this check box to play local ringback on the calling phone and connect the media upon receipt of the 200OK response.</p> <p>Note: Even though the phone that is receiving ringback is the calling phone, you need the configuration on the called device profile because it determines the behavior.</p>
Outgoing T.38 INVITE include audio mline (Optional)	<p>The parameter allows the system to accept a signal from Microsoft Exchange that causes it to switch the call from audio to T.38 fax. To use this feature, configure a SIP trunk with this SIP profile.</p> <p>Note: The parameter applies to SIP trunks only, not phones that are running SIP or other endpoints.</p>
Use Fully Qualified Domain Name in SIP Requests (Optional)	<p>This feature enables Unified CM to relay a caller's alphanumeric hostname by passing it to the called device or outbound trunk as SIP header information. Enter one of the following:</p> <p><b>f</b> - To disable this option. The IP address for Unified CM is passed to the line device or outbound trunk instead of the user's hostname.</p> <p><b>t</b> - To enable this option. Unified CM relays an alphanumeric hostname of a caller by passing it through to the called endpoint as a part of the SIP header information. This enables the called endpoint to return the call using the received or missed call list. If the call originates from a line device on the Unified CM cluster, and is routed on a SIP trunk, then the configured Organizational Top-Level Domain (for example, Cisco.com) is used in the Identity headers, such as From, Remote-Party-ID, and P-Asserted-ID. If the call originates from a trunk on Unified CM and is being routed on a SIP trunk, then:</p> <ul style="list-style-type: none"> <li>• If the inbound call provides a host or domain in the caller's information, the outbound SIP trunk messaging preserves the hostname in the Identity headers, such as From, Remote-Party-ID, and P-Asserted-ID.</li> <li>• If the inbound call does not provide a host or domain in the caller's information, the configured Organizational Top-Level Domain is used in the Identity headers, such as From, Remote-Party-ID, and P-Asserted-ID.</li> </ul> <p>Default: f - Disabled</p>
Assured Services SIP conformance (Optional)	<p>Select this check box for third-party AS-SIP endpoints and AS-SIP trunks to ensure proper Assured Service behavior. This setting provides specific Assured Service behavior that affects services such as Conference factory and SRTP.</p>



## SDP Information Fields

Option	Description
SDP Transparency Profile (Optional)	Displays the SDP Transparency Profile Setting (read-only)
Accept Audio Codec Preferences in Received Offer (Optional)	Choose one of the following options: <ul style="list-style-type: none"> <li>• <b>On</b> - Enables Unified CM to honor the preference of audio codecs in the received offer and preserve it while processing.</li> <li>• <b>Off</b> - Enables Unified CM to ignore the preference of audio codecs in a received offer and apply the locally configured Audio Codec Preference List. The default selects the service parameter configuration.</li> <li>• <b>Default</b> - Selects the service parameter configuration.</li> </ul> Default: Default
Require SDP Inactive Exchange for Mid-Call Media Change (Optional)	This feature determines how Unified CM handles midcall updates to codecs or connection information such as IP address or port numbers. If you select this check box, during midcall codec or connection updates Unified CM sends an INVITE a-inactive SDP message to the endpoint to break the media exchange. This is required if an endpoint is not capable of reacting to changes in the codec or connection information without disconnecting the media. This applies only to audio and video streams within SIP-SIP calls. <p>Note</p> For early offer enabled SIP trunks, the Send send-receive SDP in midcall INVITE parameter overrides this parameter. If this check box is clear, Unified CM passes the midcall SDP to the peer leg without sending a prior Inactive SDP to break the media exchange. <p>Default: Clear</p>
Allow RR/RS bandwidth modifier (RFC 3556) (Mandatory)	Specifies the RR (RTDP bandwidth allocated to other participants in an RTP session) and RS (RTCP bandwidth allocated to active data senders) in RFC 3556. Options are: <ul style="list-style-type: none"> <li>• Transport Independent Application Specific bandwidth modifier (TIAS) and AS</li> <li>• TIAS only</li> <li>• AS only</li> <li>• CT only</li> </ul> Default: TIAS and AS

## Parameters used in Phone Fields

Option	Description
Timer Invite Expires (seconds) (Optional)	This field specifies the time, in seconds, after which a SIP INVITE expires. The Expires header uses this value. Valid values: Any positive number Default: 180 seconds
Timer Register Delta (seconds) (Optional)	This field is intended to be used by SIP endpoints only. The endpoint receives this value through a TFTP config file. The endpoint reregisters Timer Register Delta seconds before the registration period ends. The registration period gets determined by the value of the SIP Station KeepAlive Interval service parameter. Valid values: 0 to 32767 Default: 5 seconds
Timer Register Expires (seconds) (Optional)	This field is intended to be used by SIP endpoints only. The SIP endpoint receives the value through a TFTP config file. This field specifies the value that the phone that is running SIP sends in the Expires header of the REGISTER message. Valid values include any positive number; however, 3600 (1 hour) specifies the default value. Valid values: Any positive number Default: 3600 seconds (1 hour) If the endpoint sends a shorter Expires value than the SIP Station Keepalive Interval service parameter, Unified CM responds with a 423 "Interval Too Brief." If the endpoint sends a greater Expires value than the SIP Station Keepalive Interval service parameter, Unified CM responds with a 200 OK with the Keepalive Interval value for Expires. Note: For mobile phones running SIP, Unified CM uses this value instead of the SIP Station KeepAlive Interval service parameter to determine the registration period. Note: For TCP connections, the value for the Timer Register Expires field must be lower than the value for the SIP TCP Unused Connection service parameter.
Timer T1 (msec) (Optional)	This field specifies the lowest value, in milliseconds, of the retransmission timer for SIP messages. Valid values: Any positive number Default: 500 msec
Timer T2 (msec) (Optional)	This field specifies the highest value, in milliseconds, of the retransmission timer for SIP messages. Valid values: Any positive number Default: 4000 msec
Retry INVITE (Optional)	This field specifies the maximum number of times that an INVITE request gets retransmitted. Valid values: Any positive number Default: 6

Option	Description
Retry Non-INVITE (Optional)	This field specifies the maximum number of times that a SIP message other than an INVITE request gets retransmitted. Valid values: Any positive number Default: 10
Start Media Port (Optional)	This field designates the start real-time protocol (RTP) port for media. Range: 2048 to 65535 Default: 16384
Stop Media Port (Optional)	This field designates the stop real-time protocol (RTP) port for media. Range: 2048 to 65535 Default: 32766
Call Pickup URI (Optional)	This URI provides a unique address that the phone that is running SIP sends to Unified CM to invoke the call pickup feature.
Call Pickup Group URI (Optional)	This URI provides a unique address that the phone that is running SIP sends to Unified CM to invoke the call pickup group feature.
Meet Me Service URI (Optional)	This URI provides a unique address that the phone that is running SIP sends to Unified CM to invoke the meet me conference feature.
User Info (Optional)	This field configures the user- parameter in the REGISTER message. Valid values are: <ul style="list-style-type: none"> <li>• <b>None</b> - No value is inserted</li> <li>• <b>Phone</b> - The value user-phone is inserted in the To, From, and Contact Header for REGISTER</li> <li>• <b>IP</b> - The value user-ip is inserted in the To, From, and Contact Header for REGISTER</li> </ul> Default: None
DTMF DB Level (Optional)	This field specifies the in-band DTMF digit tone level. Valid values are: <ul style="list-style-type: none"> <li>• 6 dB below nominal</li> <li>• 3 dB below nominal</li> <li>• Nominal</li> <li>• 3 dB above nominal</li> <li>• 6 dB above nominal</li> </ul> Default: Nominal
Call Hold Ring Back (Optional)	This parameter causes the phone to ring in cases where you have another party on hold when you hang up a call. Valid values are: <ul style="list-style-type: none"> <li>• <b>Off</b> - Off permanently and cannot be turned on and off locally by the user interface</li> <li>• <b>On</b> - On permanently and cannot be turned on and off locally by the user interface</li> </ul>
Anonymous Call Block (Optional)	The field configures anonymous call block. Valid values are: <ul style="list-style-type: none"> <li>• <b>Off</b> - Disabled permanently and cannot be turned on and off locally by the user interface</li> <li>• <b>On</b> - Enabled permanently and cannot be turned on and off locally by the user interface</li> </ul>

Option	Description
Caller ID Blocking (Optional)	<p>This field configures caller ID blocking. When blocking is enabled, the phone blocks its own number or email address from phones that have caller identification enabled. Valid values are:</p> <ul style="list-style-type: none"> <li>• <b>Off</b> - Disabled permanently and cannot be turned on and off locally by the user interface</li> <li>• <b>On</b> - Enabled permanently and cannot be turned on and off locally by the user interface</li> </ul>
Do Not Disturb Control (Optional)	<p>This field sets the Do Not Disturb (DND) feature. Valid values are:</p> <ul style="list-style-type: none"> <li>• <b>User</b> - The dndControl parameter for the phone specifies 0.</li> <li>• <b>Admin</b> - The dndControl parameter for the phone specifies 2.</li> </ul>
Telnet Level for 7940 and 7960 (Optional)	<p>Cisco Unified IP Phones 7940 and 7960 do not support SSH for sign-in access or HTTP that is used to collect logs. However, these phones support Telnet, which lets the user control the phone, collect debugs, and look at configuration settings. This field controls the telnet_level configuration parameter with the following possible values:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b> - No access</li> <li>• <b>Limited</b> - Some access but cannot run privileged commands</li> <li>• <b>Enabled</b> - Full access</li> </ul>
Resource Priority Namespace (Optional)	<p>This field enables the administrator to select one of the cluster's defined Resource Priority Namespace network domains for assignment to a line using its SIP Profile.</p>
Timer Keep Alive Expires (seconds) (Optional)	<p>Unified CM requires a keepalive mechanism to support redundancy. This field specifies the interval between keepalive messages sent to the backup Unified CM to ensure its availability for failover.</p> <p>Default: 120 seconds</p>
Timer Subscribe Expires (seconds) (Optional)	<p>This field specifies the time, in seconds, after which a subscription expires. This value gets inserted into the `` Expires `` header field.</p> <p>Valid values: Any positive number</p> <p>Default: 120 seconds</p>
Timer Subscribe Delta (seconds) (Optional)	<p>Use this parameter with the Timer Subscribe Expires setting. The phone resubscribes Timer Subscribe Delta seconds before the subscription period ends, as governed by Timer Subscribe Expires.</p> <p>Range: 3 to 15 seconds</p> <p>Default: 5 seconds</p>
Maximum Redirections (Optional)	<p>Use this configuration variable to determine the maximum number of times that the phone allows a call to be redirected before dropping the call.</p> <p>Default: 70 redirections</p>
Off hook To First Digit Timer (msec) (Optional)	<p>This field specifies the time in microseconds that passes when the phone goes off hook and the first digit timer gets set.</p> <p>Range: 0 to 15,000 microseconds</p> <p>Default: 15,000 microseconds</p>
Call Forward URI (Optional)	<p>This URI provides a unique address that the phone that is running SIP sends to Unified CM to invoke the call forward feature.</p>

Option	Description
Speed Dial (Abbreviated Dial) URI (Optional)	<p>This URI provides a unique address that the phone that is running SIP sends to Unified CM to invoke the abbreviated dial feature.</p> <p>Speed dials that are not associated with a line key (abbreviated dial indices) do not download to the phone. The phone uses the feature indication mechanism (INVITE with Call-Info header) to indicate when an abbreviated dial number has been entered. The request URI contains the abbreviated dial digits (for example, 14), and the Call-Info header indicates the abbreviated dial feature. Unified CM translates the abbreviated dial digits into the configured digit string and extends the call with that string. If no digit string has been configured for the abbreviated dial digits, a 404 Not Found response gets returned to the phone.</p>
Conference Join Enabled (Optional)	<p>Select this check box to join the remaining conference participants when a conference initiator using a Cisco Unified IP Phone 7940 or 7960 hangs up. Leave it clear if you do not want to join the remaining conference participants.</p> <p>Note: This check box applies to the Cisco Unified IP Phones 7941/61/70/71/11 when they are in SRST mode only.</p>
RFC 2543 Hold (Optional)	<p>Select this check box to enable setting connection address to 0.0.0.0 per RFC2543 when call hold is signaled to Unified CM. This allows backward compatibility with endpoints that do not support RFC3264.</p>
Semi Attended Transfer (Optional)	<p>This check box determines whether the Cisco Unified IP Phones 7940 and 7960 caller can transfer an attended transfer's second leg while the call is ringing. Select the check box if you want semi attended transfer enabled; leave it clear if you want semi attended transfer disabled.</p> <p>Note: This check box applies to the Cisco Unified IP Phones 7941/61/70/71/11 when they are in SRST mode only.</p>
Enable VAD (Optional)	<p>Select this check box if you want voice activation detection (VAD) enabled; leave it clear if you want VAD disabled. When VAD is enabled, no media is sent when voice is detected.</p>
Stutter Message Waiting (Optional)	<p>Select this check box if you want stutter dial tone when the phone goes off hook and a message is waiting. Leave clear if you do not want a stutter dial tone when a message is waiting.</p> <p>This setting supports Cisco Unified IP Phones 7960 and 7940 that run SIP.</p>
MLPP User Authorization (Optional)	<p>Select this check box to enable MLPP User Authorization. MLPP User Authorization requires the phone to send in an MLPP username and password.</p>

## Normalization Script Fields

Option	Description
Normalization Script	<p>From the drop-down list, choose the script that you want to apply to this SIP profile.</p> <p>To import another script from Unified CM, go to the SIP Normalization Configuration window (Device Device Settings SIP Normalization Script), and import a new script.</p>
Enable Trace	<p>Select this check box to enable tracing within the script or clear this check box to disable tracing. When selected, the trace.output API provided to the Lua scripter produces SDI trace.</p> <p>Note:</p> <p>We recommend that you only enable tracing while debugging a script. Tracing impacts performance and is not recommended under normal operating conditions.</p>
Script Parameters	<p>Enter parameter names and parameter values in the <b>Script Parameters</b> box as comma-delineated key-value pairs. Valid values include all characters except equals signs (-), semicolons (;), and nonprintable characters, such as tabs. You can enter a parameter name with no value.</p> <p>Alternatively, to add another parameter line from Unified CM, click the + (plus) button. To delete a parameter line, click the - (minus) button.</p>

## Incoming Requests FROM URI Strings Fields

Option	Description
Caller ID DN	<p>Enter the pattern that you want to use for calling line ID, from 0 to 24 digits. For example, in North America:</p> <ul style="list-style-type: none"> <li>555XXXX - Variable calling line ID, where X equals an extension number. The CO appends the number with the area code if you do not specify it.</li> <li>55000 - Fixed calling line ID, where you want the Corporate number to be sent instead of the exact extension from which the call is placed. The CO appends the number with the area code if you do not specify it.</li> </ul> <p>You can also enter the international escape character +.</p>
Caller Name	<p>Enter a caller name to override the caller name that is received from the originating SIP Device.</p>

## Presentation Info

Option	Description
Is Anonymous	Display configured External Presentation Number and External Presentation as Anonymous on the called party device.
External Presentation Name	Configure presentation number of choice.
External Presentation Number	Configure presentation name of choice.

## Trunk Specific Configuration Fields

Option	Description
Reroute Incoming Request to new Trunk based on	<p>Unified CM only accepts calls from a SIP device whose IP address matches the destination address of the configured SIP trunk. In addition, the port on which the SIP message arrives must match the one that is configured on the SIP trunk. After Unified CM accepts the call, Unified CM uses the configuration for this setting to determine whether to reroute the call to another trunk. From the drop-down list, choose the method that Unified CM uses to identify the SIP trunk where the call gets rerouted:</p> <ul style="list-style-type: none"> <li>• <b>Never</b> - If the SIP trunk matches the IP address of the originating device, choose this option. Unified CM, which identifies the trunk by the incoming packet's source IP address and the signaling port number, does not route the call to a different (new) SIP trunk. The call occurs on the SIP trunk on which the call arrived.</li> <li>• <b>Contact Info Header</b> - If the SIP trunk uses a SIP proxy, choose this option. Unified CM parses the IP address or domain name and the signaling port number in the incoming request's header. Unified CM then reroutes the call to the SIP trunk using that IP address and port. If no SIP trunk is identified, the call occurs on the trunk where the call arrived.</li> <li>• <b>Call-Info Header with purpose-x-cisco-origIP</b> - If the SIP trunk uses a Customer Voice Portal (CVP) or a Back-to-Back User Agent (B2BUA), choose this option. When the incoming request is received, Unified CM performs the following: <ul style="list-style-type: none"> <li>– parses the Call-Info header</li> <li>– looks for the parameter <code>purpose-x-cisco-origIP</code></li> <li>– uses the IP address or domain name and signaling port number in the header to reroute the call to the SIP trunk using the IP address and port</li> </ul> <p>If the parameter is not in the header, or no SIP trunk is identified, the call occurs on the SIP trunk where the call arrived.</p> <p>Default: Never</p> <p>Note:</p> <p>This setting does not work for SIP trunks connected to:</p> <ul style="list-style-type: none"> <li>• A Unified CM IM and Presence Service proxy server.</li> <li>• Originating gateways in different Unified CM groups</li> </ul> </li> </ul>

Option	Description
RSVP Over SIP	<p>This field configures RSVP over SIP trunks. From the drop-down list, choose the method that Unified CM uses to configure RSVP over SIP trunks:</p> <ul style="list-style-type: none"> <li>• <b>Local RSVP</b> - In a local configuration, RSVP occurs within each cluster, between the endpoint and the local SIP trunk, but not on the WAN link between the clusters.</li> <li>• <b>E2E</b> - In an end-to-end (E2E) configuration, RSVP occurs on the entire path between the endpoints, including within the local cluster and over the WAN.</li> </ul>
Resource Priority Namespace List	<p>Select a configured Resource Priority Namespace list from the drop-down menu. The Namespace List is configured in Unified CM in the Resource Priority Namespace List menu. You can access the menu in Unified CM from System MLPP &gt; Namespace.</p>
Fall back to local RSVP	<p>Select this check box if you want to allow failed end-to-end RSVP calls to fall back to local RSVP to establish the call. If this check box is clear, end-to-end RSVP calls that cannot establish an end-to-end connection fail.</p>
SIP Rel1XX Options	<p>This field configures SIP Rel1XX, which determines whether all SIP provisional responses (other than 100 Trying messages) are sent reliably to the remote SIP endpoint. Valid values are:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b> - Disables SIP Rel1XX.</li> <li>• <b>Send PRACK if 1XX contains SDP</b> - Acknowledges a 1XX message with PRACK, only if the 1XX message contains SDP.</li> <li>• <b>Send PRACK for all 1XX messages</b> - Acknowledges all 1XX messages with PRACK.</li> </ul> <p>If you set the RSVP Over SIP field to E2E, you cannot choose Disabled.</p>
Video Call Traffic Class	<p>Video Call Traffic Class determines the type of video endpoint or trunk that the SIP Profile is associated with. From the drop-down list, select one of:</p> <ul style="list-style-type: none"> <li>• <b>Immersive</b> - High-definition immersive video.</li> <li>• <b>Desktop</b> - Standard desktop video.</li> <li>• <b>Mixed</b> - A mix of immersive and desktop video.</li> </ul> <p>Unified CM Locations Call Admission Control (CAC) reserves bandwidth from two Locations video bandwidth pools, Video Bandwidth and Immersive Bandwidth. The pool used depends on the type of call determined by the Video Call Traffic Class. Refer to the “Call Admission Control” chapter of the Cisco Unified Communications Manager System Guide for more information.</p>



Option	Description
Calling Line Identification Presentation (Mandatory)	Select one of: <ul style="list-style-type: none"> <li>• <b>Strict From URI presentation Only</b> - To select the network-provided identity</li> <li>• <b>Strict Identity Headers presentation Only</b> - To select the user-provided identity</li> <li>• <b>Default</b> - To select the system default calling line identification</li> </ul> Default: Default
Session Refresh Method (Mandatory)	Session Timer with Update: The session refresh timer allows for periodic refresh of SIP sessions. This allows the Unified CM and remote agents to determine whether the SIP session is still active. Prior to Release 10.01, when the Unified CM received a refresh command, it supported receiving either Invite or Update SIP requests to refresh the session. When the Unified CM initiated a refresh, it supported sending only Invite SIP requests to refresh the session. With Release 10.01, this feature extends the refresh capability so that Unified CM can send both Update and Invite requests. Specify whether to use <b>Invite</b> or <b>Update</b> as the Session Refresh Method. Default: Invite Note: Sending a midcall Invite request requires specifying an offer SDP in the request. This means that the far end must send an answer SDP in the Invite response. Update: Unified CM requests a SIP Update if the SIP session's far end supports the Update method in the Supported or Require headers. When sending the Update request, the Unified CM includes an SDP. This simplifies the session refresh since no SDP offer or answer exchange is required. Note: If the far end of the SIP session does not support the Update method, the Unified CM continues using the Invite method for session refresh.
Early Offer Support for voice and video calls (Mandatory)	This field configures Early Offer support for voice and video calls. When enabled, Early Offer support includes a session description in the initial INVITE for outbound calls. Early Offer configuration settings on SIP profile apply only to SIP trunk calls. These configuration settings do not affect SIP line side calls. If this profile is shared between a trunk and a line, only a SIP trunk that uses the profile is affected by these settings. The Media Transfer Point (MTP) Required check box on the Trunk Configuration window, if enabled, overrides the early offer configuration on the associated SIP profile. Unified CM sends the MTP IP address and port with a single codec in the SDP in the initial INVITE. From the drop-down list box, select one of the following three options: <ul style="list-style-type: none"> <li>• <b>Disabled (Default value)</b> - Disables Early Offer; no SDP will be included in the initial INVITE for outbound calls.</li> <li>• <b>Best Effort (no MTP Inserted)</b> <ul style="list-style-type: none"> <li>– Provide Early Offer for the outbound call only when caller side's media port, IP and codec information is available.</li> <li>– Provide Delayed Offer for the outbound call when caller side's media port, IP and codec information is not available. No MTP is inserted to provide Early Offer in this case.</li> </ul> </li> <li>• <b>Mandatory (insert MTP if needed)</b> - Provide Early Offer for all outbound calls and insert MTP when caller side's media port, IP and codec information is not available.</li> </ul> Default: Disabled (Default value)

Option	Description
Enable ANAT	<p>This option allows a dual-stack SIP trunk to offer both IPv4 and IPv6 media. Selecting the <b>Enable ANAT</b> and <b>MTP Required</b> check boxes sets Unified CM to insert a dual-stack MTP and send an offer with two m-lines, for IPv4 and IPv6. If a dual-stack MTP cannot be allocated, Unified CM sends an INVITE without SDP.</p> <p>When you select the <b>Enable ANAT</b> check box and the <b>Media Termination Point Required</b> check box is clear, Unified CM sends an INVITE without SDP. When the <b>Enable ANAT</b> and <b>MTP Required</b> check boxes are cleared (or when an MTP cannot be allocated), Unified CM sends an INVITE without SDP.</p> <p>When you clear the <b>Enable ANAT</b> check box but you select the <b>MPT Required</b> check box, consider the information, which assumes that an MTP can be allocated:</p> <ul style="list-style-type: none"> <li>• Unified CM sends an IPv4 address in the SDP for SIP trunks with an IP Addressing Mode of IPv4 Only.</li> <li>• Unified CM sends an IPv6 address in the SDP for SIP trunks with an IP Addressing Mode of IPv6 Only.</li> <li>• For dual-stack SIP trunks, Unified CM determines which IP address type to send in the SDP based on the configuration for the IP Addressing Mode Preference for Media enterprise parameter.</li> </ul>
Deliver Conference Bridge Identifier	<p>When checked, the SIP trunk passes the b-number identifying the conference bridge across the trunk instead of changing the b-number to the null value. The terminating side does not require this field.</p> <p>Selecting this check box is not required for Open Recording Architecture (ORA) SIP header enhancements to the Recording feature to work.</p> <p>Selecting this check box allows the recorder to coordinate recording sessions where the parties are participating in a conference.</p>
Allow Passthrough of Configured Line Device Caller Information	<p>Select this check box to allow passthrough of configured line device caller information from the SIP trunk.</p>
Reject Anonymous Incoming Calls	<p>Select this check box to reject anonymous incoming calls.</p>
Reject Anonymous Outgoing Calls	<p>Select this check box to reject anonymous outgoing calls.</p>
Send ILS Learned Destination Route String	<p>When this check box is selected, for calls routed to a learned directory URI, learned number, or learned pattern, Unified CM:</p> <ul style="list-style-type: none"> <li>• adds the <code>x-cisco-dest-route-string</code> header to outgoing SIP INVITE and SUBSCRIBE messages</li> <li>• inserts the destination route string into the header</li> </ul> <p>When this check box is clear, Unified CM does not add the <code>x-cisco-dest-route-string</code> header to any SIP messages.</p> <p>The <code>x-cisco-dest-route-string</code> header allows Unified CM to route calls across a Session Border Controller.</p>

## Trunk SIP OPTIONS Ping Fields

Option	Description
Enable OPTIONS Ping to monitor destination status for Trunks with Service Type "None (Default)"	<p>Select this check box if you want to enable the SIP OPTIONS feature. SIP OPTIONS are requests to the configured destination address on the SIP trunk. If the remote SIP device is unresponsive or returns a SIP error response such as 503 Service Unavailable or 408 Timeout, Unified CM reroutes the calls by using other trunks or a different address.</p> <p>If this check box is clear, the SIP trunk does not track the status of SIP trunk destinations.</p> <p>When this check box is selected, you can configure two request timers.</p>
Ping Interval for In-service and Partially In-service Trunks (seconds)	<p>This field configures the time duration between SIP OPTIONS requests when the remote peer is responding and the trunk is marked as In Service. If at least one IP address is available, the trunk is In Service; if all IP addresses are unavailable, the trunk is Out of Service.</p> <p>Default: 60 seconds Range: 5 to 600 seconds</p>
Ping Interval for Out-of-service Trunks (seconds)	<p>This field configures the time duration between SIP OPTIONS requests when the remote peer is not responding and the trunk is marked as Out of Service. The remote peer may be marked as Out of Service if:</p> <ul style="list-style-type: none"> <li>• it fails to respond to OPTIONS</li> <li>• it sends 503 or 408 responses</li> <li>• the Transport Control Protocol (TCP) connection cannot be established</li> </ul> <p>If at least one IP address is available, the trunk is In Service; if all IP addresses are unavailable, the trunk is Out of Service.</p> <p>Default: 120 seconds Range: 5 to 600 seconds</p>
Ping Retry Timer (msec)	<p>This field specifies the maximum waiting time before retransmitting the OPTIONS request.</p> <p>Range: 100 to 1000 milliseconds Default: 500 milliseconds</p>
Ping Retry Count	<p>This field specifies the number of times that Unified CM resends the OPTIONS request to the remote peer. After the configured retry attempts are used, the destination is considered to have failed. To obtain faster failure detection, keep the retry count low.</p> <p>Range: 1 to 10 Default: 6</p>

## Trunk SDP Information Fields

Option	Description
Send send-receive SDP in midcall INVITE	<p>Select this check box to prevent Unified CM from sending an INVITE a-inactive SDP message during call hold or media break during supplementary services.</p> <p>Note: This check box applies only to early offer enabled SIP trunks and has no impact on SIP line calls.</p> <p>When you enable Send send-receive SDP in midcall INVITE for an early offer SIP trunk in tandem mode, Unified CM inserts MTP to provide sendrecv SDP when a SIP device sends offer SDP with a-inactive or sendonly or recvonly in audio media line. In tandem mode, Unified CM depends on the SIP devices to reestablish media path by sending either a delayed INVITE or midcall INVITE with send-recv SDP.</p> <p>When you enable Send send-receive SDP in midcall INVITE and Require SDP Inactive Exchange for Mid-Call Media Change on the same SIP Profile, the Send send-receive SDP in midcall INVITE overrides the Require SDP Inactive Exchange for Mid-Call Media Change, so Unified CM does not send an INVITE with a-inactive SDP in midcall codec updates. For SIP line side calls, the Require SDP Inactive Exchange for Mid-Call Media Change check box applies when enabled.</p> <p>Note: To prevent the SDP mode from being set to inactive in a multiple-hold scenario, set the Duplex Streaming Enabled clusterwide service parameter in Unified CM (System Service Parameters) to True.</p>
Allow Presentation Sharing using BFCP	<p>If the check box is selected, Unified CM allows supported SIP endpoints to use the Binary Floor Control Protocol (BFCP) to enable presentation sharing. The use of BFCP creates an added media stream in addition to the existing audio and video streams. This additional stream is used to stream a presentation, such as a PowerPoint presentation from someone's laptop, into a SIP videophone.</p> <p>If the check box is clear, Unified CM rejects BFCP offers from devices associated with the SIP profile. The BFCP application line and associated media line ports are set to 0 in the answering SDP message.</p> <p>Default: Clear</p> <p>Note: BFCP is only supported on SIP networks. BFCP must be enabled on all SIP trunks, lines, and endpoints for presentation sharing to work. BFCP is not supported if the SIP line or SIP trunk uses MTP, RSVP, TRP, or Transcoder. For more information on BFCP, refer to the Cisco Unified Communications Manager System Guide.</p>

Option	Description
Allow iX Application Media	Select this check box to enable support for iX media channel.
Allow multiple codecs in answer SDP	<p>This option applies when incoming SIP signals do not indicate support for multiple codec negotiation and Unified CM can finalize the negotiated codec. When this check box is selected, the endpoint behind the trunk can handle multiple codecs in the answer SDP.</p> <p>For example, an endpoint that supports multiple codec negotiation calls the SIP trunk, and Unified CM sends a Delay Offer request to a trunk. The endpoint behind the trunk returns all support codecs without the Contact header to indicate the support of multiple codec negotiation.</p> <p>In this case, Unified CM identifies that the trunk can handle multiple codec negotiation, and sends SIP response messages to both endpoints with multiple common codecs.</p> <p>When clear, Unified CM identifies that the endpoint behind the trunk cannot handle multiple codec negotiation, unless SIP contact header URI states it can. Unified CM continues the call with single codec negotiation.</p>

### 9.1.14. Configure SIP Trunk Security Profiles

Provider deployment only.

#### Add or Manage SIP Trunk Security Profiles

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the node where the Cisco Unified Communications Manager (CUCM, or CallManager) is configured.
3. Choose an option:
  - Logged in as Provider or Reseller admin? Go to (default menus) **Apps Management > CUCM > SIP Trunk Security Profiles**.
  - Logged in as Customer admin? Go to (default menus) **Apps Management > Advanced > SIP Trunk Security Profiles**.
4. Choose an option:
  - To add a new SIP trunk security profile, click **Add**, then go to Step 5.
  - To edit an existing SIP trunk security profile, click the SIP trunk security profile to be updated. Go to Step 6.
5. If the **Network Device List** popup window appears, select the NDL for the SIP trunk security profile from the drop-down menu. The window appears when you are on a non-site hierarchy node. If you are at a site hierarchy node, the NDL associated with the site is automatically used.

Note:

The **Network Device List** drop-down menu appears when a SIP trunk security profile is added. It does not appear when you edit a SIP trunk security profile.

6. Enter a unique name for the new SIP trunk security profile in the **Name** field, or modify the existing Name if desired. This field is mandatory.
7. Complete, at minimum, the other mandatory *SIP Trunk Security Profiles Fields*
8. Click **Save** to save a new SIP trunk security profile or to update an existing SIP trunk security profile.

### SIP Trunk Security Profiles Fields

Option	Description
Name (Mandatory)	Enter a name for the security profile. When you save the new profile, the name displays in the <b>SIP Trunk Security Profile</b> drop-down list in the Trunk Configuration window. The maximum length for the name is 64 characters.
Description (Optional)	Enter a description for the security profile. The description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&), back-slash (\), or angle brackets (<>).
Device Security Mode (Optional)	From the drop-down list, choose one of the following options: <ul style="list-style-type: none"> <li>• <b>Non Secure</b> - No security features except image authentication apply. A TCP or UDP connection opens to Cisco Unified Communications Manager.</li> <li>• <b>Authenticated</b> - Unified CM provides integrity and authentication for the trunk. A TLS connection that uses NULL/SHA opens.</li> <li>• <b>Encrypted</b> - Unified CM provides integrity, authentication, and signaling encryption for the trunk. A TLS connection that uses AES128/SHA opens for signaling.</li> </ul>
Incoming Transport Type (Optional)	Choose one of: <ul style="list-style-type: none"> <li>• TCP+UDP</li> <li>• UDP</li> <li>• TLS</li> <li>• TCP</li> </ul> <p>If you do not specify an incoming transport type, <b>TCP+UDP</b> is assigned.</p> <p>When <b>Device Security Mode</b> is <b>Non Secure</b>, <b>TCP+UDP</b> specifies the transport type.</p> <p>When <b>Device Security Mode</b> is <b>Authenticated</b> or <b>Encrypted</b>, <b>TLS</b> specifies the transport type.</p> <p>Note: The Transport Layer Security (TLS) protocol secures the connection between Unified CM and the trunk.</p>

Option	Description
Outgoing Transport Type (Optional)	<p>From the drop-down list, choose the outgoing transport mode. Choose one of:</p> <ul style="list-style-type: none"> <li>• TCP+UDP</li> <li>• UDP</li> <li>• TLS</li> <li>• TCP</li> </ul> <p>When <b>Device Security Mode</b> is <b>Non Secure</b>, choose <b>TCP</b> or <b>UDP</b>.  When <b>Device Security Mode</b> is <b>Authenticated</b> or <b>Encrypted</b>, <b>TLS</b> specifies the transport type.</p> <p>Note:  <b>TLS</b> ensures signaling integrity, device authentication, and signaling encryption for SIP trunks.</p> <p>Tip:  Use <b>UDP</b> as the outgoing transport type when connecting SIP trunks between Unified CM systems and IOS gateways that do not support TCP connection reuse. See “Understanding Session Initiation Protocol (SIP)” in the “Cisco Unified Communications Manager System Guide” for more information.</p>
Enable Digest Authentication (Optional)	<p>Select this check box to enable digest authentication. If you select this check box, Unified CM challenges all SIP requests from the trunk.</p> <p>Digest authentication does not provide device authentication, integrity, or confidentiality. Choose a security mode of <b>Authenticated</b> or <b>Encrypted</b> to use these features.</p> <p>Tip:  Use digest authentication to authenticate SIP trunk users on trunks that are using TCP or UDP transport.</p>
Nonce Validity Time (mins) (Optional)	<p>Enter the number of minutes (in seconds) that the nonce value is valid. When the time expires, Unified CM generates a new value.</p> <p>Note:  A nonce value (a random number that supports digest authentication) is used to calculate the MD5 hash of the digest authentication password.  Default = 600 minutes. If you do not specify a Nonce Validity Time, the default of 600 minutes is assigned.</p>

Option	Description
X.509 Subject Name (Optional)	<p>This field applies if you configured TLS for the incoming and outgoing transport type.</p> <p>For device authentication, enter the subject name of the X.509 certificate for the SIP trunk device. If you have a Unified CM cluster or if you use SRV lookup for the TLS peer, a single trunk may resolve to multiple hosts. This situation results in multiple X.509 subject names for the trunk. If multiple X.509 subject names exist, enter one of the following characters to separate the names: space, comma, semicolon, or a colon.</p> <p>You can enter up to 4096 characters in this field.</p> <p>Tip: The subject name corresponds to the source connection TLS certificate. Ensure that subject names are unique for each subject name and port. You cannot assign the same subject name and incoming port combination to different SIP trunks.</p> <p>Example: SIP TLS trunk1 on port 5061 has X.509 Subject Names my_cm1, my_cm2. SIP TLS trunk2 on port 5071 has X.509 Subject Names my_cm2, my_cm3. SIP TLS trunk3 on port 5061 can have X.509 Subject Name my_ccm4 but cannot have X.509 Subject Name my_cm1.</p>
Incoming Port (Optional)	<p>Choose the incoming port. Enter a value that is a unique port number from 0 to 65535. The value that you enter applies to all SIP trunks that use the profile. The default port value for incoming TCP and UDP SIP messages is 5060. The default SIP secured port for incoming TLS messages is 5061.</p> <p>If the incoming port is not specified, the default port of 5060 is used.</p> <p>Tip: All SIP trunks that use TLS can share the same incoming port; all SIP trunks that use TCP + UDP can share the same incoming port. You cannot mix SIP TLS transport trunks with SIP non-TLS transport trunk types on the same port.</p>



Option	Description
Enable application level authorization (Optional)	<p>Application-level authorization applies to applications that are connected through the SIP trunk.</p> <p>If you select this check box, also select the <b>Enable Digest Authentication</b> check box and configure digest authentication for the trunk. Unified CM authenticates a SIP application user before checking the allowed application methods.</p> <p>When application level authorization is enabled, trunk-level authorization occurs first, and application-level authorization occurs second. Unified CM checks the methods authorized for the trunk (in this security profile) before the methods authorized for the SIP application user in the <b>Application User Configuration</b> window.</p> <p>Tip: Consider using application-level authorization if you do not trust the identity of the application or if the application is not trusted on a particular trunk. Application requests may come from a different trunk than you expect. For more information about configuring application level authorization at the <b>Application User Configuration</b> window, see the “Cisco Unified Communications Manager Administration Guide”.</p>
Accept presence subscription (Optional)	<p>If you want Unified CM to accept presence subscription requests that come through the SIP trunk, select this check box.</p> <p>If you selected <b>Enable Application Level Authorization</b>, go to the <b>Application User Configuration</b> window and select <b>Accept Presence Subscription</b> for any application users authorized for this feature.</p> <p>When application-level authorization is enabled, if you select <b>Accept Presence Subscription</b> for the application user but not for the trunk, a 403 error message is sent to the SIP user agent connected to the trunk.</p>
Accept out-of-dialog refer (Optional)	<p>If you want Unified CM to accept incoming non-INVITE, Out-of-Dialog REFER requests that come through the SIP trunk, select this check box. If you selected <b>Enable Application Level Authorization</b>, go to the <b>Application User Configuration</b> window and select <b>Accept out-of-dialog refer</b> for any application users authorized for this method.</p> <p>Note: If this profile is associated with an EMCC SIP trunk, Accept Out-of-Dialog REFER is enabled regardless of the setting on this page.</p>
Accept unsolicited notification (Optional)	<p>If you want Unified CM to accept incoming non-INVITE, unsolicited notification messages that come through the SIP trunk, select this check box.</p> <p>If you selected <b>Enable Application Level Authorization</b>, go to the <b>Application User Configuration</b> window and select <b>Accept Unsolicited Notification</b> for any application users authorized for this method.</p>

Option	Description
Accept replaces header (Optional)	If you want Unified CM to accept new SIP dialogs, which have replaced existing SIP dialogs, select this check box. If you selected <b>Enable Application Level Authorization</b> , go to the <b>Application User Configuration</b> window and select <b>Accept Header Replacement</b> for any application users authorized for this method.
Transmit security status (Optional)	If you want Unified CM to send the security icon status of a call from the associated SIP trunk to the SIP peer, select this check box. Default = Cleared.
Allow charging header (Optional)	If you want to allow RFC 3455 SIP charging headers in transactions (for example, where billing information is passed in the headers for prepaid accounts), select this check box. If the check box is clear, RFC 3455 SIP charging headers are not allowed in sessions that use the SIP profile. Default = <b>Cleared</b> .
SIP V.150 Outbound SDP Offer Filtering (Mandatory)	Choose one of the following filter options from the drop-down list: <ul style="list-style-type: none"> <li>• <b>Use Default Filter</b> - The SIP trunk uses the default filter that is indicated in the SIP V.150 Outbound SDP Offer Filtering service parameter. To locate the service parameter, go to System Service Parameters Clusterwide Parameters (Device-SIP) in Unified CM Administration.</li> <li>• <b>No Filtering</b> - The SIP trunk performs no filtering of V.150 SDP lines in outbound offers.</li> <li>• <b>Remove MER V.150</b> - The SIP trunk removes V.150 MER SDP lines in outbound offers. Choose this option to reduce ambiguity when the trunk is connected to a pre-MER V.150 Unified CM.</li> <li>• <b>Remove Pre-MER V.150</b> - The SIP trunk removes any non-MER compliant V.150 lines in outbound offers. Choose this option to reduce ambiguity when your cluster is in a network of MER-compliant devices that cannot process offers with pre-MER lines.</li> </ul> Default = <b>Use Default Filter</b> .

### 9.1.15. SIP Trunks

#### Overview

This section describes how to add, edit, and delete SIP trunks, and how to reset or restart SIP trunks.

#### Add and Edit SIP Trunks

This procedure adds new SIP trunks and edits existing SIP trunks.

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the node where the Cisco Unified Communications Manager (CUCM) is configured.
3. Choose an option:
  - Logged in as Provider or Reseller admin? Go to (default menus) **Apps Management > CUCM > SIP Trunks**.
  - Logged in as Customer admin? Go to (default menus) **Apps Management > Advanced > SIP Trunks**.

4. Choose an option:
  - To add a new SIP trunk, click **Add**, then go to Step 5.
  - To edit an existing SIP trunk, click on the relevant SIP trunk in the list of SIP trunks; then, go to step 6.
5. From the **CUCM** drop-down, select the hostname, domain name, or IP address of the CUCM where you're adding the SIP trunk.

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**Note:** The **CUCM** drop-down displays only when you're adding a new SIP trunk (not when editing).

This drop-down menu displays the CUCM located at the node, and all the CUCM nodes in the hierarchies above the node where you're adding the SIP trunk.

To provision a CUCM server, see the Installation Tasks section of Installing Cisco Unified Communications Manager.

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6. In the **Device Name** field, enter a unique name for the new SIP trunk (or modify the existing device name, as applicable).
7. Complete at least the minimum, mandatory fields on the following tabs/panels:
  - **Device Information** (see *Device Information Tab*)
  - **Call Routing General** (see *Call Routing General Tab*)
  - **Call Routing Inbound** (see *Call Routing Inbound Tab*)
  - **Call Routing Outbound** (see *Call Routing Outbound Tab*)
  - **SP Info** (see *SP Info Tab*)
  - **GeoLocation** (see *GeoLocation Tab*)
8. Save your changes for the new or modified SIP trunk.

The SIP trunk appears in the SIP trunk list. The SIP trunk is automatically reset on the CUCM once it's added. To reset the SIP trunk at any other time, see "Reset SIP Trunk".

To view the SIP trunk and its properties, log in to the CUCM where you added the SIP trunk, select Device Trunk, and perform the "Find" operation. Clicking on the SIP trunk name in the list displays its characteristics.

## SIP Trunks Field Reference

## Device Information Tab

Option	Description
Device Name *	Enter a unique identifier for the trunk using up to 50 alphanumeric characters: A-Z, a-z, numbers, hyphens (-) and underscores (_) only. Default value: None
Trunk Service Type	Choose one of: <ul style="list-style-type: none"> <li>• <b>None</b> - Choose this option if the trunk is not used for call control discovery, Extension Mobility Cross Cluster, or Cisco Intercompany Media Engine</li> <li>• <b>Call Control Discovery</b> - Choose this option to enable the trunk to support call control discovery.</li> <li>• <b>Extension Mobility Cross Cluster</b> - Choose this option to enable the trunk to support the Extension Mobility Cross Cluster (EMCC) feature. Choosing this option causes the following settings to remain blank or clear and become unavailable for configuration, thus retaining their default values: Media Termination Point Required, Unattended Port, Destination Address, Destination Address IPv6, and Destination Address is an SRV.</li> <li>• <b>Cisco Intercompany Media Engine</b> - Ensure that the Cisco IME server is installed and available before you configure this field.</li> <li>• <b>IP Multimedia Subsystem Service Control (ISC)</b> - Choose this option to enable the trunk to support IP multimedia subsystem service control.</li> </ul> Default value: None (Default)
Description (Optional)	Enter a descriptive name for the trunk using up to 114 characters in any language, but not including double-quotes ("), percentage sign (%), ampersand (&), backslash (\), or angle brackets (<>). Default value: empty
Device Pool *	Choose the appropriate device pool for the trunk. For trunks, device pools specify a list of Cisco Unified Communications Managers (Unified CMs) that the trunk uses to distribute the call load dynamically. Note: Calls that are initiated from a phone that is registered to a Unified CM that does not belong to the device pool of the trunk use different Unified CMs of this device pool for different outgoing calls. Selection of Unified CM nodes occurs in a random order. A call that is initiated from a phone that is registered to a Unified CM that does belong to the device pool of the trunk uses the same Unified CM node for outgoing calls if the Unified CM is up and running. Default value: Default
Common Device Configuration	Choose the common device configuration to which you want this trunk assigned. The common device configuration includes the attributes (services or features) that are associated with a particular user. Default value: None
Call Classification	This parameter determines whether an incoming call through this trunk is considered off the network (OffNet) or on the network (OnNet). When the Call Classification field is configured as Use System Default, the setting of the Unified CM clusterwide service parameter, Call Classification, determines whether the trunk is OnNet or OffNet. This field provides an OnNet or OffNet alerting tone when the call is OnNet or OffNet, respectively. Default value: Use System Default

Option	Description
Media Resource Group List	<p>This list provides a prioritized grouping of media resource groups. An application chooses the required media resource, such as a Music On Hold server, from among the available media resources according to the priority order that a Media Resource Group List defines.</p> <p>Default value: None</p>
Location *	<p>Use locations to implement call admission control (CAC) in a centralized call-processing system. CAC enables you to regulate audio quality and video availability by limiting the amount of bandwidth that is available for audio and video calls over links between locations. The location specifies the total bandwidth that is available for calls to and from this location.</p> <p>Choose the appropriate location for this trunk:</p> <ul style="list-style-type: none"> <li>• Hub_None - Specifies that the locations feature does not keep track of the bandwidth that this trunk consumes.</li> <li>• Phantom - Specifies a location that enables successful CAC across intercluster trunks that use H.323 protocol or SIP.</li> <li>• Shadow - Specifies a location for intercluster enhanced location CAC. Valid for SIP intercluster trunks (ICT) only.</li> </ul> <p>Default value: Hub_None</p>
AAR Group	<p>Choose the automated alternate routing (AAR) group for this device. The AAR group provides the prefix digits that are used to route calls that are otherwise blocked due to insufficient bandwidth. An AAR group setting of None specifies that no rerouting of blocked calls is attempted.</p> <p>Default value: None</p>
Tunneled Protocol	<p>Choose the QSIG option if you want to use SIP trunks or SIP gateways to transport (tunnel) QSI messages from Unified CM to other PINXs. QSIG tunneling supports the following features: Call Back, Call Completion, Call Diversion, Call Transfer, Identification Services, Path Replacement, and Message Waiting Indication (MWI).</p> <p>Note: Remote-Party-ID (RPID) headers coming in from the SIP gateway can interfere with QSIG content and cause unexpected behavior with Call Back capabilities. To prevent interference with the QSIG content, turn off the RPID headers on the SIP gateway.</p> <p>Default value: None</p>
QSIG Variant	<p>To display the options in the <b>QSIG Variant</b> drop-down list, choose QSIG from the <b>Tunneled Protocol</b> drop-down menu. This parameter specifies the protocol profile that is sent in outbound QSIG facility information elements.</p> <p>From the drop-down menu, select one of:</p> <ul style="list-style-type: none"> <li>• No Changes - Default. Keep this parameter set to the default value unless a VOSS support engineer instructs otherwise.</li> <li>• Not Selected</li> <li>• ECMA - Select for ECMA PBX systems that use Protocol Profile 0x91</li> <li>• ISO - Select for PBX systems that use Protocol Profile 0x9F</li> </ul> <p>Default value: No Changes</p>

Option	Description
ASN.1 ROSE OID Encoding	<p>To display the options in the ASN.1 ROSE OID Encoding drop-down menu, choose QSIG from the <b>Tunneled Protocol</b> drop-down menu. This parameter specifies how to encode the Invoke Object ID (OID) for remote operations service element (ROSE) operations.</p> <p>From the drop-down menu, select one of</p> <ul style="list-style-type: none"> <li>• No Changes - Keep this parameter set to the default value unless a VOSS support engineer instructs otherwise.</li> <li>• Not Selected</li> <li>• Use Global Value ECMA - If you selected the ECMA option from the QSIG Variant drop-down menu, select this option.</li> <li>• Use Global Value ISO - If you selected the ISO option from the QSIG Variant drop-down menu, select this option.</li> <li>• Use Local Value</li> </ul> <p>Default value: No Changes</p>
Packet Capture Mode	<p>This setting exists for troubleshooting encryption only; packet capturing may cause high CPU usage or call-processing interruptions.</p> <p>From the drop-down menu, select one of:</p> <ul style="list-style-type: none"> <li>• None - This option, which serves as the default setting, indicates that no packet capturing is occurring. After you complete packet capturing, configure this setting.</li> <li>• Batch Processing Mode - Unified CM writes the decrypted or non-encrypted messages to a file, and the system encrypts each file. On a daily basis, the system creates a new file with a new encryption key. Unified CM, which stores the file for seven days, also stores the keys that encrypt the file in a secure location. Unified CM stores the file in the PktCap virtual directory. A single file contains the time stamp, source IP address, source IP port, destination IP address, packet protocol, message length, and the message. The TAC debugging tool uses HTTPS, administrator username and password, and the specified day to request a single encrypted file that contains the captured packets. Likewise, the tool requests the key information to decrypt the encrypted file. Before you contact TAC, you must capture the SRTP packets by using a sniffer trace between the affected devices.</li> </ul> <p>Default value: None</p>
Packet Capture Duration	<p>This setting exists for troubleshooting encryption only; packet capturing may cause high CPU usage or call-processing interruptions. This field specifies the maximum number of minutes that is allotted for one session of packet capturing.</p> <p>To initiate packet capturing, enter a value other than 0 in the field. After packet capturing completes, the value, 0, displays.</p> <p>Default value: 0 (zero), Range is from 0 to 300 minutes</p>

Option	Description
Media Termination Point Required	<p>You can configure Unified CM SIP trunks to always use an Media Termination Point (MTP). Select this box to provide media channel information in the outgoing INVITE request. When this check box is selected, all media channels must terminate and reoriginate on the MTP device. If you clear the check box, the Unified CM can decide whether calls are to go through the MTP device or be connected directly between the endpoints.</p> <p>Note: If the check box remains clear, Unified CM attempts to dynamically allocate an MTP if the DTMF methods for the call legs are not compatible. For example, existing phones that run SCCP support only out-of-band DTMF, and existing phones that run SIP support RFC2833. Because the DTMF methods are not identical, the Unified CM dynamically allocates an MTP. If, however, a new phone that runs SCCP, which supports RFC2833 and out-of band, calls an existing phone that runs SIP, Unified CM does not allocate an MTP because both phones support RFC2833. So, by having the same type of DTMF method supported on each phone, there is no need for MTP.</p> <p>Default value: False (Cleared)</p>
Retry Video Call as Audio	<p>This check box pertains to outgoing SIP trunk calls and does not impact incoming calls. By default, the system selects this check box to specify that this device should immediately retry a video call as an audio call (if it cannot connect as a video call) prior to sending the call to call control for rerouting. If you clear this check box, a video call that fails to connect as video does not try to establish as an audio call. The call then fails to call control, and call control routes the call using Automatic Alternate Routing (AAR) and route list or hunt list.</p> <p>Default value: True (Selected)</p>
Path Replacement Support	<p>This check box is relevant when you select QSIG from the <b>Tunneled Protocol</b> drop-down menu. This setting works with QSIG tunneling to ensure that non-SIP information gets sent on the leg of the call that uses path replacement.</p> <p>Default value: False (Clear)</p>
Transmit UTF-8 for Calling Party Name	<p>This device uses the user locale setting of the device pool to determine whether to send unicode and whether to translate received Unicode information. For the sending device, if you select this check box and the user locale setting in the device pool matches the terminating phone user locale, the device sends unicode. If the user locale settings do not match, the device sends ASCII. The receiving device translates incoming unicode characters based on the user locale setting of the sending device pool. If the user locale setting matches the terminating phone user locale, the phone displays the characters.</p> <p>Note: The phone may display malformed characters if the two ends of the trunk are configured with user locales that do not belong to the same language group.</p> <p>Default value: False (Cleared)</p>

Option	Description
Transmit UTF-8 Names for QSIG APDU	<p>This device uses the user locale setting of the device pool to determine whether to send unicode and whether to translate received Unicode information. For the sending device, if you select this check box and the user locale setting in the device pool matches the terminating phone user locale, the device sends unicode and encodes in UTF-8 format. If the user locale settings do not match, the device sends ASCII and encodes in UTF-8 format. If the configuration parameter is not set and the user locale setting in the device pool matches the terminating phone user locale, the device sends unicode (if the name uses 8 bit format) and encodes in ISO8859-1 format.</p> <p>Default value: False (Cleared)</p>
Unattended Port	<p>Select this check box if calls can be redirected and transferred to an unattended port, such as a voice mail port.</p> <p>Default value: False (Cleared)</p>
SRTP Allowed	<p>Select this check box if you want Unified CM to allow secure and nonsecure media calls over the trunk. Selecting this check box enables Secure Real-Time Protocol (SRTP) SIP Trunk connections and also allows the SIP trunk to fall back to Real-Time Protocol (RTP) if the endpoints do not support SRTP. If you do not select this check box, Unified CM prevents SRTP negotiation with the trunk and uses RTP negotiation instead.</p> <p>Caution:</p> <p>If you select this check box, we strongly recommend that you use an encrypted TLS profile, so that keys and other security related information do not get exposed during call negotiations. If you use a non-secure profile, SRTP still works but the keys get exposed in signaling and traces. In that case, you must ensure the security of the network between Unified CM and the destination side of the trunk.</p> <p>Default value: False (Cleared)</p>
Consider Traffic on This Trunk Secure	<p>This field provides an extension to the existing security configuration on the SIP trunk, which enables a SIP trunk call leg to be considered secure if SRTP is negotiated, independent of the signaling transport.</p> <p>From the drop-down menu, select one of:</p> <ul style="list-style-type: none"> <li>• When using both sRTP and TLS</li> <li>• When using sRTP Only - Displays when you select the <b>SRTP Allowed</b> check box.</li> </ul> <p>Default value: When using both sRTP and TLS</p>



Option	Description
Route Class Signaling Enabled	<p>From the drop-down menu, enable or disable route class signaling for the port. Route class signaling communicates special routing or termination requirements to receiving devices. It must be enabled for the port to support the Hotline feature.</p> <p>From the drop-down menu, select one of:</p> <ul style="list-style-type: none"> <li>• Default - The device uses the setting from the Route Class Signaling service parameter</li> <li>• Off - Enables route class signaling. This setting overrides the Route Class Signaling service parameter</li> <li>• On - Disables route class signaling. This setting overrides the Route Class Signaling service parameter.</li> </ul> <p>Default value: Default</p>
Use Trusted Relay Point	<p>From the drop-down menu, enable or disable whether Unified CM inserts a trusted relay point (TRP) device with this media endpoint. A Trusted Relay Point (TRP) device designates an MTP or transcoder device that is labeled as Trusted Relay Point. Unified CM places the TRP closest to the associated endpoint device if more than one resource is needed for the endpoint (for example, a transcoder or RSVPAgent). If both TRP and MTP are required for the endpoint, TRP gets used as the required MTP. If both TRP and RSVPAgent are needed for the endpoint, Unified CM first tries to find an RSVPAgent that can also be used as a TRP. If both TRP and transcoder are needed for the endpoint, Unified CM first tries to find a transcoder that is also designated as a TRP.</p> <p>Select one of:</p> <ul style="list-style-type: none"> <li>• Default - The device uses the Use Trusted Relay Point setting from the common device configuration with which this device associates</li> <li>• Off - Disables the use of a TRP with this device. This setting overrides the Use Trusted Relay Point setting in the common device configuration with which this device associates.</li> <li>• On - Enables the use of a TRP with this device. This setting overrides the Use Trusted Relay Point setting in the common device configuration with which this device associates.</li> </ul> <p>Default value: Default</p>
PSTN Access	<p>If you use the Cisco Intercompany Media Engine feature, select this check box to indicate that calls made through this trunk might reach the PSTN. Select this check box even if all calls through this trunk device do not reach the PSTN. For example, select this check box for tandem trunks or an H.323 gatekeeper routed trunk if calls might go to the PSTN. When selected, this check box causes the system to create upload voice call records (VCRs) to validate calls made through this trunk device.</p> <p>Default value: True (Selected)</p>
Run On All Active Unified CM Nodes	<p>Select this check box to enable the trunk to run on every node.</p> <p>Default value: False (Cleared)</p>

**Call Routing General Tab**

Option	Description
Remote-Party-ID	<p>Use this check box to allow or disallow the SIP trunk to send the Remote-Party-ID (RPID) header in outgoing SIP messages from Unified CM to the remote destination. If you select this box, the SIP trunk always sends the RPID header. If you do not select this check box, the SIP trunk does not send the RPID header.</p> <p>Note:</p> <p>Be aware that Calling Name Presentation, Connected Line ID, and Connected Name Presentation are not available when QSIG tunneling is enabled.</p> <p><b>Outgoing SIP Trunk Calls</b></p> <p>The configured values of the Calling Line ID Presentation and Calling Name Presentation provide the basis for the construction of the Privacy field of the RPID header. Each of these two options can have the values of Default, Allowed, or Restricted. If either option is set to Default, the corresponding information (Calling Line ID Presentation and/or Calling Name Presentation) in the RPID header comes from the Call Control layer (which is based on call-by-call configuration) within Unified CM. If either option is set to Allowed or Restricted, the corresponding information in the RPID header comes from the SIP trunk configuration window.</p> <p><b>Incoming SIP Trunk Calls</b></p> <p>The configured values of the Connected Line ID Presentation and Connected Name Presentation provide the basis for the construction of the Privacy field of the RPID header. Each of these two options can have the values of Default, Allowed, or Restricted.</p> <p>Be aware that the Connected Line ID Presentation and Connected Name Presentation options are relevant for 180/200 messages that the SIP trunk sends in response to INVITE messages that Unified CM receives. If either option is set to Default, the corresponding information (Connected Line ID Presentation and/or Connected Name Presentation) in the RPID header comes from the Call Control layer (which is based on call-by-call configuration) within Unified CM. If either option is set to Allowed or Restricted, the corresponding information in the RPID header comes from the SIP trunk configuration window.</p> <p>Note:</p> <p>The Remote-party ID and Asserted Identity options represent independent mechanisms for communication of display-identity information.</p> <p>Default value: True (Selected)</p>

Option	Description
Asserted-Identity	<p>Use this check box to allow or disallow the SIP trunk to send the Asserted-Type and SIP Privacy headers in SIP messages. If you select this check box, the SIP trunk always sends the Asserted-Type header; whether or not the SIP trunk sends the SIP Privacy header depends on the SIP Privacy configuration.</p> <p><b>Outgoing SIP Trunk Calls - P Headers</b></p> <p>The decision of which Asserted Identity (either P-Asserted Identity or P-Preferred-Identity) header gets sent depends on the configured value of the Asserted-Type option. A non-default value for Asserted-Type overrides values that come from Unified CM Call Control. If the Asserted-Type option is set to Default, the value of Screening Identification that the SIP trunk receives from Unified CM Call Control dictates the type of Asserted-Identity.</p> <p><b>Outgoing SIP Trunk Calls - SIP Privacy Header</b></p> <p>The SIP Privacy header gets used only when you select the <b>Asserted-Identity</b> check box and when the SIP trunk sends either a Privacy-Asserted Identity (PAI) or Privacy Preferred Identity (PPI) header. (Otherwise the SIP Privacy header neither gets sent nor processed in incoming SIP messages). The value of the SIP Privacy headers depends on the configured value of the SIP Privacy option. A non-default value for SIP Privacy overrides values that come from Unified CM Call Control.</p> <p>If the SIP Privacy option is set to Default, the Calling Line ID Presentation and Calling Name Presentation that the SIP trunk receives from Unified CM Call Control determines the SIP Privacy header.</p> <p><b>Incoming SIP Trunk Calls - P Headers</b></p> <p>The decision of which Asserted Identity (either P-Asserted Identity or P-Preferred-Identity) header gets sent depends on the configured value of the Asserted-Type option. A non-default value for Asserted-Type overrides values that come from Unified CM Call Control. If the Asserted-Type option is set to Default, the value of Screening Identification that the SIP trunk receives from Unified CM Call Control dictates the type of Asserted-Identity.</p> <p><b>Incoming SIP Trunk Calls - SIP Privacy Header</b></p> <p>The SIP Privacy header gets used only when you select the <b>Asserted Identity</b> check box and when the SIP trunk sends either a PAI or PPI header. (Otherwise the SIP Privacy header neither gets sent nor processed in incoming SIP messages.) The value of the SIP Privacy headers depends on the configured value of the SIP Privacy option. A non-default value for SIP Privacy overrides values that come from Unified CM Call Control.</p> <p>If the SIP Privacy option is set to Default, the Connected Line ID Presentation and Connected Name Presentation that the SIP trunk receives from Unified CM Call Control determine the SIP Privacy header.</p> <p><b>Note:</b></p> <p>The Remote-party ID and Asserted Identity options represent independent mechanisms for communication of display-identity information.</p> <p>Default value: True (Selected)</p>

Option	Description
Asserted-Type	<p>From the drop-down menu, select one of the following values to specify the type of Asserted Identity header that SIP trunk messages should include:</p> <ul style="list-style-type: none"> <li>• Default - Screening information that the SIP trunk receives from Unified CM Call Control determines the type of header that the SIP trunk sends.</li> <li>• PAI - The Privacy-Asserted Identity header gets sent in outgoing SIP trunk messages; this value overrides the Screening indication value that comes from Unified CM.</li> <li>• PPI - The Privacy Preferred Identity header gets sent in outgoing SIP trunk messages; this value overrides the Screening indication value that comes from Unified CM.</li> </ul> <p>Note: These headers get sent only if the <b>Asserted- Identity</b> check box is selected. Default value: Default</p>
SIP Privacy	<p>From the drop-down menu, select one of the following values to specify the type of SIP privacy header for SIP trunk messages to include:</p> <ul style="list-style-type: none"> <li>• Default - This option represents the default value; Name/Number Presentation values that the SIP trunk receives from the Unified CM Call Control compose the SIP Privacy header. For example, if Name/Number presentation specifies Restricted, the SIP trunk sends the SIP Privacy header; however, if Name/Number presentation specifies Allowed, the SIP trunk does not send the Privacy header.</li> <li>• None - The SIP trunk includes the Privacy:none header and implies Presentation allowed; this value overrides the Presentation information that comes from Unified CM.</li> <li>• ID - The SIP trunk includes the Privacy:id header and implies Presentation restricted for both name and number; this value overrides the Presentation information that comes from Unified CM.</li> <li>• ID Critical - The SIP trunk includes the Privacy:id;critical header and implies Presentation restricted for both name and number. The label critical implies that privacy services that are requested for this message are critical, and, if the network cannot provide these privacy services, this request should get rejected. This value overrides the Presentation information that comes from Unified CM.</li> </ul> <p>Note: These headers get sent only if the <b>Asserted Identity</b> check box is selected. Default value: Default</p>

## Call Routing Inbound Tab

Option	Description
Significant Digits	<p>Significant digits represent the number of final digits that are retained on inbound calls. Use for the processing of incoming calls and to indicate the number of digits that are used to route calls that are coming in to the SIP device.</p> <p>Choose the number of significant digits to collect, from 0 to 32, or choose 99 to indicate all digits.</p> <p>Note: Unified CM counts significant digits from the right (last digit) of the number that is called. Default value: 99</p>
Connected Line ID Presentation	<p>Unified CM uses connected line ID presentation (COLP) as a supplementary service to provide the calling party with the connected party number. The SIP trunk level configuration takes precedence over the call-by-call configuration. Select one of</p> <ul style="list-style-type: none"> <li>• Default - Allowed. Choose Default if you want Unified CM to send connected line information. If a call that originates from an IP phone on Unified CM encounters a device, such as a trunk, gateway, or route pattern, that has the Connected Line ID Presentation set to Default, the presentation value is automatically set to Allowed.</li> <li>• Restricted - Choose Restricted if you do not want Unified CM to send connected line information.</li> </ul> <p>Note: Be aware that this service is not available when QSIG tunneling is enabled. Default value: Default</p>
Connected Name Presentation	<p>Unified CM uses connected name ID presentation (CONP) as a supplementary service to provide the calling party with the connected party name. The SIP trunk level configuration takes precedence over the call-by-call configuration. Select one of</p> <ul style="list-style-type: none"> <li>• Default - Allowed. Choose Default if you want Unified CM to send connected name information.</li> <li>• Restricted - Choose Restricted if you do not want Unified CM to send connected name information.</li> </ul> <p>Note: Be aware that this service is not available when QSIG tunneling is enabled. Default value: Default</p>
Calling Search Space	<p>From the drop-down menu, choose the appropriate calling search space for the trunk. The calling search space specifies the collection of route partitions that are searched to determine how to route a collected (originating) number. You can configure the number of items that display in this drop-down menu by using the Max List Box Items enterprise parameter. If more calling search spaces exist than the Max List Box Items enterprise parameter specifies, the <b>Find</b> button displays next to the drop-down list box. Click the <b>Find</b> button to display the Find and List Calling Search Spaces window. Find and choose a calling search space name.</p> <p>Note: To set the maximum list box items, choose System &gt; Enterprise Parameters and choose CCMAAdmin Parameters. Default value: None</p>

Option	Description
AAR Calling Search Space	<p>Choose the appropriate calling search space for the device to use when performing automated alternate routing (AAR). The AAR calling search space specifies the collection of route partitions that are searched to determine how to route a collected (originating) number that is otherwise blocked due to insufficient bandwidth.</p> <p>Default value: None</p>
Prefix DN	<p>Enter the prefix digits that are appended to the called party number on incoming calls. Unified CM adds prefix digits after first truncating the number in accordance with the Significant Digits setting. You can enter the international escape character +.</p> <p>Default value: None</p>
Redirecting Diversion Header - Delivery In-bound	<p>Select this check box to accept the Redirecting Number in the incoming INVITE message to the Unified CM.</p> <p>Clear the check box to exclude the Redirecting Number in the incoming INVITE message to the Unified CM.</p> <p>You use Redirecting Number for voice messaging integration only. If your configured voice-messaging system supports Redirecting Number, you should select the check box.</p> <p>Default value: False (Cleared)</p>
Incoming Calling Party - Prefix	<p>Unified CM applies the prefix that you enter in this field to calling party numbers that use Unknown for the Calling Party Numbering Type. You can enter up to 8 characters, which include digits, the international escape field, you cannot configure the Strip Digits field. In this case, Unified CM takes the configuration for the Prefix and Strip Digits fields from the device pool that is applied to the device. If the word, Default, displays in the Prefix field in the Device Pool Configuration window, Unified CM applies the service parameter configuration for the incoming calling party prefix, which supports both the prefix and strip digit functionality.</p> <p>Default value: None</p>
Incoming Calling Party - Strip Digits	<p>Enter the number of digits, up to the number 24, that you want Unified CM to strip from the calling party number of Unknown type before it applies the prefixes.</p> <p>Default value: None</p>
Incoming Calling Party - Calling Search Space	<p>This setting allows you to globalize the calling party number of Unknown calling party number type on the device. Make sure that the calling party transformation CSS that you choose contains the calling party transformation pattern that you want to assign to this device. Before the call occurs, the device must apply the transformation by using digit analysis. If you configure the CSS as None, the transformation does not match and does not get applied. Ensure that you configure the calling party transformation pattern in a non-null partition that is not used for routing.</p> <p>Default value: None</p>

Option	Description
Incoming Calling Party - Use Device Pool CSS	Select this check box to use the calling search space for the Unknown Number field that is configured in the device pool that is applied to the device. Default value: True (Selected)
Incoming Called Party - Prefix	Unified CM applies the prefix that you enter in this field to called numbers that use Unknown for the Called Party Number Type. You can enter up to 16 characters, which include digits, the international escape character (+), asterisk (*), or the pound sign (#). You can enter the word, Default, instead of entering a prefix. Tip: If the word Default displays in the Prefix field, you cannot configure the Strip Digits field. In this case, Unified CM takes the configuration for the Prefix and Strip Digits fields from the device pool that is applied to the device. If the word Default displays in the Prefix field in the Device Pool Configuration window, Unified CM does not apply any prefix or strip digit functionality. Default value: None
Incoming Called Party - Strip Digits	Enter the number of digits that you want Unified CM to strip from the called party number of Unknown type before it applies the prefixes. Tip: To configure the Strip Digits field, you must leave the Prefix field blank or enter a valid configuration in the Prefix field. To configure the Strip Digits fields in these windows, do not enter the word, Default, in the Prefix field. Default value: None
Incoming Called Party - Calling Search Space	This setting allows you to transform the called party number of Unknown called party number type on the device. If you choose None, no transformation occurs for the incoming called party number. Make sure that the calling search space that you choose contains the called party transformation pattern that you want to assign to this device. Default value: None
Incoming Called Party - Use Device Pool CSS	Select this check box to use the calling search space for the Unknown Number field that is configured in the device pool that is applied to the device. Default value: True (Selected)

Option	Description
Connected Party Transformation CSS	<p>This setting is applicable only for inbound calls. This setting allows you to transform the connected party number on the device to display the connected number in another format, such as a DID or E164 number. Unified CM includes the transformed number in the headers of various SIP messages, including 200 OK and mid-call update and reinvite messages. Make sure that the Connected Party Transformation CSS that you choose contains the connected party transformation pattern that you want to assign to this device.</p> <p>Note:</p> <p>If you configure the Connected Party Transformation CSS as None, the transformation does not match and does not get applied. Ensure that you configure the Calling Party Transformation pattern used for Connected Party Transformation in a non-null partition that is not used for routing.</p> <p>Default value: None</p>
Use Device Pool Connected Party Transformation CSS	<p>To use the Connected Party Transformation CSS that is configured in the device pool that is assigned to this device, select this check box. If you do not select this check box, the device uses the Connected Party Transformation CSS that you configured for this device in the Trunk Configuration window.</p> <p>Default value: True (Selected)</p>



## Call Routing Outbound Tab

Option	Description
Called Party Transformation CSS	<p>This setting allows you to send the transformed called party number in an INVITE message for outgoing calls made over SIP Trunk. Make sure that the Called Party Transformation CSS that you choose contains the called party transformation pattern that you want to assign to this device.</p> <p>Note:</p> <p>If you configure the Called Party Transformation CSS as None, the transformation does not match and does not get applied. Ensure that you configure the Called Party Transformation CSS in a non-null partition that is not used for routing.</p> <p>Default value: None</p>
Use Device Pool Called Party Transformation CSS	<p>To use the Called Party Transformation CSS that is configured in the device pool that is assigned to this device, select this check box. If you do not select this check box, the device uses the Called Party Transformation CSS that you configured for this device in the Trunk Configuration window.</p> <p>Default value: True (Selected)</p>
Calling Party Transformation CSS	<p>This setting allows you to send the transformed calling party number in an INVITE message for outgoing calls made over a SIP Trunk. Also when redirection occurs for outbound calls, this CSS is used to transform the connected number that is sent from Unified CM side in outgoing reINVITE / UPDATE messages. Make sure that the Calling Party Transformation CSS that you choose contains the calling party transformation pattern that you want to assign to this device.</p> <p>Tip:</p> <p>If you configure the Calling Party Transformation CSS as None, the transformation does not match and does not get applied. Ensure that you configure the Calling Party Transformation Pattern in a non-null partition that is not used for routing.</p> <p>Default value: None</p>
Use Device Pool Calling Party Transformation CSS	<p>To use the Calling Party Transformation CSS that is configured in the device pool that is assigned to this device, select this check box. If you do not select this check box, the device uses the Calling Party Transformation CSS that you configured in the Trunk Configuration window.</p> <p>Default value: True (Selected)</p>
Calling Party Selection	<p>Choose the directory number that is sent on an outbound call. Select one of the following options to specify which directory number is sent:</p> <ul style="list-style-type: none"> <li>• Originator - Send the directory number of the calling device</li> <li>• First Redirect Number - Send the directory number of the redirecting device.</li> <li>• Last Redirect Number - Send the directory number of the last device to redirect the call.</li> <li>• First Redirect Number (External) - Send the external directory number of the redirecting device</li> <li>• Last Redirect Number (External) - Send the external directory number of the last device to redirect the call.</li> </ul> <p>Default value: Originator</p>

Option	Description
Calling Line ID Presentation	<p>Unified CM uses calling line ID presentation (CLIP) as a supplementary service to provide the calling party number. The SIP trunk level configuration takes precedence over the call-by-call configuration.</p> <p>Select one of</p> <ul style="list-style-type: none"> <li>• Default - Allowed. Choose Default if you want Unified CM to send calling number information.</li> <li>• Restricted - Choose Restricted if you do not want Unified CM to send the calling number information.</li> </ul> <p>Default value: Default</p>
Calling Name Presentation	<p>Unified CM used calling name ID presentation (CNIP) as a supplementary service to provide the calling party name. The SIP trunk level configuration takes precedence over the call-by-call configuration.</p> <p>Select one of</p> <ul style="list-style-type: none"> <li>• Default - Allowed. Choose Default if you want Unified CM to send calling name information.</li> <li>• Restricted - Choose Restricted if you do not want Unified CM to send the calling name information.</li> </ul> <p>Note: This service is not available when QSIG tunneling is enabled.</p> <p>Default value: Default</p>
Calling and Connected Party Info Format *	<p>This option allows you to configure whether Unified CM inserts a directory number, a directory URI, or a blended address that includes both the directory number and directory URI in the SIP identity headers for outgoing SIP messages.</p> <p>From the drop-down menu, select one of:</p> <ul style="list-style-type: none"> <li>• Deliver DN only in connected party - In outgoing SIP messages, Unified CM inserts the calling party - s directory number in the SIP contact header information.</li> <li>• Deliver URI only in connected party, if available - In outgoing SIP messages, Unified CM inserts the sending party - s directory URI in the SIP contact header. If a directory URI is not available, Unified CM inserts the directory number instead.</li> <li>• Deliver URI and DN in connected party, if available - In outgoing SIP messages, Unified CM inserts a blended address that includes the calling party's directory URI and directory number in the SIP contact headers. If a directory URI is not available, Unified CM includes the directory number only.</li> </ul> <p>Note: You should set this field to Deliver URI only in connected party or Deliver URI and DN in connected party only if you are setting up URI dialing between Unified CM systems of Release 9.0 or greater, or between a Cisco Unified Communications Manager system of Release 9.0 or greater and a third party solution that supports URI dialing. Otherwise, you must set this field to Deliver DN only in connected party.</p> <p>Default value: Deliver DN only in connected party</p>

Option	Description
Redirecting Diversion Header Delivery - Outbound	<p>Select this check box to include the Redirecting Number in the outgoing INVITE message from the Unified CM to indicate the original called party number and the redirecting reason of the call when the call is forwarded.</p> <p>Clear the check box to exclude the first Redirecting Number and the redirecting reason from the outgoing INVITE message. Use Redirecting Number for voice-messaging integration only. If your configured voice messaging system supports Redirecting Number, select the check box.</p> <p>Default value: False (Cleared)</p>
Use Device Pool Redirecting Party Transformation CSS	<p>Select this check box to use the Redirecting Party Transformation CSS that is configured in the device pool that is assigned to this device.</p> <p>If you do not select this check box, the device uses the Redirecting Party Transformation CSS that you configured for this device (see field below).</p>
Redirecting Party Transformation CSS	<p>Allows you to localize the redirecting party number on the device.</p> <p>Make sure that the Redirecting Party Transformation CSS that you enter contains the redirecting party transformation pattern that you want to assign to this device.</p>
Caller Information - Caller ID DN	<p>Enter the pattern, from 0 to 24 digits that you want to use to format the Called ID on outbound calls from the trunk. For example, in North America:</p> <ul style="list-style-type: none"> <li>• 55XXXX = Variable Caller ID, where X represents an extension number. The Central Office (CO) appends the number with the area code if you do not specify it.</li> <li>• 555000 = Fixed Caller ID. Use this form when you want the Corporate number to be sent instead of the exact extension from which the call is placed. The CO appends the number with the area code if you do not specify it.</li> </ul> <p>You can also enter the international escape character +.</p> <p>Default value: None</p>
Caller Information - Caller Name	<p>Enter a caller name to override the caller name that is received from the originating SIP Device.</p> <p>Default value: None</p>
Caller Information - Maintain Original Caller ID DN and Caller Name in Identity Headers	<p>This check box is used to specify whether you will use the caller ID and caller name in the URI outgoing request. If you select this check box, the caller ID and caller name is used in the URI outgoing request. If you do not select this check box, the caller ID and caller name is not used in the URI outgoing request.</p> <p>Default value: False (Cleared)</p>

## SP Info Tab

Option	Description
Destination Address is an SRV	This field specifies that the configured Destination Address is an SRV record. Default value: False (Cleared)
Destination - Destination Address IPv4	<p>The Destination Address IPv4 represents the remote SIP peer with which this trunk will communicate. The allowed values for this field are an IP address, a fully qualified domain name (FQDN), or DNS SRV record only if the Destination Address is an SRV field is selected.</p> <p>Tip: For SIP trunks that can support IPv6 or IPv6 and IPv4 (dual stack mode), configure the Destination Address IPv6 field in addition to the Destination Address field.</p> <p>Note: SIP trunks only accept incoming requests from the configured Destination Address and the specified incoming port that is specified in the SIP Trunk Security Profile that is associated with this trunk.</p> <p>Note: For configuring SIP trunks when you have multiple device pools in a cluster, you must configure a destination address that is a DNS SRV destination port. Enter the name of a DNS SRV port for the Destination Address and select the Destination Address is an SRV Destination Port check box. If the remote end is a Unified CM cluster, DNS SRV represents the recommended choice for this field. The DNS SRV record should include all Unified CMs within the cluster.</p> <p>Default value: None</p>
Destination - Destination Address IPv6	<p>The Destination IPv6 Address represents the remote SIP peer with which this trunk will communicate. You can enter one of the following values in this field:</p> <ul style="list-style-type: none"> <li>• A fully qualified domain name (FQDN)</li> <li>• A DNS SRV record, but only if the Destination Address is an SRV field is selected.</li> </ul> <p>SIP trunks only accept incoming requests from the configured Destination IPv6 Address and the specified incoming port that is specified in the SIP Trunk Security Profile that is associated with this trunk.</p> <p>If the remote end is a Unified CM cluster, consider entering the DNS SRV record in this field. The DNS SRV record should include all Unified CMs within the cluster.</p> <p>Tip: For SIP trunks that run in dual-stack mode or that support an IP Addressing Mode of IPv6 Only, configure this field. If the SIP trunk runs in dual-stack mode, you must also configure the Destination Address field.</p> <p>Default value: None. If IPv4 field above is completed, this field can be left blank.</p>
Destination - Destination port	<p>Choose the destination port. Ensure that the value that you enter specifies any port from 1024 to 65535, or 0.</p> <p>Note: You can now have the same port number that is specified for multiple trunks. You do not need to enter a value if the destination address is a DNS SRV port. The default 5060 indicates the SIP port.</p> <p>Default value: 5060</p>

Option	Description
Sort Order *	Indicate the order in which the prioritize multiple destinations. A lower sort order indicates higher priority. This field requires an integer value. Default value: Empty
Destination Address is an SRV	This field specifies that the configured Destination Address is an SRV record. Default value: False (Cleared)
Destination - Destination Address IPv4	<p>The Destination Address IPv4 represents the remote SIP peer with which this trunk will communicate. The allowed values for this field are an IP address, a fully qualified domain name (FQDN), or DNS SRV record only if the Destination Address is an SRV field is selected.</p> <p>Tip: For SIP trunks that can support IPv6 or IPv6 and IPv4 (dual stack mode), configure the Destination Address IPv6 field in addition to the Destination Address field.</p> <p>Note: SIP trunks only accept incoming requests from the configured Destination Address and the specified incoming port that is specified in the SIP Trunk Security Profile that is associated with this trunk.</p> <p>Note: For configuring SIP trunks when you have multiple device pools in a cluster, you must configure a destination address that is a DNS SRV destination port. Enter the name of a DNS SRV port for the Destination Address and select the Destination Address is an SRV Destination Port check box.</p> <p>If the remote end is a Unified CM cluster, DNS SRV represents the recommended choice for this field. The DNS SRV record should include all Unified CMs within the cluster.</p> <p>Default value: None</p>
Destination - Destination Address IPv6	<p>The Destination IPv6 Address represents the remote SIP peer with which this trunk will communicate. You can enter one of the following values in this field:</p> <ul style="list-style-type: none"> <li>• A fully qualified domain name (FQDN)</li> <li>• A DNS SRV record, but only if the Destination Address is an SRV field is selected.</li> </ul> <p>SIP trunks only accept incoming requests from the configured Destination IPv6 Address and the specified incoming port that is specified in the SIP Trunk Security Profile that is associated with this trunk.</p> <p>If the remote end is a Unified CM cluster, consider entering the DNS SRV record in this field. The DNS SRV record should include all Unified CMs within the cluster.</p> <p>Tip: For SIP trunks that run in dual-stack mode or that support an IP Addressing Mode of IPv6 Only, configure this field. If the SIP trunk runs in dual-stack mode, you must also configure the Destination Address field.</p> <p>Default value: None. If IPv4 field above is completed, this field can be left blank.</p>

Option	Description
Destination - Destination port	<p>Choose the destination port. Ensure that the value that you enter specifies any port from 1024 to 65535, or 0.</p> <p>Note: You can now have the same port number that is specified for multiple trunks. You do not need to enter a value if the destination address is a DNS SRV port. The default 5060 indicates the SIP port. Default value: 5060</p>
Sort Order *	<p>Indicate the order in which the prioritize multiple destinations. A lower sort order indicates higher priority. This field requires an integer value. Default value: Empty</p>
MTP Preferred Originating Codec	<p>Indicate the preferred outgoing codec by selecting one of:</p> <ul style="list-style-type: none"> <li>• 711ulaw</li> <li>• 711alaw</li> <li>• G729/G729a</li> <li>• G729b/G729ab</li> </ul> <p>Note: To configure G.729 codecs for use with a SIP trunk, you must use a hardware MTP or transcoder that supports the G.729 codec. This field is used only when the <b>Media Termination Point Required</b> check box is selected on the <b>Device Information</b> tab. Default value: 711ulaw</p>
BLF Presence Group *	<p>Configure this field with the Presence feature. From the drop-down menu, select a Presence group for the SIP trunk. The selected group specifies the destinations that the device/application/server that is connected to the SIP trunk can monitor.</p> <ul style="list-style-type: none"> <li>• Standard Presence group is configured with installation. Presence groups that are configured in Unified CM Administration also appear in the drop-down menu.</li> <li>• Presence authorization works with presence groups to allow or block presence requests between groups.</li> </ul> <p>Tip: You can apply a presence group to the SIP trunk or to the application that is connected to the SIP trunk. If a presence group is configured for both a SIP trunk and SIP trunk application, the presence group that is applied to the application overrides the presence group that is applied to the trunk. Default value: Standard Presence Group</p>

Option	Description
SIP Trunk Security Profile *	<p>Select the security profile to apply to the SIP trunk.</p> <p>You must apply a security profile to all SIP trunks that are configured in Unified CM Administration. Installing Cisco Unified Communications Manager provides a predefined, nonsecure SIP trunk security profile for autoregistration. To enable security features for a SIP trunk, configure a new security profile and apply it to the SIP trunk. If the trunk does not support security, choose a nonsecure profile.</p> <p>Default value: Non Secure SIP Trunk Profile</p>
Rerouting Calling Search Space	<p>Calling search spaces determine the partitions that calling devices can search when they attempt to complete a call. The rerouting calling search space gets used to determine where a SIP user (A) can refer another user (B) to a third party (C). After the refer is completed, B and C connect. In this case, the rerouting calling search space that is used is that of the initial SIP user (A). Calling Search Space also applies to 3xx redirection and INVITE with Replaces features.</p> <p>Default value: None</p>
Out-Of-Dialog Refer Calling Search Space	<p>Calling search spaces determine the partitions that calling devices can search when they attempt to complete a call. The out-of-dialog calling search space gets used when a Unified CM refers a call (B) that is coming into SIP user (A) to a third party (C) when no involvement of SIP user (A) exists. In this case, the system uses the out-of dialog calling search space of SIP user (A).</p> <p>Default value: None</p>
SUBSCRIBE Calling Search Space	<p>Supported with the Presence feature, the SUBSCRIBE calling search space determines how Unified CM routes presence requests from the device/server/application that connects to the SIP trunk. This setting allows you to apply a calling search space separate from the call-processing search space for presence (SUBSCRIBE) requests for the SIP trunk.</p> <p>From the drop-down menu, choose the SUBSCRIBE calling search space to use for presence requests for the SIP trunk. All calling search spaces that you configure in Unified CM Administration display in the SUBSCRIBE Calling Search Space drop-down menu.</p> <p>If you do not select a different calling search space for the SIP trunk from the drop-down menu, the SUBSCRIBE calling search space defaults to None.</p> <p>To configure a SUBSCRIBE calling search space specifically for this purpose, configure a calling search space as you do all calling search spaces.</p> <p>Default value: None</p>
SIP Profile *	<p>From the drop-down list box, select the SIP profile that is to be used for this SIP trunk.</p> <p>Default value: Standard SIP Profile</p>

Option	Description
DTMF Method Signaling	<p>Select one of:</p> <ul style="list-style-type: none"> <li>• No Preference - Unified CM picks the DTMF method to negotiate DTMF, so the call does not require an MTP. If Cisco Unified Communications Manager has no choice but to allocate an MTP (if the <b>Media Termination Point Required</b> check box is selected on the <b>Device Information</b> tab), SIP trunk negotiates DTMF to RFC2833.</li> <li>• RFC 2833 - Choose this configuration if the preferred DTMF method to be used across the trunk is RFC2833. Unified CM makes every effort to negotiate RFC2833, regardless of MTP usage. Out of band (OOB) provides the fallback method if the peer endpoint supports it.</li> <li>• OOB and RFC 2833 - Choose this configuration if both out of band and RFC2833 should be used for DTMF.</li> </ul> <p>Note: If the peer endpoint supports both out of band and RFC2833, Unified CM negotiates both out-of-band and RFC2833 DTMF methods. As a result, two DTMF events are sent for the same DTMF keypress (one out of band and the other, RFC2833). Default value: No Preference</p>
Normalization Script	<p>From the drop-down menu, choose the script that you want to apply to this trunk.</p> <p>To import another script, on Unified CM go to the SIP Normalization Script Configuration window (Device &gt; Device Settings &gt; SIP Normalization Script), and import a new script file. Default value: None</p>
Normalization Script - Enable Trace	<p>Select this check box to enable tracing within the script or clear the check box to disable tracing. When selected, the trace.output API provided to the Lua scripiter produces SDI trace.</p> <p>Note: We recommend that you only enable tracing while debugging a script. Tracing impacts performance and should not be enabled under normal operating conditions. Default value: False (Cleared)</p>
Script Parameters	<p>Enter parameter names and values in the format Param1Name=Param1Value; Param2Name=Param2Value where Param1Name is the name of the first script parameter and Param1Value is the value of the first script parameter. Multiple parameters can be specified by putting semicolon after each name and value pair . Valid values include all characters except equal signs (=), semi-colons (;); and non-printable characters, such as tabs. You can enter a parameter name with no value.</p>
Recording Information	<p>Enter one of</p> <ul style="list-style-type: none"> <li>• 0 - None (default)</li> <li>• 1 - This trunk connects to a recording-enabled gateway</li> <li>• 2 - This trunk connects to other clusters with recording-enabled gateways</li> </ul>



## GeoLocation Tab

Option	Description
Geolocation	From the drop-down list box, choose a geolocation. You can choose the Unspecified geolocation, which designates that this device does not associate with a geolocation. On Unified CM, you can also choose a geolocation that has been configured with the System > Geolocation Configuration menu option. Default value: None
Geolocation Filter	From the drop-down menu, choose a geolocation filter. If you leave the <None> setting, no geolocation filter gets applied for this device. On Unified CM, you can also choose a geolocation filter that has been configured with the System > Geolocation Filter menu option. Default value: None
Send Geolocation Information	Select this check box to send geolocation information for this device. Default value: False (Cleared)

## Delete a SIP Trunk

To delete a SIP trunk:

1. Log in as provider, reseller or customer administrator.
2. Choose an option:
  - If you logged in as Provider or Reseller administrator, go to **Apps Management > CUCM > SIP Trunks**.
  - If you logged in as Customer administrator, go to **Apps Management > Advanced > SIP Trunks**.
3. From the list of trunks, choose the SIP trunk to be deleted.
4. Click **Delete** to delete the SIP trunk.
5. Click **Yes** to confirm the deletion.

## Reset a SIP Trunk

This procedure shuts down a SIP trunk and brings it back into service.

---

**Note:** This procedure does not physically reset the hardware; it only re-initializes the configuration that is loaded by the Cisco Unified Communications Manager (CUCM) cluster. To restart a SIP trunk without shutting it down, use **Restart SIP Trunks**.

---

## Perform these steps:

1. Log in as provider, reseller or customer administrator.
2. Perform one of:
  - If you logged in as Provider or Reseller administrator, go to **Apps Management > CUCM > SIP Trunks**.
  - If you logged in as Customer administrator, go to **Apps Management > Advanced > SIP Trunks**.

3. From the list of SIP trunks, click the SIP trunk to be reset, then choose **Action > Reset**.

### 9.1.16. Restart SIP Trunks

This procedure restarts a SIP trunk without shutting it down first.

---

**Note:**

- To shut down a SIP trunk prior to the reset, see [Reset a SIP Trunk](#).
- If the SIP trunk is not registered with Cisco Unified Communications Manager, you cannot restart it.

**Warning:** Restarting a SIP trunk drops all active calls that are using the trunk.

**Perform these steps:**

1. Log in as provider, reseller or customer administrator.
2. Choose an option:
  - If you logged in as provider or reseller administrator, choose **Apps Management > CUCM > SIP Trunks**.
  - If you logged in as customer administrator, choose **Apps Management > Advanced > SIP Trunks**.
3. From the list of trunks, click the SIP trunk to be restarted, then click **Action > Restart**.

### 9.1.17. Route Groups

#### Overview

A route group allows you to define the order in which gateways are selected. It allows you to prioritize a list of gateways and ports for outgoing trunk selection.

For example, if you use two long distance carriers, you could add a route group so that long distance calls to the less expensive carrier are given priority. Calls only route to the more expensive carrier if the first trunk is unavailable.

#### Configure Route Groups

This procedure adds or updates route groups.

**Prerequisites:**

- You must define one or more gateway or SIP trunks before you add a route group.

---

**Note:** Each gateway or gateway and port combination can only belong to one route group and can only be listed once within that route group. All gateways in a route group must have the same route pattern. The pattern is assigned to the route list containing the route group (not the route group itself).

Route groups are optional. If a proposed route group only contains one gateway or one gateway and port combination and that route group is not to be included in a route list, the route group is not needed.

**Perform these steps:**

1. Log in as Provider, Reseller or Customer administrator.
2. Choose an option:
  - If you logged in as Provider or Reseller administrator, go to (default menus) **Apps Management > CUCM > Route Groups**.
  - If you logged in as Customer administrator, go to (default menus) **Apps Management > Advanced > Route Groups**.
3. Do you want to ..
  - Add a new route group? Click **Add**. Go to step 4.
  - Edit an existing route group? Click the group to be updated, edit the fields as required, then click **Save** to save the edited route group.
4. In the **CUCM** drop-down, select the Cisco Unified Communications Manager corresponding to the route group.
5. In the **Route Group Name** field, enter a unique name for the new route group.

**Note:** A route group name can comprise up to 50 alphanumeric characters and can contain any combination of spaces, period(s), hyphens (-), and underscore characters (\_). Ensure that each route group name is unique to the route plan.

Use concise and descriptive names for the route group. The CompanynameLocationGroup format usually provides a sufficient level of detail and is short enough to enable you to quickly and easily identify a route group. For example, - CiscoDallasAA1 - identifies a Cisco Access Analog route group for the Cisco office in Dallas.

6. Select Distribution Algorithm options for the route group. The default value is Circular.

Option	Description
Top Down	Allows CUCM to distribute a call to idle or available members starting with the first idle or available member of a route group to the last idle or available member of a route group. This option is mandatory if you want to prioritize the order of devices.
Circular	Allows CUCM to Communications Manager to distribute a call to idle or available members starting from the (n+1)th member of a route group, where the nth member is the member to which the CUCM most recently extended a call. If the nth member is the last member of a route group, CUCM distributes a call starting from the top of the route group.

7. Click the Plus icon (+) to open the **Members** box.
8. Choose an option:
  - To add a device to the route group, go to Step 9.
  - To modify the priority of a device, go to Step 10.

- To remove a device from the route group, select the relevant device, and click the Minus sign (-). Ensure you leave at least one device in the route group.
8. To add a device to the route group:
    - a. From the **Device Name** drop-down menu, choose the device where the route group is added.  
Note:  
When a SIP trunk or gateway is added, all ports on the device are selected.
    - b. For Device Selection Order, indicate the order in which to prioritize multiple devices. A lower selection order indicates higher priority. This field requires an integer value. The default is no setting. The device selection order, if specified, overrides the position of the device in the list.
    - c. To add another device to the route group, click the Plus icon (+) at **Members**, then repeat this step for each device you want to add.
  10. If no device selection order is specified, you can change the priority of a device by moving the device up or down in the list by clicking the arrows on the right side of the **Members** box. Using the Up arrow, move the device higher in the list to make it a higher priority in the route group, or using the Down arrow, move the device lower in the list to make it a lower priority in the route group.  
Note: The Top Down distribution algorithm must be selected in Step 6 to prioritize the order of devices.
  11. Click **Save**. The new route group displays **Route Group** list.

### Delete a Route Group

To delete a route group:

1. Log in as Provider, Reseller or Customer administrator.

**Warning:** When deleting a route group, ensure that you select a valid site under your customer in the hierarchy node breadcrumb at the top of the view. If you attempt to delete a route group at any other node in the hierarchy, you will receive an error indicating that you must be at a site.

2. Choose an option:
  - If you logged in as Provider or Reseller administrator, choose **Apps Management > CUCM > Route Groups**.
  - If you logged in as Customer administrator, choose **Apps Management > Advanced > Route Groups**.
3. From the list of trunks, select the route group you wish to delete.
4. Click **Delete**, then click **Yes** to confirm.

## 9.1.18. Route Lists

### Overview

Route lists are made up of route groups and are associated with route patterns. A route list associates a set of route groups with a route pattern and determines the order in which those route groups are accessed. The order controls the progress of the search for available trunk devices for outgoing calls.

A route list can contain only route groups. Each route list should have at least one route group. Each route group includes at least one device, such as a gateway, that is available. Based on device type, Cisco Unified Communications Manager (Unified CM) can choose some, or all, ports as resources in each route group. Some devices, such as digital access, only allow you to choose all ports.

You can add a route group to any number of route lists.

### Configure Route Groups

This procedure adds route lists and adds, removes, or changes the order of route groups in a route list.

#### Pre-requisites:

- Configure the route groups.

#### Perform these steps:

1. Log in to as Provider, Reseller or Customer administrator.

---

**Note:** When configuring a route list as a provider or reseller, ensure that you select a valid customer or site under your customer in the hierarchy node breadcrumb at the top of the view.

---

2. Choose an option:
  - If you logged in as Provider or Reseller administrator, choose **Apps Management > CUCM > Route Lists**.
  - If you logged in as Customer administrator, choose **Apps Management > Advanced > Route Lists**.
3. Choose an appropriate option:
  - To add a new route list, click **Add**, then go to Step 4.
  - To edit an existing route list, choose the list to be updated by clicking on its box in the leftmost column, then click **Edit** to update the selected route list. Go to Step 5.
4. Complete at minimum, the mandatory *Route Lists Field Reference*.
5. To add a route group to this route list, click + on the right side of the **Route Group Items** box and complete at minimum, the mandatory *Route Group Field Reference*.
6. To remove a route group from this route list, click - on the right side of its row in the **Member** box.
7. To change the priority of a route group, move it up or down in the list by clicking the arrows on the right side of the **Member** box. Using the Up arrow, move the group higher in the list to make it a higher priority, or using the Down arrow, move the group lower in the list to make it a lower priority.
8. To save a new or updated route list, click **Save**.

## Route Lists Field Reference

Field	Description
CUCM *	Select a Unified CM for the route list. This field is mandatory.
Name *	Enter a unique name for the new route list. The name can contain up to 50 alphanumeric characters and can contain any combination of spaces, period(s), hyphens (-), and underscore characters (_). This field is mandatory. Tip: Use concise and descriptive names for the route list. The CompanynameLocationCalltype format usually provides a sufficient level of detail and is short enough to enable you to quickly and easily identify a route list. For example, 'CiscoDallasMetro' identifies a route list for toll-free, inter-local access transport area (LATA) calls from the Cisco office in Dallas.
Description	A description of the route list.
Call Manager Group Name *	Select a Unified CM Group. Default is the default field. You can choose from <b>Default</b> , <b>None</b> , or select a group. This field is mandatory. Note: The route list registers with the first Unified CM in the group (which is the Primary Unified CM).
Route List Enabled	Select to enable the route list. This is the default. Clear to disable the route list. When disabling a route list, calls in progress do not get affected, but the route list does not accept additional calls.
Run on Every Node	Select to enable the active route list to run on every node.
Route Group Items	See "Route Group Items fields".

## Route Group Field Reference

Field	Description
Route Group *	Choose the route group. This field is mandatory.
Selection Order	Indicate the order in which to prioritize multiple routes. A lower selection order indicates higher priority. This field requires an integer value. The default is no setting.
Use Calling Party's External Phone Number Mask *	Choose <b>On</b> from the drop-down list if you want the full external phone number to be used for calling line identification (CLID) on outgoing calls. Choose <b>Off</b> or <b>Default</b> if you do not want to use the full external phone number for CLID on outgoing calls. You may also configure an External Phone Number Mask on all phone devices. This field is mandatory.
Calling Party Transformation Mask	Enter a transformation mask value. Valid entries include the digits 0 through 9; the wildcard characters X, asterisk (*), and octothorpe (#); and the international escape character +. If the <b>Digit Discards</b> field is blank, the <b>Prefix Digits</b> field is blank, the <b>Calling Party Transformation Mask</b> field is blank, and <b>Use Calling Party's External Phone Number Mask</b> is set to <b>Off</b> or <b>Default</b> , no calling party transformation takes place.
Calling Party Prefix Digits	Enter prefix digits in the field. Valid entries include the digits 0 through 9, the wildcard characters asterisk (*) and octothorpe (#), and the international escape character +. Note: The appended prefix digit does not affect which directory numbers route to the assigned device.
Calling Party Number Type	Choose the format for the number type in calling party directory numbers. Unified CM sets the calling directory number (DN) type. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to a PBX that expects the calling directory number to be encoded to a non national type numbering plan. Choose one of the following options: <ul style="list-style-type: none"> <li>• <b>Cisco CallManager</b> - Use when the Unified CM sets the directory number type.</li> <li>• <b>Unknown</b> - Use when the dialing plan is unknown.</li> <li>• <b>National</b> - Use when you are dialing within the dialing plan for your country.</li> <li>• <b>International</b> - Use when you are dialing outside the dialing plan for your country.</li> <li>• <b>Subscriber</b> - Use when you are dialing a subscriber by using a shortened subscriber number.</li> </ul>

Field	Description
Calling Party Numbering Plan	<p>Choose the format for the numbering plan in calling party directory numbers. Unified CM sets the calling DN numbering plan. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to PBXs by using routing as a non-national type number.</p> <p>Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Cisco CallManager</b> - Use when the Unified CM sets the Numbering Plan in the directory number.</li> <li>• <b>ISDN</b> - Use when you are dialing outside the dialing plan for your country.</li> <li>• <b>National Standard</b> - Use when you are dialing within the dialing plan for your country.</li> <li>• <b>Private</b> - Use when you are dialing within a private network.</li> <li>• <b>Unknown</b> - Use when the dialing plan is unknown.</li> </ul>
Called Party Discard Digits	<p>Choose the discard digit instructions that you want to be associated with this called party transformation pattern.</p>
Called Party Transform Mask	<p>Enter a transformation mask value. Valid entries include the digits 0 through 9; the wildcard characters X, asterisk (*), and octothorpe (#); the international escape character +; and blank. If this field is blank and the preceding field is not checked, no transformation takes place.</p>
Called Party Prefix Digits	<p>Enter prefix digits in the field. Valid entries include the digits 0 through 9, the wildcard characters asterisk (*) and octothorpe (#), the international escape character +, and blank. Note: The appended prefix digit does not affect which directory numbers route to the assigned device.</p>
Called Party Number Type	<p>Choose the format for the number type in called party directory numbers. Unified CM sets the called directory number (DN) type. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to a PBX that expects the called directory number to be encoded to a non-national type numbering plan.</p> <p>Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Cisco CallManager</b> - Use when the Unified CM sets the directory number type.</li> <li>• <b>Unknown</b> - Use when the dialing plan is unknown.</li> <li>• <b>National</b> - Use when you are dialing within the dialing plan for your country.</li> <li>• <b>International</b> - Use when you are dialing outside the dialing plan for your country.</li> <li>• <b>Subscriber</b> - Use when you are dialing a subscriber by using a shortened subscriber number.</li> </ul>



Field	Description
Called Party Numbering Plan	<p>Choose the format for the numbering plan in called party directory numbers. Unified CM sets the called DN numbering plan. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to PBXs by using routing as a non-national type number.</p> <p>Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Cisco CallManager</b> - Use when the Unified CM sets the Numbering Plan in the directory number.</li> <li>• <b>ISDN</b> - Use when you are dialing outside the dialing plan for your country.</li> <li>• <b>National Standard</b> - Use when you are dialing within the dialing plan for your country.</li> <li>• <b>Private</b> - Use when you are dialing within a private network.</li> <li>• <b>Unknown</b> - Use when the dialing plan is unknown.</li> </ul>

### 9.1.19. CUCM Translation Patterns

#### Overview

The Cisco Unified Communications Manager (CUCM) default dial plan translation patterns are deployed as part of the default dial plan translation patterns that ship with the VOSS Automate template package.

This section describes how to update these default dial plan translation patterns. For example, you may want to make your default national number translation patterns more restrictive. Or you may want to deploy additional, customer-specific translation patterns (with custom blocking plans that aren't defined in the standard country dial plan schema, for instance).

**Caution:** Provider deployments. The Cisco HCS default dial plan includes most common translation patterns and route patterns, which are typically added automatically when provisioning a customer dial plan, site dial plan, and voice mail service.

Ensure you have a full understanding of the Cisco HCS dial plan before using VOSS Automate to update translation patterns and route patterns. For details, see the "Provider HCS Dial Plan Management Support Guide".

#### Configure CUCM Translation Patterns

This procedure updates the CUCM translation patterns that are provisioned by the dial plan schema and adds new translation patterns from VOSS Automate that are not part of the standard dial plan package.

**Note:** For more information on CUCM translation patterns, see the "Cisco Unified Communications Manager Administration Guide, Release 10.0(1)".

1. Log in as Provider, Reseller, or Customer administrator.
2. Choose the hierarchy where you want to add or edit the translation pattern.

3. Choose an option, depending on your login:
  - If you're logged in as a Provider or Reseller administrator, go to (default menus) **Apps Management > CUCM > Translation Patterns**.
  - If you're logged in as a Customer administrator, go to (default menus) **Apps Management > Advanced > Translation Patterns**.
4. Choose an option:
  - To add a new translation pattern, click **Add**, then go to Step 5.
  - To edit an existing translation pattern, click on the pattern to be updated and go to Step 6.
5. On the **Pattern Definition tab**, from the **CUCM** drop-down, choose the hostname, domain name, or IP address of the Cisco Unified Communications Manager (CUCM) to which you want to add the translation pattern.

---

**Note:** This drop-down displays only when you're adding a translation pattern. When adding a translation pattern at a hierarchy above the site level, the drop-down displays CUCMs located at the hierarchy node where you're adding the translation pattern, and all CUCMs in hierarchies above this hierarchy node.

When adding a translation pattern at a site, the CUCM in the **CUCM** drop-down list is the CUCM in the site's Network Device List (NDL). If the site does not have an NDL, or the NDL at the site does not have a CUCM, then the drop-down list is empty and a translation pattern can't be added to the site.

---

6. On the **Pattern Definition tab**:
  - Mandatory. In the **Translation Pattern** field, fill out a unique name for the translation pattern, (or update the name if you're editing the translation pattern).

---

**Note:** The name must be unique, and can include numbers and wildcards. Spaces aren't allowed. For example, enter 8XXX for a typical private network numbering plan. Valid characters include the uppercase characters A, B, C, and D and \+, which represents the international escape character +.

---

- Mandatory. In the **Partition** field, fill out a unique name for the route partition (or update the name if you're editing the translation pattern).
- In the **Description** field, fill out an optional description for the translation pattern and route partition.

---

**Note:** The description can include up to 50 characters in any language, but it can't include double-quotes ("), percentage sign (%), ampersand (&), or angle brackets (<>).

---

7. Fill out at least the mandatory fields on each tab of the **Translations Patterns** page.

---

**Tip:** Use the Corresponding CUCM attribute information provided in the tables to manually verify in the CUCM GUI that fields have been mapped correctly.

---

- [Pattern Definition Tab](#)
- [Calling Party Transformations Tab](#)

- *Connected Party Transformations Tab*
- *Called Party Transformations Tab*

8. Save your changes.

### **Translation Patterns Page**

This page adds and edits CUCM translation patterns.

To access this page:

- If you're logged in as a Provider or Reseller administrator, go to (default menus) **Apps Management > CUCM > Translation Patterns**.
- If you're logged in as a Customer administrator, go to (default menus) **Apps Management > Advanced > Translation Patterns**.

You can select the following tabs on this page:

- *Pattern Definition Tab*
- *Calling Party Transformations Tab*
- *Connected Party Transformations Tab*
- *Called Party Transformations Tab*

## Pattern Definition Tab

Option	Description
MLPP Precedence *	<p>From the drop-down menu, choose a Multilevel Precedence and Preemption (MLPP) service setting for this translation pattern:</p> <ul style="list-style-type: none"> <li>• Executive Override - Highest precedence setting for MLPP calls.</li> <li>• Flash Override - Second highest precedence setting for MLPP calls.</li> <li>• Flash - Third highest precedence setting for MLPP calls.</li> <li>• Immediate - Fourth highest precedence setting for MLPP calls.</li> <li>• Priority - Fifth highest precedence setting for MLPP calls.</li> <li>• Routine - Lowest precedence setting for MLPP calls.</li> <li>• Default - Does not override the incoming precedence level but rather lets it pass unchanged.</li> </ul> <p>Default: Default Corresponding Unified CM Attribute: MLPP Precedence.</p>
Route Class *	<p>From the drop-down menu, choose a route class setting for this translation pattern:</p> <ul style="list-style-type: none"> <li>• Default</li> <li>• Voice</li> <li>• Data</li> <li>• Satellite Avoidance</li> <li>• Hotline voice</li> <li>• Hotline data</li> </ul> <p>The route class is a DSN code that identifies the class of traffic for a call. The route class informs downstream devices about special routing or termination requirements. The Default setting uses the existing route class of the incoming call. You can use non-default route class settings to translate an inbound T1 CAS route class digit into a Unified CM Cisco Unified Communications Manager route class value (and strip off the digit). You should not need to assign a non-default route class setting to any other inbound calls that use pattern configuration. If the route pattern points to a SIP trunk supporting G.Clear, then specify Data or Hotline as the Route Class.</p> <p>Default: Default Corresponding Unified CM Attribute: Route Class.</p>
Calling Search Space	<p>From the drop-down menu, choose the calling search space for which you are adding a translation pattern, if necessary.</p> <p>Default: None Corresponding Unified CM Attribute: Calling Search Space.</p>

Option	Description
Use Originator's Calling Search Space	<p>To use the originator's calling search space for routing a call, select the Use Originator's Calling Search Space check box.</p> <p>If the originating device is a phone, the originator's calling search space is a result of device calling search space and line calling search space.</p> <p>Whenever a translation pattern chain is encountered, for subsequent lookups Calling Search Space is selected depending upon the value of this check box at current translation pattern. If you select the Use Originator's Calling Search Space check box at current translation pattern, then originator's Calling Search Space is used and not the Calling Search Space for the previous lookup. If you clear the Use Originator's Calling Search Space check box at current translation pattern, then Calling Search Space configured at current translation pattern is used.</p> <p>Default: Clear Corresponding Unified CM Attribute: Use Originator's Calling Search Space.</p>
Block this pattern	<p>Indicates whether you want this translation pattern to be used for routing calls (such 8[2-9]XX) or for blocking calls.</p> <p>Default: Clear (meaning translation pattern is used for routing calls). Corresponding Unified CM Attribute: Block this pattern.</p>
Block Reason	<p>If you click Block this pattern radio button above, you must choose the reason that you want this translation pattern to block calls. From the drop-down menu, choose one of:</p> <ul style="list-style-type: none"> <li>• No Error</li> <li>• Unallocated Number</li> <li>• Call Rejected</li> <li>• Number Changed</li> <li>• Invalid Number Format</li> <li>• Precedence Level Exceeded</li> </ul> <p>Default: No Error Corresponding Unified CM Attribute: &lt;entry box next to Block this pattern&gt;.</p>
Provide Outside Dial Tone	<p>Outside dial tone indicates that Unified CM routes the calls off the local network. Select this check box for each translation pattern that you consider to be off network.</p> <p>Default: Selected Corresponding Unified CM Attribute: Provide Outside Dial Tone.</p>
Urgent Priority	<p>If the dial plan contains overlapping patterns, Unified CM does not route the call until the interdigit timer expires (even if it is possible to dial a sequence of digits to choose a current match). Select this check box to interrupt interdigit timing when Unified CM must route a call immediately.</p> <p>Default: Clear Corresponding Unified CM Attribute: Urgent Priority.</p>

Option	Description
Do Not Wait for Interdigit Timeout on Subsequent Hops	<p>When you select this check box along with the Urgent Priority check box and the translation pattern matches with a sequence of dialed digits (or whenever the translation pattern is the only matching pattern), Unified CM does not start the interdigit timer after it matches any of the subsequent patterns.</p> <p>Note: Unified CM does not start the interdigit timer even if subsequent patterns are of variable length or if overlapping patterns exist for subsequent matches. Whenever you select the Do Not Wait For Interdigit Timeout On Subsequent Hops check box that is associated with a translation pattern in a translation pattern chain, Unified CM does not start the interdigit timer after it matches any of the subsequent patterns.</p> <p>Note: Unified CM does not start interdigit timer even if subsequent translation patterns in a chain have Do Not Wait For Interdigit Timeout On Subsequent Hops check box cleared.</p> <p>Default: Clear Corresponding Unified CM Attribute: Do Not Wait for Interdigit Timeout On Subsequent Hops.</p>
Route Next Hop By Calling Party Number	<p>Select this check box to enable routing based on the calling party number, which is required for call screening based on caller ID information to work between clusters.</p> <p>Default: Clear Corresponding Unified CM Attribute: Route Next Hop By Calling Party Number.</p>

### Calling Party Transformations Tab

Option	Description
Use Calling Party's External Phone Number Mask	<p>Select the check box if you want the full, external phone number to be used for calling line identification (CLID) on outgoing calls.</p> <p>Default: Default Corresponding Unified CM Attribute: Use Calling Party's External Phone Number Mask.</p>
Calling Party Transform Mask	<p>Enter a transformation mask value. Valid entries for the National Numbering Plan include the digits 0 through 9, and the wildcard characters asterisk (*) and octothorpe (#); the international escape character +; and blank. If this field is blank and the preceding field is cleared, no calling party transformation takes place.</p> <p>Default: None Corresponding Unified CM Attribute: Calling Party Transform Mask.</p>
Prefix Digits (Outgoing Calls)	<p>Enter prefix digits. Valid entries for the National Numbering Plan include the digits 0 through 9, and the wildcard characters asterisk (*) and octothorpe (#); the international escape character +.</p> <p>Note: The appended prefix digit does not affect which directory numbers route to the assigned device.</p> <p>Default: None Corresponding Unified CM Attribute: Prefix Digits (Outgoing Calls).</p>

Option	Description
Calling Line ID Presentation *	<p>Unified CM uses calling line ID presentation/restriction (CLIP/CLIR) as a supplementary service to allow or restrict the originating caller phone number on a call-by-call basis.</p> <p>Choose whether you want the Unified CM to allow or restrict the display of the calling party phone number on the called party phone display for this translation pattern.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Default - Choose if you do not want to change calling line ID presentation.</li> <li>• Allowed - Choose if you want Unified CM to allow the display of the calling number.</li> <li>• Restricted - Choose if you want Unified CM to block the display of the calling number.</li> </ul> <p>For more information about this field, see topics related to calling party number transformations settings in the Cisco Unified Communications Manager System Guide.</p> <p>Note:</p> <p>Use this parameter and the Connected Line ID Presentation parameter, in combination with the Ignore Presentation Indicators (internal calls only) device-level parameter, to configure call display restrictions. Together, these settings allow you to selectively present or restrict calling and/or connected line display information for each call. See topics related to device profile configuration settings and phone settings for information about the Ignore Presentation Indicators (internal calls only) field, and for more information about call display restrictions, see topics related to call display restrictions in the Cisco Unified Communications Manager System Guide.</p> <p>Default: Default</p> <p>Corresponding Unified CM Attribute: Calling Line ID Presentation.</p>

Option	Description
Calling Name Presentation *	<p>Unified CM uses calling name presentation (CNIP/CNIR) as a supplementary service to allow or restrict the originating caller name on a call-by-call basis. Choose whether you want the Unified CM to allow or restrict the display of the calling party name on the called party phone display for this translation pattern. Choose one of:</p> <ul style="list-style-type: none"> <li>• Default - Choose if you do not want to change calling name presentation.</li> <li>• Allowed - Choose if you want Unified CM to allow the display of the calling name information.</li> <li>• Restricted - Choose if you want Unified CM to block the display of the calling name information.</li> </ul> <p>For more information about this field, see calling party number transformations settings in the Cisco Unified Communications Manager System Guide. Default: Default Corresponding Unified CM Attribute: Calling Name Presentation.</p>
Calling Party Number Type *	<p>Choose the format for the number type in calling party directory numbers. Unified CM sets the calling directory number (DN) type. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to a PBX that expects the calling directory number to be encoded to a non-national numbering plan type. Choose one of:</p> <ul style="list-style-type: none"> <li>• Unified CM - the Unified CM sets the directory number type.</li> <li>• Unknown - The dialing plan is unknown.</li> <li>• National - Use when you are dialing within the dialing plan for your country.</li> <li>• International - Use when you are dialing outside the dialing plan for your country.</li> <li>• Subscriber - Use when you are dialing a subscriber by using the shortened subscriber name.</li> </ul> <p>Default: Unified CM Corresponding Unified CM Attribute: Calling Party Number Type.</p>



Option	Description
Calling Party Numbering Plan *	<p>Choose the format for the numbering plan in calling party directory numbers. Unified CM sets the calling DN numbering plan. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to PBXs by using routing as a non-national type number.</p> <p>Choose one of:</p> <ul style="list-style-type: none"><li>• Unified CM - Use when the Unified CM sets the Numbering Plan in the directory number.</li><li>• ISDN - Use when you are dialing outside the dialing plan for your country.</li><li>• National Standard - Use when you are dialing within the dialing plan for your country.</li><li>• Private - Use when you are dialing within a private network.</li><li>• Unknown - Use when the dialing plan is unknown.</li></ul> <p>Default: Unified CM Corresponding Unified CM Attribute: Calling Party Numbering Plan.</p>

**Connected Party Transformations Tab**

Option	Description
Connected Line ID Presentation *	<p>Unified CM uses connected line ID presentation (COLP/COLR) as a supplementary service to allow or restrict the called party phone number on a call-by-call basis. Choose whether you want Unified CM to allow or restrict the display of the connected party phone number on the calling party phone display for this translation pattern. Choose one of:</p> <ul style="list-style-type: none"> <li>• Default - Choose if you do not want to change the connected line ID presentation.</li> <li>• Allowed - Choose if you want to display the connected party phone number.</li> <li>• Restricted - Choose if you want Unified CM to block the display of the connected party phone number.</li> </ul> <p>If a call that originates from an IP phone on Unified CM encounters a device, such as a trunk, gateway, or route pattern, that has the Connected Line ID Presentation set to Default, the presentation value is automatically set to Allowed.</p> <p>For more information about this field, see topics related to connected party presentation and restriction settings in the Cisco Unified Communications Manager System Guide.</p> <p>Default: Default Corresponding Unified CM Attribute: Connected Line ID Presentation.</p>
Connected Name Presentation *	<p>(CONP/CONR) as a supplementary service to allow or restrict the called party name on a call-by-call basis. Choose whether you want Unified CM to allow or restrict the display of the connected party name on the calling party phone display for this translation pattern. Choose one of:</p> <ul style="list-style-type: none"> <li>• Default - Choose if you do not want to change the connected name presentation.</li> <li>• Allowed - Choose if you want to display the connected party name.</li> <li>• Restricted - Choose if you want Unified CM to block the display of the connected party name.</li> </ul> <p>For more information about this field, see topics related to connected party presentation and restriction settings in the Cisco Unified Communications Manager System Guide.</p> <p>Default: Default Corresponding Unified CM Attribute: Connected Name Presentation.</p>

**Called Party Transformations Tab**

Option	Description
Discard Digits	<p>Choose the discard digits instructions that you want to be associated with this translation pattern. See topics related to discard digits instructions in the Cisco Unified Communications Manager System Guide for more information.</p> <p>Default: None</p> <p>Corresponding Unified CM Attribute: Discard Digits.</p>
Called Party Transform Mask	<p>Enter a transformation mask value. Valid entries for the National Numbering Plan include the digits 0 through 9, and the wildcard characters asterisk (*) and octothorpe (#); the international escape character +; and blank. If the field is blank, no transformation takes place. The dialed digits get sent exactly as dialed.</p> <p>Default: None</p> <p>Corresponding Unified CM Attribute: Called Party Transform Mask.</p>
Prefix Digits (Outgoing Calls)	<p>Enter prefix digits. Valid entries for the National Numbering Plan include the digits 0 through 9, and the wildcard characters asterisk (*) and octothorpe (#);the international escape character +; and blank.</p> <p>Note:</p> <p>The appended prefix digit does not affect which directory numbers route to the assigned device.</p> <p>Default: None</p> <p>Corresponding Unified CM Attribute: Prefix Digits (Outgoing Calls).</p>
Called Party Number Type *	<p>Choose the format for the number type in called party directory numbers. Unified CM sets the called directory number (DN) type. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CMUnified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to a PBX that expects the called directory number to be encoded to a non-national type numbering plan.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Unified CM - Use when the Unified CM sets the directory number type.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> <li>• National - Use when you are dialing within the dialing plan for your country.</li> <li>• International - Use when you are dialing outside the dialing plan for your country.</li> <li>• Subscriber - Use when you are dialing a subscriber by using a shortened subscriber number.</li> </ul> <p>Default: Unified CM</p> <p>Corresponding Unified CM Attribute: Called Party Number Type.</p>

Option	Description
Called Party Numbering Plan *	<p>Choose the format for the numbering plan in called party directory numbers. Unified CM sets the called DN numbering plan. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to PBXs by using routing as a non-national type number.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Unified CM - Use when the Unified CM sets the Numbering Plan in the directory number.</li> <li>• ISDN - Use when you are dialing outside the dialing plan for your country.</li> <li>• National Standard - Use when you are dialing within the dialing plan for your country.</li> <li>• Private - Use when you are dialing within a private network.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> </ul> <p>Default: Unified CM Corresponding Unified CM Attribute: Called Party Numbering Plan.</p>

## 9.1.20. Calling Party Transformation Patterns

### Overview

The parameters in the Calling Party Transformation Patterns window provide appropriate caller information using the Calling Party Transformation calling search space on the destination device. Be aware that calls through transformation patterns are not routable. When this pattern is matched, the call does not route to any device.

You use calling party transformation patterns with the calling party normalization feature.

### Configure Calling Party Transformation Patterns

1. Log in as the Provider, Reseller, or Customer Administrator.
2. Perform one of the following:
  - If you logged in as the Provider or Reseller Administrator, select **Apps Management > CUCM > Calling Party Transformation Patterns**.
  - If you logged in as the Customer Administrator, select **Apps Management > Advanced > Calling Party Transformation Patterns**.
3. Make sure that the hierarchy path is set to the correct level.
4. Perform one of the following:
  - To add a new calling party transformation pattern, click **Add**, then go to step 5.
  - To edit an existing calling party transformation pattern, click on the line item in the table. Go to step 6.
5. In the popup, select from the drop-down the network device list (NDL) to which you are adding the calling party transformation pattern, and click **OK**.

---

**Note:** The NDL popup will only appear when you are adding a new calling party transformation pattern. If you are updating an existing pattern, go to Step 6.

---

If you are adding the calling party transformation pattern to a Site hierarchy node, the NDL popup will not appear. You will go right to the Calling Party Transformation Pattern add tabs using the NDL associated to the site.

6. From the **Pattern Definition** tab, modify the following fields as required.

Option	Description
Pattern (Mandatory)	Enter the transformation pattern, including numbers and wildcards (do not use spaces); for example, for NANP, enter 9.@ for typical local access or 8XXX for a typical private network numbering plan. Valid characters include the uppercase characters A, B, C, and D and +, which represents the international escape character +. Note Ensure that the pattern is unique. Check the transformation pattern, route pattern, translation pattern, directory number, call park number, call pickup number, message waiting on/off, or meet me number if you receive an error that indicates duplicate entries. You can also check the route plan report. Default value: None
Partition	If you want to use a partition to restrict access to the transformation pattern, choose the desired partition from the drop-down list box. Note Configure transformation patterns in different non-null partitions rather than dialing patterns such as route patterns and directory numbers. For transformation pattern lookups, Cisco Unified Communications Manager ignores the patterns in null partitions. Make sure that the combination of pattern, route filter, and partition is unique within the Cisco Unified Communications Manager cluster.
Description	Enter a description of the transformation pattern.
Numbering Plan	Choose a numbering plan.
Route Filter	If your transformation pattern includes the @ wildcard, you may choose a route filter. The optional act of choosing a route filter restricts certain number patterns. The route filters that display depend on the numbering plan that you choose from the Numbering Plan drop-down list box.
MLPP Preemption Disabled	Check this box to make the numbers in a transformation pattern non-preemptable.

7. From the **Calling Party Transformations** tab, modify the following fields as required.

Option	Description
Use Calling Party's External Phone Number Mask	Choose On from the drop-down list if you want the full external phone number to be used for calling line identification (CLID) on outgoing calls. Choose Off or Default if you do not want to use the full external phone number for CLID on outgoing calls. You may also configure an External Phone Number Mask on all phone devices.
Digit Discards	Choose the discard digit instructions that you want to be associated with this calling party transformation pattern.
Calling Party Transformation Mask	Enter a transformation mask value. Valid entries include the digits 0 through 9; the wildcard characters X, asterisk (*), and octothorpe (#); and the international escape character +. If the Digit Discards field is blank, the Prefix Digits field is blank, the Calling Party Transformation Mask field is blank, and Use Calling Party's External Phone Number Mask is set to Off or Default, no calling party transformation takes place.
Prefix Digits	Enter prefix digits in the field. Valid entries include the digits 0 through 9, the wildcard characters asterisk (*) and octothorpe (#), and the international escape character +. Note The appended prefix digit does not affect which directory numbers route to the assigned device.
Calling Line ID Presentation	Cisco Unified Communications Manager uses calling line ID presentation (CLIP/CLIR) as a supplementary service to allow or restrict the originating caller phone number on a call-by-call basis. Choose whether you want the Cisco Unified Communications Manager to allow or restrict the display of the calling party phone number on the called party phone display for this route pattern. Choose Default if you do not want to change calling line ID presentation. Choose Allowed if you want Cisco Unified Communications Manager to allow the display of the calling number. Choose Restricted if you want Cisco Unified Communications Manager to block the display of the calling number.

Option	Description
Calling Party Number Type	<p>Choose the format for the number type in calling party directory numbers. Cisco Unified Communications Manager sets the calling directory number (DN) type. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Cisco Unified Communications Manager does not recognize European national dialing patterns. You can also change this setting when you are connecting to a PBX that expects the calling directory number to be encoded to a non national type numbering plan. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• Cisco CallManager - Use when the Cisco Unified Communications Manager sets the directory number type.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> <li>• National - Use when you are dialing within the dialing plan for your country.</li> <li>• International - Use when you are dialing outside the dialing plan for your country.</li> <li>• Subscriber - Use when you are dialing a subscriber by using a shortened subscriber number.</li> </ul>
Calling Party Numbering Plan	<p>Choose the format for the numbering plan in calling party directory numbers. Cisco Unified Communications Manager sets the calling DN numbering plan. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Cisco Unified Communications Manager does not recognize European national dialing patterns. You can also change this setting when you are connecting to PBXs by using routing as a non-national type number. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• Cisco CallManager - Use when the Cisco Unified Communications Manager sets the Numbering Plan in the directory number.</li> <li>• ISDN - Use when you are dialing outside the dialing plan for your country.</li> <li>• National Standard - Use when you are dialing within the dialing plan for your country.</li> <li>• Private - Use when you are dialing within a private network.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> </ul>

8. Click **Save**. The calling party transformation pattern appears in the list.

To modify any of these properties, click the item in the list, make your changes, and click **Save**.

To delete a calling party transformation pattern, check the box to the left of the Name column in the group list, and click **Delete**.

## 9.1.21. Configure Called Party Transformation Patterns

### Overview

The parameters in the Called Party Transformation Patterns window provide appropriate caller information by using the Called Party Transformation calling search space on the destination device. Be aware that calls through transformation patterns are not routable. When this pattern is matched, the call does not route to any device.

### Configure Called Party Transformation Patterns

1. Log in as the Provider, Reseller, or Customer Administrator.
2. Perform one of the following:
  - If you logged in as the Provider or Reseller Administrator, select **Apps Management > CUCM > Called Party Transformation Patterns**.
  - If you logged in as the Customer Administrator, select **Apps Management > Advanced > Called Party Transformation Patterns**.
3. Make sure that the hierarchy path is set to the correct level.
4. Perform one of the following:
  - To add a new called party transformation pattern, click **Add**, then go to step 5.
  - To edit an existing called party transformation pattern, click on the line item in the table. Go to step 6.
5. In the popup, select from the drop-down the network device list (NDL) to which you are adding the called party transformation pattern, and click **OK**.

---

**Note:** The NDL popup will only appear when you are adding a new called party transformation pattern. If you are updating an existing pattern, go to Step 6.

---

If you are adding the called party transformation pattern to a Site hierarchy node, the NDL popup will not appear. You will go right to the Called Party Transformation Pattern add tabs using the NDL associated to the site.

6. From the Pattern Definition tab, modify the following fields as required.



Option	Description
Pattern (Mandatory)	<p>Enter the transformation pattern, including numbers and wildcards (do not use spaces); for example, for NANP, enter 9.@ for typical local access, or 8XXX for a typical private network numbering plan. Valid characters include the uppercase letters A, B, C, and D and +, which represents the international escape character +.</p> <p>Note</p> <p>Ensure that the pattern is unique. Check the transformation pattern, route pattern, translation pattern, directory number, call park number, call pickup number, message waiting on/off, or meet me number if you receive an error that indicates duplicate entries. You can also check the route plan report.</p> <p>Default value: None</p>
Partition	<p>If you want to use a partition to restrict access to the transformation pattern, choose the desired partition from the drop-down list box. If you do not want to restrict access to the transformation pattern, choose &lt;None&gt; for the partition.</p> <p>Note</p> <p>Transformation patterns should be configured in different non- NULL partitions than dialing patterns such as route patterns and directory numbers. For transformation pattern lookups, the patterns in NULL partitions get ignored.</p> <p>Make sure that the combination of pattern, route filter, and partition is unique within the Cisco Unified Communications Manager cluster.</p>
Description	<p>Enter a description of the transformation pattern. The description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&amp;), or angle brackets (&lt;&gt;).</p>
Numbering Plan	<p>Choose a numbering plan.</p>
Route Filter	<p>If your transformation pattern includes the @ wildcard, you may choose a route filter. The optional act of choosing a route filter restricts certain number patterns.</p> <p>The route filters that display depend on the numbering plan that you choose from the Numbering Plan drop-down list box.</p>
MLPP Preemption Disabled	<p>Check this box to make the numbers in a transformation pattern non-preemptable.</p>

7. From the **Called Party Transformations** tab, modify the following fields as required.

Option	Description
Digit Discards	Choose the discard digit instructions that you want to be associated with this called party transformation pattern.
Called Party Transformation Mask	Enter a transformation mask value. Valid entries include the digits 0 through 9; the wildcard characters X, asterisk (*), and octothorpe (#); the international escape character +; and blank. If this field is blank and the preceding field is not checked, no transformation takes place.
Prefix Digits	<p>Enter prefix digits in the field. Valid entries include the digits 0 through 9, the wildcard characters asterisk (*) and octothorpe (#), the international escape character +, and blank.</p> <p><b>Note</b> The appended prefix digit does not affect which directory numbers route to the assigned device.</p>
Called Party Number Type	<p>Choose the format for the number type in called party directory numbers. Cisco Unified Communications Manager sets the called directory number (DN) type. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Cisco Unified Communications Manager does not recognize European national dialing patterns. You can also change this setting when you are connecting to a PBX that expects the called directory number to be encoded to a non-national type numbering plan. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• Cisco CallManager - Use when the Cisco Unified Communications Manager sets the directory number type.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> <li>• National - Use when you are dialing within the dialing plan for your country.</li> <li>• International - Use when you are dialing outside the dialing plan for your country.</li> <li>• Subscriber - Use when you are dialing a subscriber by using a shortened subscriber number.</li> </ul>

Option	Description
Called Party Numbering Plan	<p>Choose the format for the numbering plan in called party directory numbers.</p> <p>Cisco Unified Communications Manager sets the called DN numbering plan. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Cisco Unified Communications Manager does not recognize European national dialing patterns. You can also change this setting when you are connecting to PBXs by using routing as a non-national type number.</p> <p>Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• Cisco CallManager - Use when the Cisco Unified Communications Manager sets the Numbering Plan in the directory number.</li> <li>• ISDN - Use when you are dialing outside the dialing plan for your country.</li> <li>• National Standard - Use when you are dialing within the dialing plan for your country.</li> <li>• Private - Use when you are dialing within a private network.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> </ul>

8. Click **Save**. The called party transformation pattern appears in the list.

To modify any of these characteristics, click the item in the list, make your changes, and click **Save**.

To delete a called party transformation pattern, check the box to the left of the Name column in the group list, and click **Delete**.

## 9.1.22. CUCM Route Patterns

### Overview

Default Cisco Unified Communications Manager (CUCM) dial plan route patterns are deployed as part of the default dial plan schemas that ship with the VOSS Automate template package.

This section describes how you can update these default CUCM dial plan route patterns.

**Caution:** The Cisco HCS default dial plan includes most common translation and route patterns and in most cases, should be added automatically when a customer dial plan, site dial plan, and voice mail service is provisioned. If you wish to update translation and route patterns using VOSS Automate, you must have a full understanding of the Cisco HCS dial plan. Refer to the VOSS Automate Dial Plan Management Guide.

## Configure CUCM Route Patterns

This procedure updates the CUCM route patterns that are provisioned by the dial plan schema, and adds new new route patterns from VOSS Automate that are not part of the standard dial plan package.

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**Note:** For more information on the latest CUCM route patterns, refer to <http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/products-maintenance-guides-list.html>.

---

### Perform these steps

1. Log in as a Provider, Reseller, or Customer administrator.
2. Set the hierarchy path to the node where you want to add or edit the route pattern.
3. Choose an option, depending on your login:
  - If you're logged in as a Provider or Reseller administrator, go to (default menus) **Apps Management > CUCM > Route Patterns**.
  - If you're logged in as a Customer administrator, go to (default menus) **Apps Management > Advanced > Route Patterns**.
4. Choose an option:
  - To add a new route pattern, click **Add**, then go to Step 5.
  - To edit an existing route pattern, click on the route pattern to be updated and go to Step 6.
5. From the **CUCM** drop-down menu, select the hostname, domain name, or IP address of the Unified CM to which you want to add the route pattern.

---

**Note:** The **CUCM** drop-down menu only appears when adding a route pattern, and not when editing an existing route pattern.

---

**Important:** If you're adding or editing a route pattern at any hierarchy node above a site level, the only CUCMs that appear in the **CUCM** drop-down list are CUCMs that are located at the node where you're adding the route pattern, and all CUCMs in hierarchies above the node where you're adding the route pattern. If you're adding or editing a route pattern at a site level, the CUCM that appears in the **CUCM** drop-down list is the CUCM in the site's Network Device List (NDL). If the site does not have an NDL, or the NDL at the site does not have a CUCM, the drop-down list is empty and a route pattern cannot be added to the site.

---

6. Mandatory. In the **Route Pattern** field, enter the route pattern, or modify the existing route pattern, as required.

---

**Note:** Enter the route pattern, including numbers and wildcards (do not use spaces); for example, enter 8XXX for a typical private network numbering plan. Valid characters include the uppercase characters A, B, C, and D and \+, which represents the international escape character +.

---

7. If you want to use a partition to restrict access to the route pattern, choose the relevant partition from the **Route Partition** drop-down. If you do not want to restrict access to the route pattern, choose <None> for the partition.

---

**Note:** Ensure that the combination of route pattern, route filter, and partition is unique within the CUCM cluster.

---

8. In the **Description** field, enter a description for the route pattern and route partition if desired.

---

**Note:** Description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&), or angle brackets (<>).

---

9. Complete at minimum, the mandatory fields on each tab as appropriate (see below):

10. Click **Save**.

### Pattern Definition Tab

Tip:

Use the Corresponding Cisco Unified Communications Manager (Unified CM) Attribute information provided in the table to manually verify in the Unified CM GUI that fields have been mapped correctly.

Option	Description
MLPP Precedence *	<p>From the drop-down menu, choose a Multilevel Precedence and Preemption (MLPP) service setting for this route pattern:</p> <ul style="list-style-type: none"> <li>• Executive Override - Highest precedence setting for MLPP calls</li> <li>• Flash Override - Second highest precedence setting for MLPP calls</li> <li>• Flash - Third highest precedence setting for MLPP calls</li> <li>• Immediate - Fourth highest precedence setting for MLPP calls</li> <li>• Priority - Fifth highest precedence setting for MLPP calls</li> <li>• Routine - Lowest precedence setting for MLPP calls</li> <li>• Default - Does not override the incoming precedence level but rather lets it pass unchanged</li> </ul> <p>Default: Default Corresponding Unified CM Attribute: MLPP Precedence.</p>
Apply Call Blocking Percentage	<p>Select this check box to enable the Destination Code Control (DCC) feature. By enabling DCC, all calls other than flash and higher precedence calls made to destination are filtered and allowed or disallowed based on the Call Blocking Percentage quota set for the destination. Flash and higher precedence calls are allowed at all times. DCC is disabled by default.</p> <p>Note: The <b>Apply Call Blocking Percentage</b> field gets enabled only if the MLPP level is immediate, priority, routine, or default.</p> <p>Default: Clear Corresponding Unified CM Attribute: Apply Call Blocking Percentage.</p>

Option	Description
Call Blocking Percentage	<p>Enter the percentage of calls to be blocked for this destination in numerals. This value specifies the percentage of lower precedence calls made to this destination that get blocked by the route pattern. This percentage limits the lower precedence calls only; the flash and higher precedence calls made to this destination are allowed at all times. Values between 0 and 99 are allowed.</p> <p>Note: Unified CM calculates the maximum number of low priority calls to be allowed through this route pattern based on the call blocking percentage that you set for this destination.</p> <p>Note: The <b>Call Blocking Percentage</b> field gets enabled only if the <b>Apply Call Blocking Percentage</b> check box is selected.</p> <p>Default: None</p> <p>Corresponding Unified CM Attribute: &lt;Entry box next to Apply Call Blocking Percentage&gt;.</p>
Route Class *	<p>From the drop-down menu, choose a route class setting for this route pattern:</p> <ul style="list-style-type: none"> <li>• Default</li> <li>• Voice</li> <li>• Data</li> <li>• Satellite Avoidance</li> <li>• Hotline voice</li> <li>• Hotline data</li> </ul> <p>The route class is a DSN code that identifies the class of traffic for a call. The route class informs downstream devices about special routing or termination requirements. The Default setting uses the existing route class of the incoming call.</p> <p>You can use non-default route class settings to translate an inbound T1 CAS route class digit into a Unified CM route class value (and strip off the digit). You should not need to assign a non-default route class setting to any other inbound calls that use pattern configuration.</p> <p>If the route pattern points to a SIP trunk supporting G.Clear, then specify Data or Hotline as the Route Class.</p> <p>Default: Default</p> <p>Corresponding Unified CM Attribute: Route Class.</p>
Route List (Mandatory if gateway or trunk is not specified)	<p>Choose the route list for which you are adding a route pattern. Default: None</p> <p>Corresponding Unified CM Attribute: Gateway/Route List.</p>
Gateway/Trunk (Mandatory if route list is not specified)	<p>Choose the gateway or trunk list for which you are adding a route pattern.</p> <p>Note: If the gateway is included in a Route Group, this drop-down menu does not display the gateway. When a gateway is chosen in the drop-down menu, Unified CM uses all the ports in the gateway to route or block this route pattern. This action does not apply for MGCP gateways.</p> <p>Default: Clear</p> <p>Corresponding Unified CM Attribute: Gateway/Route List.</p>

Option	Description
Block this pattern	Indicates whether you want this route pattern to be used for routing calls (such 8[2-9]XX) or for blocking calls. Default: Clear (meaning route pattern is used for routing calls). Corresponding Unified CM Attribute: Block this pattern.
Block Reason	If you click Block this pattern radio button above, you must choose the reason that you want this route pattern to block calls. From the drop-down menu, choose one of: <ul style="list-style-type: none"> <li>• No Error</li> <li>• Unallocated Number</li> <li>• Call Rejected</li> <li>• Number Changed</li> <li>• Invalid Number Format</li> <li>• Precedence Level Exceeded</li> </ul> Default: No Error Corresponding Unified CM Attribute: <entry box next to Block this pattern>.
Call Classification *	Call Classification indicates whether the call that is routed through this route pattern is considered either off (OffNet) or on (OnNet) the local network. When adding a route pattern, if you clear the <b>Provide Outside Dial Tone</b> check box, you set Call Classification as OnNet. Default: OnNet Corresponding Unified CM Attribute: Call Classification.
Allow Device Override	When the check box is selected, the system uses the Call Classification setting that is configured on the associated gateway or trunk to consider the outgoing call as OffNet or OnNet. Default: Clear Corresponding Unified CM Attribute: Allow Device Override
Provide Outside Dial Tone	Leave this check box selected to provide outside dial tone. To route the call in the network, clear the check box. Default: Clear Corresponding Unified CM Attribute: Provide Outside Dial Tone.
Allow Overlap Sending	With overlap sending enabled, when Unified CM passes a call to the PSTN, it relies on overlap sending in the PSTN to determine how many digits to collect and where to route the call. Select this check box for each route pattern that you consider to be assigned to a gateway or route list that routes the calls to a PSTN that supports overlap sending. The Client Matter Code (CMC) and Forced Authorization Code (FAC) features do not support overlap sending because the Unified CM cannot determine when to prompt the user for the code. If you select the <b>Require Forced Authorization Code</b> or the <b>Require Client Matter Code</b> check box, the system clears the <b>Allow Overlap Sending</b> check box. Default: Clear Corresponding Unified CM Attribute: Allow Overlap Sending
Urgent Priority	If the dial plan contains overlapping patterns, Unified CM does not route the call until the interdigit timer expires (even if it is possible to dial a sequence of digits to choose a current match). Select this check box to interrupt interdigit timing when Unified CM must route a call immediately. Default: Clear Corresponding Unified CM Attribute: Urgent Priority.

Option	Description
Require Forced Authorization Code	<p>If you want to use forced authorization codes with this route pattern, select the check box.</p> <p>The FAC feature does not support overlap sending because the Unified CM cannot determine when to prompt the user for the code. If you select the <b>Allow Overlap Sending</b> check box, you should clear the <b>Require Forced Authorization Code</b> check box.</p> <p>Default: Clear</p> <p>Corresponding Unified CM Attribute: Require Forced Authorization Code.</p>
Authorization Level *	<p>Enter the authorization level for the route pattern. The number that you specify in this field determines the minimum authorization level that is needed to successfully route a call through this route pattern. Range is 0 to 255.</p> <p>Default: 0</p> <p>Corresponding Unified CM Attribute: Authorization Level</p>
Require Client Matter Code	<p>If you want to use client matter codes with this route pattern, select this check box.</p> <p>The CMC feature does not support overlap sending because the Unified CM cannot determine when to prompt the user for the code. If you select the <b>Allow Overlap Sending</b> check box, you should clear the <b>Require Client Matter Code</b> check box.</p> <p>Default: Clear</p> <p>Corresponding Unified CM Attribute: &lt;Entry box next to Authorization Level&gt;.</p>



**Calling Party Transformations Tab**

Option	Description
Use Calling Party's External Phone Number Mask	<p>Select the check box if you want the full, external phone number to be used for calling line identification (CLID) on outgoing calls.</p> <p>Note: The calling party transformation settings that are assigned to the route groups in a route list override any calling party transformation settings that are assigned to a route pattern that is associated with that route list.</p> <p>Default: Default Corresponding Unified CM Attribute: Use Calling Party's External Phone Number Mask</p>
Calling Party Transform Mask	<p>Enter a transformation mask value. Valid entries for the National Numbering Plan include the digits 0 through 9, and the wildcard characters asterisk (*) and octothorpe (#); the international escape character +; and blank. If this field is blank and the preceding field is clear, no calling party transformation takes place.</p> <p>Default: None Corresponding Unified CM Attribute: Calling Party Transform Mask</p>
Prefix Digits (Outgoing Calls)	<p>Enter prefix digits. Valid entries for the National Numbering Plan include the digits 0 through 9, and the wildcard characters asterisk (*) and octothorpe (#); the international escape character +.</p> <p>Note: The appended prefix digit does not affect which directory numbers route to the assigned device.</p> <p>Default: None Corresponding Unified CM Attribute: Prefix Digits (Outgoing Calls).</p>

Option	Description
Calling Line ID Presentation *	<p>Unified CM uses calling line ID presentation/restriction (CLIP/CLIR) as a supplementary service to allow or restrict the originating caller phone number on a call-by-call basis.</p> <p>Choose whether you want the Unified CM to allow or restrict the display of the calling party phone number on the called party phone display for this route pattern.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Default - Choose if you do not want to change calling line ID presentation.</li> <li>• Allowed - Choose if you want Unified CM to allow the display of the calling number.</li> <li>• Restricted - Choose if you want Unified CM to block the display of the calling number.</li> </ul> <p>For more information about this field, see topics related to calling party number transformations settings in the Cisco Unified Communications Manager System Guide.</p> <p>Default: Default</p> <p>Corresponding Unified CM Attribute: Calling Line ID Presentation.</p>
Calling Name Presentation *	<p>Unified CM uses calling name presentation (CNIP/CNIR) as a supplementary service to allow or restrict the originating caller name on a call-by-call basis.</p> <p>Choose whether you want the Unified CM to allow or restrict the display of the calling party name on the called party phone display for this route pattern.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Default - Choose if you do not want to change calling name presentation.</li> <li>• Allowed - Choose if you want Unified CM to allow the display of the calling name information.</li> <li>• Restricted - Choose if you want Unified CM to block the display of the calling name information.</li> </ul> <p>For more information about this field, see calling party number transformations settings in the Cisco Unified Communications Manager System Guide.</p> <p>Default: Default</p> <p>Corresponding Unified CM Attribute: Calling Name Presentation.</p>
Calling Party Number Type *	<p>Choose the format for the number type in calling party directory numbers.</p> <p>Unified CM sets the calling directory number (DN) type. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to a PBX that expects the calling directory number to be encoded to a non-national numbering plan type.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Unified CM - the Unified CM sets the directory number type.</li> <li>• Unknown - The dialing plan is unknown.</li> <li>• National - Use when you are dialing within the dialing plan for your country.</li> <li>• International - Use when you are dialing outside the dialing plan for your country.</li> <li>• Subscriber - Use when you are dialing a subscriber by using the shortened subscriber name.</li> </ul> <p>Default: Unified CM</p> <p>Corresponding Unified CM Attribute: Calling Party Number Type.</p>

Option	Description
Calling Party Numbering Plan *	<p>Choose the format for the numbering plan in calling party directory numbers. Unified CM sets the calling DN numbering plan. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to PBXs by using routing as a non-national type number.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Unified CM - Use when the Unified CM sets the Numbering Plan in the directory number.</li> <li>• ISDN - Use when you are dialing outside the dialing plan for your country.</li> <li>• National Standard - Use when you are dialing within the dialing plan for your country.</li> <li>• Private - Use when you are dialing within a private network.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> </ul> <p>Default: Unified CM Corresponding Unified CM Attribute: Calling Party Numbering Plan.</p>

### Connected Party Transformations Tab

Option	Description
Connected Line ID Presentation *	<p>Unified CM uses connected line ID presentation (COLP/COLR) as a supplementary service to allow or restrict the called party phone number on a call-by-call basis.</p> <p>Choose whether you want Unified CM to allow or restrict the display of the connected party phone number on the calling party phone display for this route pattern.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Default - Choose if you do not want to change the connected line ID presentation.</li> <li>• Allowed - Choose if you want to display the connected party phone number.</li> <li>• Restricted - Choose if you want Unified CM to block the display of the connected party phone number.</li> </ul> <p>If a call that originates from an IP phone on Unified CM encounters a device, such as a trunk, gateway, or route pattern, that has the Connected Line ID Presentation set to Default, the presentation value is automatically set to Allowed.</p> <p>For more information about this field, see topics related to connected party presentation and restriction settings in the Cisco Unified Communications Manager System Guide.</p> <p>Default: Default Corresponding Unified CM Attribute: Connected Line ID Presentation.</p>

Option	Description
Connected Name Presentation *	<p>Unified CM uses connected name presentation (CONP/CONR) as a supplementary service to allow or restrict the called party name on a call-by-call basis.</p> <p>Choose whether you want Unified CM to allow or restrict the display of the connected party name on the calling party phone display for this route pattern. Choose one of:</p> <ul style="list-style-type: none"> <li>• Default - Choose if you do not want to change the connected name presentation.</li> <li>• Allowed - Choose if you want to display the connected party name.</li> <li>• Restricted - Choose if you want Unified CM to block the display of the connected party name.</li> </ul> <p>For more information about this field, see topics related to connected party presentation and restriction settings in the Cisco Unified Communications Manager System Guide.</p> <p>Default: Default Corresponding Unified CM Attribute: Connected Name Presentation.</p>

### Called Party Transformations Tab

Option	Description
Discard Digits	<p>Choose the discard digits instructions that you want to be associated with this route pattern. See topics related to discard digits instructions in the Cisco Unified Communications Manager System Guide for more information.</p> <p>Default: None Corresponding Unified CM Attribute: Discard Digits.</p>
Called Party Transform Mask	<p>Enter a transformation mask value. Valid entries for the National Numbering Plan include the digits 0 through 9, and the wildcard characters asterisk (*) and octothorpe (#); the international escape character +; and blank. If the field is blank, no transformation takes place. The dialed digits get sent exactly as dialed.</p> <p>Default: None Corresponding Unified CM Attribute: Called Party Transform Mask.</p>
Prefix Digits (Outgoing Calls)	<p>Enter prefix digits. Valid entries for the National Numbering Plan include the digits 0 through 9, and the wildcard characters asterisk (*) and octothorpe (#);the international escape character +; and blank.</p> <p>Note: The appended prefix digit does not affect which directory numbers route to the assigned device.</p> <p>Default: None Corresponding Unified CM Attribute: Prefix Digits (Outgoing Calls).</p>

Option	Description
Called Party Number Type *	<p>Choose the format for the number type in called party directory numbers. Unified CM sets the called directory number (DN) type. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to a PBX that expects the called directory number to be encoded to a non-national type numbering plan.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Unified CM - Use when the Unified CM sets the directory number type.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> <li>• National - Use when you are dialing within the dialing plan for your country.</li> <li>• International - Use when you are dialing outside the dialing plan for your country.</li> <li>• Subscriber - Use when you are dialing a subscriber by using a shortened subscriber number.</li> </ul> <p>Default: Unified CM Corresponding Unified CM Attribute: Called Party Number Type.</p>
Called Party Numbering Plan *	<p>Choose the format for the numbering plan in called party directory numbers. Unified CM sets the called DN numbering plan. Cisco recommends that you do not change the default value unless you have advanced experience with dialing plans such as NANP or the European dialing plan. You may need to change the default in Europe because Unified CM does not recognize European national dialing patterns. You can also change this setting when you are connecting to PBXs by using routing as a non-national type number.</p> <p>Choose one of:</p> <ul style="list-style-type: none"> <li>• Unified CM - Use when the Unified CM sets the Numbering Plan in the directory number.</li> <li>• ISDN - Use when you are dialing outside the dialing plan for your country.</li> <li>• National Standard - Use when you are dialing within the dialing plan for your country.</li> <li>• Private - Use when you are dialing within a private network.</li> <li>• Unknown - Use when the dialing plan is unknown.</li> </ul> <p>Default: Unified CM Corresponding Unified CM Attribute: Called Party Numbering Plan.</p>

### 9.1.23. Route Partitions

#### Overview

A partition contains a list of route patterns (directory number (DN) and route patterns). Partitions facilitate call routing by dividing the route plan into logical subsets that are based on organization, location, and call type.

**Tip:** Use concise and descriptive names for your partitions. The CompanynameLocationCalltype format usually provides a sufficient level of detail and is short enough to enable you to quickly and easily identify a partition. For example, CiscoDallasMetroPT identifies a partition for toll-free, inter-local access and transport area (LATA) calls from the Cisco office in Dallas.

## Configure Route Partitions

If you're updating a partition, use the **Apply Config** button (as described in this procedure) to synchronize a partition with affected devices. When you apply the configuration to devices that are associated with the partition, all calls on affected gateways drop.

1. Log in as the Provider, Reseller, or Customer administrator.
2. Choose an option:
  - If you're signed in as the Provider or Reseller administrator, go to (default menus) **Apps Management > CUCM > Route Partitions**.
  - If you're signed in as the Customer administrator, go to (default menus) **Apps Management > Advanced > Route Partitions**.
3. Choose the relevant hierarchy.
4. Choose an option:
  - To add a new route partition, click **Add**, then go to step 5.
  - To edit an existing route partition, click the line item in the table. Go to step 6.
5. In the pop-up, select from the drop-down the network device list (NDL) to which you are adding the route partition, and click **OK**.

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**Note:** The NDL pop-up only appears when you are adding a new route partition. If you are updating an existing partition, go to step 6.

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If you are adding the partition to a site hierarchy node, the NDL pop-up will not appear. You will go right to the route partitions add page using the NDL associated to the site.

6. On the **Route Partitions** page, modify the following fields as required.

Option	Description
Name (Mandatory)	<p>Enter a name for the new partition that you are creating. Ensure that each partition name is unique to the route plan. Partition names can contain a-z, A-Z, and 0-9 characters, as well as spaces, hyphens (-), and underscore characters (_).</p> <p>Note:</p> <p>The length of the partition names limits the maximum number of partitions that can be added to a calling search space (CSS). The CSS partition limitations table provides examples of the maximum number of partitions that can be added to a CSS with partition names of fixed length.</p>
Description	<p>Enter a description of the new partition that you are creating. The description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&amp;), back-slash (\), angle brackets (&lt;&gt;), or brackets ([ ]).</p> <p>If you do not enter a description, Cisco Unified Communications Manager automatically enters the partition name in this field.</p> <p>Default value: None</p>
Time Schedule	<p>From the drop-down list box, choose a time schedule to associate with this partition. The associated time schedule specifies when the partition is available to receive incoming calls.</p> <p>This field is empty by default, which indicates that time-of-day routing is not in effect and the partition remains active.</p> <p>With the time zone value in the following field, association of a partition with a time schedule configures the partition for time-of-day routing. The system checks incoming calls to this partition against the specified time schedule.</p>
Time Zone	<p>Choose one of the following options to associate a partition with a time zone:</p> <ul style="list-style-type: none"> <li>• Use Originating Device Time Zone: If you choose this option, the system checks the partition against the associated time schedule with the calling device's time zone.</li> <li>• Time Zone: If you choose this option, choose a time zone from the drop-down list box. The system checks the partition against the associated time schedule at the time that is specified in this time zone.</li> </ul> <p>These options all specify the time zone. When an incoming call occurs, the current time on the Cisco Unified Communications Manager gets converted into the specific time zone set when one option is chosen. The system validates this specific time against the value in the Time Schedule field.</p>

The following table provides examples of the maximum number of partitions that can be added to a CSS if partition names are of fixed length.

Partition Name Length	Maximum Number of Partitions
2 characters	170
3 characters	128
4 characters	102
5 characters	86
...	...
10 characters	46
15 characters	32

7. Click **Save**. The route partition appears in the route partition list.

To modify any of these properties, click the item in the list, make your changes, and click **Save**.

To delete a route partition, select the checkbox to the left of the Name column in the group list, and click **Delete**.

## 9.1.24. Calling Search Spaces

### Overview

A calling search space (CSS) comprises an ordered list of route partitions that are typically assigned to devices. Calling search spaces determine the partitions that calling devices search when they are attempting to complete a call.

1. Log in as the Provider, Reseller, or Customer Administrator.
2. Choose an option:
  - If you're logged in as the Provider or Reseller Administrator, go to (default menus) **Apps Management > CUCM > Calling Search Spaces**.
  - If you're logged in as the Customer Administrator, go to (default menus) **Apps Management > Advanced > Calling Search Spaces**.
3. Choose the relevant hierarchy.
4. Choose an option:
  - To add a new calling search space, click **Add**, then go to step 5.
  - To edit an existing calling search space, click on the line item in the table. Go to step 6.
5. In the popup, select from the pull-down the network device list (NDL) to which you are adding the calling search space, and click **OK**.

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**Note:** The NDL popup will only appear when you are adding a new calling search space. If you are updating an existing calling search space, go to Step 6.

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If you are adding the calling search space to a Site hierarchy node, the NDL popup will not appear. You will go right to the Calling Search Spaces add page using the NDL associated to the site.

6. From the Calling Search Spaces page, modify the following fields as required.



Option	Description
Name (Mandatory)	<p>Enter a name in the field. The name can comprise up to 50 alphanumeric characters and can contain any combination of spaces, periods (.), hyphens (-), and underscore characters (_). Ensure each calling search space name is unique to the system.</p> <p>Note</p> <p>Use concise and descriptive names for your calling search spaces. The CompanynameLocationCalltype format usually provides a sufficient level of detail and is short enough to enable you to quickly and easily identify a calling search space. For example, CiscoDallasMetroCS identifies a calling search space for toll-free, inter-local access and transport area (LATA) calls from the Cisco office in Dallas.</p> <p>Default value: None</p>
Description	<p>Enter a description in the field. The description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&amp;), back-slash (\), or angle brackets (&lt;&gt;).</p> <p>Default value: None</p>
Route Partitions	<p>Click the Add (+) button to add a partition to the calling search space. Repeat as necessary to add multiple partitions to the calling search space.</p>
Partition Name	<p>Click the drop-down list and select a partition to add to the calling search space.</p> <p>Click <b>Add (+)</b> to add another partition to the Route Partitions list. Repeat as necessary to add multiple partitions to the list.</p> <p>Click the <b>Remove (-)</b> button to remove a partition from the list.</p> <p>Click the up and down arrow buttons to change the order of a partition in the list.</p>
Partition Index	<p>Enter the priority number for this partition in the calling search space. The smaller the integer, the higher the priority.</p>

The following table provides examples of the maximum number of partitions that can be added to a calling search space if partition names are of fixed length.

Partition Name Length	Maximum Number of Partitions
2 characters	170
3 characters	128
4 characters	102
5 characters	86
...	...
10 characters	46
15 characters	32

7. Click **Save**. The calling search space appears in the list.

**Note:** When selecting an existing CSS with a partition associated and cloning this instance for modification,

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the new CSS will by default show the partition populated with this associated partition.

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To modify any of these properties, click the item in the list, make your changes, and click **Save**.

To delete a calling search space, check the box to the left of the Name column in the group list, and click **Delete**.

## 9.1.25. SIP Route Patterns

### Overview

This section applies to Provider deployments only.

Cisco Unified Communications Manager (CUCM) uses SIP route patterns to route or block both internal and external calls.

The domain name or IP address provides the basis for routing. The administrator can add domains, IP addresses, and IP network (subnet) addresses and associate them to SIP trunks (only). This method allows requests that are destined for these domains to be routed through particular SIP trunk interfaces.

### Configure SIP Route Patterns

This procedure configures a SIP route pattern.

#### Prerequisites

- Configure at least one SIP Profile and SIP trunk before configuring a SIP route pattern.

#### Perform these steps

1. Log in as Provider, Reseller, or Customer administrator.
2. Ensure that the hierarchy path is set to a customer or site level.
3. If prompted, choose the NDL that contains the CUCM which you are configuring the SIP Route Pattern.
4. Choose an option, depending on your login:
  - Provider or Reseller administrator: Go to (default menus) **Apps Management > CUCM > SIP Route Patterns**.
  - Customer administrator? Go to (default menus) **Apps Management > Advanced > SIP Route Patterns**.
5. Click **Add**.
6. On the **Pattern Definition** tab, complete the *Pattern Definition Tab*.
7. On the **Calling Party Transformations** tab, complete the *Calling Party Transformations Tab*.
8. On the **Connected Party Transformations** tab, complete the *Connected Party Transformations Tab*.
9. Click **Save**.

## Pattern Definition Tab

Field	Description
Pattern Usage	From the drop-down list, choose either <b>Domain Routing</b> or <b>IP Address Routing</b> . This field is mandatory.
IPv4 Pattern	<p>Enter the domain, subdomain, IPv4 address, or IP subnetwork address. This field is mandatory.</p> <p>For Domain Routing pattern usage, enter a domain name <b>IPv4 Pattern</b> field that can resolve to an IPv4 address. The domain name can contain the following characters: -, ., 0-9, A-Z, a-z, *, ], and [.</p> <p>For IP Address Routing pattern usage, enter an IPv4 address with the format X.X.X.X, where X represents a number between 0 and 255.</p> <p>For the IP subnetwork address, in classless interdomain routing (CIDR) notation, X.X.X.X/Y; where Y is the network prefix that denotes the number of bits in the network address.</p> <p>Tip: If the SIP trunk supports IPv6 or both IPv4 and IPv6 (dual-stack mode), configure the IPv6 Pattern in addition to the IPv4 pattern.</p>
IPv6 Pattern	<p>Unified CM uses SIP route patterns to route or block both internal and external calls. The IPv6 address in this field provides the basis for routing internal and external calls to SIP trunks that support IPv6.</p> <p>Tip: If the SIP trunk supports IPv6 or both IPv4 and IPv6 (dual-stack mode), configure the IPv4 Pattern in addition to the IPv6 pattern.</p>
Description	Enter a description of the SIP Route Pattern. The description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&), or angle brackets (<>).
Route Partition	If you want to use a partition to restrict access to the SIP route pattern, choose the desired partition from the drop-down list box. If you do not want to restrict access to the SIP route pattern, leave the Route Partition value empty.
SIP Trunk/Route List	Choose the SIP trunk or route list to which the SIP route pattern is associated. This field is mandatory.
Block Pattern	Select this check box if you want this pattern to be used for blocking calls.

## Calling Party Transformations Tab

Field	Description
Use Calling Party's External Phone Mask	Select <b>On</b> if you want the full, external phone number to be used for calling line identification (CLID) on outgoing calls. Select <b>Default</b> to use the default External Phone Number Mask. This field is mandatory.
Calling Party Transformation Mask	Enter a transformation mask value. Valid entries include the digits 0 to 9 and the wildcard characters X, asterisk (*), and octothorpe (#). If this field is blank and the preceding field is not selected, no calling party transformation takes place.
Prefix Digits (Outgoing Calls)	Enter prefix digits in the Prefix Digits (Outgoing Calls) field. Valid entries include the digits 0 to 9 and the wildcard characters asterisk (*) and octothorpe (#). Note: The appended prefix digit does not affect which directory numbers route to the assigned device.
Calling Line ID Presentation	Calling line ID presentation (CLIP/CLIR) is a supplementary service that allows or restricts the originating caller phone number on a call-by-call basis. Choose whether you want to allow or restrict the display of the calling party phone number on the called party phone display for this SIP route pattern. Choose <b>Default</b> if you do not want to change calling line ID presentation. Choose <b>Allowed</b> if you want to allow the display of the calling number. Choose <b>Restricted</b> if you want to block the display of the calling number.
Calling Line Name Presentation	Calling line name presentation (CNIP/CNIR) is a supplementary service that allows or restricts the originating caller name on a call-by-call basis. Choose whether you want to allow or restrict the display of the calling party name on the called party phone display for this SIP route pattern. Choose <b>Default</b> if you do not want to change calling name presentation. Choose <b>Allowed</b> if you want to allow the display of the caller name. Choose <b>Restricted</b> if you want to block the display of the caller name.

## Connected Party Transformations Tab

Field	Description
Connected Line ID Presentation	<p>Connected line ID presentation (COLP/COLR) is a supplementary service that allows or restricts the called party phone number on a call-by-call basis. Choose whether you want to allow or restrict the display of the connected party phone number on the calling party phone display for this SIP route pattern. Choose <b>Default</b> if you do not want to change the connected line ID presentation. Choose <b>Allowed</b> if you want to display the connected party phone number. Choose <b>Restricted</b> if you want to block the display of the connected party phone number.</p> <p>If a call originating from an IP phone on Unified CM encounters a device, such as a trunk, gateway, or route pattern, that has the Connected Line ID Presentation set to Default, the presentation value is automatically set to Allowed.</p>
Connected Line Name Presentation	<p>Connected name presentation (CONP/CONR) is a supplementary service that allows or restricts the called party name on a call-by-call basis. Choose whether you want to allow or restrict the display of the connected party name on the calling party phone display for this SIP route pattern. Choose <b>Default</b> if you do not want to change the connected name presentation. Choose <b>Allowed</b> if you want to display the connected party name. Choose <b>Restricted</b> if you want to block the display of the connected party name.</p>

### 9.1.26. CTI Route Points

#### Overview

A computer telephony integration (CTI) route point designates a virtual device that can receive multiple, simultaneous calls for application-controlled redirection.

#### Add a CTI Route Point

This procedure adds a CTI route point.

#### Perform these steps:

1. Log in as Provider, Reseller, or Customer administrator.
2. Set the hierarchy path to the site for which you want to configure CTI route points.
3. To open the CTI Route Points list view, choose an option:
  - Logged in as a Provider or Reseller admin? Go to (default menus) **Apps Management > CUCM > CTI Route Points**.
  - Logged in as Customer admin? Go to (default menus) **Apps Management > Advanced > CTI Route Points**.
4. Choose an option:
  - To view the details on an existing CTI route point, click an entry in the list view.

Home / CTI Route Points / CTIRP32323

Common Device Configuration	<input type="text"/>
Calling Search Space	<input type="text"/>
Location *	Cu1Si1-Location
User Locale	<input type="text"/>
Media Resource Group List	<input type="text"/>
Network Hold MOH Audio Source	<input type="text"/>
User Hold MOH Audio Source	<input type="text"/>
Use Trusted Relay Point Required Field *	Default
Calling Party Transformation CSS	<input type="text"/>
Geolocation	<input type="text"/>
Use Device Pool Calling Party Transformation CSS	<input checked="" type="checkbox"/>

Line

> 82010008 Cu1Si1-Feature-PT

- To add a new CTI route point, click **Add**. Go to step 5.
5. Complete at least the mandatory fields. See [CTI Route Points Field Reference](#).
  6. In the **Line** section, click the Plus icon (+) to associate a line with the CTI route point. Complete at least the mandatory fields. See [CTI Route Points Line Field Reference](#).
  7. Click **Save**.

## CTI Route Points Field Reference

Option	Description
Device Name *	Enter a unique identifier for this device, from 1 to 15 characters, including alphanumeric, dot, dash, or underscores. This field is mandatory.
Description	Enter a descriptive name for the CTI route point. The description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&), back-slash (\), or angle brackets (<>).
Device Pool *	Choose the name of a Device Pool. The device pool specifies the collection of properties for this device, including Cisco Unified Communications Manager Group, Date Time Group, Region, and Calling Search Space for autoregistration. This field is mandatory.
Common Device Configuration	Choose the common device configuration to which you want this CTI route point assigned. The common device configuration includes the attributes (services or features) that are associated with a particular user. Configure common device configurations in the Common Device Configuration window.
Calling Search Space	From the drop-down list, choose a calling search space. The calling search space specifies the collection of partitions that are searched to determine how a collected (originating) number is routed.
Location *	<p>From the drop-down list, choose the appropriate location for this CTI route point. This field is mandatory.</p> <p>Locations implement call admission control (CAC) in a centralized call-processing system. CAC regulates audio quality and video availability by limiting the amount of bandwidth that is available for audio and video calls between locations. The location specifies the total bandwidth that is available for calls to and from this location.</p> <p>A location setting of Hub_None means that the locations feature does not track the bandwidth that this CTI route point consumes. A location setting of Phantom specifies a location that enables successful CAC across intercluster trunks that use H.323 protocol or SIP.</p>
User Locale	<p>From the drop-down list, choose the locale that is associated with the CTI route point. The user locale identifies a set of detailed information to support users, including language and font. Note:</p> <p>If no user locale is specified, Cisco Unified CM uses the user locale that is associated with the device pool</p>
Media Resource Group List	<p>Choose the appropriate Media Resource Group List. A Media Resource Group List is a prioritized grouping of media resource groups. An application chooses the required media resource, such as a Music On Hold server, from the available media resources. The application chooses according to the priority order defined in a Media Resource Group List.</p> <p>If you choose &lt;none&gt;, Cisco Unified CM uses the Media Resource Group that is defined in the device pool.</p>

Option	Description
Network Hold MOH Audio Source	Choose the audio source that plays when the network starts a hold action. If you do not choose an audio source, Cisco Unified CM uses the audio source that is defined in the device pool. If the device pool does not specify an audio source, the system default is used.
User Hold MOH Audio Source	Choose the audio source that plays when an application starts a hold action. If you do not choose an audio source, Cisco Unified CM uses the audio source that is defined in the device pool. If the device pool does not specify an audio source, the system default is used.
Use Trusted Relay Point Required Field *	<p>Enable or disable whether Cisco Unified CM inserts a trusted relay point (TRP) device with this media endpoint. This field is mandatory. Choose one of the following values:</p> <ul style="list-style-type: none"> <li>• <b>Default</b> - If you choose this value, the device uses the Use Trusted Relay Point setting from the common device configuration with which this device associates.</li> <li>• <b>Off</b> - Choose this value to disable the use of a TRP with this device. This setting overrides the Use Trusted Relay Point setting in the common device configuration with which this device associates.</li> <li>• <b>On</b> - Choose this value to enable the use of a TRP with this device. This setting overrides the Use Trusted Relay Point setting in the common device configuration with which this device associates.</li> </ul> <p>A Trusted Relay Point (TRP) device designates an MTP or transcoder device that is labeled as Trusted Relay Point.</p>
Calling Party Transformation CSS	This setting allows you to localize the calling party number on the device. Make sure that the Calling Party Transformation CSS that you choose contains the calling party transformation pattern that you want to assign to this device. Tip: Before the call occurs, the device must apply the transformation by using digit analysis. If you configure the Calling Party Transformation CSS as <b>None</b> , the transformation does not match and does not get applied. Ensure that you configure the Calling Party Transformation Pattern in a non-null partition that is not used for routing.
Geolocation	From the drop-down list box, choose a geolocation. You can choose the Unspecified geolocation, which designates that this device does not associate with a geolocation.
Use Device Pool Calling Party Transformation CSS	To use the Calling Party Transformation CSS that is configured in the device pool that is assigned to this device, select this check box. If you do not select this check box, the device uses the Calling Party Transformation CSS that you configured in the CTI Route Point Configuration window.





## CTI Route Points Line Field Reference

Field	Description
Directory Number *	<p>Enter a dialable phone number. Values can include route pattern wildcards and numeric characters (0 to 9). Special characters such as a question mark (?), exclamation mark (!), backslash (\), brackets [ ] , plus sign (+), dash (-), asterisk (*), caret (^), pound sign (#), and an X are also allowable. Special characters that are not allowed are a period (.), at sign (@), dollar sign (\$), and percent sign (%). This field is mandatory.</p> <p>At the beginning of the pattern, enter \+ if you want to use the international escape character +. For this field, \+ does not represent a wildcard; instead, entering \+ represents a dialable digit.</p> <p>When saving the CTI route point, the combination of directory number and route partition name displays as a summary header in the <b>Line</b> section.</p>
Route Partition *	<p>Choose the partition to which the directory number belongs. Make sure that the directory number that you enter in the Directory Number field is unique within the partition that you choose. If you do not want to restrict access to the directory number, choose &lt;None&gt; for the partition.</p> <p>When saving the CTI route point, the combination of directory number and route partition name displays as a summary header in the <b>Line</b> section.</p>
Index	<p>This field is the line position on the device. If left blank, an integer is automatically assigned.</p>
External Phone Number Mask	<p>Indicate phone number (or mask) that is used to send Caller ID information when a call is placed from this line.</p> <p>You can enter a maximum of 24 number, the international escape character +, and "X" characters. The Xs represent the directory number and must appear at the end of the pattern. For example, if you specify a mask of 972813XXXX, an external call from extension 1234 displays a caller ID number of 9728131234.</p>
Line Text Label	<p>Use this field only if you do not want the directory number to show on the line appearance. Enter text that identifies this directory number for a line and phone combination.</p> <p>Suggested entries include boss name, department name, or other appropriate information to identify multiple directory numbers to a secretary or assistant who monitors multiple directory numbers.</p>
Display (Internal Caller ID)	<p>Leave this field blank to have the system display the extension.</p> <p>Use a maximum of 30 characters. Typically, use the username or the directory number. If using the directory number, the person receiving the call may not see the proper identity of the caller.</p>
ASCII Display (Caller ID)	<p>This field provides the same information as the Display (Internal Caller ID) field, but limit input to ASCII characters. Devices that do not support Unicode (internationalized) characters display the content of the ASCII Display (Internal Caller ID) field.</p>
Ring Setting (Phone Active)	<p>If applicable, the ring setting that is used when this phone has another active call on a different line. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Use system default</b></li> <li>• <b>Disable</b></li> <li>• <b>Flash only</b></li> <li>• <b>Ring once</b></li> <li>• <b>Ring</b></li> <li>• <b>Beep only</b></li> </ul>

Field	Description
Ring Setting (Phone Idle)	<p>If applicable, the ring setting for the line appearance when an incoming call is received and no other active calls exist on that device. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Use system default</b></li> <li>• <b>Disable</b></li> <li>• <b>Flash only</b></li> <li>• <b>Ring once</b></li> <li>• <b>Ring</b></li> </ul>
Recording Option	<p>This field determines the recording option on the line appearance of an agent. The default recording option is Call Recording Disabled. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Call Recording Disabled</b> - Calls made on this line appearance cannot be recorded.</li> <li>• <b>Automatic Call Recording Enabled</b> - Calls made on this line appearance are recorded automatically.</li> <li>• <b>Selective Call Recording Enabled</b> - Calls made on this line appearance can be recorded using a softkey or programmable line key that is: <ul style="list-style-type: none"> <li>– assigned to the device</li> <li>– a CTI-enabled application</li> <li>– both interchangeably</li> </ul> </li> </ul>
Recording Profile	This field determines the recording profile on the line appearance of an agent.
Recording Media Source	<p>This field determines the recording media source option on the line appearance. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Gateway Preferred</b> - Voice gateway is selected as the recording media source when the call is routed through a recording enabled gateway.</li> <li>• <b>Phone Preferred</b> - Phone is selected as the recording media source.</li> </ul>
Monitoring Calling Search Space	The monitoring calling search space of the supervisor line appearance must include the agent line or device partition to allow monitoring the agent.
Visual Message Waiting Indicator Policy	<p>Use this field to configure the handset lamp illumination policy. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Use System Policy</b> (The directory number refers to the service parameter "Message Waiting Lamp Policy" setting.)</li> <li>• <b>Light and Prompt</b></li> <li>• <b>Prompt Only</b></li> <li>• <b>Light Only</b></li> <li>• <b>None</b></li> </ul>
Audible Message Waiting Indicator Policy	<p>Use this field to configure an audible message waiting indicator policy. Choose one of the following options:</p> <ul style="list-style-type: none"> <li>• <b>Off</b></li> <li>• <b>On</b> - When you select this option, you receive a stutter dial tone when you take the handset off hook.</li> <li>• <b>Default</b> - When you select this option, the phone uses the default that was set at the system level.</li> </ul>
Log Missed Calls	If selected, Cisco Unified CM logs missed calls in the call history for the shared line appearance on the phone.

Field	Description
Busy Trigger	This setting, working with Maximum Number of Calls and Call Forward Busy, determines the maximum call number for the line. Use this field with Maximum Number of Calls for CTI route points. The default specifies 4500 calls
Maximum Number of Calls	For CTI route points, you can configure up to 10,000 calls for each port. The default specifies 5000 calls. Use this field with the <b>Busy Trigger</b> field. Note: We recommend that you set the maximum number of calls to no more than 200 per route point. This prevents system performance degradation. If the CTI application needs more than 200 calls, we recommend that you configure multiple CTI route points.
Dialed Number	Select to display original dialed number upon call forward.
Redirected Number	Select to display the redirected number upon call forward.
Caller Number	Select to display the caller number upon call forward.
Caller Name	Select to display the caller name upon call forward.
End User, User ID	The User ID of a user associated with the line.

## 9.1.27. Softkey Templates

### Introduction

Softkey templates manage softkeys that are used by the Cisco Unified CM IP Phones, for example 7970. There are two types of softkey templates:

- standard
- customized

VOSS Automate includes the following Unified CM system softkey templates, which cannot be modified or deleted:

- Cisco Assistant with Feature Hardkeys
- Cisco Chaperone Phone with Feature Hardkeys
- Cisco Feature with Feature Hardkeys Standard
- Cisco Manager with Feature Hardkeys Standard
- Cisco Protected Phone with Feature Hardkeys
- Cisco Shared Mode Manager with Feature Hardkeys
- Cisco User with Feature Hardkeys
- Personal Conference User
- Public Conference User
- Standard User

A reseller administrator (or higher) can create customized softkey templates from the standard templates, make modifications as required and save them at the required hierarchy level, i.e. customer or higher.

## How to Manage Customized Softkey Templates and Related Softkey Layout Configurations

**Note:** The following device models need to be imported from Unified CM post upgrade before Softkey Templates can be managed.

This can be done by either performing a full import of Unified CM or using the “CUCM Softkey Templates” Model Type List which is available from Release 19.3.1.

```
device/cucm/SoftKeyTemplate
device/cucm/SoftKey
device/cucm/SoftKeyCallState
device/cucm/SoftKeySet
```

1. Browse to the required hierarchy.
2. Click **Add** to add a new customized softkey template.
3. From the **Create a softkey template based on** drop-down, choose an existing softkey template on which to base the customized template.
4. Enter a unique **Name** and **Description** for the customized template. The description can be a maximum of 50 characters but cannot include “, %, &, <, or >.
5. Select or clear the **Is Default** check box. If selected, this softkey template becomes the default standard softkey template.
6. Click **Save** to save the customized softkey template and simultaneously add it to the **Softkey Template** list view.
7. Select the newly created softkey template and configure the required softkey layout by modifying the designated softkeys for each call state.
  - a. CUCM baseline softkey templates cannot be updated. Any change to such a template will result in a failed transaction.
  - b. Some of the selected softkeys of the different call state are mandatory and cannot be removed from the CUCM standard set of templates. For example, template Standard User-Custom, Call State – On Hook, Softkey – NewCall.

When a mandatory softkey is deleted, the transaction will be successful but the softkey will not be removed - when opening the template again it will still be there.
8. Click **Save** when complete.

**Note:** To modify a customized softkey template, select it from the **Softkey Template** list view and update as described in the above procedure.

Before deleting a softkey template, which has been marked as **Is Default**, a different softkey template must first be set as **Is Default**.

## Related Topics

- LDAP User Sync in the Core Feature Guide.

### 9.1.28. Call Park Management

#### Overview

The Call Park feature (Call Park and Directed Call Park) allows you to manage call park numbers from the Call Park list.

Call Parks can be added either individually or in bulk using number ranges.

Multiple call park numbers can be added in a single operation, which creates the required number of individual call park numbers instead of creating masked ranges of 10, etc.

Call Park and Directed Call Park can be configured as either service specific or clusterwide, dependent on the status of the **Enable Clusterwide CallPark Number/Ranges** parameter on the Unified CM.

Call Park allows you to select directory numbers from a drop-down list, but also permits custom entries outside of the number inventory that can begin with '\*' or '#', which are then added to the Number Inventory.

---

**Note:** Clusterwide call park numbers are available to devices hosted on any server within the Unified CM cluster. If clusterwide call park is disabled, the call park numbers are only available to devices on the nominated Unified CM server.

---



[Call Park Management](#)

#### Clusterwide Call Park

Call Park allows users to place a call on hold, so it can be retrieved from another phone in the system, for example, a phone in another office or in a conference room.

If your users are on an active call at your phone, they can park the call to a call park extension by pressing the **Park** softkey or the **Call Park** button. Someone on another phone in your system can then dial the call park extension to retrieve the call.

You can define either a single directory number or a range of directory numbers for use as call park extension numbers. Users can park only one call at each call park extension number.

#### Clusterwide Directed Call Park

Directed Call Park allows a user to transfer a call to an available user-selected directed call park number.

Directed Call Park numbers are managed at site level, and allow a user to transfer a call to an available user-selected directed call park number. Configured directed call park numbers exist clusterwide. You can configure phones that support the directed call park Busy Lamp Field (BLF) to monitor the busy/idle status of specific directed call park numbers. Users can also use the BLF to speed dial a directed call park number.

Only one call can be parked at each directed call park number. To retrieve a parked call, a user must dial a configured retrieval prefix followed by the directed call park number at which the call is parked. Configure the retrieval prefix in the Directed Call Park Configuration window.

---

**Note:** Whenever changes are made to directed call park numbers, any devices that are configured to monitor those directed call park numbers by using the directed call BLF must restart to correct the display. Change notification automatically restarts impacted devices when it detects directed call park number changes. You also can use the Restart Devices button on the Directed Call Park Configuration window.

---

## Adding Call Parks

To add call parks:

1. Go to (default menus) **Apps Management > CUCM** then choose either **Clusterwide Call Park** or **Clusterwide Directed Call Park**.
2. Click **Add**.
3. Browse to the required Site level.
4. Enter, at minimum, the following mandatory fields:
  - Range Size\* - Enter a range size of 1 or more.
  - First Call or Directed Call Park Number\*
    - Displays call park numbers which are **not used** and **available**. If **Range Size > 1**, only contiguous ranges are made available.
    - Numbers beginning with '\*' or '#' are allowed as free form numbers. However, numbers with this prefix cannot be created in the directory number inventory so directory number inventory management is not available.
  - Description - this description is used in the directory number inventory list view and also the Unified CM call park number.
  - Partition (Directed Call Park only) - The route partition of the directed call park range, selected from the drop-down list.
  - CUCM Server\* - (Call Park only) - This field is mandatory, and a CUCM Server must be selected **IF** the **Enable Clusterwide CallPark Number/Ranges** parameter on the Unified CM is set to **False**.
  - Reversion Pattern (Directed Call Park only) - If a call is parked for longer than the allowed time, it reverts to the number selected from the drop-down list. Note that the allowed time is specified in the **Call Park Reversion Timer** parameter on the Unified CM.

---

**Note:** The **Enable Clusterwide CallPark Number/Ranges** and **Call Park Reversion Timer** parameters are located on the Unified CM under **System > Service Parameters - Service Parameter Configuration (Advanced) - Cisco CallManager (Active) Service > Clusterwide Parameters (Feature - General)** section.

---

- Revert CSS Name (Directed Call Park only) - This is the CSS that will be used to attempt to route the call to the reversion pattern above.
  - Retrieval Prefix\* (Directed Call Park only) - for example, a '\*' may be used to retrieve a number from the call park number.
5. Click **Save**.

### 9.1.29. Media Resources

VOSS Automate allows for the management of the following media resources in Unified CM:

- Media Termination Point (MTP)
- Transcoder
- Conference Bridge

---

**Note:**

- Resources may be added at customer and site level
  - In a multi cluster environment, Unified CM selection can be carried out for each resource.
  - A media resource with a device pool and/or location are usually set up at site level. If however the media resource is created at *customer level*, consider the configuration of the device pool / location at customer level. The use of defaults available at CUCM level is possible, but a review of these settings may be required. Alternatively, creating a specific device pool / location for the media resource may be a better option.
- 

#### Add a Media Termination Point (MTP)

VOSS Automate supports the following media termination point type: Cisco IOS Enhanced Software Media Termination Point

**To add a MTP:**

1. Navigate to the required customer or site level.
2. Select the Unified CM from the **CUCM** drop-down list.
3. Enter a **MTP Name** - up to 15 characters: (a-z, A-Z, 0-9), a dot (.), dash (-), and underscore (\_).
4. Optionally complete the fields as required (refer to tooltips):
  - **Description**
  - **Mtp Type** - only one type supported: **Cisco IOS Enhanced Software Media Termination Point**. Display only.
  - **Device Pool Name** (refer to considerations at [Media Resources](#).)
  - **Trusted Relay Point**
5. Click **Save** and inspect the entry in the list view.

---

**Note:** The following cannot be modified: CUCM, MTP Name, MTP type

---



### Delete a MTP

To delete a MTP, choose the MTP, and click the **Delete** button.

### Add a Transcoder

To add a Transcoder:

1. Navigate to the required customer or site level.
2. Select the Unified CM from the **CUCM** drop-down list.
3. The following transcoder types are supported in the **Product** drop-down list:
  - Cisco Media Termination Point Hardware
  - Cisco IOS Media Termination Point
  - Cisco IOS Enhanced Media Termination Point
4. Enter a **Transcoder Name** - up to 15 characters: (a-z, A-Z, 0-9), a dot (.), dash (-), and underscore (\_).
5. Optionally complete the fields as required (refer to tooltips):

The device pool should reflect the physical position of the hardware.

- **Description**
- **Device Pool Name** (refer to considerations at [Media Resources.](#))
- **Is Trusted Relay Point**
- **Common Device Config Name** from Unified CM
- **Load Information**

6. Click **Save** and inspect the entry in the list view.

---

**Note:** The following cannot be modified: CUCM, product, transcoder name

---

### Delete a Transcoder

To delete a transcoder, select it and click the **Delete** button.

### Add a Conference Bridge

You can add, update, or delete a conference bridge.

**To add a conference bridge:**

1. Navigate to the required customer or site level.
2. Choose the Unified CM from the **CUCM** drop-down list.
3. The following hardware types are supported in the **Product** drop-down list:
  - Cisco Conference Bridge Hardware
  - Cisco IOS Conference Bridge
  - Cisco IOS Enhanced Conference Bridge

4. Enter a **Conference Bridge Name** - up to 15 characters: (a-z, A-Z, 0-9), a dot (.), dash (-), and underscore (\_).

5. Optionally complete the fields as required (refer to tooltips):

The device pool and location should reflect the physical position of the hardware.

- **Description**
- **Device Pool Name** (refer to considerations at [Media Resources](#).)
- **Location Name** - as available on Unified CM
- **Security Profile Name** - in accordance with the selected **Product**.
- **Common Device Config Name** from Unified CM
- **Use Trusted relay Point**

6. Click **Save** and inspect the entry in the list view.

---

**Note:** When modifying a Conference Bridge, the following cannot be modified: CUCM, product, conference bridge name

---

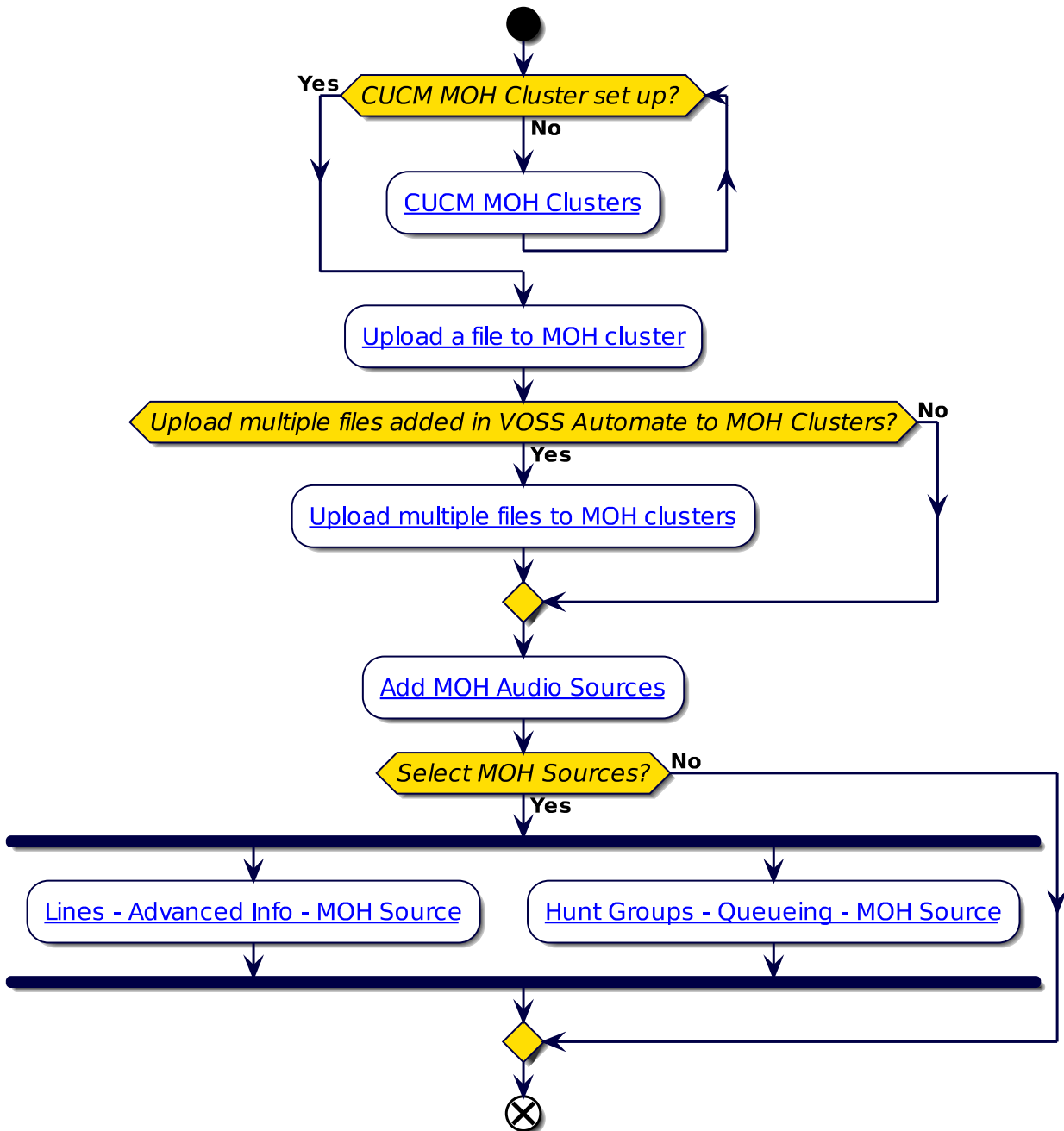
Use the **Delete** button to delete a Conference Bridge.

## 9.2. CUCM Music On Hold

### 9.2.1. Cisco Unified CM Music on Hold (MOH) File Management

#### Overview

VOSS Automate allows an administrator to manage Music On Hold (MOH) servers and files from within the Admin Portal, and to upload MOH files to Cisco Unified CM (CUCM).



Managing MOH files involves:

1. Adding a CUCM MOH cluster for uploading MOH files.
2. Uploading MOH .wav files to VOSS Automate, and (optionally) to the CUCM MOH cluster. VOSS Automate syncs the file to CUCM once it's added to the CUCM MOH cluster.
3. Adding MOH audio sources for use in VOSS Automate (for example, to manage lines and hunt groups).

**Note:** Deleting a .wav file from VOSS Automate does not remove the file from CUCM MOH clusters.

A MOH file you're adding is uploaded to the VOSS Automate database, and if you selected a MOH cluster,

the file is also added to the MOH cluster (to the publisher, and to any subscriber servers flagged as music servers). A data sync is triggered to add the files to CUCM, and any MOH files on CUCM are imported to VOSS Automate in the sync. These MOH files are available for selection when adding or managing MOH audio source files.

### **Call Managers (CUCM), MOH Files, NDLs, and Upgrading VOSS Automate**

When uploading MOH files at site level, the CUCM MOH cluster is automatically selected based on the site Network Device List (NDL).

Since data syncs export and import MOH files between VOSS Automate and CUCM, when upgrading from a previous version of VOSS Automate, a workflow creates a new data sync entry for each of the existing call managers, and adds the call managers to the correct NDLs.

To view data sync entries, go to (default menus) **Administration Tools > Data Sync**. Data sync entries are prefixed with the name of the API (CMCCS - Call Manager Control Center Services)

See [Introduction to Data Sync](#)

### **Add a CUCM MOH Cluster**

This procedure adds a CUCM MOH cluster.

---

**Note:** MOH files are uploaded to the CUCM MOH cluster.

---

1. Log in to the Admin Portal.
2. Go to (default menus) **Apps Management > CUCM Music On Hold > Manage MOH Clusters**.
3. On the **Manage MOH Clusters** list view, click **Add** to open **Manage MOH Clusters/New Record**.
4. Fill out details for the new MOH cluster:

Cluster Name	Add a name for the CUCM MOH cluster. You can use the same name as the CUCM cluster, or a unique name.
Publisher Server Name	Choose a CUCM publisher server from the list of available CUCM publisher servers at the hierarchy.
Publisher Hostname or IP Address	This field is auto-populated once you choose a publisher server name. The value must match the SERVICE_PROVIDER_SPACE hostname or IPv4 address of the CUCM publisher server.  <b>Note:</b> By default, the port used to connect to the publisher is 443.
Publisher username	Specify the username of a user with administrative access to the CUCM server GUI.
Publisher Password	Specify the password of the publisher username.
CUCM Subscriber Details	Click the Plus icon (+) to add CUCM subscriber servers (one or more), and specify details for each subscriber server you're adding. These CUCM subscriber servers are part of the CUCM cluster. For each server you add, you will need to provide the following details: <ul style="list-style-type: none"> <li>Subscriber server name</li> <li>Hostname or IP address</li> <li>Username (and an associated password for this user)</li> <li>Is Music Server - defines whether the subscriber server you're adding is a MOH server. MOH files are uploaded to a server with this setting enabled. At a minimum, you should add at least the subscriber with a MOH role (music servers).</li> </ul> <b>Note:</b> The port used to connect to a subscriber server 443.

5. Save your changes to add the CUCM MOH cluster.

---

## View MOH Files

This procedure displays the list of files that exist on the Call Manager Publisher.

---

### Note:

- Files uploaded to MOH clusters in VOSS Automate are imported to the database. An automatic sync is created for each of the CUCM (Call Manager Control Center Services MOHFile model sync, or CMCCS sync) so that you can run a manual data sync to update the list of files on this page.

If you're upgrading to v21.2, you can immediately execute this data sync to import the files; else, they will be automatically imported automatically the next time you upload a new file to the CUCM.

- The menu for the MOH list view functionality is added to the default menus and access profiles for the following admin roles: Provider, Reseller, Customer
- 

### To view the list of MOH files:

- Log in to the Admin Portal as a Provider, Customer, or Reseller admin.
- Go to (default menus) **Apps Management > List MOH Audio Files**.
- In the list view, you can:
  - View the list of MOH files.

---

**Note:** WAV files are stored in the database as XML files.

---

- Export files (select the files you wish to export, and click the **Export** icon)

## Upload a Single MOH File

This procedure uploads a .wav MOH file to the VOSS Automate database, and optionally also to a CUCM MOH cluster.

---

**Note:** You can upload the MOH file to the relevant CUCM at the same time as you add it to VOSS Automate, or after you've added the file to VOSS Automate.

When files are uploaded to a CUCM MOH cluster, files are uploaded to the publisher server, as well as to CUCM subscriber servers that have the **Is Music Server** setting enabled.

---

### To upload a MOH file:

- Log in to the Admin Portal.
- Go to (default menus) **Apps Management > CUCM Music On Hold > Manage Files and Upload to MOH Cluster**.
- In the list view, click the Plus icon (+) to open the **Manage Files And Upload to MOH Cluster / New Record** page.
- Click **Choose** to locate the .wav file from your filesystem.

---

### Note:

- Once you've chosen the file, the name of the file displays in the **Filename** field.

- If a file with same name as an existing file is uploaded at the same hierarchy, the existing file is automatically deleted.

5. Optionally, add a description for the file.
6. Optionally, at **CUCM MOH Cluster**, choose the relevant CUCM MOH cluster.

---

**Note:**

- If you don't choose a CUCM MOH cluster, the file is uploaded only to the VOSS Automate database.
  - In the list view, when viewing a MOH file that has already been uploaded to a MOH cluster, you can select the MOH cluster to re-add the file to the cluster. MOH files you add to a MOH cluster here will display in CUCM.
  - A .wav file that has previously been uploaded to VOSS Automate can be re-uploaded to the same CUCM MOH cluster, or to another CUCM MOH cluster.
  - Deleting a .wav file from VOSS Automate does not remove the file from the CUCM MOH clusters.
  - Uploading files to the pre-release version of CUCM 12.5.1 SU1(12.5.1.11900-20) will fail.
- 

7. Save your changes.

### Upload Multiple MOH Files

This procedure uploads two or more MOH files to CUCM MOH clusters.

1. Log in to the Admin Portal.
2. Go to (default menus) **Apps Management > CUCM Music On Hold > Upload Multiple Files to MOH Clusters**.
3. On the **Upload Multiple Files to MOH Clusters** page:
  - At **CUCM MOH Clusters**, choose the MOH cluster where you want to upload MOH files:
    - Move the MOH clusters you wish to use, from **Available** to **Selected**.
    - Move MOH clusters you don't want to use, from **Selected** to **Available**.
  - At **MOH File Names**, choose the MOH files you wish to upload:
    - Move the MOH files you wish to upload, from **Available** to **Selected**.
    - Move the MOH files you don't want to upload, from **Selected** to **Available**.

---

**Note:** Use the right and left arrows to move your choices to the relevant sides of the transfer boxes. Use the up and down arrows to re-position items in the transfer boxes.

---

4. Save your changes.

---

## Add a MOH Audio Source

This procedure adds a MOH audio source instance, once MOH files have been added to CUCM.

---

**Note:** A MOH audio source instance is required in order to make use of the MOH files that have been uploaded to CUCM MOH clusters.

---

### To add a MOH audio source:

1. Log in to the Admin Portal.
2. Go to (default menus) **Apps Management > CUCM Music On Hold > Add MOH Audio Source** to open the **Add MOH Audio Source** page.
3. At **CUCM MOH Cluster**, choose a CUCM MOH cluster where the audio source will be added.
4. At **MOH Audio Source Name**, provide a unique, descriptive name for the MOH audio source.

---

**Note:** The MOH audio source name and the MOH audio file may be modified once you're created the MOH audio source.

---

5. At **MOH Audio Stream Number**, choose an available audio stream number.

---

**Note:**

- The drop-down displays only available stream numbers. The number 1 is reserved in CUCM, so only numbers from 002 display as available in VOSS Automate.
  - The following stream number is reserved for a fixed MOH audio source, and is not shown: 051
- 

6. At **MOH Audio Source File**, choose the MOH file previously uploaded to the CUCM MOH cluster.
7. Save your changes.

Once you've added the first MOH audio source, VOSS Automate triggers a sync from CUCM to fetch all MOH audio sources. When you add a new MOH audio source, the workflow sync adds the new file to CUCM.

MOH audio source files you add in VOSS Automate may be viewed, updated, or deleted via (default menus) **Apps Management > CUCM Music On Hold > Manage MOH Audio Source**.

## Manage MOH Audio Sources

This procedure allows you to view and manage existing MOH audio sources.

---

**Note:** MOH audio sources you've added to the system are used for:

- Managing lines for subscribers. See Directory Number Advanced Information in [Lines](#)
  - Managing hunt groups for subscribers. See Queuing in [Add a Hunt Group](#)
-



## View and Manage MOH Audio Sources

1. Log in to the Admin Portal.
2. Go to **Apps Management > CUCM Music On Hold > Manage MOH Audio Source**.
3. View existing MOH audio sources in the **Manage MOH Audio Source** list view, and choose an action:
  - To delete a MOH audio source (one or more), select the checkbox for the relevant entries, and click the **Delete** icon.
  - To filter the list, click the toolbar **Filter** icon, or enter filter criteria in the column headers.
  - To move MOH audio sources (one or more), select the relevant checkboxes, and click the **Move** icon.
  - To view or update a MOH audio source, click on the relevant entry in the list to open its configuration screen. Go to step 4.
4. On the MOH audio source configuration page, view existing settings, and update relevant fields, as required:

<b>MOH Audio Stream Number</b>	Read-only. The default, reserved number in CUCM is 1.
<b>MOH Audio Source Name</b>	Editable. The name of the MOH audio source.
<b>MOH Audio Source File</b>	WAV files uploaded and saved to the database as XML files. You can choose another file. The drop-down displays files on CUCM.
<b>Initial Announcement</b>	Choose an available initial announcement.
<b>Play Initial Announcement to Hunt Pilot callers</b>	Define whether to play an initial announcement. Clear the checkbox to disable this setting if an agent is available.
<b>Periodic Announcement</b>	Choose an available announcement from the drop-down.
<b>Periodic Announcement interval</b>	Enter a value, in seconds (10s - 300s). The default is 30s.
<b>Locale Announcement</b>	Choose a locale.

5. Save your changes. Updates are added to CUCM.

## 9.3. CUCM FAC Management (Forced Authorization Codes - FAC)

### 9.3.1. Introduction to Forced Authorization Codes (FAC)

The Forced Authorization Codes (FAC) feature provides the ability to use codes to authorize certain types of calls as setup in the dial plan. For example, to make an international call, a code might be shared with people who need it and they can enter the code after dialing their call in order to authorize this.

To use FAC, the deployed dial plan must be set up in a way that enables the codes to be used. For more details on the use of FAC and CUCM functionality, refer to the Cisco documentation.

VOSS Automate provides full support for FAC, from setting up the dial plan elements to the management of the codes themselves. Refer to the *VOSS Automate Provider HCS Dial Plan Management Support Guide* for more details on managing the dial plan elements.

VOSS Automate supports the provisioning of FAC using two methods:

- *Using Device Models to Manage FAC* - this basically mirrors the setting up of codes in the Unified CM. It uses the device model in VOSS Automate and allows you to add/mod/del codes for a given cluster.
- *Using VOSS Automate to Manage FAC* - this feature helps to improve the usability of FAC codes and to manage consistent FAC codes across clusters in an orchestrated way. It provides the ability to define which authorization levels you require and to provide text along with the code to help administrators understand the purpose of the different levels as implemented in the dial plan.

The method to use depends on your requirements, but generally the VOSS Automate FAC Code Management method is likely to be a better overall fit.

The appropriate option(s) you want to use should be included in your menu designs for the required roles for administrators to access. You may want to use both methods if you need to manage FAC codes per cluster in some cases, and across clusters for other cases. Any existing codes synced into VOSS Automate will appear in VOSS Automate and can be managed via either method.

### 9.3.2. Using Device Models to Manage FAC

#### Overview

You will typically use device models to manage Forced Authorization Code (FAC) if you want to manage FAC codes within the context of a given cluster (or only have single cluster deployments).

You can add, modify, or delete FAC codes in the system, including via the bulk management tools in VOSS Automate. If there won't be large number of FAC codes implemented and/or this remains an advanced administration task, this might be the best approach.

To manage FAC codes using this method, select the FAC Codes menu (exposed via the *device/cucm/FacInfo* device model):

#### Add a FAC Code

1. Browse to the appropriate hierarchy level for the FAC code (e.g. Customer or Site).
2. Navigate to the FAC Code menu item which will give a list of existing codes.
3. Click **Add**. If there is more than one Unified CM cluster at that hierarchy, then you will get a pop-up to choose the appropriate cluster.
4. Enter the details of the FAC code to be added in the form and click **Save**.

### Modify an Existing FAC Code

1. Navigate to the FAC Code menu item which will give a list of existing codes. Use the filters and/or hierarchy breadcrumb to locate the code to modify and then select it.
2. Edit the settings and click **Save**.

### Delete an Existing FAC Code

1. Navigate to the FAC Code menu item which will give a list of existing codes.
2. Use the filters and/or hierarchy breadcrumb to locate the code(s) to delete.
3. You can either select the code(s) from the list view via the check boxes and click **Delete** OR open the appropriate code and click **Delete**.

## 9.3.3. Using VOSS Automate to Manage FAC

### Overview

The VOSS Automate FAC management feature and workflows push any added FAC codes to all the clusters at that hierarchy (e.g. all clusters at a customer). This means for deployments where consistent FAC codes are being used, these don't need to be managed per cluster by administrators.

The same applies for the delete FAC code scenario where you have the choice to remove it from a single cluster or all the clusters at that hierarchy level.

There is also a sync capability in the event that a new cluster is added and the existing codes need to be pushed to the new cluster. This mode can be used for single cluster environments as well if needed.

The ability to define the relevant FAC code authorization levels and provide text naming for them helps to provide appropriate business context to the level for administrators.

By default VOSS Automate includes all the levels for use, however you can adjust these to your needs. For example, you can configure FAC so that only five levels are shown and they have the correct naming convention, e.g. 6 - International. See [Customize Authorization Levels](#) for more details.

Use this feature to manage FAC codes:

- Add a code to all clusters - browse to the level you want the code added. Use the view to enter the details for the code - the list of authorization levels is driven by the setup above. Click **Add**. This adds the FAC code to any cluster at that hierarchy level - so if there are three clusters at level, the code will be added to all three clusters.

If the hierarchy only has a single cluster or is not a multi-cluster environment, then the code is only added to the single cluster.

- Add a code to only a single cluster.
- Update a code - open, edit and save- this will change the code on all clusters.
- Remove a code - from a single cluster or across all clusters.

### Add a FAC

1. Navigate to the required customer or site level.
2. From the **Forced Authorization Codes** form (default menu **Apps Management > CUCM FAC Management > Forced Authorization Codes**).
3. Click **Add**.
4. Complete the following mandatory settings (see form **Help notes** for additional information):

A Provider Admin can customize the form help by cloning, editing and saving the help text on the **Customize Help** form to a lower hierarchy level.

Field Name	Description
Name*	A unique name describing the FAC code, e.g. Customer code + Subscriber UserID. This name ties the authorization code to a specific user or group of users; and displays in the CDRs for calls that use this code. 50 characters maximum.
Authorization Level*	Select the authorization level in the range of 0 to 255. This can include a description after a delimiter, e.g. 1-international <sup>1</sup> . The drop-down contains all authorization levels that have been cloned to this hierarchy level. If none have been cloned, then the list displays the default auth levels 0-255. To successfully route a call, the user's Authorization Level must be equal to or greater than the Authorization Level set on the Route Pattern.
Code*	Enter a unique authorization code. The user enters this code when placing a call through a FAC-enabled route pattern. 16 digits maximum.

5. Click **Save** and inspect the entry in the list view.

### Delete a FAC

When deleting FAC codes, all codes are listed for each Unified CM cluster. This allows the deletion of a code on a single cluster, even if it was added at customer level to multiple clusters.

1. Browse to the required customer or site hierarchy.
2. Open the **Forced Authorization Codes** form (default menu **Apps Management > CUCM FAC Management > Forced Authorization Codes**)
3. Select the check box next to the FAC instance you want to delete or click on the FAC instance you want to delete.
4. Click **Delete** and then click **Yes** to confirm deletion.

**Note:** All instances of a FAC can also be deleted (across all clusters) by selecting the instance on the list view, and then clicking **Delete All Instances** on the button bar.

<sup>1</sup> See *Customize Authorization Levels*

### Sync FAC Code Cross Cluster

All codes can be synced across all clusters at the customer hierarchy.

1. Browse to the required customer hierarchy.
2. Open the **Sync FAC Codes Cross Clusters** form (default menu **Apps Management > CUCM FAC Management > Sync FAC Codes Cross Clusters**).
3. Choose **Confirm**.
4. Click **Save**.

### 9.3.4. Customize Authorization Levels

Open the **Customize Authorization Levels** form (default menu **Apps Management > CUCM FAC Management > Customize Authorization Levels**) to access the list of valid authorization (auth) levels and optional text. These instances are hierarchy specific so you can have different codes/text for different hierarchies, e.g. different customers or areas of the business.

The list of auth levels available in the drop-down can be customized. By default, numeric values 0 to 250 are shown.

If a Customer only requires for example 0 to 6 auth levels, then a provider administrator can clone, edit and save those instances to the lower hierarchy level. Descriptive text can also be added to the cloned auth level first by adding a '-' and then a 'description' *after* the numeric value, for example:

**1-Allow Local Calls**, where:

- '1' is the numeric value that gets selected on the Unified CM
- '-' is the delimiter that separates the numeric value and description
- 'Allow Local Calls'- is the (example) friendly description that describes the numeric value action

Once cloned to Customer level, only the cloned versions are displayed in the **Authorization Level** drop-down when adding forced authorization code at Customer level or lower.

## 9.4. CUC (Cisco Unity Connection)

### 9.4.1. Servers (CUC)

#### Overview

Cisco Unity Connection (CUC) devices provide voicemail services and can be dedicated to a customer or shared across multiple customers.

To dedicate a CUC to a single customer	Configure the CUC at the customer hierarchy node.
To share a CUC across multiple customers	Configure the CUC at a hierarchy node above the customer (reseller, provider, or intermediate node). The CUC device must be included in one or more Network Device Lists (NDLs), and the NDL must be assigned to one or more sites.

## Add a CUC Server

To add a CUC server:

1. Log in as the appropriate hierarchy administrator.
  - Provider or Reseller admins can create a shared instance.
  - Customer, Provider, or Reseller admins can create a dedicated instance.
2. Choose the relevant hierarchy.
  - You can create a shared instance at the Provider or Reseller level.
  - You can create a dedicated instance at the Customer level.
3. Go to (default menus) **Apps Management > CUC > Servers**.
4. Click **Add** to open the server configuration page.
5. Configure details for the **Base** tab/panel:

The screenshot shows the configuration page for a CUC server in the Voss Automate interface. The page is titled "Servers > AAAGlobal-CUCX-CL1" and has two tabs: "Base" (selected) and "Publisher". The configuration fields are as follows:

- CUCxN Server Name \***: 192.168.100.20
- Publisher**:
- Cluster Name \***: AAAGlobal-CUCX-CL1
- Sync on Create/Update**:

Below these fields are two sections: "Network Addresses" and "Credentials". Each section has a table of entries and an "Add Item" button.

Network Addresses	Credentials												
<table border="1"> <tr> <td>&gt; SERVICE_PROVIDER_SPACE</td> <td>[Edit] [Delete]</td> </tr> <tr> <td>+ Add Item</td> <td></td> </tr> </table>	> SERVICE_PROVIDER_SPACE	[Edit] [Delete]	+ Add Item		<table border="1"> <tr> <td>&gt; ADMIN</td> <td>[Edit] [Delete]</td> </tr> <tr> <td>&gt; PLATFORM</td> <td>[Edit] [Delete]</td> </tr> <tr> <td>&gt; SNMP_V2</td> <td>[Edit] [Delete]</td> </tr> <tr> <td>+ Add Item</td> <td></td> </tr> </table>	> ADMIN	[Edit] [Delete]	> PLATFORM	[Edit] [Delete]	> SNMP_V2	[Edit] [Delete]	+ Add Item	
> SERVICE_PROVIDER_SPACE	[Edit] [Delete]												
+ Add Item													
> ADMIN	[Edit] [Delete]												
> PLATFORM	[Edit] [Delete]												
> SNMP_V2	[Edit] [Delete]												
+ Add Item													

The table describes configuration options on the **Base** tab:

Field	Description
CUCxn Server Name	Mandatory. Fill out the Cisco Unity Connection (CUC) server name.
Publisher	<p>Select this checkbox only if you're configuring a publisher node.</p> <hr/> <p><b>Note:</b> The <b>Publisher</b> tab/panel displays only when this checkbox is selected.</p> <hr/>
Cluster Name	<p>Mandatory. Fill out the name you want to use for this cluster. The new cluster is created with this name.</p> <hr/> <p><b>Note:</b> If the <b>Publisher</b> checkbox is not selected, the <b>Cluster Name</b> field appears as a drop-down list so that you can choose an existing cluster.</p> <hr/>
Network Addresses	<p>Expand this field, then:</p> <ul style="list-style-type: none"> <li>• At <b>Address Space</b>, select SERVICE_PROVIDER_SPACE.</li> <li>• At <b>IPv4 Address</b>, fill out the IP address of the CUC server.</li> <li>• The <b>Hostname</b> field is automatically populated with the CUC server name. Edit this value if necessary.</li> </ul> <hr/> <p><b>Note:</b> Either the hostname <i>or</i> the IP address is required. Ensure that the hostname or IP address does not contain a trailing blank space. VOSS Automate cannot validate an entry that contains a blank space at the end of the hostname or IP address.</p> <hr/> <ul style="list-style-type: none"> <li>• At <b>Domain</b>, fill out the domain of the CUC application.</li> <li>• At <b>Description</b>, fill out a description for the network address. If NAT is used, also configure an APPLICATION_SPACE network address.</li> </ul>

Field	Description
Credentials	<p>Expand this field then add credentials for PLATFORM, ADMIN, HTTP, and SNMP_Vx credential types. Click the Plus icon (+) to add more credentials:</p> <ul style="list-style-type: none"> <li>• Fill out the user ID and password that you configured when you installed the CUC.</li> <li>• Choose RO (Read-only) or RW (Read or Write) for the Access Type. The default is RO.</li> <li>• Optionally, provide a description for the credential.</li> </ul> <hr/> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• ADMIN credentials are used by Automate to access the CUC REST API interface for provisioning synchronization. These credentials must be manually configured in Cisco Unity Connection, then configured in VOSS Automate, via (default menus) <b>Apps Management &gt; CUC &gt; Servers, Credentials</b> fields.</li> <li>• PLATFORM and ADMIN are required for Service Inventory to generate reports for UC applications.</li> </ul>

6. Configure details for the **Publisher** tab/panel.

**Note:** This tab displays *only* if you're configuring a publisher node and have selected the **Publisher** checkbox on the **Base** tab/panel.

The table describes configuration options on the **Publisher** tab:



Field	Description
Call Processing ID	The Call Processing ID of this cluster
SDR Cluster ID	The Shared Data Repository (SDR) CUC cluster ID.
Multi-Tenant	If creating at Provider level, this field is read-only and set to Shared. If creating at Customer level, you can choose between Dedicated and Partitioned.
Version	Select the version of Cisco Unity Connection Servers in this cluster.
Port	The port on the CUC server to connect to. The default is 8443.
Monitoring	For new servers and if Arbitrator servers are available, monitoring can be enabled for this CUC server on VOSS Insights. The Arbitrator server checkboxes can be selected to add the server as an asset. The Arbitrator server will be updated. Existing servers can be managed from the Onboard Assets and Offboard Assets menus under VOSS Insights. The Arbitrator checkboxes will then reflect the asset status.

---

**Note:** For more information around monitoring and VOSS Insights, see [Introduction to VOSS Insights Monitoring](#).

---

10. Click **Save**.

### Delete a CUC Server

Deleting a Cisco Unity Connection (CUC) server in VOSS Automate also deletes local data that has been synced to it from the Cisco Unity Connection Server, including:

- Users
- Configuration parameters
- Dial Plan information (if applicable)

## 9.4.2. Schedules

Configuring a CUC device on Automate creates a scheduled data sync to import model data from the device into Automate.

The scheduled data sync ensures that the VOSS Automate cache maintains the most current view of the configured device.

---

**Note:** If Holiday Schedules were added to CUC directly, update the default scheduled data sync instance to include the Model Type List called CUCXN Schedules in order to ensure that these holiday schedules are synced into VOSS Automate.

---

Any changes to the configuration occurring on the device, including additions, deletions, or modifications, reflect in VOSS Automate after the next data sync.

---

**Note:**

- There is no immediate data sync upon update or modification.
  - Some license-related models will now be excluded from Cisco Unity Connection imports by default:
    - device/cuc/Handler
    - device/cuc/GlobalUser
    - device/cuc/LicenseStatus
    - device/cuc/TenantUserLicense
    - device/cuc/UserLicense
- 

The recurring sync (disabled by default) is scheduled to occur every 14 days. You can enable the sync and modify the schedule (via **Apps Management > CUC > Schedules**).

When determining the appropriate schedule setting, the frequency of the sync must be weighed against the additional processing and network activity associated with the data sync. You can manually run the data sync at any time, via **Apps Management > Advanced > Perform Publisher Actions**, or from **Administration Tools > Data Sync**.

---

**Important:** Allow the initial data sync to complete before doing more configuration on Automate that requires information from CUC.

---

The performance of a data sync can be improved by controlling the types of data that are synced.

### Related Topics

- LDAP User Sync in the Core Feature Guide.

## 9.4.3. Voice Mail Service

### Add Voicemail Service

This procedure adds a voice mail service, associates the service with a Cisco Unity Connection (CUC) server, and integrates it with a Cisco Unified Communications Manager (CUCM).

#### Prerequisites

- To associate the voice mail service with a CUCM, ensure you know the SIP trunking endpoint information between the voice mail server and the CUCM.
- Ensure you have a CUC server configured.

#### Perform these steps:

1. Log in as Provider or Reseller administrator.
2. Set the hierarchy to the correct provider or reseller node.
3. Go to (default menus) **Apps Management > CUC > Voice Mail Service**.
4. Click the Plus icon (+) to add a voice mail service.
5. Fill out details for the voice mail service:

- At **Voice Mail Service Name**, fill out a name for the voice mail service. Ensure there are no spaces in the name.
- At **Cisco Unity Connection Cluster**, choose the name of the CUC server for the voice mail service.

---

**Note:** The CUC server must have been added at the Provider level (via **Apps Management > CUC**). This is also the location whether the voice mail server in a multi-tenant environment is categorized as Dedicated or Partitioned. This determines what elements are available to the voice mail server, for example, whether another tenant should be created on the voice mail server.

---

- To integrate the voice mail service with CUCM, select the **Integrate with CUCM** check box. The default is disabled (unchecked).

If CUCM will manage the voice mail service, choose the CUCM to be paired with the CUC server, from the **Cisco Unified CM Cluster** drop-down.

---

**Note:** The CUCM must have been added and configured at the Provider level, via **Apps Management > CUCM**.

---

Complete the SIP trunk provisioning information (between the SIP trunk and the CUC server) in the following fields:

- At **Cisco Unity Connection Server Address**, fill out the hostname or IP address of the voice mail server.
- At **Cisco Unity Connection Server Port**, fill out the voice mail server port number (1 to 65535).

---

**Note:** Do not use port 5061, which is reserved for secure SIP.

---

- At **Cisco Unified CM Server Address**, fill out the hostname or IP address for the voice mail server to reach the CUCM.
- At **Cisco Unified CM Server Port**, fill out the CUCM port number.

---

**Note:** Do not use port 5061, which is reserved for secure SIP.

---

Only one CUCM and one CUC can be specified here. To support redundancy and failover in a multinode configuration, the trunk information must be manually updated on the UC apps.

---

- At **Voice Messaging Ports**, fill out the number of voice messaging ports to be created for the voice mail service and associated with the appropriate Port Group on CUC when the voice mail service is associated to a customer.

Valid values are 1 - 250. Default = 3. This field is mandatory.

---

**Note:** The number of voice messaging ports that you add cannot bring the total number of voice messaging ports for all port groups to more than the maximum number of voice messaging ports that are enabled by the CUC license files. If the license files do not enable the total number of ports, you will not be able to add the new ports.

---

- To also integrate a Voice Mail Webex Dedicated Instance with CUCM, select the **Integrate with Cisco Unified CM Webex DI** check box.
  - Only the **Voice Mail Trunk Address** dropdown is shown with entries existing and available on the selected **Cisco Unified CM Cluster** - which will be associated with the Route Group as a part of the Route List and Route Group provisioning.

Other fields are now not required and are hidden on the form.

6. Click **Save** to add the voice mail service.

Once a shared voice mail service is created, if you have enabled **Integrate with Cisco Unified CM**:

- In CUCM, cluster-level SIP trunk and route group is provisioned for the shared voice mail service.
- In CUC, cluster-level port group appears on the PhoneSystem for the shared voice mail service.

### Next Steps

- [Associate/Disassociate Voice Mail Services to Customer](#)

### Delete Voice Mail Service

#### Perform these steps:

1. Log in as the Provider Administrator.
2. Go to (default menus) **Apps Management > CUC > Voice Mail Service**.
3. From the list of voice mail services, choose the service to be deleted by selecting the check box in the leftmost column.
4. Click **Delete** to delete the Voice Mail Service.
5. From the popup window, click **Yes** to confirm the deletion.

When the delete action is complete, the Voice Mail Service disappears from the list.

## 9.4.4. Associate/Disassociate Voice Mail Services to Customer

### Associate Voice Mail Services to Customer

#### Prerequisites

- To associate Voice Mail Service with a customer, the Voice Mail Service must be created before starting this procedure. See [Voice Mail Service](#).
- If the **Integrate with Cisco Unified CM** check box was selected when the Voice Mail services was created, a customer dial plan and a site dial plan must be created before a Voice Mail Service can be associated with a customer; otherwise the association will fail.
- If the **Integrate with Cisco Unified CM Webex DI** check box was selected when the Voice Mail services was created, the selected **Cisco Unified CM Cluster** provides the **Voice Mail Trunk Address** selection.

#### Perform these steps:

1. Log in as provider or reseller administrator.
2. Set the hierarchy path to the customer to which you want to associate the Voice Mail Service.

3. Choose **Services > Voice Mail > Associate Voice Mail Service to Customer**.
4. Click **Add** to associate Voice Mail Service to a customer.
5. From the **Voice Mail Service** drop-down, choose the name of the Voice Mail Service that has been defined by the provider and available to this customer.
6. Click **Save** to associate the Voice Mail Service with the customer. The association appears in the list.
  - When the Voice Mail Service is associated with a customer and the **Integrate with Cisco Unified CM** check box was selected for the Voice Mail Service, the following is provisioned based on the deployment mode of the Voice Mail server:

Voice Mail Deployment Mode	Cisco Unified Communications Manager	Cisco Unity Connection
Dedicated	Creates Integration at customer level: SipTrunk, Route Group, AllowVm route partition	Creates customer-specific Port Group, ports (3), route partition, calling search space and user template
Partitioned	Creates Integration at customer level: SipTrunk, Route Group, AllowVm route partition	Creates new tenant (partition), port group, ports (3), route partition, calling search space and user template

Note: The deployment mode for the Voice Mail service is determined by the mode selected when the Cisco Unity Connection is first added to VOSS Automate using **Device Management > CUC**.

- When the **Integrate with Cisco Unified CM Webex DI** check box was selected for the Voice Mail Service, the **Voice Mail Trunk Address** selected from the selected **Cisco Unified CM Cluster** - will be associated with the Route Group as a part of the Route List and Route Group provisioning.

### Disassociate Voice Mail Services from Customers

1. Log in as the Provider Administrator.
2. Set the hierarchy path to the customer from which you want to disassociate the Voice Mail Service.
3. Choose **Apps Management > CUC > Associate Voice Mail Service to Customer**.
4. From the list of associations, choose the Voice Mail Service customer association to be disassociated, by clicking the check box in the leftmost column.
5. Click **Delete** to disassociate the Voice Mail Service from the customer.
6. From the popup window, click **Yes** to confirm the change. When the delete action is complete, the Voice Mail Service association to the customer disappears from the list.

### 9.4.5. Pilot Numbers

#### Add a Pilot Number

##### Prerequisites

To create one or more Voice Mail Pilot Numbers for Voice Mail Services that have previously been associated with the customer, the following procedures must be completed before performing this procedure:

- Voice Mail Service must be created. See [Create Voice Mail Service](#).
- Voice Mail Service must be associated with the customer. See [Associate Voice Mail Services to Customer](#).

---

**Note:** In VOSS Automate, you can select the voice mail pilot number from a list of available DN inventory.

---

##### Perform these steps:

1. Log in as provider or customer administrator.
2. Make sure the hierarchy path is set to the customer or site that you are defining a Voice Mail Pilot Number for.
3. Choose **Apps Management > CUC > Pilot Numbers**.
4. Click **Add** to associate a pilot number with the voice mail service that has been associated with the customer.
5. From the **Voice Mail Service** drop-down, select the appropriate Voice Mail Service from the list of Voice Mail Services associated with the customer.
6. From the **Voice Mail Pilot Number** drop-down, select a Pilot Number from the list of your available DN inventory, or type the Pilot Number you want to use in the field. This is the internal Voice Mail Pilot Number that can be dialed from site.

---

**Note:** You can add one or more pilot numbers for a single voice mail service.

---

7. Click **Save** to create the pilot number. The Pilot Number appears in the list. When a Pilot Number is created for a Voice Mail Service and the **Integrated with CUCM** check box was selected for the Voice Mail Service, the following is provisioned based on the deployment mode of the Voice Mail server:

Voice Mail Deployment Mode	Cisco Unified Communications Manager
Dedicated	At customer level: Route List, Route Pattern, CSS, Voice Mail Pilot, Voice Mail Profile
Partitioned	At customer level: Route List, Route Pattern, CSS, Voice Mail Pilot, Voice Mail Profile

### Delete a Voice Mail Pilot Number

1. Log in as the Customer Administrator. For a list of the roles and tasks that can be done at each level, see *Dial Plan Roles and Privileges*.
2. Choose **Apps Management > CUC > Pilot Numbers**.
3. From the list of Pilot Numbers, choose the number to be deleted, by selecting the check box in the leftmost column.
4. Click **Delete** to delete the Voice Mail Pilot Number.
5. From the popup window, click **Yes** to confirm the deletion.

When the delete action is complete, the Voice Mail Pilot Number disappears from the list.

## 9.4.6. Associate/Disassociate Pilot Number to a Site

### Associate Pilot Number to Site

This procedure associates an existing voicemail pilot number to a site.

#### Prerequisites

- Add the voicemail pilot number. See *Pilot Numbers*

---

**Note:** In VOSS Automate, the event related to SIP Local Gateway may be generated as a result. Also you can select an E164 number to associate with the Pilot Number.

---

#### Perform these steps:

1. Log in as a Customer or Provider administrator.
2. Set the hierarchy to the relevant site.
3. Go to (default menus) **Apps Management > CUC > Associate Pilot Number to Site**.
4. Click the Plus icon (+) to add the pilot number to site association.
5. At **Voice Mail Service** (mandatory), choose the voicemail service to associate with the site.
6. At **Voice Mail Service Pilot Number** (mandatory), choose the pilot number for the voicemail service you selected.
7. At **E164 Number** (optional), choose a E164 number from your site's inventory to associate with the pilot number, or type the E164 number you want to use.

---

**Note:** You must choose (or specify) an available E164 number. The transaction will fail if you choose an E164 number that is already assigned.

---

8. Click **Save**.

The voicemail service pilot number is associated with the site:

- The association appears in the list. When a pilot number is associated to a site, the **Site Management > Defaults > CUC Defaults** are updated so that the subscriber management templates can take advantage of this new voicemail service for the site.

- If the site has one or more SIP Local Gateways associated with it and an E164 number has been specified, the `HcsSipLocalGwAddVoiceMailPilotNumberEVT` is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event for each SIP Local Gateway.

### Disassociate Pilot Number from a Site

**Note:** In VOSS Automate, the event related to SIP Local Gateway is generated as a result.

#### Perform these steps:

1. Log in as the Customer Administrator. For a list of the roles and tasks that can be done at each level, see *Dial Plan Roles and Privileges*.
2. Choose **Services > Voice Mail > Associate Pilot Number to Site**.
3. From the list of associations, choose the Pilot Number association to be disassociated, by selecting the check box in the leftmost column.
4. Click **Delete** to disassociate the Pilot Number from the site.
5. From the popup window, click **Yes** to confirm the change.
  - When the delete action is complete, the Pilot Number association to the site disappears from the list.
  - If the site has one or more SIP Local Gateways associated with it, the `HcsSipLocalGwDelVoiceMailPilotNumberEVT` event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event for each SIP Local Gateway.

## 9.4.7. Call Handler

### Overview

A Cisco Unified Communications Manager (CUCM) Auto-Attendant Call Handler transfers incoming calls to the extension of a user or department without the intervention of an operator, via a system of voice menus that the caller interacts with, using their telephone keypad or voice commands.

**Note:** Auto-Attendant is a comprehensive service that provides for the provisioning, configuration, and management of Call Handlers, greetings, schedules, and related dialplan components in Cisco Unity Connection (CUC) and Cisco Unified Communications Manager (CUCM).

Some Call Handler systems are comprised of message-only information menus and voice menus, which allow organizations to provide business information such as hours, directions to their premises, or to answer other frequently-asked questions. Once the message plays, the caller can be forwarded to an operator, or they can choose to return to the main menu.

Call Handlers can be created at the Customer hierarchy or the Site hierarchy in VOSS Automate:

Created at Customer	at	You must select a Network Device List (NDL), which then instructs the workflow which UC Application servers to provision.
Created at Site		The NDL associated to the site is chosen automatically.



## Related Topics

- Manage Greeting Files in the Core Feature Guide
- Call Handler (Auto Attendant) Schedule in the Core Feature Guide
- Add a TimeZone Filter in the Core Feature Guide
- [Number Status and Usage](#)
- See “System Call Handlers” in the “Cisco Unity Connection System Administration Guide for more information about Call Handlers.

## Call Handlers and Shared Numbers

VOSS Automate allows you to share the same directory number (DN) between a Call Handler and one or more device types (phone, SNR, EM), provided you're using different line partitions between the Call Handler and the device types.

**Note:** SNR is short for Single Number Reach device. EM is short for Extension Mobility device. Device can include, for example, desk phone, BOT.

## Shared Number Scenarios for Call Handler

### Overview

This section describes scenarios for number sharing between Call Handler and one or more device types and how this changes the status and usage values for the number in the number inventory.

The following scenarios are described:

- [Add Devices to a Number with an Existing Call Handler](#)
- [Add a Call Handler to a Number with Existing Devices](#)
- [Remove Call Handler from a Number Previously Shared Between Call Handler and Devices](#)
- [Remove Devices from a Number Previously Shared Between Call Handler and Devices](#)

**Note:** Status defines whether the number is available to be assigned (or shared) between Call Handler and one or more devices. Usage value is added to the line details in the directory number inventory.

When adding a Call Handler, all numbers available for the Call Handler (whether shared or not) display in the **Pilot** drop-down. See [Manage Auto-Attendant Call Handlers](#)

Internal Number	Status	Usage	E164Number	Release Date	Tag
2126693916	Used-Utility	Call_Handler_Pilot, Device			

When a number is currently used exclusively by Call Handler (not shared with a device), the status and usage detail for that number is as follows:

Status	Usage
Used-Utility	Call_Handler_Pilot

When a number is currently used exclusively by a device (not shared with Call Handler), the status and usage detail for that number is as follows:

Status	Usage
Used	Device

### Add Devices to a Number with an Existing Call Handler

In this scenario, Call Handler is added first and is assigned to a number. Then you can add additional devices (e.g. deskphone, BOT, EM, SNR) with the same number.

Scenario	Before adding devices	After adding devices
Add devices to a number already assigned to Call Handler	<ul style="list-style-type: none"> <li>• Status: "Used-Utility"</li> <li>• Usage:               <ul style="list-style-type: none"> <li>– "Call_Handler_Pilot",</li> <li>or</li> <li>– "Call_Handler_Pilot, Device"</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Status: "Used"</li> <li>• Usage: "Call_Handler_Pilot,Device"</li> </ul>

### Add a Call Handler to a Number with Existing Devices

In this scenario, one or more device types (device, EM, SNR) were added first to a number, then you add the same number to Call Handler.

Scenario	Before adding Call Handler	After adding Call Handler
Add Call Handler to a number already assigned to devices Scenario also applies if Call Handler was added with with a different number, then you change the Call Handler number to one that is used by devices.	<ul style="list-style-type: none"> <li>• Status: "Used"</li> <li>• Usage: "Device"</li> </ul>	<ul style="list-style-type: none"> <li>• Status: "Used-Utility"</li> <li>• Usage: "Call_Handler_Pilot,Device"</li> </ul>

### Remove Call Handler from a Number Previously Shared Between Call Handler and Devices

In this scenario, you have a number that is currently shared between Call Handler and one or more devices. Now you remove Call Handler from the number.

Scenario	Existing Status / Usage	Updated Status / Usage
Where Call Handler was added first, and then devices were added. Now you delete the Call Handler or change the number it uses.	<ul style="list-style-type: none"> <li>• Status: "Used"</li> <li>• Usage: "Call_Handler_Pilot,Device"</li> </ul>	<ul style="list-style-type: none"> <li>• Status: "Used"</li> <li>• Usage: "Device"</li> </ul>
Where devices were added to a number first, and then Call Handler was added. Now you delete Call Handler or change the number it uses.	<ul style="list-style-type: none"> <li>• Status: "Used-Utility"</li> <li>• Usage: "Call_Handler_Pilot,Device"</li> </ul>	<ul style="list-style-type: none"> <li>• Status: "Used"</li> <li>• Usage: "Device"</li> </ul>

### Remove Devices from a Number Previously Shared Between Call Handler and Devices

In this scenario, Call Handler was added first, then you added devices (one or more) to that number. Now you remove devices.

In this case, number status and usage depends on whether there was only one device and you remove it, or whether there are multiple devices, and you remove one device from the number shared with Call Handler.

Scenario	Existing Status / Usage	Updated Status / Usage
Call Handler was added first. One device (e.g. a phone) shares a number with Call Handler. You delete that one device, or you update that device to remove the number (e.g. update phone to use a new line, or remove line from phone).	<ul style="list-style-type: none"> <li>• Status: "Used"</li> <li>• Usage: "Call_Handler_Pilot,Device"</li> </ul>	<ul style="list-style-type: none"> <li>• Status: "Used-Utility"</li> <li>• Usage: "Call_Handler_Pilot"</li> </ul>
Call Handler was added first. Two or more devices are then added to the shared number (e.g. two phones using the same number). One device is deleted (e.g. delete phone), or you update one device to remove the number (e.g. update phone to use a new line, or remove line from phone).	<ul style="list-style-type: none"> <li>• Status: "Used"</li> <li>• Usage: "Call_Handler_Pilot,Device"</li> </ul>	<ul style="list-style-type: none"> <li>• Status: "Used"</li> <li>• Usage: "Call_Handler_Pilot,Device"</li> </ul>

---

## Manage Auto-Attendant Call Handlers

This section describes how to add, update, or delete an Auto-Attendant Call Handler in VOSS Automate and Cisco Unity Connection (CUC).

---

**Note:** Some of the configuration parameters required to provision the Call Handler are defined via the configuration templates and are not exposed in the user interface. For example, the following settings are hardcoded in the **AddCucmRoutePatternForCallhandlerCFT** configuration template:

- Provide Outside Dial Tone = False
- Call Classification = OnNet

To change these settings or any other values defined via the configuration template, clone the template (via **Customizations > Configuration Templates**) to the relevant hierarchy level, and edit the fields as required.

---

### Add a Call Handler

This procedure adds a Call Handler.

#### Before you start:

- The relevant Cisco Unity Connection (CUC) Auto-Attendant Call Handler template must have been synced from CUC.

#### To add a Call Handler:

1. Log in to the Admin Portal as Provider, Reseller, or Customer administrator.
2. Choose the relevant hierarchy, either Customer or Site.
3. Go to (default menus) **Apps Management > CUC > Call Handler**.
4. Click **Add**.

---

**Note:** The **Call Handler/New Record** page opens at the **Call Handler Basics** tab. All other tabs on this page remain read-only until you configure the initial settings on this tab. Once you've saved the new call handler, you can edit these settings. See [Update a Call Handler](#)

---

5. Mandatory. At **Network Device List**, choose the required network device list (NDL).

---

**Note:** This field is auto-populated and read-only if you're adding the call handler at site level.

---

6. Mandatory. At **Name**, enter a name for the new Call Handler.
7. At **Call Handler Template**, choose the CUC Call Handler template.

---

**Note:** For more information about the Call Handler template, see the "Call Handler Templates" section of the "Call Management" chapter of the System Administration Guide for Cisco Unity Connection, Release 11.x.

---

8. Optional. At **Pilot**, choose a directory number to associate with the Call Handler.

---

**Note:** The drop-down displays the list of directory numbers available at the selected hierarchy. This can include numbers already assigned to one or more device types, since VOSS Automate allows sharing of numbers between Call Handler and multiple device types. See [Call Handler](#)

---

9. At **Do not add Route Pattern** define whether to remove the mandatory requirement for adding a route list (if you've chosen a pilot).

---

**Note:**

- When enabled, (checkbox selected), choosing a route list (route pattern) is optional.
- When disabled (default), choosing a route list (route pattern) is mandatory.

This setting is relevant when adding or updating a Call Handler.

---

10. At **Route List**, choose a CUCM route list for the new Call Handler.

---

**Note:**

- Optional when **Do not add Route Pattern** is enabled.
  - The NDL determines the route lists available in this drop-down. If the NDL is updated, route list options are updated.
- 

11. Click **Save**.

---

**Note:**

- Adding a Call Handler through VOSS Automate also adds a route pattern on the CUCM designated in the NDL (if **Do not add Route Pattern** is disabled, and you've chosen a route list and a pilot for the Call Handler). The pattern is the value of the pilot (directory number) you choose.
  - A configuration template (which can be cloned and modified) defines the rest of the pilot configuration (including partition).
  - A direct routing rule is also created on the CUC designated in the NDL. This rule accepts inbound calls into CUC, and routes them to the relevant Call Handler.
- 

## Update a Call Handler

To update a Call Handler:

1. Log in as Provider, Reseller, or Customer administrator.
2. Choose the relevant hierarchy.
3. Go to (default menu) **Apps Management > CUC > Call Handler**.
4. In the list view, click the relevant Call Handler to open the **Call Handler** page.
5. Click through the following tabs, and update settings as required:

Tab	Description
Call Handler Basics	<p>Only this tab is enabled when adding a Call Handler. All tabs are available when updating a Call Handler.</p> <ul style="list-style-type: none"> <li>• <b>Do not add Route Pattern</b> (disabled by default) defines whether to remove the mandatory requirement for choosing a route list (if you've chosen a pilot). <ul style="list-style-type: none"> <li>– When disabled, you must choose a route list if you've selected a pilot</li> <li>– When enabled, choosing a route list is hidden and no longer required (even if you've chosen a pilot)</li> </ul> </li> <li>• <b>Call Handler Owner</b> - choose the CUC user to associate with the owner of the Call Handler.</li> </ul>
Transfer Rules tab	<p>Enables/disables transfer rules.</p> <ul style="list-style-type: none"> <li>• The <b>Standard</b> transfer rule can't be disabled.</li> <li>• By default, <b>Transfer Call To</b> is set to <b>Greeting</b>. When changing this setting to <b>Extension or URI</b>, you can specify an extension number or URI, and a transfer type (either <i>Release to Switch</i> or <i>Supervise Transfer</i>)</li> </ul>
Caller Input tab	<p>Configures the default caller. Additional settings become available as you choose options on this tab. For example, choosing <b>User with Mailbox</b> (from the <b>Action</b> drop-down in <b>Callhandler Menu Entry</b>) displays the <b>Transfer/Greeting</b> drop-down.</p>
Greetings tab	<p>Configures greeting settings.</p>
Record/Playback tab	<p>Configures the greeting you want to record and playback on the chosen extension. You can trigger a call to a physical device, which allows for recording or playback of a greeting. The extension to dial must be an accessible extension for the administrator (or user) to answer and record or listen to greetings</p> <ul style="list-style-type: none"> <li>• At <b>Extension</b>, choose an extension, or manually type in the number of the device you want to call to record or listen to a greeting.</li> <li>• To record or playback a greeting for a specific purpose, select the <b>Specific Greeting</b> checkbox; else, the action applies to the main Call Handler.</li> <li>• At <b>Duration (seconds)</b>, specify a time period (in seconds) that the system allows for recording a greeting. This time duration does not apply when playing back a recording. Ensure you set this timer appropriately. Setting it too low may result in an incorrect configuration.</li> <li>• Before saving the settings on this tab, go to <b>Action &gt; Record Greeting</b>, or to <b>Action &gt; Playback Greeting</b> (as applicable) to record or playback the greeting you wish to use.</li> </ul>
Upload Greeting tab	<p>At <b>Greeting File</b>, choose the greeting file (.wav) to upload to the Call Handler. Then configure the specific greeting (if required).</p>

6. Click **Save**.

Changes are saved to the Call Handler in VOSS Automate and in Cisco Unity Connection (CUC).

### Delete a Call Handler

To delete a Call Handler, click on the Call Handler you want to delete; then, click **Delete**. On the pop-up, click **Yes** to confirm.

If this Call Handler is using a number shared with one or more additional device types, see [Call Handler](#) to understand how the status and usage description of the number may change when you delete the Call Handler.

### Call Handler Page

This section provides more information about the information required in the tabs and fields when adding or editing a Call Handler.

### Call Handler Basics Tab

This tab configures base information for the Call Handler.

The screenshot displays the 'Call Handler Basics' configuration page in the VOSS Automate interface. The page title is 'CS-P (Provider) VOSS Automate' and the breadcrumb is 'Call Handler / Operator'. The 'Call Handler Basics' tab is selected, with other tabs including 'Transfer Rules', 'Caller Input', 'Greetings', 'Record/Playback', and 'Upload Greeting'. The configuration fields are as follows:

- Network Device List:** A text input field.
- Name \*:** A text input field containing 'Operator'.
- Pilot:** A dropdown menu with '0' selected.
- Do not add Route Pattern:** A checked checkbox.
- Time Zone:** A dropdown menu with '(GMT+02:00) Africa/Johannesburg' selected.
- Schedule:** A dropdown menu with 'Weekdays' selected.
- Phone System:** A dropdown menu with 'PhoneSystem' selected.
- Language:** A dropdown menu with 'English(United States)' selected.
- Partition Name:** A dropdown menu with 'cucm Partition' selected.
- Call Handler Owner:** A button with a plus sign (+).

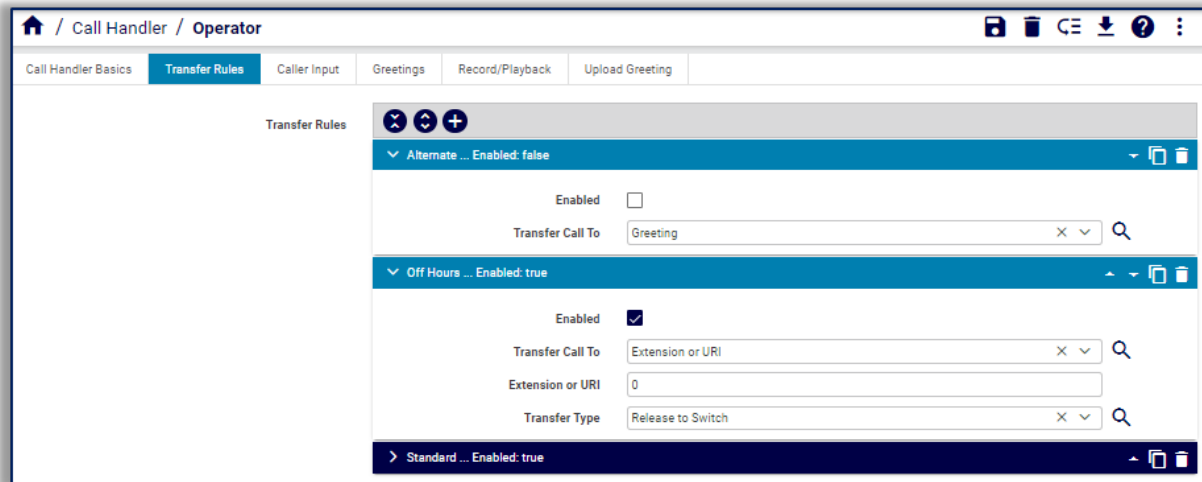
Title	Field Name	Description
Network Device List *	HF.target_ndl	Mandatory input-field for the <b>option</b> (if hierarchy is at Site-node, however, this value is derived automatically). The workflow (and GUI rules) will target the UC devices that is linked to this Network Device List (NDL). In the Mod use-case, this should also be derived automatically and can thus be omitted from Updates.
Cisco Unity Connection	HF.cuc_info	Informative (non-input) field. Indicates the target CUCx host/IP, which is automatically derived from the input NDL.
Cisco Unified CM	HF.cucm_info	Informative (non-input) field. Indicates the target CUCM host/IP, which is automatically derived from the input NDL.
Name *	DisplayName	The text name of the handler to be used when displaying entries in the administrative console, e.g. Cisco Unity Connection Administration. For example, the display name for the default opening greeting Call Handler is "Opening Greeting."
Route List	route_list	The CUCM Route List to use. The valid options are dependent on the selected NDL/CUCM. console, e.g. Cisco Unity Connection Administration. For example, the display name for the default opening greeting Call Handler is "Opening Greeting."
Pilot	DtmfAccessId	The DTMF access id (i.e., extension) for the call handler. The dialable number. When adding a call handler, all numbers available for the call handler (whether shared or not) display in the Pilot drop-down. Removing a pilot number from a call handler changes the number's status to <i>Available</i> in the Internal Number Inventory (INI).
Call Handler Template	cuc_template	Select the Unity Template for Call Handler.

**Note:** If the pilot number is shared between the Call Handler and one or more additional device types, see [Call Handler](#) to understand the status of numbers available to assign to the Call Handler.



## Transfer Rules Tab

This tab configures transfer rules for the Call Handler, for example, the system behavior to transfer a call to an alternative number.



Title	Field Name	Description
Message	callerInput_tab_message	Caller Input
Callhandler Menu Entry	CallhandlerMenuEntry.[n]	
Object Id	ObjectId	The primary key for this table. A globally unique, system-generated identifier for a MenuEntry object.
Call Handler *	CallHandlerObjectId	The unique identifier of the CallHandler object to which this menu entry belongs.
Touchtone Key	TouchtoneKey	The character on the touch-tone keypad that this menu entry corresponds to ( * , #, 0,1...9).
Ignore Additional Input (Locked)	Locked	A flag indicating whether Cisco Unity Connection ignores additional input after callers press this key. Values: 0: Additional input accepted 1: Additional input ignored; Cisco Unity Connection performs the action assigned to the key.
Call Action	Action	The type of call action to take, e.g., hang-up, goto another object, etc.
Extension or URI	TransferNumber	This setting only applies if "Call Action" is set to 'Transfer to Alternate Contact Number'.
Description	DisplayName	This setting only applies if "Call Action" is set to 'Transfer to Alternate Contact Number'.
Transfer Type	TransferType	This setting only applies if "Call Action" is set to 'Transfer to Alternate Contact Number'.
Rings to Wait for	TransferRings	This setting only applies if "Call Action" is set to 'Transfer to Alternate Contact Number'.
Target Conversation	TargetConversation	The name of the conversation to which the caller is routed.
Target Handler Object Id	TargetHandlerObjectId	The unique identifier of the specific object to send along to the target conversation.

### Caller Input Tab

This tab defines the Call Handler behavior for caller input and navigation.

The table describes fields on this tab:

Field	Description
Wait for Additional Digits (milliseconds)	The amount of time (in milliseconds) that Cisco Unity Connection (CUC) waits for additional input after a caller presses a single, unlocked key. If there's no input within this time, CUC performs the action assigned to the key.
Enable Prepend Digits to Dialed Extensions	Defines whether to prepend digits when dialing an extension number to transfer to.
Digits to Prepend	The touch-tone digits to prepend to the extension when dialing the transfer number.

**Note:** These fields are exposed automatically in the default FDP for relation/CallhandlerREL. If the FDP has been customized, you'll need to expose these fields manually by exposing the following field names: OneKeyDelay, EnablePrependDigits, PrependDigits

The table describes options in the **Call Handler Menu Entry** fieldsets:

Title	Field Name	Description
Message	callerInput_tab_message	
Callhandler Menu Entry	CallhandlerMenuEntry.[n]	
Object Id	ObjectId	The primary key for this table. A globally unique, system-generated identifier for a MenuEntry object.
Call Handler *	CallHandlerObjectId	The unique identifier of the Call Handler object to which this menu entry belongs.
Touchtone Key	TouchtoneKey	The character on the touch-tone keypad that this menu entry corresponds to ( * , #, 0,1...9).
Ignore Additional Input (Locked)	Locked	A flag indicating whether Cisco Unity Connection ignores additional input after callers press this key. Values: 0: Additional input accepted 1: Additional input ignored; Cisco Unity Connection performs the action assigned to the key.
Call Action	Action	The type of call action to take, e.g., hang-up, goto another object, etc.
Extension or URI	TransferNumber	This setting only applies if "Call Action" is set to 'Transfer to Alternate Contact Number'.
Description	DisplayName	This setting only applies if "Call Action" is set to 'Transfer to Alternate Contact Number'.
Transfer Type	TransferType	This setting only applies if "Call Action" is set to 'Transfer to Alternate Contact Number'.
Rings to Wait for	TransferRings	This setting only applies if "Call Action" is set to 'Transfer to Alternate Contact Number'.
Target Conversation	TargetConversation	The name of the conversation to which the caller is routed.
Target Handler Object Id	TargetHandlerObjectId	The unique identifier of the specific object to send along to the target conversation.

### Greetings Tab

This tab configures the behavior and type of greetings enabled in the Call Handler.

The screenshot displays the Cisco Unity Connection web interface for configuring a Greeting. The breadcrumb navigation shows the path: Home / Call Handler / Operator. The main navigation tabs include Call Handler Basics, Transfer Rules, Caller Input, Greetings (selected), Record/Playback, and Upload Greeting. The Greeting configuration panel is open, showing a list of greetings with columns for name, status, and actions. The selected greeting is "Busy Enabled: true".

**Greeting Configuration Details:**

- Greeting Type:** Busy
- Enabled:**
- Time Expires:** [Empty field]
- Callers Hear:** My Personal Recording
- Play the "Record Your Message at the Tone" Prompt:**
- Callers See My Personal Recording:**
- Ignore Caller Input During Greeting:**
- Allow Transfers to Numbers Not Associated with Users or Call Handlers:**
- Times to Re-prompt Caller:** 0
- Delay between Re-prompts:** 2
- After Greeting:** Take Message

**Other Greeting Statuses:**

- Alternate Enabled: false
- Error Enabled: true
- Internal Enabled: false

Title	Field Name	Description
Message	greetings_tab_message	
Greeting	Greeting.[n]	
Greeting Type	Enabled	The type of greeting, e.g. "Standard," "Off Hours," "Busy," etc.
Enabled	Enabled	If TimeExpires is set, this field is ignored.
Time Expires	TimeExpires	The date and time when the greeting rule expires. The greeting rule is considered not expired (enabled), if the value is NULL or a future date. The greeting rule is considered expired (disabled), the value is in the past.
Callers Hear	PlayWhat	The source for the greeting when this greeting is active.
Play the "Record Your Message at the tone" Prompt	PlayRecordMessage Prompt	A flag indicating whether the "Record your message at the tone?" prompt prior to recording a message.
Callers See My Personal Recording	EnablePersonal Video-Recording	It will Enable the Personal video Recording in CUCA.
Callers See Play the "Record Your Message at the Tone" Prompt	PlayRecordVideo MessagePrompt	A flag indicating whether the "Record your message at the tone?" prompt prior to Video recording a message.
Ignore Caller Input During Greeting	IgnoreDigits	A flag indicating whether Cisco Unity Connection takes action in response to touchtone keys pressed by callers during the greeting.
Allow Transfers to Numbers Not Associated with Users or Call Handlers	EnableTransfer	A flag indicating when an extension is dialed at the greeting and the extension is not available whether to transfer to another extension.
Times to Re-prompt Caller	Reprompts	The number of times to reprompt a caller. After the number of times indicated here, Cisco Unity Connection performs the after-greeting action.
Delay between Re-prompts	RepromptDelay	The amount of time (in seconds) that Cisco Unity Connection waits without receiving any input from a caller before Cisco Unity Connection prompts the caller again.

Title	Field Name	Description
After Greeting	AfterGreetingAction	The type of call action to take, for example, hang-up, goto another object, etc.
After Greeting Target Conversation	AfterGreetingTarget Conversation	The name of the conversation to which the caller is routed.
After Greeting Target Handler Object Id	AfterGreetingTarget HandlerObjectld	The unique identifier of the specific object to send along to the target conversation.
Call Handler Object Id	CallHandlerObjectld	The unique identifier of the Call Handler object to which this greeting rule belongs.
Callhandler URI	CallhandlerURI	
Greeting Stream Files URI	GreetingStreamFilesURI	
Greetings Type	GreetingType	The type of greeting, e.g. "Standard," "Off Hours," "Busy," etc.
URI	URI	

### Record/Playback Tab

This tab configures message recording and playback for the Call Handler.

The screenshot shows the configuration interface for the 'Record/Playback' tab. The breadcrumb path is 'Home / Call Handler / Operator'. The navigation tabs include 'Call Handler Basics', 'Transfer Rules', 'Caller Input', 'Greetings', 'Record/Playback' (which is active), and 'Upload Greeting'. A message box states: 'Select the extension you want to Record or Playback your greeting on. Once the form is filled out select Record Greeting or Playback Greeting option from the menu on the right. Please note that the duration is important and will allow the CUC server enough time to record/playback the greeting. Please note that it will take between 10-30 seconds for the phone to ring if configured properly.' The form fields are: 'Call Handler Name' (text input with 'Operator'), 'Extension' (dropdown menu), 'Specific Greeting' (checkbox), and 'Duration (seconds)' (text input with '30').

Title	Field Name	Description
Message	RecordPlayback.note	A special interface, which allows administrators to trigger a call to a physical device, which allows for recording or playback of a greeting. The extension to dial must be an accessible extension for the admin (or user) to answer and record or listen to greetings.
Call Handler Name	RecordPlay-back.call_handler	Call Handler Name.
Extension	RecordPlay-back.extension	Extension to Record message on.
Specific Greeting	RecordPlay-back.specific_greeting	The unique identifier of the Call Handler object to which this menu entry belongs.
Greetings	RecordPlayback.greeting	Greetings.
Duration	RecordPlayback.duration	Duration to allow enough time to make recording/playback.

### Upload Greeting Tab

On this tab you can upload a greeting for the Call Handler.

Title	Field Name	Description
Message	note	Upload a greeting to the selected Call Handler.
Greeting File	Upload.filename	Call Handler Name.
Call Handler Name	Upload.call_handler	Call Handler Name.
Specific Greeting	Upload.specific_greeting	Specific Greeting.
Greetings	Upload.greeting	Greetings.



### 9.4.8. Manage Greeting Files

This option allows you to independently upload previously created greeting (.wav) files, which can be used when adding or updating call handlers at a hierarchy level.

**Note:** The Unity Connection server port that is used when uploading greeting files is the port specified during Unity Connection Publisher setup - see [Servers \(CUC\)](#).

1. Click **Auto Attendant > Manage Greeting Files**.
2. Click **Add**.
3. Click **Browse** to select the required greeting file from the directory in which it was saved.
4. Enter an optional description to uniquely identify the greeting file.
5. Click **Save**.

Uploaded greeting files are available to use on the **Record/Playback** and **Upload Greeting** tabs when you modify a call handler, see [Update a Call Handler](#).

### 9.4.9. Call Handler (Auto Attendant) Schedule

#### Overview

**Note:** You can only manage schedules at the same hierarchy level (or lower) as your log in level. For example, if you login as a customer administrator, you can view schedules at your own customer hierarchy level, and add new schedules at (or below) your hierarchy level.

During initial installation, VOSS Automate imports two predefined schedules from Cisco Unity Connection. These are accessed via **Apps Management > CUC > Schedule**:

- **All Hours**
- **Weekdays**

By default, the **All Hours** schedule is configured to be “active” 24 hours a day, 7 days a week, with no holidays. Routing rules that follow this schedule will always be active, and call handlers that use this schedule ‘as is’, will never use off hour transfer settings or play closed greetings.

The **Weekdays** schedule is configured to be active from 8 a.m. to 5 p.m. (in the time zone of the Cisco Unity Connection server) from Monday through Friday. It is also configured to observe any days and times that are set in the default Holidays schedule.

**Note:** By default the **Holidays** schedule is not configured for any days or times. — at a minimum you may want to add days and times to this holiday schedule when your organization will be closed.

## Holidays

When a Holiday setting is in effect, holiday greetings are played (if enabled), and off hours transfer rules are observed. You can set up several years of holidays at a time. Because many holidays occur on different dates each year, confirm that the holiday schedule remains accurate annually.

### Related Topics

- [Add a Call Handler \(Auto Attendant\) Schedule](#)
- [Update a Call Handler Schedule](#)

### Add a Call Handler (Auto Attendant) Schedule

You may want to create a new schedule for your organization.

On the **Schedule** form (modify or add), take note of the following field:

**Uses Holiday Schedule** - If you want your schedule to recognize days that are included as holidays in a holiday schedule, then choose a holiday schedule from the **Uses Holiday Schedule** drop-down list. Any day included in the selected holiday schedule will be recognized as a holiday.

If you want to create a new holiday schedule:

1. Select the **Is Holiday** check box.
2. Click **Holiday Details +** enter the following fields:
  - **Name**
  - **Holiday Start Date**
  - **Holiday End Date**
  - **Start Time**
  - **End Time.**
3. Add more days to the holiday as required by clicking **+** next to the entered holiday, and entering new details in the fields.
4. Click **Save** when complete.

---

**Note:** Another method to create a new schedule is to:

1. Select an existing schedule from the **Schedule** list view.
  2. Clone it (**Action > Clone**) to the desired hierarchy level.
  3. Edit as required.
  4. Click **Save**.
-

## Update a Call Handler Schedule

1. In the Admin Portal, go to (default menu) **Apps Management > CUC > Schedule**.
2. In the **Schedule** list view, click on the schedule you wish to edit.
3. Update the relevant fields. See [Add a Call Handler \(Auto Attendant\) Schedule](#)

**Note:** If you're updating a *Holidays* schedule, click the Plus icon at **Holiday Details**, then fill out details for the holiday, including Name, Start Time, End Time, and select **End of Day** to define whether the schedule becomes inactive at midnight on the day of the holiday. Finally, click in the **Start Date and End Date** field to select a date for the holiday from the calendar date picker.

The screenshot displays the 'Holidays' configuration page in the Admin Portal. The main form includes the following fields:

- Schedule Display Name \***: Holidays
- Is Holiday**:
- Uses Holiday Schedule**:
- Holiday Details**: A dropdown menu showing 'Default' with a plus icon to expand details.

The expanded 'Default' holiday details form includes:

- Name \***: Default
- Start Time \***: 00:00 AM
- End Time \***: [Empty field]
- End of Day**:

A modal dialog titled 'Please complete Holiday Details information.' is overlaid on the form, containing the same fields as the expanded details. Below the dialog, a calendar date picker for May 2023 is shown, with the 17th of May selected.

4. Save your changes.

## Delete a Call Handler Schedule

1. In the Admin Portal, go to (default menu) **Apps Management > CUC > Schedule**.
2. In the **Schedule** list view, select the checkbox adjacent to the schedule you want to delete. If you want to delete more than one schedule, select multiple checkboxes.
3. Click the toolbar **Delete** icon.
4. In the dialog asking you to confirm the deletion, click **Yes**.

## 9.4.10. Language Filters

### Overview

Provider administrators or higher can manage multi-site, multi-country customers by setting geo-specific information using the Site Defaults Doc. Using this information, administrators can use custom Configuration Templates (as in the Quick Add Group for Quick Add Subscriber), to set this information on a per-site level.

Timezones and languages in VOSS Automate are populated with the required Cisco Unity Connection (CUC) timezones and languages. These are typically selected from the relevant drop-down lists as described under Modify Site Defaults.

---

**Note:** You must only add timezone and language codes in VOSS Automate that match the installed timezones and languages on the associated CUC Server. The names entered must uniquely describe the timezone and code.

---

### Related Topics

- [Timezone Filters](#)

### Add a Language Filter

To add a custom Cisco Unity Connection (CUC) language filter:

1. Log in as provider administrator or higher.
2. Choose **Apps Management > CUC > Language Filters** to see a list of language filters currently in VOSS Automate.
3. Click **Add**.
4. Enter the following:
  - a. **Installed Language Code** - this is a mandatory field, and must match a language code installed on the associated Cisco Unity Connection Server.
  - b. **Language Name** - this is a mandatory field, and must be a unique description for the language code above.
5. Click **Save**.

## 9.4.11. Timezone Filters

### Add a TimeZone Filter

To add a custom Cisco Unity Connection timezone filter:

1. Log in as provider administrator or higher.
2. Choose **Apps Management > CUC > TimeZone Filters** to see a list of timezone filters currently in VOSS Automate.
3. Click **Add**.
4. Enter the following:

- a. TimeZone Code - this is a mandatory field, and must match a timezone code installed on the associated Cisco Unity Connection Server.
  - b. TimeZone Name - this is a mandatory field, and must be a unique description for the timezone code above.
5. Click **Save**.

## 9.5. Cisco Emergency Responder (CER)

### 9.5.1. Configure Cisco Emergency Responder (CER)

This procedure configures Cisco Emergency Responder (CER) on VOSS Automate.

---

**Note:** For more information on CER installation and setup, refer to the Cisco Emergency Responder Administration Guide.

---

1. Log in as the appropriate hierarchy administrator.
2. Set the hierarchy path to the correct level. Shared instances are created at the provider, reseller, or customer level. Dedicated instances are created at the customer level.
3. Go to (default menus) **Apps Management > CER > Servers**.
4. Perform one of the following:
  - To add a new Cisco Emergency Responder (CER) in VOSS Automate, click **Add**.
  - To modify an existing CER, click its name in the list of Cisco Emergency Responders.
5. Enter a name for the Cisco Emergency Responder in the **CER\_Virtual Server Name** field.
6. Select the **Publisher** check box if you are configuring a publisher node.

---

**Note:** The **Publisher** tab is populated only when the **Publisher** check box is selected.

---

7. Expand **Network Addresses**.
  - a. Choose the SERVICE\_PROVIDER\_SPACE address space.
  - b. Enter the IP address of the CER Server in the **IPV4 Address** field.

---

**Note:** Either the hostname or the IP address is required. Ensure that the hostname or IP address does not contain a trailing blank space. VOSS Automate can't validate an entry that contains a blank space at the end of the hostname or IP address.

---

- c. The **Hostname** field is automatically populated with the CER Name. Edit it if necessary.
  - d. Fill in the domain of the CER application.
  - e. Provide an optional description for the network address.
8. Expand **Credentials**.
  - a. Add credentials for PLATFORM and ADMIN credential types. Click + to add more credentials.

- b. Fill in the user ID and password that you configured when you installed the CER.
- c. Choose RO (Read-only) or RW (Read or Write) for the Access Type. The default is RO.
- d. Provide an optional description for the credential.

PLATFORM and ADMIN are required for license management.

9. Fill out the fields on the **Publisher** tab:

Field	Description
Version	Select the version of the CER servers in this cluster.
Multi-Tenant	Read-only. If creating at provider level, this field is set to Shared. If creating at customer level, this field is set to Dedicated.

10. Click **Save**.

### Next Steps

- [Associate CER with Customers](#)

## 9.5.2. Associate CER with Customers

### Prerequisites:

- A customer must be configured.
- Perform this procedure at any hierarchy level at or above where the CER is configured, when you configure the VM in Cisco Unified Communications Domain Manager 10.6(x), or perform it at any time after the VM has been created.

### Perform these steps:

1. Log in as a Provider or Reseller administrator.
2. Choose **Device Management > CER > Servers**.
3. Click the name of the CER cluster to associate with a customer.
4. Click the **Customer Association** tab.

Note:

The list of customers that appear on this tab are those at, and below your current hierarchy. For example, if you are at the Provider level, and the CER is at Reseller1, you can see all customers at the Provider level and below. An error will occur if you try to associate a customer out of the CER's scope.

5. Select the check box to the left of each customer to be associated with the CER cluster.

**Note:** To remove one or more customer associations from the CER cluster, clear the box for each customer to be disassociated from the cluster.

6. Click **Save**.

### 9.5.3. View Associated Clusters on CER Servers

**Prerequisites:**

- Customers must be associated with the Cisco Emergency Responder (CER) cluster in order to be viewed in this procedure, unless the CER is created at customer level.
- If the CER is created at the customer level, customer information is automatically filled in for the customer where the CER exists.

**Perform these steps:**

1. Log in as a Provider, Reseller, or Customer administrator.
2. Make sure that the hierarchy is set to the customer you wish to view.
3. Choose **Device Management > CER > Servers**.
4. Click the name of the CER cluster to be viewed. Information appears about the CER cluster. You can view a list of customers associated with the CER server by selecting the Customer Association tab.

## 9.6. Cisco Contact Center Express (UCCX)

### 9.6.1. Configure Cisco Unified Contact Center Express (UCCX) Server

**Overview**

Reseller level and higher administrators can view and manage Cisco Unified Contact Center Express (UCCX) servers, typically from the **Apps Management** menu.

**Note:**

- Network Device Lists (NDLs) must always be updated to include the UCCX server, even when a single server is used per customer.
- Multiple UCCX servers can be configured for a single customer. In this case, the relevant NDLs be updated with the UCCX server references.
- Cisco Unified Communications Manager (CUCM) server and UCCX server integration should be performed as pre-configuration for this feature to work correctly.

**Related Topics**

- [Contact Center](#)

## Add a UCCX Server

This procedure adds a UCCX server.

1. Log in as Provider administrator or higher.
2. Choose the relevant hierarchy.

---

**Note:** The UCCX server must be created at the same hierarchy as the CUCM. This is because the application user for the UCCX server is selected from a drop-down that is populated with application users from the CUCM at the same hierarchy.

If the UCCX is at a hierarchy above or below the CUCM, there are no application users to choose from.

---

2. Go to (default menus) **Apps Management > UCCX > Servers**.
3. Click **Add**.
4. Fill out the server details.
  - The current supported **Versions** are 11.x and 12.x.
  - Set the **Application User ID** values of the server. These are CUCM users to be used for agent device association. Typically this would be the RMCM application user (CCX Resource Manager, CUCM Telephony user), but could also include others for call recording and so on.

## Run a Pull Data Sync from the UCCX Server

Once the UCCX server is added, you can run a pull data sync from the server to VOSS Automate. This can be done from the UCCX server input interface menu: **Actions > Sync**.

VOSS Automate also automatically creates two default Data Sync instances to manage and schedule data synchronization between the device and VOSS Automate. These can be seen from the **Data Sync** list view:

<i>SyncUccx</i> <host>	Use this sync to schedule or manually sync data between the server and VOSS Automate.
<i>PurgeUccx</i> <host>	Disabled by default to avoid accidental purges. To enable it, change the Sync Type to "Purge Local Resources" from "Pull from Device", and clear <b>Disabled Operations</b> .

The Data Sync instances are removed automatically when the server is deleted. The purge sync will also be executed on server deletion, thereby removing any configuration from VOSS Automate.

## 9.7. Contact Center Service

provider



### 9.7.1. Overview

- Only one instance of Contact Center Server can be created for a Cisco Unified Communications Manager (CUCM) cluster.
- Only one instance of Contact Center Service can be created for Contact Center Server.
- For CUSP, only one trunk of type CUSP needs to be added in **Services > Contact Center > Servers**.
- For deleting a server, ensure that the service is deleted first.

---

**Note:** Ensure that before you begin deleting Contact Center Server you have deleted all the agent lines for that Contact Center Server.

---

### 9.7.2. Configure Contact Center Server Using CUCM

Contact Center provisioning configures Cisco Unified Communications Manager (CUCM) to communicate with Contact Center.

- To enable CUCM to communicate with Contact Center when transferring a call from agent to agent and routing a call back to the Customer Voice Portal (CVP), go to **Services > Contact Center > Servers**
- To allow internal service calls to be routed to the CUBE (ENT) for Contact Center to process, go to **Services > Contact Center > Service**

#### Configuration Overview

1. Once you have VOSS Automate configured and have added a Provider, add a Customer (under Provider or Reseller), then log in as a Provider Admin.
2. Contact Center configuration is only supported for dedicated Unified Communications Applications for a Customer. When adding a Provider, clear Shared UC Apps.
3. After successfully adding a Customer, choose the Customer hierarchy at the above context level and then add the Cisco Unified Communications Manager(s) to that customer from **Apps Management > CUCM > Servers**.
4. Complete a CUCM import before proceeding further.
5. VOSS Automate supports multiple CUCM clusters at a Customer hierarchy. You can decide which cluster to use for Contact Center and IP telephony.
6. SIP Trunk Security Profiles must be created manually in each CUCM and synced to VOSS Automate.
7. For the Contact Center customers, Built-in-Bridge must be enabled for the phones. By default, it is disabled at system level.
8. SIP Trunk Profiles must be created manually in each CUCM and synced to VOSS Automate.

### 9.7.3. Built-in-Bridge

#### provider

Built-in-Bridge (BIB) is not enabled by default for the phones. It is disabled at the system level as it is not used by all customers by default. It is used only by customers with Contact Center.

The provider has to perform the following procedures to enable BIB for the customers having contact center.

**Note:** Create a new Field Display Policy at the customer level and add Built-in Bridge to the list.

- *Configure the Built-in-Bridge*
- *Enable or Disable the Built-in-Bridge*

### 9.7.4. Configure the Built-in-Bridge

**Perform these steps:**

1. Log in to VOSS Automate as provider administrator.
2. Go to (default menus) **Customizations > Field Display Policies**.
3. Set the hierarchy to the relevant Customer.
4. Select **SubscriberPhoneMenuItemProvider**.
5. Choose **Action > Clone**.
6. In the **Name** field, enter **SubscriberPhoneMenuItemProvider**.
7. From the **Target Model Type** drop-down, choose **relation/SubscriberPhone**.
8. Click '+' next to **Groups** to expand the Groups section, and in the **Title** field enter **Phone**.
9. From the **Available** list, choose **builtInBridgeStatus** and click **Select**.
10. Click **Save**.

### 9.7.5. Enable or Disable the Built-in-Bridge

**Prerequisites:**

Ensure that you configure Built-in-Bridge. See, Configure the Built-in-Bridge.

**Perform these steps:**

1. Log in to VOSS Automate as provider administrator.
2. Make sure that hierarchy is set to the appropriate Customer.
3. Choose **Subscriber Management > Phones** and select the appropriate phone.
4. On the **Phone** tab:
  - From the **Built in Bridge** drop-down in the **Vendor Config** section, choose **On** to enable BIB.
  - From the **Built in Bridge** drop-down in the **Vendor Config** section, choose **Off** to disable BIB.

5. Click **Save**.

### 9.7.6. How to Set Up a Contact Center Server

#### Perform these steps:

1. Log in as provider administrator at the customer hierarchy.
2. Choose **Services > Contact Center > Servers** menu to add a Contact Center server.
3. Click on **Add** button to add a new Contact Center server, complete the fields, and click **Save** to save the Contact Center server.

Field	Description
Contact Center Server Name	Unique server name. This field is mandatory.
Description	Server description.
Cisco Unified Communications Manager	The Cluster you want to use for Contact Center Server. This field is mandatory.
Transfer Conference Pattern	Transfer conference pattern used when transferring calls between agents. This field is mandatory.
Network VRU	Pattern used to route calls to a CVP. This field is mandatory.
SIP Trunks	This field is mandatory. See fields below:
Trunk Destination Type	CVP or CUBE (ENT) or CUSP SIP Trunk. This field is mandatory. Note: Both CVP and CUBE (ENT) trunks must be added for this Contact Center Server to be added successfully.
Trunk Destination Address	The destination address of the CVP or CUBE (ENT) or CUSP SIP Trunk. This field is mandatory. Multiple destination addresses & ports can be added for each trunk type.
Trunk Destination Port	The destination port of the CVP or CUBE (ENT) or CUSP SIP Trunk, if no value provided system takes 5060 as default.
Trunk Security Profile	The SIP trunk Security Profile that needs to be used by each trunk. This field is mandatory.
SIP Profile	The SIP trunk profile that needs to be used by each trunk. This field is mandatory.

For 500/1000/4000/12K/SCC - You must provide information for a CVP and a CUBE (ENT) SIP Trunk. For Small Contact Center, both the CVP and CUBE (ENT) trunks should have the same IP address with a different Trunk Security Profile selected in the **Trunk Security Profile** drop-down for each trunk.

For CUSP - You must provide information for a CUSP SIP Trunk. Only one trunk type can be added.

**Note:** For CUSP, use only one SIP trunk. For CVP or CUBE (ENT), use two SIP trunks.

1. Device Pool will create automatically as a part of Contact Center server with the name "Cu<CUSTOMER\_ID>-CC<CC\_SERVER\_ID>-DP" with the default Call Manager Group & Region.
2. Call Manager Group & Region can be changed in the Cisco Unified Communications Manager as desired.

3. Two application users created with names pguser & pguser2 - both are created with default password "cisco".

**Note:**

- Planning to change the pguser & pguser2 names to tie with the Customer ID in future releases.
- For all the phone line CSS of a site, add Cu<CUSTOMER\_ID>-CC<CC\_SERVER\_ID>-Xfer4CCServer-PT to the Class of Service member list as a partition with the next available index.
- The admin needs to add Default Region as related regions for each site region created for a site.
- Reset the trunk by clicking the **Reset** button in the Trunk page after updating the SIP profile.

### 9.7.7. Edit Contact Center Servers

**Perform these steps:**

1. Log in to VOSS Automate as provider or reseller Administrator.
2. Choose the Customer hierarchy level.
3. Choose **Services > Contact Center > Servers**.
4. Click the Contact Center server that you want to edit and modify the required fields.

**Note:**

You cannot change the Contact Center server name.

5. Click **Save**.

### 9.7.8. Delete Contact Center Servers

**Prerequisites:**

Delete the Contact Center service and parameters associated with Contact Center server.

**Perform these steps:**

1. Log in to VOSS Automate as provider or reseller administrator.
2. Choose the Customer hierarchy level.
3. Choose **Services > Contact Center > Servers**.
4. Select the check box in the leftmost column next to the Contact Center server that you want delete.
5. Click **Delete**.
6. From the popup window, click **Yes** to confirm the deletion.

### 9.7.9. How to Set Up a Contact Center Service

**Perform these steps:**

1. Log in as provider administrator at the customer hierarchy.
2. Choose **Services > Contact Center > Services** menu to add a Contact Center Service.
3. Click **Add** to add a new Contact Center Service, complete the fields, and then click **Save**.

**Note:**

- Customer & Site Dial Plan is required to add a Contact Center Service.
- Only ONE instance of Contact Center Server can be created for a Cisco Unified Communications Manager cluster.
- Only ONE instance of Contact Center Service can be created for a Contact Center Server.
- For CUSP only ONE trunk of type CUSP needs to be added.
- For deleting a server, ensure the service is deleted first.

### 9.7.10. Edit Contact Center Services

**Perform these steps:**

1. Log in to VOSS Automate as provider or reseller administrator.
2. Choose the customer hierarchy level.
3. Choose **Services > Contact Center > Services**.
4. Click the Contact Center service that you want to edit, and modify the required fields.

**Note:**

You cannot change Contact Center Service Name.

5. Click **Save**.

### 9.7.11. Delete Contact Center Services

**Perform these steps:**

1. Log in to the VOSS Automate as provider or reseller administrator.
2. Choose the customer hierarchy level.
3. Choose **Services > Contact Center > Services**.
4. Select the check box in the leftmost column next to the contact center service that you want to delete.
5. Click **Delete**.
6. From the popup window, click **Yes** to confirm the deletion.

### 9.7.12. Configure CTI Port

This procedure adds and configures a CTI port.

**Perform these steps:**

1. In the Admin Portal, go to (default menus) **Subscriber Management > Phones**.
2. Click **Add** to open the **Phones/New Record** page.
3. Set the hierarchy level (Provider, Reseller, Customer, Site).
4. Configure options on the **Phone** tab:
  - At **Device Name**, enter a unique name for the Local CTI Port pool name. For example, use the following format for the device name (LCPxxxxFyyyy):
    - LCP identifies the CTI Port as a local device.
    - xxxx is the peripheral ID for the Unified Communications Manager PIM.
    - yyyy is the local CTI Port. At the **Product** drop-down, choose **CTI Port**.
  - Enter a description for the Local CTI Port.
  - At **Device Pool Name**, choose the appropriate device pool.
5. Configure options on the **Lines** tab:
  - Click the Plus icon (+) at **Line** to add a new line.
  - At **Pattern**, choose a unique directory number for the CTI port.
  - Leave default values unchanged.
6. Go to **Subscriber Management > Phones**.
7. Click the Plus icon (+) to create a new CTI port.
8. Set the hierarchy level (Provider, Reseller, Customer, Site).
9. Configure options on the **Phone** tab:
  - At the **Product** drop-down, choose **CTI Port**.
  - At **Device Name**, enter a unique name for the Local CTI Port pool name. For example, use the following format for the device name (RCPxxxxFyyyy):
    - RCP identifies the CTI Port as a Network device.
    - xxxx is the peripheral ID for the Unified Communications Manager PIM.
    - yyyy is the Network CTI Port.
  - At **Description**, enter a description for the Local CTI Port.
  - At **Device Pool Name**, choose the appropriate device pool.
10. Configure options on the **Lines** tab:
  - Click the Plus icon (+) to add an entry for a new line.
  - From the **Pattern** drop-down, choose a unique directory number for the CTI port.
  - Leave default values unchanged.
11. Click **Save**.

### 9.7.13. Tag CTI Port as Contact Center Agent Line

#### Perform these steps:

1. Choose **Subscriber Management > Agent Lines**.
2. Choose **Hierarchy Provider > Reseller > Customer > Site**.
3. Click **Add** to create a new CTI port.
4. From the **Device Type** drop-down, choose **Phone**.
5. From the **Device Name** drop-down, choose a port from the list of device names.
6. From the **Line** drop-down, choose the Line.
7. From the **Application User** drop-down, choose **pguser**.
8. Click **Save**.
9. Repeat the steps for both LCP and RCP ports.

## 9.8. Webex

### 9.8.1. Webex Servers

#### Overview

Webex is a web conferencing facility used for collaboration with colleagues across your organization.

The support for Cisco Webex is as follows:

- Hosted Webex Cloud.
- Ability to create user accounts and meetings using Webex versions:
  - 6.0 API and 27.00 server
  - 8.0 API and 29.13 server
- User and Meeting APIs are exposed and available, so that user capability can be managed. However, system setup, Site addition, and meeting functions, are done with the Webex application.

Parameters are defined when adding Webex instances of Network Devices on the Admin Portal.

#### Device Model Mapping

A data model is maintained in VOSS Automate where its instances map network device types to data models. For example, the network device device/cucm would have a mapping to data/CallManager. These target data models are used to maintain network device data in VOSS Automate, and any of their default connection parameters.

## Add a Cisco Webex server

This procedure adds and configures the server.

**Note:** For more information about conferencing, see [Introduction to Conferencing](#).

1. Log in as Provider or Reseller administrator.
2. Go to (default menus) **Apps Management > WebEx > Servers**.
3. Click **Add**.
4. Complete, at minimum, the mandatory [Webex Server Field Reference](#).
5. Click **Save**.
6. Test the connection to the Webex server:
  - Select **Apps Management > Advanced > WebEx Network Device**.
  - Click in the row for the relevant Webex server; then, choose **Action > Test Connection**.

### Webex Server Field Reference

Field	Description
Type	Mandatory. The type of Webex server. Read-only. Set to Cloud-Based.
Protocol	Mandatory. Protocol used for communication with the Webex server, either https or http. Default https.
Address	Mandatory. The IP address or hostname of the Webex server, for example, Site-name.webex.com
Port	The port used to communicate with the Webex Server. Defaults to 443.
Site Name	Mandatory if Site ID is not specified. The name of the site to be managed. Usually matches the start of the Webex address.
Site Id	Mandatory if Site Name is not specified. The ID of the site being managed. Typically received from Cisco Webex Site Provisioning group. Provide this field value before testing the connection to the Webex server.
REST URI	Mandatory. Defaults to WBXService/XMLService. The relative URI for the XML service on the Webex server.
WebEx Id	Either the Webex ID or the Email field is mandatory. The Webex administrator ID, used to connect to the server for admin tasks, such as adding or deleting users.
Email	Either the Webex ID or the Email field is mandatory. Required if no Webex ID is provided. A valid email address for the administrator.
Password	Mandatory. The password for the administrator with the supplied Webex ID.
Version	Supported Webex server versions. Supported server versions can be either 27.00 or 29.13.



## 9.9. IOS

### 9.9.1. IOS Device Management

In VOSS Automate, you can set up IOS devices such as SIP Local Gateways and Analog Gateways. And you can set up Command Builders to generate the appropriate IOS commands, which allow you to copy to the IOS device CLI.

#### Related Topics

- [Command Builders in the Core Feature Guide](#)

#### IOS Device Management Workflow

This section outlines a possible workflow for setting up Local Break Out (LBO) using a SIP Local Gateway. This workflow copies IOS commands to the IOS device CLI after each step. Alternatively, you can use the consolidate commands tool to create one set of IOS commands to run all at once.

#### Perform these steps:

1. Create customized Command Builders for events. Either add new ones, or clone the default ones and update the clones. See [Set up a Command Builder](#) or [Clone a Command Builder](#).
2. Add an IOS device at customer hierarchy level. See [Set up an IOS Device](#).
3. View the IOS Commands log and copy commands to the IOS device CLI. See [View IOS Commands Log](#).
4. Add SIP Local Gateways at customer hierarchy level. See:  
[Set up SIP Local Gateway in the Core Feature Guide](#)
5. View the IOS Commands log and copy commands to the IOS device CLI. See [View IOS Commands Log](#).
6. Perform manual configuration on the SIP Local Gateway. See [IOS Gateway Manual Configuration](#).
7. Associate SIP Local Gateways to sites. See:  
[Associate / Disassociate SIP Local Gateway to a Site in the Core Feature Guide](#)
8. View the IOS Commands log and copy commands to the IOS device CLI. See [View IOS Commands Log](#).
9. Create E.164 Associations. See:
  - [Associate a Set of E164 Numbers to One Internal Number in the Core Feature Guide](#)
  - [Associate a Range of E164 Numbers to a Range of Internal Numbers in the Core Feature Guide](#)
10. View the IOS Commands log and copy commands to the IOS device CLI. See [View IOS Commands Log](#).

## 9.9.2. Command Builders

You can build a repository of IOS commands to be run when certain events, such as adding an IOS device, occur. Each set of IOS commands and associated event is known as a Command Builder.

For a list of events with default set of IOS commands and available variables, see *Local Break Out and Analog Gateway Events, IOS Commands, and Variables*.

The default Command Builders exist at the sys.hcs hierarchy level.

You can define customized Command Builders at any hierarchy node. When an event occurs, Command Builders nearest (at or above) the hierarchy node of the event are checked first. For instance, if an event occurs at a customer hierarchy level, Command Builders at the customer level are checked before Command Builders at the provider or sys.hcs level. Command Builders at a higher level are checked only if no builders match at a nearer hierarchy level. If no customized Command Builders are defined, the default Command Builders at sys.hcs are checked. Multiple Command Builders may be run for the same event at the same hierarchy node.

### Set up a Command Builder

This procedure sets up a Command Builder that contains an IOS Commands template for an event.

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**Note:** One event can trigger multiple Command Builders.

---

#### To set up a Command Builder:

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the level where you want to define your Command Builder.
3. Choose **Apps Management > IOS > Command Builder**.
4. Click **Add**.
5. Provide the following information:

Field	Description
Name	Enter a unique name for the builder. This field is mandatory.
Event Name	Select the event that triggers the builder. This field is mandatory
Description	Enter a description for the builder.
Command Template	Enter the IOS Commands template for the event, one command per line. You can use macros in the IOS Commands template for variable substitution.
Enabled	Clear the <b>Enabled</b> check box to create a builder but not have it available to run.
Applicable Device Type	Select the device type that the commands can run on. This field is mandatory.

6. Click **Save**.

## Clone a Command Builder

This procedure clones a Command Builder that contains an IOS Commands template for an event. For instance, use this procedure to modify one of the default Command Builders to suit your needs.

---

**Note:** One event can trigger multiple Command Builders.

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### To clone a command builder:

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the level where you want to clone an existing Command Builder.
3. Choose **Apps Management > IOS > Command Builder**.
4. Click the Command Builder name you want to clone.
5. Choose **Action > Clone**.
6. Modify the following information as needed:

Field	Description
Name	Enter a unique name for the builder. This field is mandatory.
Event Name	Select the event that triggers the builder. This field is mandatory
Description	Enter a description for the builder.
Command Template	Enter the IOS Commands template for the event, one command per line. You can use macros in the IOS Commands template for variable substitution.
Enabled	Clear the <b>Enabled</b> check box to create a builder but not have it available to run.
Applicable Device Type	Select the device type that the commands can run on. This field is mandatory.

7. Click **Save**.

## View IOS Commands Log

Using the IOS Commands log, an administrator can see a list of command sets that were triggered by different events. An administrator can copy the IOS Commands template and paste it into the IOS device CLI to be executed.

By default, the command sets are listed with the most recent at the top.

---

**Note:** Deleting a hierarchy node, such as a site, deletes all IOS Command Builders and associated IOS Commands templates configured at the hierarchy node.

---

### Perform these steps:

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the level for which you want to view IOS Commands.
3. Choose **Apps Management > IOS > Commands**. A table containing the Command Builders that have been triggered is displayed. The table contains this information:

Column	Description
Timestamp	The time of the event that triggered the Command Builder.
Device Name	The IOS device associated with the event that fired the Command Builder.
Gateway Name	The SIP Local Gateway or Analog Gateway associated with the event that fired the Command Builder.
Command Builder	The name of the Command Builder that was triggered. To view the IOS Commands template associated with a Command Builder, click the Command Builder name. The Command Builder configuration is displayed, including the IOS Commands template.
Description	The description of the Command Builder that was triggered.
Device Deleted	Select this check box if the associated device has been deleted.
Hierarchy	The hierarchy level of the event that triggered the Command Builder.

### Consolidate IOS Commands

To copy IOS commands to an IOS device CLI that is generated by multiple events, follow these steps:

#### To copy IOS commands:

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the customer or site for which you want to consolidate IOS commands.
3. Choose **Apps Management > IOS > Consolidate Commands**.
4. Click **Add**.
5. On the **Consolidate Commands** screen, complete at minimum, the mandatory *Consolidate Commands Fields*.
6. Click the required command templates listed in the **Available** list, and click **Select** to move them to the **Selected** list.

Click **Remove** to unselect a command template.

---

**Note:** You can change the order of the command templates by clicking **Move Up** and **Move Down**. However, the consolidated commands are generated in chronological order regardless of the order of the selected command templates.

---

7. Click **Save**. The new command consolidation instance appears in the list.
8. Click the command consolidation instance you created.

In the **Command Template** field, all the commands from the command templates you selected appear in one window. Comments are used to separate and identify the source command templates. You can edit the consolidated commands.

Any modifications to the Command consolidation, displays the entire list of commands in a single instance. The commands present earlier to the modification cannot be viewed separately as the commands from the earlier events are treated as a single instance.

## Next Steps

After you have consolidated the IOS commands you want, copy them from the Commands Template field to the IOS device CLI.

## Consolidate Commands Fields

Field	Description
Name *	Enter a unique name for the command consolidation. This field is mandatory.
Description	Enter an optional description for the command consolidation.
IOS Device *	Choose the IOS device from which you want to consolidate commands.
Device Type *	Choose the device types for which you want to consolidate commands. <b>IOS Device</b> Choose this to get commands for the IOS device and any SIP Local Gateway or Analog Gateway hosted on that device. <b>SIP Local Gateway</b> Choose this to get commands only for the SIP Local Gateway. <b>Analog Gateway</b> Choose this to get commands only for the Analog Gateway. You do not get commands for devices that have been deleted. Note: If you select site hierarchy, only specific commands such as IOS Device or SIP Local gateway are displayed. To view both the IOS and Analog gateway commands, choose the customer hierarchy path.

## Regenerate IOS Commands

This procedure regenerates IOS commands for events that occurred for the selected device, and removes all old IOS commands for the selected device.

Because the variables that are used in generating IOS commands may change, you may want to regenerate IOS commands with the latest configuration. IOS commands can be regenerated for the following devices:

- IOS Device
- SIP Local gateway
- Analog Gateway

Regenerating commands for an IOS Device also regenerates commands for any SIP Local gateway or Analog Gateway hosted on the IOS Device.

### To regenerate IOS commands:

1. Log in as provider, reseller, or customer administrator.
2. Choose one of the following depending on the device for which you want to regenerate IOS commands:
  - **Apps Management > IOS > IOS Devices** for an IOS Device and any gateways it hosts.
  - **Apps Management > IOS > SIP Local Gateways** for a SIP Local Gateway.
  - **Apps Management > IOS > Analog Gateways** for an Analog Gateway.
3. Click the device for which you want to regenerate commands.

#### 4. Choose **Action > Regenerate IOS Commands**.

IOS commands for the events that had occurred for the selected device are regenerated. All old IOS commands for the selected device are removed.

#### **Next Steps**

- View the regenerated commands in the IOS Commands log. See [View IOS Commands Log](#).

### **9.9.3. Local Break Out (LBO) and Analog Gateway Configuration and Generated Events**

LBO and Analog Gateway Configuration and Corresponding Events

LBO and Analog Gateway Configuration Action	Generated LBO and Analog Gateway Events
Add an IOS Device	HcsAddIOSDeviceEVT
Delete an IOS Device	HcsDeleteIOSDeviceEVT
Add an Analog Device	HcsAddAnalogGatewayEVT
Add an Analog Gateway Endpoint	HcsAddAnalogGatewayEndpointEVT
Add an Analog Gateway Endpoint Mod	HcsAddAnalogGatewayEndpointModEVT
Delete an Analog Gateway	HcsDeleteAnalogGatewayEVT
Delete an Analog Gateway Endpoint	HcsDeleteAnalogGatewayEndpointEVT
Delete an Analog Gateway Endpoint Mod	HcsDeleteAnalogGatewayEndpointModEVT
Add SIP Local Gateway	Provider deployment only HcsAddSipLocalGwEVT HcsAddSipLocalGwDialPeerEVT HcsSipLocalGwAddE164AssociationEVT or HcsSipLocalGwAddMultiE164AssociationEVT (if E164 Associations have been configured at the customer level)
Delete a SIP Local Gateway	Provider deployment only HcsDeleteSipLocalGwEVT HcsDeleteSipLocalGwDialPeerEVT HcsSipLocalGwDelSitePstnEVT HcsSipLocalGwDelSiteAreaCodeEVT HcsSipLocalGwDelE164AssociationEVT or HcsSipLocalGwDelMultiE164AssociationEVT (if E164 Associations have been configured) HcsSipLocalGwDelVoiceMailPilotNumberEVT (if Voice Mail Pilot Number Association has been configured)
Update a SIP Local Gateway	Provider deployment only HcsUpdateSipLocalGw1EVT HcsUpdateSipLocalGw2EVT
Associate a SIP Local Gateway with a Site	Provider deployment only HcsSipLocalGwAddSitePstnEVT HcsSipLocalGwAddSiteAreaCodeEVT HcsSipLocalGwAddE164AssociationEVT or HcsSipLocalGwAddMultiE164AssociationEVT (if E164 Associations have been configured) HcsSipLocalGwAddVoiceMailPilotNumberEVT (if Voice Mail Pilot Number Association with a specified E164 Number has been configured on the site)

LBO and Analog Gateway Configuration Action	Generated LBO and Analog Gateway Events
Disassociate a SIP Local Gateway from a Site	Provider deployment only HcsSipLocalGwDelSitePstnEVT HcsSipLocalGwDelSiteAreaCodeEVT HcsSipLocalGwDelE164AssociationEVT or HcsSipLocalGwDelMultiE164AssociationEVT (if E164 Associations have been configured)
Associate E164 Numbers to a Single DN	Provider deployment only HcsSipLocalGwAddMultiE164AssociationEVT (if a site is associated with SIP Local Gateway)
Associate E164 Numbers to a Range of DNs	Provider deployment only HcsSipLocalGwAddE164AssociationEVT (if a site is associated with SIP Local Gateway)
Disassociate E164 Numbers from a Single DN	Provider deployment only HcsSipLocalGwDelMultiE164AssociationEVT (if a site is associated with SIP Local Gateway)
Disassociate E164 Numbers from a Range of DNs	Provider deployment only HcsSipLocalGwDelE164AssociationEVT (if a site is associated with SIP Local Gateway)
Associate a Voice Mail Pilot Number to a Site	Provider deployment only HcsSipLocalGwAddVoiceMailPilotNumberEVT (if the site is associated with SIP Local Gateway)
Disassociate a Voice Mail Pilot Number from a Site	Provider deployment only HcsSipLocalGwDelVoiceMailPilotNumberEVT (if the site is associated with SIP Local Gateway)

#### 9.9.4. Local Break Out and Analog Gateway Events, IOS Commands, and Variables

Local Break Out and Analog Gateway Events



Default IOS Commands	Notes
<p data-bbox="228 289 808 317"><b>HcsAddIOSDeviceEVT</b> An IOS Device is added.</p> <pre data-bbox="228 373 914 1098"> conf t voice service VoIP no IP address trusted authenticate y fax protocol t38 ls-redundancy 0 hs-redundancy 0 ↳fallback pass-through g711ulaw modem passthrough nse codec g711ulaw voice class codec 1 codec preference 1 g729r8 bytes 30 codec preference 2 g711ulaw codec preference 3 g711alaw end </pre>	<p data-bbox="1011 331 1403 485">If you are generating the command for VG350 analog gateway, remove y from the generated commands, and then paste it to the analog gateway console.</p>

Default IOS Commands
<p data-bbox="250 1272 865 1299"><b>HcsDeleteIOSDeviceEVT</b> An IOS Device is deleted.</p> <pre data-bbox="250 1356 553 1482"> conf t no voice service VoIP no voice class codec 1 end </pre>

Default IOS Commands	Available Variables
<p data-bbox="228 285 935 317"><b>HcsAddAnalogGatewayEVT</b> An Analog Gateway is added.</p> <pre data-bbox="228 373 971 1346"> conf t stcapp ccm-group 1 stcapp stcapp feature access-code stcapp feature speed-dial sccp local {{ pwf.GatewayDAT.networkInterface }} sccp bind interface {{ pwf.GatewayDAT.networkInterface }} sccp ccm group 1 {{ macro.HcsAnalogGwCommandForCCMIdentAndAssocMCR }}↵ ↵ccm-manager config server {{ fn.one macro. ↵HcsCucmsAssociatedToNDLRMCR}} ccm-manager sccp local {{ pwf.GatewayDAT. ↵networkInterface }} ccm-manager sccp stcapp end </pre>	<p data-bbox="1011 327 1408 453">pwf.GatewayDAT.networkInterface - This is the physical device network interface (Ethernet Port) for the analog gateway.</p>

Default IOS Commands	Available Variables
<p data-bbox="228 289 982 346"><b>HcsAddAnalogGatewayEndpointEVT</b> An Endpoint is added for the Analog Gateway.</p> <pre data-bbox="228 405 828 1094"> conf t voice-port {{ pwf.PORT_NUM }}  caller-id enable  timeouts call-disconnect {{ fn.as_string pwf.GatewayDAT.disconnectTimeout }}  cptone {{ pwf.GatewayDAT.cpTone }}  signal {{macro.HcsIosCmdAnalogGwSignalMCR}}  no shutdown  dial-peer voice {{ pwf.DIAL_PEER_NO }} pots  service stcapp  port {{ pwf.PORT_NUM }}  end </pre>	<p data-bbox="1015 363 1437 892"> pwf.PORT_NUM - This is the FXS port number of the analog gateway device.  pwf.GatewayDAT.disconnectTimeout - Time in seconds for which a connection is maintained after the completion of a communication exchange.  pwf.GatewayDAT.cpTone - This is the call progress tone of the country that supports each analog device in the gateway.  pwf.DIAL_PEER_NO - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one. </p>

Default IOS Commands	Available Variables
<p data-bbox="228 285 987 348"><b>HcsAddAnalogGatewayEndpointModEVT</b> An Endpoint Module is added for the Analog Gateway.</p> <pre data-bbox="228 405 828 1094"> conf t voice-port {{ pwf.PORT_NUM }} caller-id enable timeouts call-disconnect {{ fn.as_string pwf.GatewayDAT.disconnectTimeout }} cptone {{ pwf.GatewayDAT.cpTone }} signal {{macro.HcsIosCmdAnalogGwSignalMCR}} no shutdown dial-peer voice {{ pwf.DIAL_PEER_NO }} pots service stcapp port {{ pwf.PORT_NUM }} end </pre>	<p data-bbox="1015 359 1435 894"> pwf.PORT_NUM - This is the FXS port number of the analog gateway device.  pwf.GatewayDAT.cpTone - This is the call progress tone of the country that supports each analog device in the gateway.  pwf.GatewayDAT.disconnectTimeout - Time in seconds for which a connection is maintained after the completion of a communication exchange.  pwf.DIAL_PEER_NO - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one. </p>

Default IOS Commands
<p data-bbox="246 1268 990 1299"><b>HcsDeleteAnalogGatewayEVT</b> An Analog Gateway is deleted.</p> <pre data-bbox="246 1356 1149 1822"> conf t no stcapp no ccm-manager sccp local {{ input.GatewayDAT.networkInterface }} no ccm-manager sccp no sccp no sccp local {{ input.GatewayDAT.networkInterface }} no sccp ccm group 1 end </pre>

Default IOS Commands	Available Variables
<p><b>HcsDeleteAnalogGatewayEndpointEVT</b> An Analog Gateway Endpoint is deleted.</p> <pre> conf t voice-port {{ pwf.PORT_NUM }} no caller-id enable no timeouts call-disconnect no cptone no signal shutdown no dial-peer voice {{ pwf.DIAL_PEER_NO }} pots no port {{ pwf.PORT_NUM }} end </pre>	<p>pwf.PORT_NUM - This is the FXS port number of the analog gateway device.</p> <p>pwf.DIAL_PEER_NO - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>

Default IOS Commands	Available Variables
<p><b>HcsDeleteAnalogGatewayEndpointModEVT</b> An Analog Gateway Endpoint Module is deleted.</p> <pre> conf t voice-port {{ pwf.PORT_NUM }} no caller-id enable no timeouts call-disconnect no cptone no signal shutdown no dial-peer voice {{ pwf.DIAL_PEER_NO }} pots no port {{ pwf.PORT_NUM }} end </pre>	<p>pwf.PORT_NUM - This is the FXS port number of the analog gateway device.</p> <p>pwf.DIAL_PEER_NO - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>

(Provider deployment)

Default IOS Commands	Available Variables
<p data-bbox="228 285 902 317"><b>HcsAddSipLocalGwEVT</b> A SIP Local Gateway is added.</p> <pre data-bbox="228 373 732 1161">conf t voice class e164-pattern-map 4007 e164 \+T e164 .T voice service VoIP allow-connections sip to sip sip-ua retry invite 2 timers trying 150 application service dsapp param disc-toggle-time 20 param callHold TRUE param callWaiting TRUE param callConference TRUE param callTransfer TRUE voice translation-rule 802 voice translation-profile VOIPOUT80 translate called 802 voice translation-rule 812 voice translation-profile VOIPIN81 translate calling 811 translate called 812 no voice hunt invalid-number no voice hunt unassigned-number</pre> <p data-bbox="228 1230 326 1262">[CTD..]</p>	

Default IOS Commands	Available Variables
<p><b>HcsAddSipLocalGwEVT</b> A SIP Local Gateway is added [CTD]</p> <pre>[CTD]  dial-peer voice 8 VoIP translation-profile incoming VOIPIN81 session protocol sipv2 incoming called e164-pattern-map 4007 fax rate 14400 no vad voice translation-rule 812 rule 97 /<sup>^</sup>\\+01\\(..*\\)/ /904\\1/ rule 98 /<sup>^</sup>\\+1\\(..*\\)/ /901\\1/ rule 99 /<sup>^</sup>\\+\\(..*\\)/ /902\\1/ rule 100 /<sup>^</sup>\\(..*\\)/ /904\\1/ voice translation-rule 9011 rule 98 /<sup>^</sup>\\+{pwf.COUNTRYCODE}\\(..*\\)/ /\\1/ type →any national  rule 99 /<sup>^</sup>\\+\\(..*\\)/ /\\1/ type any international  rule 100 /<sup>^</sup>\\(..*\\)/ /\\1/ type any unknown  voice translation-rule 9021  rule 81 /<sup>^</sup>901\\(..*\\)/ /\\1/ type any national  rule 82 /<sup>^</sup>902\\(..*\\)/ /\\1/ type any international  rule 83 /<sup>^</sup>903\\(..*\\)/ /\\1/ type any unknown  rule 84 /<sup>^</sup>904\\(..*\\)/ /\\1/ type any unknown  voice translation-rule 9022  rule 81 /<sup>^</sup>901\\(..*\\)/ /{pwf.STDACCESSPREFIX}\\1/ →type any unknown  rule 82 /<sup>^</sup>902\\(..*\\)/ /{pwf.INTLACCESSPREFIX}\\1/ →type any unknown  rule 83 /<sup>^</sup>903\\(..*\\)/ /\\1/ type any unknown  rule 84 /<sup>^</sup>904\\(..*\\)/ /\\1/ type any unknown  voice translation-rule 9111  [CTD...]</pre>	<p>pwf.COUNTRYCODE - returns the Country Code based on the Country field configured on this SIP Local GW</p> <p>pwf.STDACCESSPREFIX - returns the Country's national trunk access prefix based on the Country field configured on this SIP Local GW</p> <p>pwf.INTLACCESSPREFIX - returns the Country's international access prefix based on the Country field configured on this SIP Local GW</p> <p>pwf.PBXIP - returns the CUCM Server's IP or hostname for dial peer</p> <p>pwf.PREFERENCE - returns the CUCM server's priority in the dial peer list</p> <p>pwf.DIALPEER - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>



Default IOS Commands	Available Variables
<p><b>HcsAddSipLocalGwEVT</b> A SIP Local Gateway is added [CTD]</p> <pre>[CTD]  rule 1 /^\\(.*)\\ / /\+{{pwf.COUNTRYCODE}}\\1/ type ↳national unknown rule 2 /^\\(.*)\\ / /\+\\1/ type international unknown voice translation-rule 9012 rule 98 /^\\+\+{{pwf.COUNTRYCODE}}\\(.*)\\ / /{{pwf.STDACCESSPREFIX}}\\1/ type any unknown rule 99 /^\\+\+\\(.*)\\ / /{{pwf.INTLACCESSPREFIX}}\\1/ ↳type any unknown rule 100 /^\\(.*)\\ / /\1/ type any unknown voice translation-rule 9121 voice translation-rule 9112 rule 1 /^{{pwf.INTLACCESSPREFIX}}\\(.*)\\ / /\+\\1/ ↳type unknown unknown rule 2 /^{{pwf.STDACCESSPREFIX}}\\(.*)\\ / /\+{{pwf.COUNTRYCODE}}\\1/ type unknown unknown voice translation-rule 9122 voice translation-profile POTSOUT9011 translate calling 9011 translate called 9021 voice translation-profile POTSOUT9012 translate calling 9011 translate called 9022 voice translation-profile POTSOUT9021 translate calling 9012 translate called 9021 voice translation-profile POTSOUT9022 translate calling 9012 translate called 9022 voice translation-profile POTSIN9111 translate calling 9111 translate called 9121 voice translation-profile POTSIN9112 translate calling 9111 translate called 9122 voice translation-profile POTSIN9121 translate calling 9112 translate called 9121 voice translation-profile POTSIN9122 translate calling 9112 translate called 9122 end</pre>	

(Provider deployment)

Default IOS Commands	Available Variables	Notes
<p><b>HcsAddSipLocalGwDialPeerEVT</b> Triggers IOS Commands for each Dial Peer when A SIP Local Gateway is added.</p> <pre> conf t dial-peer voice {{pwf.DIALPEER}} VoIP translation-profile outgoing VOIPOUT80 {{pwf.PREFERENCE}} voice-class codec 1 service dsapp voice-class sip options-keepalive up- interval 120 down-interval 60 retry 2 session target {{pwf.PBXIP}} destination e164-pattern-map 4007 session protocol sipv2 modem passthrough nse codec g711ulaw dtmf-relay rtp-nte fax rate 14400 no vad end </pre>	<p>pwf.COUNTRYCODE - returns the Country Code based on the Country field configured on this SIP Local GW</p> <p>pwf.STDACCESSPREFIX - returns the Country's national trunk access prefix based on the Country field configured on this SIP Local GW</p> <p>pwf.INTLACCESSPREFIX - returns the Country's international access prefix based on the Country field configured on this SIP Local GW</p> <p>pwf.PBXIP - returns the CUCM Server's IP or host-name for dial peer</p> <p>pwf.PREFERENCE - returns the CUCM server's priority in the dial peer list</p> <p>pwf.DIALPEER - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>	<p>One command set is generated per dial peer.</p>

(Provider deployment)

Default IOS Commands	Available Variables
<p><b>HcsDeleteSipLocalGwEVT</b> A SIP Local Gateway is deleted.</p> <pre> conf t no voice translation-profile POTSIN9122 no voice translation-profile POTSIN9121 no voice translation-profile POTSIN9112 no voice translation-profile POTSIN9111 no voice translation-profile POTSOUT9022  no voice translation-profile POTSOUT9021  no voice translation-profile POTSOUT9012  no voice translation-profile POTSOUT9011  no voice translation-rule 9122 no voice translation-rule 9112 no voice translation-rule 9121 no voice translation-rule 9012 no voice translation-rule 9111 no voice translation-rule 9022 no voice translation-rule 9021 no voice translation-rule 9011 no voice translation-rule 812 no voice translation-rule 802  no dial-peer voice 8 VoIP  no voice class e164-pattern-map 4007 application no service dsapp no sip-ua voice service VoIP no allow-connections sip to sip end </pre>	<p>pwf.COUNTRYCODE - returns the Country Code based on the Country field configured on this SIP Local GW</p> <p>pwf.STDACCESSPREFIX - returns the Country's national trunk access prefix based on the Country field configured on this SIP Local GW</p> <p>pwf.INTLACCESSPREFIX - returns the Country's international access prefix based on the Country field configured on this SIP Local GW</p> <p>pwf.PBXIP - returns the CUCM Server's IP or hostname for dial peer</p> <p>pwf.PREFERENCE - returns the CUCM server's priority in the dial peer list</p> <p>pwf.DIALPEER - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>

(Provider deployment)

Default IOS Commands	Available Variables	Notes
<p data-bbox="196 283 820 380"><b>HcsDeleteSipLocalGwDialPeerEVT</b> Triggers IOS Commands for each Dial Peer when A SIP Local Gateway is deleted.</p> <pre data-bbox="196 422 820 569"> conf t no dial-peer voice {{pwf.DIALPEER}} VoIP end </pre>	<p data-bbox="829 390 1157 548">pwf.COUNTRYCODE - returns the Country Code based on the Country field configured on this SIP Local GW</p> <p data-bbox="829 548 1157 737">pwf.STDACCESSPREFIX - returns the Country's national trunk access prefix based on the Country field configured on this SIP Local GW</p> <p data-bbox="829 737 1157 926">pwf.INTLACCESSPREFIX - returns the Country's international access prefix based on the Country field configured on this SIP Local GW</p> <p data-bbox="829 926 1157 1020">pwf.PBXIP - returns the CUCM Server's IP or host-name for dial peer</p> <p data-bbox="829 1020 1157 1115">pwf.PREFERENCE - returns the CUCM server's priority in the dial peer list</p> <p data-bbox="829 1115 1157 1304">pwf.DIALPEER - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>	<p data-bbox="1166 390 1409 485">One command set is generated per dial peer.</p>

(Provider deployment)

Default IOS Commands	Available Variables	Notes
<p data-bbox="196 289 821 348"><b>HcsUpdateSipLocalGw1EVT</b> Triggers IOS Commands when A SIP Local Gateway is updated.</p> <pre data-bbox="196 394 821 575"> conf t no dial-peer voice {{pwf.DIALPEER}} VoIP end </pre>	<p data-bbox="829 363 1154 512">pwf.COUNTRYCODE - returns the Country Code based on the Country field configured on this SIP Local GW</p> <p data-bbox="829 520 1154 701">pwf.STDACCESSPREFIX - returns the Country's national trunk access prefix based on the Country field configured on this SIP Local GW</p> <p data-bbox="829 709 1154 890">pwf.INTLACCESSPREFIX - returns the Country's international access prefix based on the Country field configured on this SIP Local GW</p> <p data-bbox="829 898 1154 989">pwf.PBXIP - returns the CUCM Server's IP or host-name for dial peer</p> <p data-bbox="829 997 1154 1087">pwf.PREFERENCE - returns the CUCM server's priority in the dial peer list</p> <p data-bbox="829 1096 1154 1272">pwf.DIALPEER - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>	<p data-bbox="1166 363 1409 737">Removes configuration related to previous dial peer. One set of commands per dial peer. Note: If "Enable Command Builder" is updated from False to True, IOS commands will be regenerated for the SIP Local Gateway.</p>

(Provider deployment)

Default IOS Commands	Available Variables	Notes
<p><b>HcsUpdateSipLocalGw2EVT</b> Triggers IOS Commands when A SIP Local Gateway is updated.</p> <pre> conf t dial-peer voice {{pwf.DIALPEER}} VoIP translation-profile outgoing VOIPOUT80 {{pwf.PREFERENCE}} voice-class codec 1 service dsapp voice-class sip options-keepalive up- interval 120 down-interval 60 retry 2 session target {{pwf.PBXIP}} destination e164-pattern-map 4007 session protocol sipv2 modem passthrough nse codec g711ulaw dtmf-relay rtp-nte fax rate 14400 no vad end </pre>	<p>pwf.COUNTRYCODE - returns the Country Code based on the Country field configured on this SIP Local GW</p> <p>pwf.STDACCESSPREFIX - returns the Country's national trunk access prefix based on the Country field configured on this SIP Local GW</p> <p>pwf.INTLACCESSPREFIX - returns the Country's international access prefix based on the Country field configured on this SIP Local GW</p> <p>pwf.PBXIP - returns the CUCM Server's IP or hostname for dial peer</p> <p>pwf.PREFERENCE - returns the CUCM server's priority in the dial peer list</p> <p>pwf.DIALPEER - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>	<p>Adds configuration related to new dial peer. One set of commands per dial peer. Event is triggered only if the SIP Trunk information has been updated.</p>

(Provider deployment)

Default IOS Commands	Available Variables	Notes
<p><b>HcsSipLocalGwAddSiteAreaCodeEVT</b> Triggers IOS commands for Area Code when a SIP Local Gateway is associated with a Site.</p> <pre> conf t  voice translation-rule 9021  rule {{pwf.RULENUMBER}} /^901{{pwf.NATCODE}} →}\\(.*\)\// {{pwf.NATCODEFORLOCALDIALING}}\\1/ type →any subscriber  voice translation-rule 9022  rule {{pwf.RULENUMBER}} /^901{{pwf.NATCODE}}\\ (.*\)\//{{pwf. →NATCODEFORLOCALDIALING}}\\1/ type any unknown  end </pre>	<p>{{pwf.RULENUMBER}} and {{pwf.NATCODE}} are sequence numbers and area codes that is substituted by workflow during runtime</p> <p>{{pwf.NATCODEFORLOCALDIALING}} is the Area Code if the administrator selected the "Area Code Used for Local Dialing" option when deploying the site dial plan. If this option was not selected, this variable has no value.</p>	<p>The workflow for this event generates IOS Commands for each Area Code defined for the associated Site.</p>

(Provider deployment)

Default IOS Commands	Available Variables	Notes
<p><b>HcsSipLocalGwDelSiteAreaCodeEVT</b> Triggers IOS commands for Area Code when a SIP Local Gateway is disassociated from Site.</p> <pre> conf t  no voice translation-rule 9021  no rule {{pwf.RULENUMBER}}  end  conf t  no voice translation-rule 9022  no rule {{pwf.RULENUMBER}}  end </pre>	<p>{{pwf.RULENUMBER}} is substituted as sequence number by workflow during run time</p>	<p>The workflow for this event generates IOS Commands for each Area Code defined for the disassociated Site. If Area Codes are shared across multiple sites and associated with the same gateway, the commands are generated only when the gateway is disassociated from the last site that shares the Area Code.</p>

(Provider deployment)

Default IOS Commands	Available Variables
<p><b>HcsSipLocalGwAddSitePstnEVT</b> Triggers IOS commands for PSTN when a SIP Local Gateway is associated with a Site.</p> <pre> conf t voice translation-rule 9111 rule 3 /^\\(.*)\\/ /{{pwf.PSTNACCESSPREFIX}}\\\\1/ →type subscriber unknown  rule 4 /^\\(.*)\\/ /{{pwf.PSTNACCESSPREFIX}}\\\\1/ →type unknown unknown voice translation-rule 9112 rule 3 /^\\(.*)\\/ /{{pwf.PSTNACCESSPREFIX}}\\\\1/ →type unknown unknown end </pre>	<p>pwf.PSTNACCESSPREFIX - PSTN breakout associated with the country associated with the site</p>

(Provider deployment)

Default IOS Commands	Notes
<p><b>HcsSipLocalGwDelSitePstnEVT</b> Triggers IOS commands for PSTN when a SIP Local Gateway is disassociated from Site.</p> <pre> conf t  no voice translation-rule 9111  no rule 3  no rule 4  no voice translation-rule 9112  no rule 3  end </pre>	<p>By default, these commands are not generated to avoid deleting the voice translation rule for PSTN if the gateway is shared by multiple sites. If you need to delete the translation rules for PSTN when SIP Local Gateway is disassociated from site, clone the command builder template and set the Enabled flag.</p>

(Provider deployment)



Default IOS Commands	Available Variables
<p><b>HcsSipLocalGwAddE164AssociationEVT</b> Triggers IOS commands for SIP Local Gateway when an E164 Association (N to 1 DN) is made.</p> <pre> conf t  voice translation-rule 9011  rule {{ pwf.RULENUMBER }} /^{pwf.DNESCAPE }{{ pwf. →DNPREFIX }} \\ \\ ({{ pwf.RGMASK }} \\ \\ ) / {{ pwf.DDIPREFIX }} \\ → \\ 1/ type any national  voice translation-rule 9012  rule {{ pwf.RULENUMBER }} /^{pwf.DNESCAPE }{{ pwf. →DNPREFIX }} \\ \\ ({{ pwf.RGMASK }} \\ \\ ) / {{ pwf. →STDACCESSPREFIX }}{{ pwf.DDIPREFIX }} \\ \\ 1/ type any unknown  voice translation-rule 802  rule {{ pwf.RULENUMBER }} /^{pwf.DNESCAPE }{{ pwf. →DNPREFIX }} \\ \\ ({{ pwf.RGMASK }} \\ \\ ) / \+{{ pwf.COUNTRYCODE } →}{{ pwf.DDIPREFIX }} \\ \\ 1/  voice translation-rule 9121  rule {{ pwf.RULENUMBER }} /^{ pwf.DDIPREFIX }} \\ \\ ( →{{ pwf.RGMASK }} \\ \\ ) / {{ pwf.DNPREFIX }} \\ \\ 1/ →type national unknown  voice translation-rule 9122  rule {{ pwf.RULENUMBER }} /^{ pwf.STDACCESSPREFIX }}{ →{ pwf.DDIPREFIX }} \\ \\ ({{ pwf.RGMASK }} \\ \\ ) / {{ →pwf.DNPREFIX }} \\ \\ 1/ type unknown unknown  voice translation-rule 712  [CTD..]</pre>	<p>pwf.DNPREFIX - Contains the directory number prefix (DN without the mask digits)</p> <p>pwf.DNESCAPE - Contains a backslash escape character if the DNPREFIX contains a +</p> <p>pwf.RGMASK - Contains the range mask for prefix (for example if range is 100, then the value is ..)</p> <p>pwf.DDIPREFIX - Contains the DDI (E.164) prefix (DDI without + prefix, country code, or mask digits) Note: this still contains the national code (area code)</p> <p>pwf.STDACCESSPREFIX - National Trunk Prefix for the country associated with the site</p> <p>pwf.COUNTRYCODE - Country Code for the country associated with the site</p> <p>pwf.PSTNACCESSPREFIX - PSTN breakout associated with the country associated with the site</p>

Default IOS Commands	Available Variables
<p><b>HcsSipLocalGwAddE164AssociationEVT</b> Triggers IOS commands for SIP Local Gateway when an E164 Association (N to 1 DN) is made.</p> <pre data-bbox="212 430 998 745"> [CTD..]  rule {{ pwf.RULENUMBER }} /^{{ pwf.PSTNACCESSPREFIX }} →{{ pwf.STDACCESSPREFIX }}{{ pwf.DDIPREFIX }} \\\ ({{ →pwf.RGMASK }} \\ \ )/ /{{ pwf.DNPREFIX }} \\\ 1/  end </pre>	<p>pwf.RULENUMBER - Contains the appropriate rule index for associate/disassociate</p>

(Provider deployment)

Default IOS Commands	Available Variables
<p><b>HcsSipLocalGwDeleE164AssociationEVT</b> Triggers IOS commands for SIP Local Gateway when an E164 Association (N to 1 DN) is deleted.</p> <pre> conf t voice translation-rule 9011 no rule {{ pwf.RULENUMBER }}  end  conf t  voice translation-rule 9012  no rule {{ pwf.RULENUMBER }}  end  conf t  voice translation-rule 802  no rule {{ pwf.RULENUMBER }}  end  conf t  voice translation-rule 9121  no rule {{ pwf.RULENUMBER }}  end  conf t  voice translation-rule 9122  no rule {{ pwf.RULENUMBER }}  end  conf t  voice translation-rule 712 no rule {{ pwf.RULENUMBER }} end </pre>	<p>pwf.DNPREFIX - Contains the directory number prefix (DN without the mask digits)</p> <p>pwf.DNESCAPE - Contains a backslash escape character if the DNPREFIX contains a +</p> <p>pwf.RGMASK - Contains the range mask for prefix (for example if range is 100, then the value is ..)</p> <p>pwf.DDIPREFIX - Contains the DDI (E.164) prefix (DDI without + prefix, country code, or mask digits) Note: this still contains the national code (area code)</p> <p>pwf.STDACCESSPREFIX - National Trunk Prefix for the country associated with the site</p> <p>pwf.COUNTRYCODE - Country Code for the country associated with the site</p> <p>pwf.PSTNACCESSPREFIX - PSTN breakout associated with the country associated with the site</p> <p>pwd.RULENUMBER - Contains the appropriate rule index for associate/disassociate</p>

(Provider deployment)

Default IOS Commands	Available Variables
<p><b>HcsSipLocalGwAddMultiE164AssociationEVT</b> Triggers IOS commands for SIP Local Gateway when an E164 Association (N to N DN) is made.</p> <pre> conf t  voice translation-rule 9011  rule {{ pwf.RULENUMBER }} /^{ {{ pwf.DNESCAPE }} }{{ pwf. ↳DN }}/ /{{ pwf.DDIPRIMARY }}/ type any national  voice translation-rule 9012  rule {{ pwf.RULENUMBER }} /^{ {{ pwf.DNESCAPE }} }{{ pwf. ↳DN }}/ /{{ pwf.STDACCESSPREFIX }}{{ pwf.DDIPRIMARY }}/ type any, ↳unknown  voice translation-rule 802  rule {{ pwf.RULENUMBER }} /^{ {{ pwf.DNESCAPE }} }{{ pwf. ↳DN }}/ /\+{{ pwf.COUNTRYCODE }}{{ pwf.DDIPRIMARY }}/  voice translation-rule 9121  rule {{ pwf.RULENUMBER }} /^{ {{ pwf.DDIPREFIX }} }{{ pwf. ↳RGMASK }}/ / {{ pwf.DN }}/ type national unknown  voice translation-rule 9122  rule {{ pwf.RULENUMBER }} /^{ {{ pwf.STDACCESSPREFIX }} }{ ↳{ pwf.DDIPREFIX }}{{ pwf.RGMASK }}/ / {{ pwf.DN }}/ type, ↳unknown unknown  voice translation-rule 712  rule {{ pwf.RULENUMBER }} /^{ {{ pwf.PSTNACCESSPREFIX }} ↳{{ pwf.STDACCESSPREFIX }}{{ pwf.DDIPREFIX }}{{ pwf. ↳RGMASK }}/ / {{ pwf.DN }}/  end </pre>	<p>pwf.DN - Contains the directory number</p> <p>pwf.DNESCAPE - Contains a backslash escape character if the DNPREFIX contains a +</p> <p>pwf.RGMASK - Contains the range mask for prefix (for example if range is 100, then the value is ..)</p> <p>pwf.DDIPRIMARY - Contains the primary E.164 associate with the N:1 association (DDI without + prefix and country code) Note: this still contains the national code (area code)</p> <p>pwf.DDIPREFIX - Contains the DDI (E.164) prefix (DDI without + prefix, country code, or mask digits) Note: this still contains the national code (area code)</p> <p>pwf.STDACCESSPREFIX - National Trunk Prefix for the country associated with the site</p> <p>pwf.COUNTRYCODE - Country Code for the country associated with the site</p> <p>pwf.PSTNACCESSPREFIX - PSTN breakout associated with the country associated with the site</p> <p>pwd.RULENUMBER - Contains the appropriate rule index for associate/disassociate</p>

(Provider deployment)

Default IOS Commands	Available Variables
<p><b>HcsSipLocalGwDelMultiE164AssociationEVT</b> Triggers IOS commands for SIP Local Gateway when an E164 Association (N to N DN) is deleted.</p> <pre> conf t voice translation-rule 9011 no rule {{ pwf.RULENUMBER }} end  conf t voice translation-rule 9012 no rule {{ pwf.RULENUMBER }} end  conf t voice translation-rule 802 no rule {{ pwf.RULENUMBER }} end  conf t voice translation-rule 9121 no rule {{ pwf.RULENUMBER }} end  conf t voice translation-rule 9122 no rule {{ pwf.RULENUMBER }} end  conf t voice translation-rule 712 no rule {{ pwf.RULENUMBER }} end </pre>	<p>pwf.DN - Contains the directory number</p> <p>pwf.DNESCAPE - Contains a backslash escape character if the DNPREFIX contains a +</p> <p>pwf.RGMASK - Contains the range mask for prefix (for example if range is 100, then the value is ..)</p> <p>pwf.DDIPRIMARY - Contains the primary E.164 associate with the N:1 association (DDI without + prefix and country code) Note: this still contains the national code (area code)</p> <p>pwf.DDIPREFIX - Contains the DDI (E.164) prefix (DDI without + prefix, country code, or mask digits) Note: this still contains the national code (area code)</p> <p>pwf.STDACCESSPREFIX - National Trunk Prefix for the country associated with the site</p> <p>pwf.COUNTRYCODE - Country Code for the country associated with the site</p> <p>pwf.PSTNACCESSPREFIX - PSTN breakout associated with the country associated with the site</p> <p>pwd.RULENUMBER - Contains the appropriate rule index for associate/disassociate</p>

(Provider deployment)

Default IOS Commands	Available Variables
<p><b>HscSipLocalGwAddVoiceMailPilotNumberEVT</b> Associate a Voice Mail Pilot Number with a Site</p> <pre> conf t voice translation-rule 9121  rule {{ pwf.RULENUMBER }} /^{ {{ pwf.DDIPREFIX }} \\ \\ \\ \\ ( {{ pwf.RGMASK }} \\ \\ \\ \\ ) / / {{ pwf.DNPREFIX }} \\ \\ \\ \\ 1 / type ↪ national unknown  voice translation-rule 9122  rule {{ pwf.RULENUMBER }} /^{ {{ pwf.STDACCESSPREFIX }} } { ↪ { pwf.DDIPREFIX } \\ \\ \\ \\ ( {{ pwf.RGMASK }} \\ \\ \\ \\ ) / / {{ pwf. ↪ DNPREFIX }} \\ \\ \\ \\ 1 / type unknown unknown  end </pre>	<p>pwf.DNPREFIX - Contains the voice mail pilot number prefix (without the mask digits)</p> <p>pwf.DNESCAPE - Contains a backslash escape character if the DNPREFIX contains a +</p> <p>pwf.RGMASK - Contains the range mask for prefix (for example if range is 100, then the value is ..)</p> <p>pwf.DDIPREFIX - Contains the DDI (E.164) prefix (DDI without + prefix, country code, or mask digits) Note: this still contains the national code (area code)</p> <p>pwf.STDACCESSPREFIX - National Trunk Prefix for the country associated with the site</p> <p>pwf.COUNTRYCODE - Country Code for the country associated with the site</p> <p>pwf.PSTNACCESSPREFIX - PSTN breakout associated with the country associated with the site</p> <p>pwf.RULENUMBER - Contains the appropriate rule index for voice mail pilot association</p>

(Provider deployment)

Default IOS Commands	Available Variables
<p><b>HscSipLocalGwDelVoiceMailPilotNumberEVT</b> Disassociate a Voice Mail Pilot Number from a Site</p> <pre> conf t voice translation-rule 9121 no rule {{ pwf.RULENUMBER }} end  conf t voice translation-rule 9122 no rule {{ pwf.RULENUMBER }} end </pre>	<p>pwf.DNPPREFIX - Contains the voice mail pilot number prefix (without the mask digits)</p> <p>pwf.DNESCAPE - Contains a backslash escape character if the DNPPREFIX contains a +</p> <p>pwf.RGMASK - Contains the range mask for prefix (for example if range is 100, then the value is ..)</p> <p>pwf.DDIPREFIX - Contains the DDI (E.164) prefix (DDI without + prefix, country code, or mask digits) Note: this still contains the national code (area code)</p> <p>pwf.STDACCESSPREFIX - National Trunk Prefix for the country associated with the site</p> <p>pwf.COUNTRYCODE - Country Code for the country associated with the site</p> <p>pwf.PSTNACCESSPREFIX - PSTN breakout associated with the country associated with the site</p> <p>pwd.RULENUMBER - Contains the appropriate rule index for voice mail pilot association</p>

### 9.9.5. MGCP Analog Gateway Events and IOS Commands

#### MGCP Analog Gateway Events



Default IOS Commands	Available Variables
<p data-bbox="228 285 976 317"><b>HcsAddAnalogGatewayEVT</b> Adds an Analog MGCP Gateway.</p> <pre data-bbox="228 373 927 1031"> conf t hostname {{pwf.GatewayDAT.domainName}} ccm-manager config server {{ fn.one macro. ↳HcsCucmsAssociatedToNDLRMCR}} ccm-manager config mgcp call-agent {{ fn.one macro. ↳HcsCucmsAssociatedToNDLRMCR}} 2427 service-type ↳mgcp version 1.0 ccm-manager mgcp ! ccm-manager redundant-host ccm-manager switchback Graceful ccm-manager fallback-mgcp mgcp bind control source-int {{ pwf.GatewayDAT. ↳networkInterface }} mgcp bind media source-int {{ pwf.GatewayDAT. ↳networkInterface }} mgcp dtmf-relay voip codec all mode out-of-band mgcp modem passthrough voip mode nse mgcp package-capability sst-package no mgcp package-capability sst-package end </pre>	<p data-bbox="1015 327 1409 453">pwf.GatewayDAT.networkInterface returns the Network Interface based on the configuration in the Gateway.</p>

Default IOS Commands	Available Variables
<p data-bbox="228 1203 984 1266"><b>HcsAddAnalogGatewayEndpointEVT</b> Adds an Endpoint for the Analog MGCP Gateway.</p> <pre data-bbox="228 1323 854 1822"> conf t voice-port {{ pwf.PORT_NUM }} timeouts call-disconnect {{ fn.as_string pwf. ↳GatewayDAT.disconnectTimeout }} cptone {{ pwf.GatewayDAT.cpTone }} signal {{macro.HcsIosCmdAnalogGwSignalMCR}} ring frequency 25 description {{ fn.sub_string macro. ↳HcsAnalogGatewayIOSCmdDesc, 0, 63 }} timing hookflash-in 250 80 no shutdown exit dial-peer voice {{ pwf.DIAL_PEER_NO }} pots service mgcpapp port {{ pwf.PORT_NUM }} end </pre>	<p data-bbox="1015 1276 1398 1560">pwf.GatewayDAT.cpTone - This is the call progress tone of the country that supports each analog device in the gateway. pwf.DIAL_PEER_NO - returns the dial peer number that is used to generate the dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>

Default IOS Commands	Available Variables
<p data-bbox="228 285 987 348"><b>HcsAddAnalogMGCPGatewayEndpointModEVT</b> Adds an Endpoint Module for the Analog MGCP gateway.</p> <pre data-bbox="228 405 852 905"> conf t voice-port {{ pwf.PORT_NUM }} timeouts call-disconnect {{ fn.as_string pwf. ↳GatewayDAT.disconnectTimeout }} cptone {{ pwf.GatewayDAT.cpTone }} signal {{macro.HcsIosCmdAnalogGwSignalMCR}} ring frequency 25 description {{ fn.sub_string macro. ↳HcsAnalogGatewayIOSCmdDesc, 0, 63 }} timing hookflash-in 250 80 no shutdown exit dial-peer voice {{ pwf.DIAL_PEER_NO }} pots service mgcpapp port {{ pwf.PORT_NUM }} end </pre>	<p data-bbox="1015 359 1435 894"> pwf.PORT_NUM - This is the FXS port number of the analog gateway device.  pwf.GatewayDAT.disconnectTimeout - Time in seconds for which a connection is maintained after the completion of a communication exchange.  pwf.GatewayDAT.cpTone - This is the call progress tone of the country that supports each analog device in the gateway.  pwf.DIAL_PEER_NO - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one. </p>

Default IOS Commands	Available Variables
<p><b>HcsDeleteAnalogGatewayEVT</b> Deletes an Analog MGCP Gateway.</p> <pre> conf t no mgcp call-agent {{ fn.one macro. ↳HcsCucmsAssociatedToNDRMCR}} 2427 service-type ↳mgcp version 1.0 no ccm-manager config server {{ fn.one macro. ↳HcsCucmsAssociatedToNDRMCR}} mgcp no ccm-manager mgcp ! no ccm-manager redundant-host no ccm-manager switchback Graceful no ccm-manager fallback-mgcp no mgcp bind control source-int {{ pwf.GatewayDAT. ↳networkInterface }} no mgcp bind media source-int {{ pwf.GatewayDAT. ↳networkInterface }} no mgcp dtmf-relay voip codec all mode out-of-band no mgcp modem passthrough voip mode nse no ccm- ↳manager music-on-hold no ccm-manager config no mgcp package-capability rtp-package no mgcp package-capability sst-package no mgcp default-package mt-package no mgcp timer receive-rtcp no mgcp sdp simple no mgcp fax t38 inhibit no mgcp end </pre>	<p>pwf.GatewayDAT.networkInterface - This is the physical device network interface (Ethernet Port) for the analog gateway.</p>

Default IOS Commands	Available Variables
<p><b>HcsDeleteAnalogGatewayEndpointEVT</b> Deletes an Endpoint for the Analog MGCP Gateway.</p> <pre> conf t voice-port {{ pwf.PORT_NUM }} no timeouts call-disconnect default cptone default timing hookflash-in default description no signal default ring frequency shutdown exit no dial-peer voice {{ pwf.DIAL_PEER_NO }} pots end </pre>	<p>pwf.PORT_NUM - This is the FXS port number of the analog gateway device.</p> <p>pwf.DIAL_PEER_NO - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>

Default IOS Commands	Available Variables
<p><b>HcsDeleteAnalogMGCPGatewayEndpointModEVT</b> Deletes an Endpoint Module for the Analog MGCP Gateway.</p> <pre> conf t voice-port {{ pwf.PORT_NUM }} no timeouts call-disconnect default cptone default timing hookflash-in default description no signal default ring frequency shutdown exit no dial-peer voice {{ pwf.DIAL_PEER_NO }} pots end </pre>	<p>pwf.PORT_NUM - This is the FXS port number of the analog gateway device.</p> <p>pwf.DIAL_PEER_NO - returns the dial peer number we use to generate dial peer. It starts from 4 for the first dial peer, and increase by 1 for the next one.</p>

Default IOS Commands	Available Variables
<p><b>HcsUpdateAnalogGatewayEVT</b> Updates the Analog MGCP Gateway.</p> <pre> conf t hostname {{pwf.GatewayDAT.domainName}} no mgcp bind control source-int {{ pwf. ↳previousGatewayDAT.networkInterface }} mgcp bind control source-int {{ pwf.GatewayDAT. ↳networkInterface }} no mgcp bind media source-int {{ pwf. ↳previousGatewayDAT.networkInterface }} mgcp bind media source-int {{ pwf.GatewayDAT. ↳networkInterface }} end </pre>	<p>pwf.GatewayDAT.networkInterface - This is the physical device network interface (Ethernet Port) for the analog gateway.</p>

Default IOS Commands	Available Variables
<p><b>HcsUpdateAnalogGatewayEndpointEVT</b> Updates the Endpoint for the Analog MGCP Gateway.</p> <pre> conf t voice-port {{ pwf.PORT_NUM }} no signal signal {{macro.HcsIosCmdAnalogGwSignalMCR}} no timeouts call-disconnect timeouts call-disconnect {{ fn.as_string pwf. ↳GatewayDAT.disconnectTimeout }} no cptone cptone {{ pwf.GatewayDAT.cptone }} no shutdown end </pre>	<p>pwf.PORT_NUM - This is the FXS port number of the analog gateway device. pwf.GatewayDAT.disconnectTimeout - Time in seconds for which a connection is maintained after the completion of a communication exchange. pwf.GatewayDAT.cptone - This is the call progress tone of the country that supports each analog device in the gateway.</p>

### 9.9.6. Translation Rule Numbering

The following information can be helpful to decode the number of Translation Rules included in IOS Command Builders.

- The first digit indicates if the rule is for SRST, VoIP, or TDM: 7 for SRST, 8 for VoIP, and 9 for PSTN.
- The second digit indicates if it is for incoming or outgoing call: 1 for incoming and 0 for outgoing
- The third digit indicates if it is for calling or called number: 1 for calling and 2 for called
- The fourth digit indicates if NOA is used: 1 is for NOA and 2 for no NOA and defines on the TDM trunk to the PSTN.

Examples:

- Translation-rule 9011 - for handling calling number of an outgoing call to the PSTN where NOA is used.
- Translation-rule 9022 - for handling called number of an outgoing call to the PSTN where NOA is not used.
- Translation-rule 9111 - for handling calling number of an incoming call from the PSTN where NOA is used.

### 9.9.7. Set up an IOS Device

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the customer hierarchy node where you want to set up the IOS Device.
3. Go to (default menus) **Apps Management > IOS > IOS Devices**.
4. Click **Add**.
5. Provide the following information:

Field	Description
IOS Device Name	Enter the name for the IOS Device. This field is mandatory.
Description	Enter a description for the IOS Device.

6. In the **Network Addresses** pane, configure the SERVICE\_PROVIDER\_SPACE address space.

Field	Description
Address Space	Address Space Type. SERVICE_PROVIDER_SPACE is the default. This field is required.
IPV4 Address	Enter the IP address of the IOS Device.
Host Name	The <b>Host Name</b> field is automatically populated with the IOS Device Name. If the IOS Device Name is not the host name, you can edit this field to provide the host name, or provide an IP address in the <b>IPV4 Address</b> field. Note: Either a host name or an IP address is required. If both are provided, the host name is used. If a host name is provided must be resolvable by the IOS Device.
Domain	The domain of the IOS Device.
Description	An optional description for the network address

If NAT is used, also configure an APPLICATION\_SPACE network address.

If a double NAT is deployed, also configure a CUSTOMER\_SPACE network address.

7. Optionally, expand **Credentials**.
  - a. Add credentials for CLI, SNMP\_V2, SNMP\_V3 credentials types. Click + to add more credentials.
  - b. For CLI and SNMP\_V3, fill in the user ID and password that you configured when you installed the IOS Device. For SNMP\_V2, only the password is required.
  - c. For SNMP credentials, choose RO (Read-only) or RW (Read or Write) for the Access Type. The default is RO.
  - d. Provide an optional description for the credential.

---

CLI credentials are used to log in to the IOS Device.

---

**Note:** SNMP configuration must be done manually on the IOS Device.

---

8. Click **Save**.

## 9.9.8. Analog Gateways

A Cisco analog gateway connects fax machines, analog phones, and modems in the SCCP/MGCP protocol. Any IOS device that has FXS ports configured as SCCP/MGCP endpoints on Cisco Unified Communications Manager is considered an SCCP/MGCP analog gateway.

An analog device contains analog phones, which are endpoints in Cisco Unified Communications Manager.

## 9.9.9. Set up an Analog Gateway

### Pre-requisites

- Add an IOS device in VOSS Automate at the Customer level hierarchy. To add an IOS device, see [Set up an IOS Device](#).
- If applicable, ensure that the site-level dial plan is applied on the site where the gateway is being added.

---

**Note:** VOSS Automate supports SCCP and MGCP protocols. It does not support BRI endpoints. Do not add slots or modules or subunits for BRI.

---

### Perform these steps:

1. Log in as provider, reseller, or customer administrator.
2. Choose **Apps Management > IOS > Analog Gateways**.
3. Click **Add**.
4. Choose the required hierarchy path from the drop-down and click **OK**.
5. On the **Gateway** tab, complete, at minimum, the mandatory [Gateway Fields](#).
6. On the **Gateway Units** tab, click + to expand **Modules**, and complete, at minimum, the mandatory [Gateway Units - Modules Fields](#).
7. On the **Endpoints** tab, click + to expand the SCCP or MGSP endpoints, and complete, at minimum, the mandatory:
  - [SCCP Endpoints Fields](#).
  - [MGCP Endpoints Fields](#).

---

**Note:** Gateway endpoints will be shown in the following order on the **Endpoints** tab of the form:

*Slot > Subunit > Port Number*, for example:

```

0-0-0
0-0-1
2-0-0
2-0-1
2-0-2

```

8. On the **Config** tab, click + to expand the **Product Specific Configuration Layout**, and complete the required *Config: Product Specific Configuration Layout Fields*.
9. Click **Save**.

There are few scenarios that show the expected behaviour of an Analog gateway when adding, deleting, or modifying a gateway.

Successful Scenario	Failure Scenario
Adding an Analog device with a phone line.	Removing the phone line from the endpoint.
Adding an Analog gateway without using enable command builder.	Adding a phone line after adding the command builder.
Removing the command builder after adding an analog gateway with command builder.	Adding an analog gateway without a phone line after adding a phone line to an endpoint. Note: Ensure to add the Directory Names to both endpoints.



## Gateway Fields

Field	Description
IOS Device *	Choose the required IOS Device from the drop-down list. For example: IOS 11. This is a mandatory field. Note: The IOS device identifies the devices that are not associated with any Analog Gateways.
Product *	Choose the product from the drop-down list. For example: VG202, where VG represents Voice Gateway and 202 represents port. It has 2 ports, 0 and 1. This is a mandatory field. Note: The analog gateway supports the following models (FXS ports): <ul style="list-style-type: none"> <li>• VG202: 2 ports</li> <li>• VG204: 4 ports</li> <li>• VG224: 24 ports</li> <li>• VG310: 24 ports</li> <li>• VG320: 48 ports</li> <li>• VG350: 144/160 ports</li> <li>• VG400: 8 ports max</li> <li>• VG420: 144 ports max</li> <li>• VG450: 144 ports max</li> </ul>
Protocol *	Choose the protocol from the drop-down list. The available protocols are <b>SCCP</b> and <b>MGCP</b> . This is a mandatory field.
Gateway Name *	Enter the MAC address of the analog gateway. For example: SKIGW0102030405, where SKI represents SCCP, GW represents gateway, and the last 10 digits represents the MAC address of the gateway. This is a mandatory field for the SCCP protocol.
Domain Name	Enter a fully qualified domain name. For example: E7C1VG310.hcsent17.com. This is a mandatory field for the MGCP protocol.
Call Manager Group *	Choose the call manager group from the drop-down list. For example: <b>Default</b> . This is a mandatory field. Note: Call Manager Group is default based on the site default device pool.
Enable Builder	Command Leave the check box clear to generate IOS commands, when Analog Gateway is added, deleted, or modified.

**Note:** To view generated commands from Command Builder, see [View IOS Commands Log](#).

Field	Description
Gateway Network Interface *	<p>Enter a Gateway Network Interface. For example: <b>FastEthernet0/0</b>, <b>FastEthernet0/1</b>, <b>GigabitEthernet0/0</b>, <b>GigabitEthernet0/1</b> or <b>**GigabitEthernet0/2</b>. This is a mandatory field.</p> <p>Note: Check the network interface at the Physical Device, then choose the appropriate Network Interface and Port as applicable. The Network Interface is used in Command Generation. Choose <b>FastEthernet</b> for all 2x series and <b>GigabitEthernet</b> for all 3x series.</p>
Call Disconnect Timeout *	<p>Enter the time unit for Call Disconnect Timeout. For example: <b>2</b>. This is a mandatory field.</p> <p>Note: The time unit always is in seconds. Do not enter any negative timer values.</p>
CP Tone *	<p>Choose the call progress tone (country code) from the drop-down list. For example: <b>in</b> (for India). This is a mandatory field.</p> <p>Note: CP Tone is an FXS configuration parameter that supports each analog device in the gateway.</p>
Signal *	<p>Choose a signal from the drop-down list. For example: <b>loop-start</b> or <b>ground-start</b>. This is a mandatory field.</p> <p>Note: Signal is an FXS configuration parameter that supports each analog device in the gateway.</p>

## Gateway Units - Modules Fields

Field	Description
Slot *	<p>Choose the required value from the drop-down list. For example: 0. This is a mandatory field</p> <p>Note:</p> <ul style="list-style-type: none"> <li>• Add only those Units (Modules) and Subunits that are listed in the drop-down list, without duplicate the units and subunit numbers.</li> <li>• If duplicating entry is made for a slot, then the new slot overwrites the older configuration. You may lose previously configured endpoints.</li> <li>• For VG310 model, do not choose any module for slot 1.</li> </ul>
Module *	<p>Choose the available module from the drop-down list. For example: NM-4VWIC-MBRD.</p> <p>Note:</p> <p>Only modules that are available for the slot appear in the list.</p>
Subunits *	<p>Click + to expand Subunits. This is a mandatory field.</p>
Subunit Position *	<p>Choose the subunit position from the drop-down list. For example: 0.</p> <p>Note:</p> <p>Subunit position 1 on the VG310 gateway has no available hardware by design, so choosing a value of 1 in this drop-down will not allow you to continue. Please choose a different subunit position to continue setting up your gateway.</p>
Subunit *	<p>Choose the subunit from the drop-down list. For example: VIC3-2FXS-E/DID-SCCP.</p>

## SCCP Endpoints Fields

Option	Description
Gateway Name	GUI read-only field is populated from the analog gateway for the SCCP protocol. This is a mandatory field.
Slot *	GUI read-only field is populated from the gateway units. This is a mandatory field.
Subunit Position *	GUI read-only field is populated from the gateway units. This is a mandatory field.
Port Number *	GUI read-only field is populated from the gateway units. This is a mandatory field.
Product Type *	Choose the product type from the drop-down list. For example: Analog Phone. This is a mandatory field.
Device Protocol *	Choose the device protocol from the drop-down list. This is a mandatory field.
Device Name *	GUI read-only field is populated from the analog gateway. This is a mandatory field.
Description	When the endpoint is added, the default description is in the format: <i>Endpoint for slot/subunit/port n/n/n gateway @domain</i> that can be updated if required. This is an optional field and accepts a string value.
Device Pool *	Choose the device pool from the drop-down list. For example: Cu2Si2-DevicePool. This is a mandatory field.
Phone Button Template *	Choose the phone button template from the drop-down list. For example: Standard Analog. This has a specific phone button template for the analog gateway. This is a mandatory field.
Common Phone Profile *	Choose the common phone profile from the drop-down list. For example: Standard Common Phone Profile. It includes the attributes (services or features) that are associated with a particular user. This is a mandatory field.
Calling Search Space	From the drop-down list, choose the appropriate calling search space. The calling search space specifies a collection of partitions that are searched to determine how a collected (originating) number should be routed.
AAR Calling Search Space	Choose the appropriate calling search space for the device to use when it performs automated alternate routing (AAR). The AAR calling search space specifies the collection of route partitions that are searched to determine how to route a collected (originating) number that is otherwise blocked due to insufficient bandwidth.
Media Resource Group List	This list provides a prioritized grouping of media resource groups. An application chooses the required media resource, such as a Music On Hold server, from among the available media resources according to the priority order that a Media Resource Group List defines.
Location *	Choose a location from the drop-down list. For example: Cu2Si2-Location. This is a mandatory field.
AAR Group	Specify the automated alternate routing (AAR) group for this device. The AAR group provides the prefix digits that are used to route calls that are otherwise blocked due to insufficient bandwidth.
Owner	Choose from the drop-down list.

Option	Description
Always Use Prime Line for Voice Message	Choose the required options from the drop-down list. For example: On, Off or Default. This is a mandatory field. This specifies whether the device will always use the prime line for voice messages.
Geolocation	From the drop-down list, choose a geolocation. You can choose the Unspecified geolocation, which designates that this device does not associate with a geolocation.
Transmit UTF-8 for Calling Party Name	Keep the check box clear.
Called Party Transformation CSS	<p>This setting allows you to send transformed called party number in SETUP message for outgoing calls. Make sure that the Called Party Transformation CSS that you choose contains the called party transformation pattern that you want to assign to this device.</p> <p>Note: If the Called Party Transformation CSS is configured as &lt;None&gt;, the transformation does not match and does not get applied. Ensure that you configure the Called Party Transformation CSS in a non-null partition that is not used for routing.</p>
Use Device Pool Called Party Transformation CSS	Select the check box.
Allow Control Of Device From CTI	Select the check box.
Logged Into Hunt Group	Select the check box.
Calling Party Transformation CSS (Caller ID For Calls From This Phone)	<p>This setting allows you to send transformed calling party number in SETUP message for outgoing calls. Also when redirection occurs for outbound calls, this CSS will be used to transform the connected number sent from Cisco Unified Communications Manager side in outgoing NOTIFY messages. Make sure that the Calling Party Transformation CSS that you choose contains the calling party transformation pattern that you want to assign to this device.</p> <p>Note: If the Calling Party Transformation CSS is configured as &lt;None&gt;, the transformation does not match and does not get applied. Ensure that you configure the Calling Party Transformation Pattern in a non-null partition that is not used for routing.</p>
Use Device Pool Calling Party Transformation CSS (Caller ID for Calls From This Phone)	Select the check box.
Calling Party Transformation CSS (Device Mobility Related Information)	

Field	Description
Use Device Pool Calling Party Transformation CSS (Device Mobility Related Information)	Select the check box.
BLF Presence Group *	Choose the presence group for busy lamp field buttons from the drop-down list. For example: Standard Presence group is the default value. This is a mandatory field.
Device Security Profile *	Choose options from the drop-down list. For example: Analog Phone - Standard SCCP Non-Secure Profile. This is mandatory field.
MLPP Domain	If you leave the value <None>, this device inherits its MLPP domain from the value that was set for the device pool of this device. If the device pool does not have an MLPP Domain setting, this device inherits its MLPP domain from the value that was set for the MLPP Domain Identifier enterprise parameter.
MLPP Indication	Choose options from the drop-down list. For example: On, Off, or Default. This is a mandatory field.
MLPP Preemption	Choose options from the drop-down list. For example: Disabled, Forceful, Default. This is a mandatory field. Note: If there are any changes to be performed to analog phone line then do not refer line settings. For example: Changing CSS is done under Subscriber Management.
Line	Click + to expand <b>Line</b> .
Pattern *	Choose the route pattern from the drop-down list. For example: 08231006
Enduser	Click + to expand <b>Enduser</b> .
User ID	Choose the available user ID from the drop-down list. For example: Subscriber 1
Product Specific Configuration Layout	Click + to expand <b>Product Specific Configuration Layout</b> .
Key	Enter the Key for the product specific configuration layout. For example: stcapRegCap.
Value	Enter the Key for the product specific configuration layout. For example: 0.

**Note:** For more optional field information, see [Phones](#).

## MGCP Endpoints Fields

You can configure multiple endpoints for an MGCP gateway.

Option	Description
Domain Name	GUI read-only field is populated from the analog gateway for the MGCP protocol. This is a mandatory field.
Slot *	GUI read-only field is populated from the gateway units. This is a mandatory field.
Subunit Position *	GUI read-only field is populated from the gateway units. This is a mandatory field.
Port Number *	GUI read-only field is populated from the gateway units. This is a mandatory field.
Product Type *	Choose the product type from the drop- down list. For example: Analog Phone. This is a mandatory field.
Device Protocol *	Choose the device protocol from the drop-down list. For example: SCCP. This is a mandatory field.
Protocol Side *	This is a read-only field except when creating a device. This is a mandatory field.
Class *	This is a read-only field except when creating a device. This is a mandatory field.
Device Name *	GUI read-only field is populated from the analog gateway. This is a mandatory field.
Description	When the endpoint is added, the default description is in the format: <i>Endpoint for slot/subunit/port n/n/n gateway @domain</i> . Update it with an optional description for the device. This is an optional field and accepts a string value.
Device Pool	Choose the device pool from the drop-down list. For example: Cu2Si2-DevicePool. This is a mandatory field.
Calling Search Space	Choose the space name from the drop-down list. This is an optional field.
Common Device Configuration	Specify the Configuration name of the device. This is an optional field.
Network Locale	Choose the location from the drop-down list. This is an optional field.
Location *	Choose a location from the drop-down list. For example: Cu2Si2-Location. This is a mandatory field.
Media Resource Group List	Choose a media resource to allocate for a device. This is an optional field.
AAR calling search space	Choose the appropriate calling search space for the device to use when it performs automated alternate routing (AAR) from the drop-down list. This is an optional field.

Field	Description
Use Trusted Relay Point	Choose one of the following values: <ul style="list-style-type: none"> <li>• Off - Choose this value to disable the use of a Trusted Relay Point (TRP) with this device. This setting overrides the Use Trusted Relay Point setting in the common device configuration with which this device associates.</li> <li>• On - Choose this value to enable the use of a TRP with this device. This setting overrides the Use Trusted Relay Point setting in the common device configuration with which this device associates.</li> <li>• Default - If you choose this value, the device uses the Use Trusted Relay Point setting from the common device configuration with which this device associates.</li> </ul>
AAR Group	Specify the automated alternate routing (AAR) group for this device. The AAR group provides the prefix digits that are used to route calls that are otherwise blocked due to insufficient bandwidth.
Geolocation	Specify the location name. This is an optional field.
Transmit UTF-8 for Calling Party Name MLPP Preemption	Keep the check box cleared.
Port Number *	Configure the ports for the <b>MGCP Endpoint</b> . This is a mandatory field.
Trunk *	This field value auto-populates depending on the value set for the Port Number. This is a mandatory field.
Trunk Direction *	The field value auto-populates depending on the value set for the Number. This is a mandatory field.
Trunk Level *	The field value auto-populates depending on the value set for the Number. This is a mandatory field.
Attendant DN	Specify this field for group start and loop start. This is a mandatory field.
Prefix DN	Enter the prefix digits that are appended to the digits that this trunk receives on incoming calls.
Num Digits *	Enter the number of significant digits to collect between 0 to 32.
Expected Digits *	Enter the number of digits that are expected on the inbound side of the trunk. You can leave zero as the default value, if you are unsure.



Field	Description
SMDI Port Number (0 - 4096) *	Enter the first SMDI port number of the T1 span. If you set this parameter to a nonzero value and this gateway belongs to an unknown type of route list, route group, or route list, hunting does not continue beyond this span.
Unattended Port	Select this check box to indicate an unattended port on this device.
Line	Click + to expand <b>Line</b> .
Label	Use this field only if you do not want the directory number to show on the line appearance. Enter text that identifies this directory number for a line and phone combination.
E164 Mask	Indicate a phone number (or mask) that is used to send Caller ID information when a call is placed from the line. You can enter a maximum of 24 numbers, the international escape character + and 'X' characters. The Xs represent the directory number and must appear at the end of the pattern. For example, if you specify a mask of 972813XXXX, an external call from extension 1234 displays a caller ID number of 9728131234.
Dirn, Pattern *	Choose the route pattern from the drop-down list. For example: 08231006.
Dirn, Route Partition	Choose the partition to which the directory number belongs. Make sure that the directory number that you enter in the Directory Number field is unique within the partition that you choose. If you do not want to restrict access to the directory number, choose <None> for the partition.
Enduser	Click + to expand <b>Enduser</b> .
User ID	Choose the available user ID from drop-down list. For example: Subscriber 1.
Index	This field is the line position on the device. If left blank, an integer is automatically assigned.
Trunk Selection Order *	Choose the order from the drop-down list to display the call routing logic for the route pattern.

### Config: Product Specific Configuration Layout Fields

Field	Description
Key	Enter the Key for the product-specific configuration Layout. For example stcap-pRegCap.
Value	Enter the Key for the product-specific configuration layout. For example: 0.

### 9.9.10. Add Port to Analog Gateway

You can add a new port to a gateway located at site level, without prior knowledge of existing ports. This is useful on the higher density gateways, and in cases where a port is bulk loaded.

#### Supported Ports

- VG2XX and VG3XX models (FXS ports) are supported, providing a range of port capacities, from 2 – 160 ports.
- VG400 (8 ports max) and VG450 (144 ports max) models (FXS ports) are also supported

#### To add a port to an analog gateway:

1. Go to (default menus) **Apps Management > IOS > Add port to Analog Gateway**.
2. Choose a site.
3. Fill out fields on the form:
  - Add a URI at **Gateway Domain**, and add a description for the analog gateway.
  - Choose owner user ID, and INI inventory filter.
  - In **Directory Number** specify the directory number to use for the new line.

---

**Note:** When selecting a Directory Number (DN) to add to a new port:

- The next available DN from site level INI is pre-populated.
- The **Directory Number** drop-down can be used to select alternative Directory Numbers.
- If a bulk loader or form drop-down does not have the Directory Number field populated, the next number from site level INI is used. If this is not available, the next available number from customer level INI is used.

- 
- In **Calling Search Space**, fill out the Line CSS (if this is a new line).
  - Optionally, use one or more of the custom fields (Custom String or Custom Boolean) to configure additional fields, for example, to add a display name.
4. Click **Save**.

VOSS Automate checks for the first free port space on the gateway, and adds the port to the gateway. Once the transaction completes, a log entry shows the port number added.

## 9.9.11. SIP Gateway Port

### View, Add, or Delete a Gateway Port

This procedure displays, updates, and deletes existing gateway ports, and adds new gateway ports.

1. Go to (default menus) **Apps Management > IOS > SIP Gateway Port**.
2. Choose a site.
3. View the list of existing gateway ports.
4. Choose an option:
  - To delete an existing port, select the checkbox for the relevant ports, and click **Delete**.
  - To update an existing port, click the port name in the list. Update as required. Save your changes.
  - To add a new port, go to step 5.
5. To add a new port, click **Add**. Fill out the form with the new port details:
  - In **LBO Gateway Name**, choose the gateway where you will add the new port.
  - In **Port Number** enter a port number (free text field).
  - Choose a port type, either *T1* or *E1*, and optionally, add a description.

---

**Note:** If you've chosen a *T1* port:

- Choose a **Framing** option, either *sf* (super frame) or *esf* (extended super frame).
- Choose a **Line Coding** option, either *b8zs* or *ami*.

If you've chosen *E1* port:

- Choose a **Framing** option, either *crc4* or *no-crc4*.
  - **Line Coding** defaults to *hdb3*, which is the only option for this port type.
- 

- In **Clock Source**, choose either *line* or *internal*.
  - Choose **Protocol Side**, either *Network* or *User*.
  - Choose a **ISDN Switch Type**.
  - Choose **ISDN B-Channel Number Order**, either *ascending* or *descending*.
  - Define whether to set calling/called party number NOA for outgoing calls.
6. Save your changes.

A workflow pushes the data, and triggers the Command Builder. The commands for setting up the port are available via (default menus) **Apps Management > IOS > Commands**. You can paste these commands into the gateway. Commands for updates and deletes can also be found in the **Commands** log.

## 9.9.12. Quick Add SIP Gateway

### Overview

Quick Add SIP Gateway allows you to configure a new SIP gateway at the site level, with minimum details. Saving the form triggers a background process that uses the information you provide, along with configuration templates, and automatically creates the required elements at the correct hierarchies:

At customer level	<p>Saving a Quick Add SIP Gateway configuration creates and adds the following elements at the customer level:</p> <ul style="list-style-type: none"> <li>• The IOS device</li> <li>• The SIP trunk</li> <li>• The SIP LBO gateway</li> </ul>
At site level	<p>Saving a Quick Add SIP Gateway configuration performs these actions at the site level:</p> <ul style="list-style-type: none"> <li>• The gateway is associated to the site</li> <li>• The E1/T1 Ports are added (optional)</li> </ul>

### Note:

- Quick Add SIP Gateway does not support incremental configuration of the gateway. Activities such as adding additional ports must be done via the appropriate menus.
- While the Quick Add SIP Gateway tool automates the creation and configuration of elements required for the SIP gateway at the customer and site level, you can manually create these elements, if required. For example, to associate an unused or old gateway that was previously associated with a site, to a new site.

In this case, you would need to add these elements at customer and site hierarchies, as follows:

- At customer level:
  - \* Add the IOS device
  - \* Add the SIP trunk
  - \* Add the SIP LBO gateway
- At the site level:
  - \* Associate the gateway to the site
  - \* Add the E1/T1 ports (optional)

## Add the SIP Gateway and Associated Components

1. In the Admin Portal, choose the site.
2. Go to (default menus) **Apps Management > IOS > Quick Add SIP Gateway** to open the **Quick Add SIP Gateway** form.
3. On the **IOS Device** tab, configure IOS gateway details:
  - Mandatory. Enter a **IOS Device Name** or select an existing IOS device from the drop-down.
  - Optional. Add a description for the IOS device.
  - At **Network Addresses** you must create two network addresses:
    - To create the first network address, at **Address Space**, choose **SERVICE\_PROVIDER\_SPACE**, then enter the associated **IPv4 Address**.

---

**Note:** This is used to specify the IP address of the IOS device, if one is created.

---

- Create the second network address (as seen from the Unified CM) for the SIP Trunk to use. In this case, at **Address Space**, choose **APPLICATION\_SPACE**.

---

**Important:** The second network address is critical as it is used to specify the IP address of the SIP trunk.

---

4. On the **SIP Trunk** tab, choose a SIP trunk template.

---

**Note:**

- The SIP trunk templates assemble data (such as IPv4) from the details you specified in the **Network Addresses** section of the **IOS Device** tab in the previous step.
  - The **Configuration Templates** list displays available templates. Type *siptrunk* in the **Name** column to filter the list. Existing sample SIP trunk templates can be cloned, modified, and saved under a new name.
- 

5. On the **SIP Gateway** tab, complete the relevant fields, for example:

<b>SIP Gateway Name</b>	Mandatory.
<b>Run On Every Node</b>	Enabled by default. Defines whether the Unified CM hosts the trunk everywhere.
<b>Enable Builder</b>	<b>Command</b> Enabled by default.

---

**Note:** **Country** is a read-only field that displays the location of the SIP gateway. The value in this field (the country) is the same as the site to which the SIP gateway will be associated.

---

6. Optional. On the **Ports** tab, add an E1 or T1 port to the gateway:
  - Enter the required T1 or E1 **Port Number**, and a description.

---

**Note:** Port numbers should be formatted as follows: x/x/x (unit/subunit/port)

---

- Choose a **Port Template**. The template drives the values defined for E1 and T1.

---

**Note:** Existing sample port templates can be cloned, modified, and saved under a new name.

---

7. Click **Save**.

Once the transaction completes:

- The IOS Device, SIP Trunk, SIP LBO Gateway are created at the customer level
- The SIP LBO Gateway is associated to the site
- The optional E1 and T1 ports are created at the site level

### Related Topics

- [Set up an IOS Device](#)

## 9.9.13. Set up SIP Local Gateway

### Before You Begin

- You must configure an IOS Device at the customer hierarchy node.
- You must configure an NDL containing the Cisco Unified CM for the customer.
- You must configure a SIP Trunk at the customer hierarchy node.

A SIP Local Gateway is a logical gateway running on a physical IOS device.

### Procedure

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the customer for which you are setting up the SIP Local Gateway.
3. Choose **Apps Management > IOS > SIP Local Gateways**.
4. Click **Add**.
5. On the **SIP Local Gateways** screen, complete at minimum, the mandatory *SIP Local Gateways Fields*.
6. Click **Save**.

View transaction progress and details in the Transaction Logs.

- The SIP Local Gateway appears in the **SIP Local Gateway** list view.
- The HcsAddSipLocalGwEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
- The HcsAddSipLocalGwDialPeerEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event for each dial peer.

## Related Topics

- Transaction Logging and Audit in the Core Feature Guide.

## SIP Local Gateways Fields

Field	Description
Name *	Enter a name for the SIP Local Gateway. This field is mandatory.
Description	Enter a description for the SIP Local Gateway.
IOS Device *	Choose the IOS Device on which the SIP Local Gateway is located. This field is mandatory. Note: An IOS Device can have only one SIP Local Gateway. Once selected, the IOS Device cannot be changed.
Country *	Choose the country where the SIP Local Gateway is. This field is mandatory. The country selected must be the same country as the Site to which the SIP local gateway will be associated.
CUCM Publisher *	Choose the CUCM Publisher. All CUCM Publishers that are in the customer's NDL are displayed. This field is mandatory. The chosen CUCM Publisher must be the same as the CUCM Publisher in the NDL for the Site to which the SIP local gateway will be associated.
SIP Trunk *	Choose the SIP Trunk from the ones available on the CUCM Publisher. This field is mandatory. Note: Only SIP Trunks configured at the customer hierarchy are available. If the customer uses a shared CUCM, then SIP Trunks must be manually configured at the customer level in VOSS Automate to be selectable here.
Gateway Address	Gateway Address. This field is read-only and is derived from the selected SIP Trunk. Note: If a SIP Trunk has multiple destination addresses, only the first one is used.
Gateway Port	Gateway Port. This field is read-only and is derived from the selected SIP Trunk.
Run on Every Node	Indicates whether call processing is distributed across all CUCM subscriber nodes. This field is read-only and is derived from the selected SIP Trunk.
Dial Peer Info	If the <b>Run on Every Node</b> is cleared then the Call Manager Group members are displayed in priority order. If the <b>Run on Every Node</b> check box is selected, then all CUCM nodes in the cluster are displayed, but without priority.
Enable Command Builder *	Select this check box to have Command Builder generate commands when SIP Local Gateway is added, deleted, or modified. Default = Selected. If this is checked and the Override below is also checked, then E164-to-DN disassociation will fail if it exceeds the default limit. This setting should therefore be un-selected for disassociation to succeed in this case.
Override Voice Translation Limit ** Warning may invalidate Command Builder Configuration**	Select this check box to override Voice Translation Limit if E164 associations exceed 80. Default = Cleared. Note that once checked and saved, then un-checking will not reset the limit to 80. Contact VOSS support or a high level admin to reset it to 80.

### 9.9.14. Delete a SIP Local Gateway

1. Log in as provider, reseller, or customer administrator.
2. Choose **Apps Management > IOS > SIP Local Gateways**.
3. Select the SIP Local Gateway that you want to delete, then click the **Delete** icon on the details page.

View transaction progress and details in the Transaction Logs. See [Transaction Logging and Audit](#)

- The SIP Local Gateway is removed from the **SIP Local Gateway** list view.
- The HcsDeleteSipLocalGwEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event.
- The HcsDeleteSipLocalGwDialPeerEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event for each dial peer.
- If the SIP Local Gateway is associated with any sites, the events for disassociating a SIP Local Gateway from a Site are generated for each associated site. See “Disassociate a SIP Local Gateway from a Site” for details.

#### Related Topics

- Transaction Logging and Audit in the Core Feature Guide.

### 9.9.15. Update a SIP Local Gateway

This procedure updates a SIP Local Gateway. You can also perform this task if you have updated the SIP Trunk associated with the SIP Local Gateway.

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the customer whose SIP Local Gateway you are updating.
3. Choose **Apps Management > IOS > SIP Local Gateways**.
4. Click the SIP Local Gateway to update.
5. On the **SIP Local Gateways** screen you can update only the following fields:

Field	Description
Name	Enter a name for the SIP Local Gateway. This field is mandatory.
Description	Enter a description for the SIP Local Gateway.
Enable Command Builder	Select this check box to have Command Builder generate commands when SIP Local Gateway is added, deleted, or modified.

However, you can update the SIP Trunk in **Apps Management > CUCM > SIP Trunks**.

6. Click **Save**.

View transaction progress and details in the Transaction Logs.

- If you changed the SIP Local Gateway name, the Gateway Name for generated commands is updated in the IOS Commands log.



- If the **Run on Every Node** check box is selected for SIP Trunk, the HcsUpdateSipLocalGw1EVT and HcsUpdateSipLocalGw1EVT events are generated.

If the **Enable Command Builder** check box is selected, the IOS Command Builder generates the default IOS commands associated with the events.

### Related Topics

- Transaction Logging and Audit in the Core Feature Guide.

## 9.9.16. IOS Gateway Manual Configuration

This procedure adds a PRI Trunk to connect to the PSTN.

VOSS Automate does not generate any controller, interface, or dial peer commands for the gateway. This has to be manually added after the command builder has generated the gateway configuration.

### Perform these steps:

1. Configure PRI on a channelized E1 or T1 controller with the following commands:
  - a. controller <T1 or E1><slot/port>  
where slot/port is the controller location in the gateway
  - b. framing <esf | sf or crc4 | non crc4>  
esf/sf for T1 and crc4/non crc4 for E1
  - c. linecode <b8zs | ami or bdb3 | ami>  
b8zs/ami for T1 and hdb3/ami for E1
  - d. clock source <internal/line>
  - e. pri-group timeslots <1-24 | 1-31>  
Use all channel on the trunk 1-24 for T1 and 1-31 for E1
2. Configure Serial Interface with the following commands:
  - a. interface serial <slot/port>:<23 | 15>  
slot/port similar to the above for controller and use 23 for T1 and 15 for E1
  - b. no ip address
  - c. encapsulation hdlc
  - d. isdn protocol-emulate <network | user>
  - e. isdn switch-type <switch-type>  
See IOS documentation for supported switch types.
  - f. isdn incoming-voice voice
  - g. isdn bchan-number-order <ascending | descending>
  - h. no cdp enable
3. Configure POTS dial peer with the following commands:
  - a. dial-peer voice 95 pots

## b. translation-profile incoming &lt;91XX&gt;

For incoming call:

- use 9111 when both called and calling number have NOA
- use 9121 when called number does not have NOA but Calling number has NOA
- use 9112 when calling number does not have NOA but Called number has NOA
- use 9122 when both called and calling number do not have NOA

## c. translation-profile outgoing &lt;90XX&gt;

For outgoing call:

- use 9111 when both called and calling number have NOA
- use 9121 when called number does not have NOA but Calling number has NOA
- use 9112 when calling number does not have NOA but Called number has NOA
- use 9122 when both called and calling number do not have NOA

## d. destination-pattern 90[1-9]T

## e. incoming called-number .

## f. no digit-strip

## g. direct-inward-dial

## h. port &lt;slot/port&gt;:&lt;23 | 15&gt;

Similar to what is configured for serial interface

## i. no register e164

### Example IOS gateway manual configuration

```

controller T1 0/0/0
framing esf
linecode b8zs
clock source line
pri-group timeslots 1-24

interface serial 0/0/0:23
no ip address
encapsulation hdlc
isdn protocol-emulate user
isdn switch-type primary-net5
isdn incoming-voice voice
isdn bchan-number-order descending
no cdp enable

dial-peer voice 95 pots
translation-profile incoming 9111
translation-profile outgoing 9011
destination-pattern 90[1-9]T
incoming called-number .
no digit-strip

```

(continues on next page)

(continued from previous page)

```
direct-inward-dial
port 0/0/0:23
no register e164
```

## 9.10. Advanced

### 9.10.1. Configure Intelligent Proximity for Mobile Voice in VOSS Automate

#### provider

#### Prerequisites:

Ensure that you have the latest COP files for your Cisco IP phone, or device package downloaded and installed in Cisco Unified Communications Manager (Unified CM):

- In your browser, open <https://software.cisco.com/download/navigator.html?mdfid>.
- In the Product Search window, enter Unified Communications Manager Version 10.5.
- Choose Software Type Unified Communications Manager/CallManager Device Packages.
- Download and install the file cmterm-devicepack 10.5.2 12020-1cop.sgn in Unified CM.

Each phone that you register to Unified CM contains phone-specific settings. These settings appear in Unified CM at the bottom of the Phone Configuration window under the Product Specific Configuration Layout heading. The settings vary by phone model, and are tailored to each phone model. The phone has default settings, but in the Unified CM Phone Configuration window, you can override the settings and configure new values.

Task overview:

- Ensure that all the required settings are enabled on Cisco Unified CM.
- Import the settings into VOSS Automate so they appear on the Phone Management page for each registered phone.
- Ensure that the settings are correct in VOSS Automate.
- Pair the mobile phone or tablet with the Cisco IP endpoint.

#### Perform these steps:

1. In Cisco Unified CM, choose these settings on the **Device** page:
  - Proximity Mode - Choose 'On'
  - Call Control - Choose 'Enabled'
  - Proximity Content Share From Clients - Choose 'Enabled'
  - Proximity Content Share To Clients - Choose 'Enabled'
2. Import phone features (or refresh existing phone features) using the Import/Refresh feature in VOSS Automate. This step imports each phone type's features as listed on the Product Specific Configuration Layout page in **Devices > Phones** in Unified CM into VOSS Automate. VOSS Automate imports the settings and only shows settings that were available and imported the last time the command was run. Perform this step any time there is a change on the Unified CM, such as adding new phone types or

templates. However, we recommend that you perform this step every time. To import or refresh phone features, perform these steps:

- a. Log in to VOSS Automate as provider or reseller administrator.
  - b. Choose **Apps Management > Advanced > Perform Publisher Actions**.
  - c. From the **Action** drop-down, choose **Import**.
  - d. From the **App Type** drop-down, choose **CUCM Device**.
  - e. In the Clusters box, click the cluster to be configured for the Intelligent Proximity feature in the **Available** window. Click Select to move the cluster to the **Selected** window.
  - f. Click **Save**.
3. Verify that the Bluetooth settings are enabled.
- a. Log in to VOSS Automate as customer administrator and choose a valid site from the hierarchy node.
  - b. Choose **Subscriber Management > Phones**.
  - c. Choose the endpoint to pair with the mobile phone or tablet.
  - d. On the **Advanced Information** tab, make sure that these fields are set correctly if they appear for the selected endpoint type:
    - **Bluetooth** drop-down - **Enabled**.
    - **Allow Bluetooth Contacts Import** drop-down - **Enabled**.
    - **Allow Bluetooth Mobile Handsfree Mode** drop-down - **Enabled**.
4. Pair the mobile phone or tablet with the Cisco endpoint (device such as a desk phone). For more information, see 'Intelligent Proximity for Mobile Devices' in [http://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/cuipph/8811\\_8841\\_8851\\_8861/10\\_5/english/userguide/P881\\_BK\\_C9A41445\\_00\\_cisco-ip-phone-8811-8841.pdf](http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cuipph/8811_8841_8851_8861/10_5/english/userguide/P881_BK_C9A41445_00_cisco-ip-phone-8811-8841.pdf).
- a. At the Cisco IP endpoint, make sure that Bluetooth and Handsfree 2-way audio are enabled.
  - b. Add the mobile device. Once the mobile device is discovered, you can pair the two and also store mobile contacts on the Cisco IP endpoint.
  - c. A security code may appear on both the endpoint and mobile device. Accept the security code on both the Cisco IP endpoint and mobile device before the pairing can be completed.

## 9.11. UC Prep Management

### 9.11.1. Introduction to UC Prep

#### Overview

The UCPrep Profile tool further streamlines the preparation process of deployment of Cisco applications with VOSS Automate Provider and Enterprise so that administrators will not have to repeat the same configuration tasks each time they stage or build a UC Application.

The tool provides an easy, flexible and repeatable way to define, store and load static configurations and other infrastructure setup needed in the UC applications. One or multiple sets of static configuration data can

be set up and stored. The UCPREP Profile tool use can vary from provider to provider and even by customer within a provider.

The created static configuration can then be pushed to UC Apps as a “one-off”, and does not always have to be tied into a overall workflow.

### UCPrep Feature Scope

The UCPrep tool covers the following areas of the Cisco Application Deployment:

- CUCM Date Time Groups
- CUCM Groups
- CUCM Host Adjustment
- CUCM SIP Trunk Security Profiles
- CUCM SIP Profiles
- CUCM Audio Codec Preferences
- CUCM Application Users
- CUCM Feature Control Policies
- CUCM Route Filters
- CUC Authentication Policies
- CUC User Templates

It is not necessary to adjust all of these UC Application elements within a given UCPrep Profile. For example, if a Unity server is not part of a deployment, the CUC elements may remain un-configured. Similarly, if there is no need to adjust the hostname of a CUCM node, then the input form tab for that configuration can remain empty.

### Caveats

- The push of data needs to be run at the level of the apps.
- None of the work has been done to apply required fields from the perspective of UC Apps to the data model.

### UCPrep Menu Descriptions

When the feature is exposed on an administrator menu, a list of menus items are available to carry out the UCPrep tasks.

A typical workflow would be that one or more UCPrep Profiles are set up for use and then pushed to UC Applications.

- Initial Timezones can be selected before the UCPrep Profile configuration in order to simplify the management of the drop-down list of timezones in the tool.
- The UCPrep Application User List can also be set up where these are repeatedly used and pushed to UC Applications.
- The related Configuration Templates that drive the workflows of the configuration of the elements are grouped together for detailed customization and management.

Menu Name	Description and Notes
UCPrep Profile Push	This is the menu element used to push profile data into the target Cisco UC Applications.
UCPrep Profiles	The VOSS data structure that contains the configurations that can be repeatedly applied to UC Applications.
UCPrep Friendly Time-zones	List of time zones that is a mirror of the Call Manager available time zone database. This table is used to populate the Date/Time Group portion of the UCPrep Profile.
UCPrep Application User List	Administrator configurable list of Application Users that may be pushed into a Cisco Call Manager.
UCPrep Configuration Templates	The collection of configuration templates that are utilized to provision the individual UC Application elements. Note that the menu item filters the configuration templates based on the prefix "ucprep". Should any configuration template be cloned for customization please use the prefix.

### 9.11.2. UCPrep Profiles

UCPrep Profiles [Standard UC Deployment USA] Save Delete Help Back Action ▾

UCPrep Profile | CUCM Date Time Groups | CUCM Group | CUCM Host Adjustment | CUCM SIP Trunk Security Profiles | CUCM SIP Profile | More ▾

UC Prep Profile Name	Standard UC Deployment USA
UC Prep Profile Notes	Standard set of UC deployment for USA Country-wide. Date Time Groups: NY, Chicago, Denver, Phoenix, Los Angeles. CUCM Groups - PubOnly. CUC User Templates - Standard, Advanced.

From the **UCPrep Profiles** menu, the list view shows all created profiles at the administrator's hierarchy and below.

UCPrep Profiles are intended to be templates at a higher level in the hierarchy and are then cloned to a lower level for specific settings to a cluster. When cloning a UCPrep Profile the UC Prep Profile Name must be unique. The **UCPrep Profile Notes** should also be descriptive so that this information is available when the UCPrep Profile Push tool is used.

For example, a provider level profile may contain global element configuration that are not site or cluster specific. At a customer or site level, this profile can then be cloned and updated with configuration elements that apply to the customer or site.

#### UCPrep Profiles Reference

Name	Field Description
UC Prep Profile Name	The friendly name for the UCPrep Profile. This is the name populated into the push tooling above.
UC Prep Profile Notes	A field available to enter helpful information describing the UCPrep Profile. This is the field populated to the push tooling above.

### 9.11.3. UCPrep Profile Push

#### UCPrep Profile Push

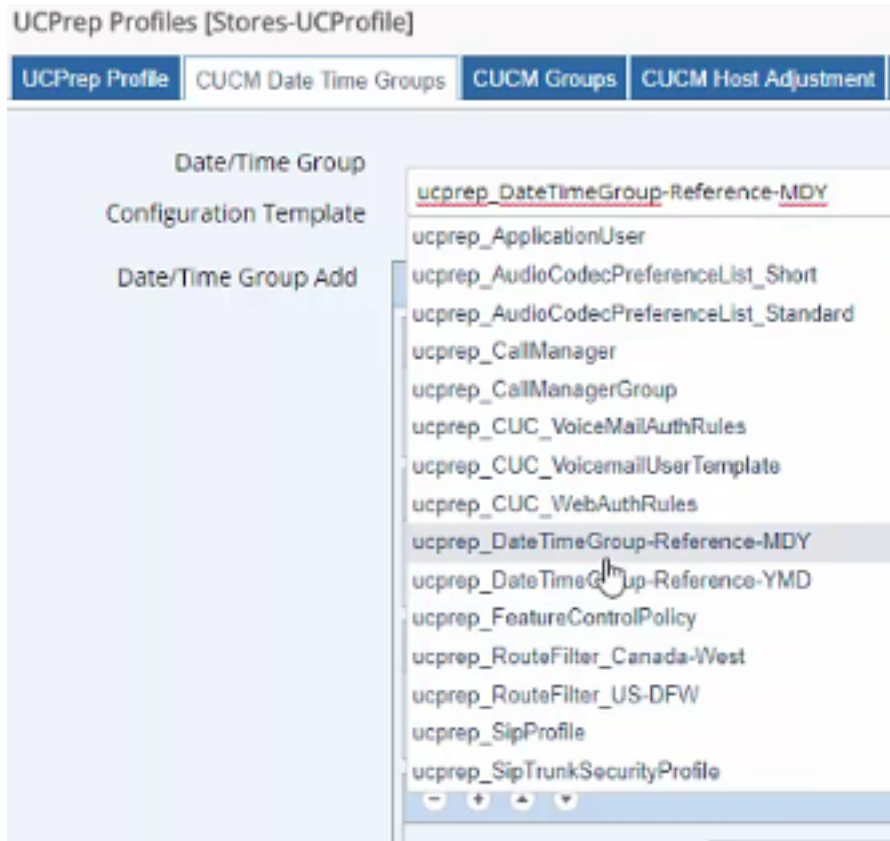
UC Prep Profile:	Standard UC Deployment USA
Profile Description	Standard set of UC deployment for USA Country-wide. Date Time Groups: NY, Chicago, Denver, Phoenix, Los Angeles. CUCM Groups - PubOnly. CUC User Templates - Standard, Advanced.
Target Call Manager	["10.5.31.21", "8443"]
Target Unity	["10.5.31.22", "443"]

#### UCPrep Profile Push Reference

Name	Field Description
UCPrep Profile	Drop-down providing the available UCPrep Profiles configured on the system.
Profile Description	Description populated automatically when a UCPrep Profile is chosen from the UC Prep Profile drop-down.
Target Call Manager	Cisco Call Manager to which the UCPrep Profile Data will be pushed.
Target Unity	Cisco Unity server to which the UCPrep Profile Data will be pushed.

### 9.11.4. Date Time Groups

- Configuration Templates can be customized and added so that these become available in the **Date/Time Group Configuration Template** drop down list, for example to templates to customize the date format and listed in the **UCPrep Configuration Templates** menu.
- The **UCPrep Friendly Timezones** menu can be used to manage the list available in the **timezones** drop-downs, for example to shorten the list to only include the timezones that are used in the Data/Time groups.



### Date Time Groups Reference

Field	Field Description
Date/Time Group Configuration Template	Configuration template used to configure the specific settings to a Data-Time Group in Call Manager. Options available in the Configuration template are date format, separator, Time format, and so on. Note: the name of the date time group is automatically configured based on the chosen timezone entry. A timezone drop-down entry of <i>America/New_York</i> will create a date time group named <i>America-New_York</i> .
Date/Time Group Add	Timezones are chosen and added via drop-down. Any number of timezones may be chosen.

#### 9.11.5. Call Manager Groups

In order for the Member drop-downs to function, a UCPrep Profile must be cloned to the level of the UC Applications.

Note that in this example, the UCPrep Profile that is built is entered at the “Axis” customer application level.



The screenshot shows the 'Standard CUCM Group' configuration page. At the top, there are navigation tabs: 'UCPrep Profile', 'CUCM Date Time Groups', 'CUCM Group' (selected), 'CUCM Host Adjustment', 'CUCM SIP Trunk Security Profiles', and 'More'. Below the tabs, there are buttons for 'Save', 'Delete', 'Help', 'Back', and 'Action'. The main content area is titled 'Standard CUCM Group' and contains two sub-panels. Each sub-panel has a 'Call Manager Group Name' field and a 'Members (In Order)' list. The first sub-panel has the name 'Sub1Sub2' and two members: 'CM\_3121CUCMSub1' and 'CM\_3121CUCMSub2'. The second sub-panel has the name 'Sub2Sub1' and two members: 'CM\_3121CUCMSub2' and 'CM\_3121CUCMSub1'.

The order in which the members are added indicate primary and secondary members of the group.

### Call Manager Groups Reference

Name	Description
Standard CUCM Group	Entry mechanism to allow for configuration of an unlimited number of Call Manager Groups.
Call Manager Group Name	Free text entry box for Call Manager Group Name.
Members (In Order)	Add Call Manager nodes via drop-down by adding member entry boxes. The Call Manager nodes are added to the Call Manager Groups in the order presented in the input box.

## 9.11.6. Call Manager Host Adjustment

Multiple nodes of the cluster at the hierarchy can be modified.

Considerations for Host Adjustment are:

- Since the CUCM Host Adjustment modifies existing data in Call Manager, the data must be re-set or removed if a UCPrep Profile must be applied more than once.
- The CUCM Host adjustment occurs after the Call Manager Group configuration because the Call Manager will internally adjust the node names within a Call Manager Group when the node is renamed.
- If a node name is adjusted and a UCPrep profile is run a second or more times, the data on the **CUCM Groups** tab must be updated from the drop-downs to be the current CUCM node name.

UCPrep Profiles [Standard UC Deployment USA - AXIS] Save Delete Help Back

UCPrep Profile CUCM Date Time Groups CUCM Group CUCM Host Adjustment CUCM SIP Trunk Security Profiles CUCM SIP Profile CUCM Audio Codec Preferences CUCM Application Users More ▾

Call Manager Hostname

Current ID

New Host Identifier

Call Manager Universal Device Template

Call Manager Universal Line Template

Starting Directory Number

Ending Directory Number

Auto-registration Enabled on this Cisco Unified Communications Manager

Current ID

New Host Identifier

Call Manager Universal Device Template

Call Manager Universal Line Template

Starting Directory Number

Ending Directory Number

Auto-registration Enabled on this Cisco Unified Communications Manager

## Call Manager Host Adjustment Reference

Name	Description
Call Manager Hostname	Entry area for multiple Call Manager Hostname adjustments.
Current ID	Drop-down providing the current Call Manager node names in the cluster.
New Host Identifier	Free text area to enter the new name as per business standards.
Call Manager Universal Device Template	Drop-down providing the CUCM configured Universal Device Templates. These templates are only required when configuring auto-registration on the Call Manager Node.
Call Manager Universal Line Template	Drop-down providing the CUCM configured Universal Line Templates. These templates are only required when configuring auto-registration on the Call Manager Node.
Starting Directory Number	Free text field for entry of starting directory number for auto-registration.
Ending Directory Number	Free text field for entry of ending directory number for auto-registration.
Auto-registration Enabled on this Cisco Unified Communications Manager	Check box to enable auto-registration on the Call Manager node.

### 9.11.7. Call Manager SIP Trunk Security Profiles

The input form on the tab shows the fields commonly requiring modification.

UCPrep Profiles [Standard UC Deployment USA - AXIS] Save Delete Help Back Action ▾

UCPrep Profile CUCM Date Time Groups CUCM Group CUCM Host Adjustment CUCM SIP Trunk Security Profiles CUCM SIP Profile More ▾

Sip Trunk Security Profile

Name

Description

Device Security Mode

Incoming Transport Type\*

Outgoing Transport Type

Enable Digest Authentication

Accept presence subscription

Accept out-of-dialog refer

Accept unsolicited notification

Accept replaces header

Incoming SIP Port

## Call Manager SIP Trunk Security Profiles Reference

Name	Description
Name	Free text field to enter Sip Trunk Security Profile name.
Description	Free text field to enter Sip Trunk Security Profile description.
Device Security Mode	Drop-down providing options: <ul style="list-style-type: none"> <li>• Non Secure</li> <li>• Authenticated</li> <li>• Encrypted</li> </ul>
Incoming Transport Type	Drop-down providing options: <ul style="list-style-type: none"> <li>• TLS</li> <li>• TCP and UDP</li> </ul>
Outgoing Transport Type	Drop-down providing options: <ul style="list-style-type: none"> <li>• TCP</li> <li>• UDP</li> <li>• TLS</li> </ul>
Enable Digest Authentication	Check box to enable Digest Authentication.
Accept presence subscription	Check box to enable Accept of presence subscription.
Accept out-of-dialog refer	Check box to enable Accept out-of-dialog refer.
Accept unsolicited notification	Check box to enable Accept unsolicited notification.
Accept replaces header	Check box to enable Accept replaces header.
Incoming SIP Port	Free text box to set Incoming SIP Port.

### 9.11.8. Call Manager SIP Profiles

Where values or time settings are shown in the fields of the form when adding a profile, these are the static values corresponding with the Call Manager defaults.

Call Manager SIP Profiles

Name: Custom\_SIP\_Profile

Description: Custom SIP Profile

Use Fully Qualified Domain Name in SIP Requests:

Phone Parameters: Timer Register Expires (seconds): 3600

Phone Parameters: Timer Register Delta: 5

Phone Parameters: Timer Keep Alive Expires (seconds): 120

Phone Parameters: Timer Subscribe Delta (seconds): 5

Phone Parameters: Timer Subscribe Expires (seconds): 120

Enable OPTIONS Ping to monitor destination status for Trunks with Service Type "None (Default)":

Trunk Configuration: SIP Rel1XX Options: Send PRACK for all 1xx Messages

Trunk Configuration: Calling Line Identification Presentation: Default

Trunk Configuration: Session Refresh Method:

Trunk Configuration: Enable ANAT:

Trunk Configuration: Deliver Conference Bridge Identifier:

SDP Information: Allow Presentation Sharing using BFCP:

## Call Manager SIP Profiles Reference

Field Name	Description
Call Manager SIP Profiles	Entry box to add any number of SIP Profile definitions.
Name	Free text field to enter name of SIP Profile.
Description	Free text field to enter description of SIP Profile.
Use Fully Qualified Domain Name in SIP Requests	Check box to enable Use Fully Qualified Domain Name in SIP Requests.
Phone Parameters: Timer Register Expires (seconds)	Free text box to adjust the Timer Register Expired timeout. Default 3600
Phone Parameters: Timer Register Delta	Free text box to adjust the Timer Register Delta. Default 5
Phone Parameters: Timer Keep Alive Expires (seconds)	Free text box to adjust the Timer Keep Alive Expires. Default 120
Phone Parameters: Timer Subscribe Delta (seconds)	Free text box to adjust the Timer Subscribe Delta. Default 120
Enable OPTIONS Ping to monitor destination status for Trunks with Service Type "None (Default)"	Check box to Enable OPTIONS Ping.
Trunk Configuration: SIP Rel1XX Options	Drop-down providing options <ul style="list-style-type: none"> <li>• Disabled</li> <li>• Send PRACK if 1xx Contains SDP</li> <li>• Send PRACK for all 1xx Messages</li> </ul>
Trunk Configuration: Calling Line Identification Presentation	Drop-down providing options <ul style="list-style-type: none"> <li>• Default</li> <li>• Strict From URI presentation Only</li> <li>• Strict Identity Headers presentation Only</li> </ul>
Trunk Configuration: Session Refresh Method	Drop-down providing options <ul style="list-style-type: none"> <li>• Invite</li> <li>• Update</li> </ul>
Trunk Configuration: Enable ANAT	Check box to enable ANAT
Trunk Configuration: Deliver Conference Bridge Identifier	Check box to enable Deliver Conference Bridge Identifier.
SDP Information: Allow Presentation Sharing using BFCP	Check box to enable Allow Presentation Sharing using BFCP

### 9.11.9. Call Manager Audio Codec Preferences

UCPrep Profiles [Standard UC Deployment USA - AXIS] Save Delete Help Back Action ▾

UCPrep Profile CUCM Date Time Groups CUCM Group CUCM Host Adjustment CUCM Audio Codec Preferences More ▾

Audio Codec Preference List +

- +

Configuration

Template to Apply

The Audio Codec Preferences List lends itself to be driven by a configuration template rather than a GUI input of a list of codecs.

The lists are written to Call Manager by selecting any number of configuration templates that have been set up to list out groups of codecs. Typically, a configuration template from the menu **UCPrep Configuration Templates** list view is cloned and modified to show the required codecs and settings.

Audio Codec Preference List Configuration Template Example:

UCPrep Configuration Templates [ucprep\_AudioCodecPreferenceList\_test] Save Delete Help Back Action ▾

Name\*

Description

Foreach Elements

Schema Defaults

Target Model Type\*

Merge Strategy

**device/cucm/AudioCodecPreferenceList**

Codec Names \*

-	+	▲	▼	<input type="text" value="AMR-WB (7k-24k)"/>
-	+	▲	▼	<input type="text" value="AMR (5k-13k)"/>
-	+	▲	▼	<input type="text" value="MP4A-LATM 128k"/>
-	+	▲	▼	<input type="text" value="AAC-LD (MP4A Generic)"/>
-	+	▲	▼	<input type="text" value="MP4A-LATM 64k"/>
-	+	▲	▼	<input type="text" value="MP4A-LATM 56k"/>
-	+	▲	▼	<input type="text" value="L16 256k"/>
-	+	▲	▼	<input type="text" value="MP4A-LATM 48k"/>
-	+	▲	▼	<input type="text" value="G.729 8k"/>
-	+	▲	▼	<input type="text" value="G.729a 8k"/>
-	+	▲	▼	<input type="text" value="GSM Half Rate 6k"/>
-	+	▲	▼	<input type="text" value="G.723.1 7k"/>

Name \*

Description \*



## Call Manager Audio Codec Preferences Reference

Name	Description
Audio Codec Preference List	Entry mechanism for any number of Codec lists.
Configuration Template to Apply	Drop-down providing a list of available configuration templates.

### 9.11.10. Call Manager Application Users

- Application Users can initially be set up from the **UCPrep Application User** menu, to be available from the **Application Users** drop-down on the input form of this tab.
- New Application Users can also be added on the form by entering the user name directly into the **Application Users** input.
- Application User roles are automatically added from the selected **Group Permissions**.

UCPrep Profiles [Standard UC Deployment USA - AXIS] Save Delete Help Back Action ▾

UCPrep Profile | CUCM Date Time Groups | CUCM Group | CUCM Host Adjustment | CUCM SIP Trunk Security Profiles | CUCM SIP Profile | CUCM Application Users More ▾

Application Users

User ID: CustomCTIUser ▾

Password: .....

Repeat Password: .....

Controlled Devices:

CTI Controlled Device Profiles:

Group Permissions:

- Group: Standard CTI Enabled ▾
- Group: Standard CTI Secure Connection ▾

User ID: SinglewireUser ▾

Password: .....

Repeat Password: .....

Controlled Devices:

CTI Controlled Device Profiles:

Group Permissions:

- Group: Third Party Application Users ▾

## Call Manager Application Users Reference

Field Name	Description
Application Users	Mechanism for adding an unlimited number of application users to a Call Manager.
User ID	The Application User ID. This drop-down is driven from the UCPrep Application User List in the menu. The idea behind this is to cut down on AppUser misspelling.
Password	Password for the application user
Repeat Password	Confirmation of entered password.
Controlled Devices	Drop-down that provides a list of configured devices on Call Manager should an association be necessary.
CTI Controlled Device Profiles	Drop-down that provides a list of configured device profiles on Call Manager should an association be necessary.
Group Permissions	Drop-down that provides the ability to build group permissions for the application user. The drop-downs will provide all configured groups from the Call Manager.

### 9.11.11. Call Manager Feature Control Policies

Feature Control Policies are defined by entering policy names and selecting features from the list of check boxes.

Feature Control Policy

Policy Name: FCP-ALL

Policy Description: All Features Enabled

Barge

Call Back

Call Pickup

Conference List

Divert (Alerting)

Divert (Connected)

Forward All

Group Call Pickup

Meet Me

Mobility

Other Call Pickup

Park

Redial

Report Caller

Report Quality

Speed Dial

Policy Name: BargeOnly

Policy Description: Barge Only Enabled

Barge

Call Back

Call Pickup

## Call Manager Feature Control Policies Reference

Field Name	Description
Feature Control Policy	Mechanism to enter an unlimited number of Feature Control Policies
Policy Name	Free text field for entry of Feature Control Policy Name.
Policy Description	Free text field for entry of Feature Control Policy Description.
Check boxes to add the individual services into the Feature Control Policy	<ul style="list-style-type: none"> <li>• Barge</li> <li>• Call Back</li> <li>• Call Pickup</li> <li>• Conference List</li> <li>• Divert (Alerting)</li> <li>• Divert (Connected)</li> <li>• Forward All</li> <li>• Group Call Pickup</li> <li>• Meet Me</li> <li>• Mobility</li> <li>• Other Call Pickup</li> <li>• Park</li> <li>• Redial</li> <li>• Report Caller</li> <li>• Report Quality</li> <li>• Speed Dial</li> </ul>

### 9.11.12. Call Manager Route Filters

UCPrep Profiles [Standard UC Deployment USA - AXIS] Save Delete Help Back Action ▾

UCPrep Profile CUCM Date Time Groups CUCM Group CUCM Route Filters More ▾

Route Filters +

- +

Route Filter

Template to  ▾

Apply

The Route Filter lends itself to be driven by a configuration template rather than a GUI input of clauses.

The filters are written to Call Manager by selecting any number of configuration templates from the **Route Filter Template to Apply** drop-down on the input form.

Typically, a configuration template from the menu **UCPrep Configuration Templates** list view is cloned and modified to show the required Route Filter settings.

Example of Route Filter Configuration Template:

### Call Manager Route Filters Reference

Name	Description
Route Filters Route Filter Template to Apply	Mechanism to add an unlimited number of route filters via configuration template. Drop-down to provide a list of available configuration templates.

### 9.11.13. Unity Authentication Policies

UCPrep Profiles [Standard UC Deployment USA - AXIS] Save Delete Help Back : Action ▾

UCPrep Profile CUCM Date Time Groups CUCM Group CUCM Host Adjustment CUCM SIP Trunk Security Profiles Unity Authentication Policies More ▾

Update Voice Mail Authentication Rules

Voice Authentication Rule CFT

Update Web Authentication Rules

Web Authentication Rule CFT

The Unity authentication rule lends itself to be driven by a configuration template rather than a GUI input, since settings commonly do not change and the same group of settings are repeated.

Typically, configuration templates from the menu **UCPrep Configuration Templates** list view are cloned and modified to show the required Voice and Web Authentication Rules.

Example of Authentication Rule Configuration Template:

UCPrep Configuration Templates [ucprep\_CUC\_VoiceMailAuthRules]

Save Delete Help Back Action ▾

Name*	<input type="text" value="ucprep_CUC_VoiceMailAuthRules"/>
Description	<input type="text" value="CUC Voice Authentication Rule"/>
Foreach Elements	<input type="button" value="+"/>
Schema Defaults	<input type="button" value="+"/>
Target Model Type*	<input type="text" value="device/cuc/AuthenticationRule"/>
Merge Strategy	<input type="text" value="Additive"/>

device/cuc/AuthenticationRule	
Trivial Cred Checking	<input type="text" value="(( False ))"/>
Max Hacks	<input type="text" value="0"/>
Object Id	<input type="text"/>
Max Days	<input type="text" value="0"/>
Min Length	<input type="text" value="3"/>
Hack Reset Time	<input type="text" value="30"/>
Expiry Warning Days	<input type="text" value="15"/>
Lockout Duration	<input type="text" value="30"/>
URI	<input type="text"/>
Location Object Id	<input type="text" value="{{ pwf.LocationObjectId }}"/>
Min Duration	<input type="text" value="1440"/>
Display Name	<input type="text" value="Recommended Voice Mail Authentication Rule"/>
Prev Cred Count	<input type="text" value="0"/>
Location URI	<input type="text" value="/vmrest/locations/connectionlocations/{{ pwf.LocationObjectId }}"/>

## Unity Authentication Policies Reference

Field Name	Description
Update Voice Mail Authentication Rules	Check box to enable the update of the Voice Mail Authentication Rule from the UCPrep Profile.
Voice Authentication Rule CFT	Drop-down providing a list of available configuration templates.
Update Web Authentication Rules	Check box to enable the update of the Web Authentication Rule from the UCPrep Profile.
Web Authentication Rule CFT	Drop-down providing a list of available configuration templates.

### 9.11.14. Unity User Templates

The list of user templates shown on the input form are those that are most often changed. Own templates can be added as new entries and options selected from the available drop-downs.

Additional required fields can be added by selecting a created Configuration Template containing these from the **CUC User Template CFT** drop-down.

UCPrep Profiles [Standard UC Deployment USA - AXIS] Save Delete Help Back Action

UCPrep Profile CUCM Date Time Groups CUCM Group CUCM Host Adjustment CUCM SIP Trunk Security Profiles CUCM SIP Profile Unity User Templates More

Unity User Template

Alias: Standard\_Voicemail\_User

Display Name: Standard Voicemail User

Based On Template: voicemailusertemplate

Phone System: PhoneSystem

Class Of Service: Voice Mail User COS

Partition: 3122cucpub Partition

Search Scope: 3122cucpub Search Space

Message Aging Policy: Default System Policy

CUC User Template: ucprep\_CUCVoicemailUserTemplate

CFT:

Alias: Advanced\_Voicemail\_User

Display Name: Advanced Voicemail User

Based On Template: voicemailusertemplate

Phone System: PhoneSystem

Class Of Service: Voice Mail User COS

Partition: 3122cucpub Partition

Search Scope: 3122cucpub Search Space

Message Aging Policy: Do Not Age Messages

CUC User Template: ucprep\_CUCVoicemailUserTemplate

CFT:



Field Name	Description
Unity User Template	Mechanism to enter an unlimited number of user templates.
Alias	Free text field to enter the User Template Alias.
Display Name	Free text field to enter the User Template Display Name.
Based On Template	Drop-down providing a list of Unity configured templates to use as the required reference.
Phone System	Drop-down providing the Unity configured phone system.
Class Of Service	Drop-down providing the Unity configured and available Class of Service.
Partition	Drop-down providing the Unity configured and available Partitions.
Search Scope	Drop-down providing the Unity configured and available Calling Search Spaces.
Message Aging Policy	Drop-down providing the Unity configured and available Message Aging Policies.
CUC User Template CFT	The VOSS configuration template, which will be used to populate the unexposed fields of a User Template.

## 9.12. Load Balancing

### 9.12.1. Introduction to Load Balancing

Cisco Unified Communications Manager (Unified CM) groups provide both call-processing redundancy and distributed call processing. You can distribute devices, device pools, and Unified CMs among the groups to improve redundancy and load balancing in your system.

A Cisco Unified Communications Manager Group specifies a prioritized list of up to three Unified CMs. The first Unified CM in the list serves as the primary Unified CM for that group, and the other members of the group serve as secondary and tertiary (backup) Unified CMs.

Each device pool has one Unified CM Group that is assigned to it. For example, Group 1 points to Device Pool 1, Group 2 points to Device Pool 2, and Group 3 points to Device Pool 3. When a device registers, it attempts to connect to the primary (first) Unified CM in the group that is assigned to its device pool. If the primary Unified CM is not available, the device tries to connect to the next Unified CM that is listed in the group, and so on.

Load balancing is a manual process on Unified CM requiring you to perform the following tasks:

1. Add new, custom Unified CM groups and device pools.
2. Synchronize the groups and device pools into VOSS Automate.
3. Choose the appropriate group and device pool in the Subscriber or Phone configuration for the site. To create more than one configuration for a site, create at least two Unified CM groups, then associate a device pool to the appropriate Unified CM group.

To determine if load balancing is required for your network, you can check the current device traffic load in Unified CM using the System > Device Pool menu path. When you click on the device configuration information for a specific device pool, the Device Pool Information field lists the number of members in the Device Pool. Compare different device pools to see if the members are evenly divided between pools.

To perform load balancing, see “Load Balancing Using Site Default Device Pool”.

### 9.12.2. Load Balancing Using Site Default Device Pool

A default device pool is created for each site when the site dial plan is deployed for the Type 1 through 4 dial plan schema groups. This procedure uses the default site device pools, so you do not need to create any additional device pools directly on Cisco Unified Communications Manager (Unified CM). Perform this procedure to load balance using the default site device pool. In this procedure, the default device pool is updated to point to the appropriate Cisco Unified Communications Manager group.

**Note:** Using this configuration, redundancy is gained within a site while load balancing is gained across multiple sites. Since there is one device pool per site, all devices at a site home to the same sequence of Cisco Unified Communications Managers, providing failover redundancy. Devices in different sites home to different sequences of Cisco Unified Communications Managers, providing load balancing across the sites.

The default site device pool is not created until the Type 1 to 4 site dial plan has been deployed which updates the Site Defaults to use the default device pool. If the site dial plan has not been deployed, you will not see a site default device pool in the form Cu<customerId>Si<siteId>-DevicePool. You can determine the default device pool for a site in VOSS Automate by choosing **Site Management > Defaults**.

#### Perform these steps:

1. Log in as provider, reseller, or customer administrator.
2. Choose the site from the hierarchy node breadcrumb at the top of the view in (VOSS Automate).
3. Follow the steps outlined in Create a Site Dial Plan if you have not already done so; the Create a Site Dial Plan procedure creates the default site device pool instance.
4. Log in to Cisco Unified Communications Manager and create one or more Cisco Unified Communications Manager groups on Cisco Unified Communications Manager. See Cisco Unified Communications Manager Administration Guide.
5. From VOSS Automate, perform a sync operation of the Cisco Unified Communications Manager using the **Administration Tools > Data Sync** menu path. This sync updates the VOSS Automate cache and makes the Cisco Unified Communications Manager groups that were added directly on Cisco Unified Communications Manager available to VOSS Automate.
6. Perform Associate Cisco Unified Communications Manager Group to a Device Pool, choose a Unified CM group other than the default group in the **Call Manager Group** drop-down list.

#### Note:

To verify that the phone or subscriber uses the device pool as expected, choose a subscriber from the list of subscribers in VOSS Automate (**Subscriber Management > Subscribers**) and choose the required **Device Pool Name** setting from the drop-down under the **Phones** tab.

### 9.12.3. Associate a CUCM Group to a Device Pool

This procedure associates a Cisco Unified Communications Manager (CUCM) group with an existing device pool for each site.

This allows calls from a device that is tied to a device pool to go out on a specific CUCM group based on the call type. You cannot use this procedure to add or delete device pools.

#### Perform these steps:

1. Log in as provider, reseller or customer administrator.

#### Warning:

When associating a CUCM group, ensure that you choose a valid site under your customer in the hierarchy node breadcrumb at the top of the view. If you attempt to associate a CUCM group at any other node in the hierarchy, a popup alerts you to select a site hierarchy node.

2. Perform one of the following:
  - If you logged in as provider or reseller administrator, choose **Device Management > CUCM > Device Pools**.
  - If you logged in as customer administrator, choose **Device Management > Advanced > Device Pools**.
3. Click the device pool to be associated.
4. From the **Unified CM Group** drop-down, choose a specific CUCM group or leave the **Unified CM Group** as **Default**.
5. To save the new CUCM group association, click **Save**.

# 10. Microsoft Apps Management

## 10.1. Introduction to Microsoft UC Integration

This section introduces Microsoft Unified Communications (UC) integration with VOSS Automate.

VOSS Automate provides an interface for managing Microsoft users and services, either as a stand-alone, Microsoft-only implementation, or as part of a multi vendor implementation.

VOSS Automate can be used to manage multiple applications within Microsoft's UC stack, including:

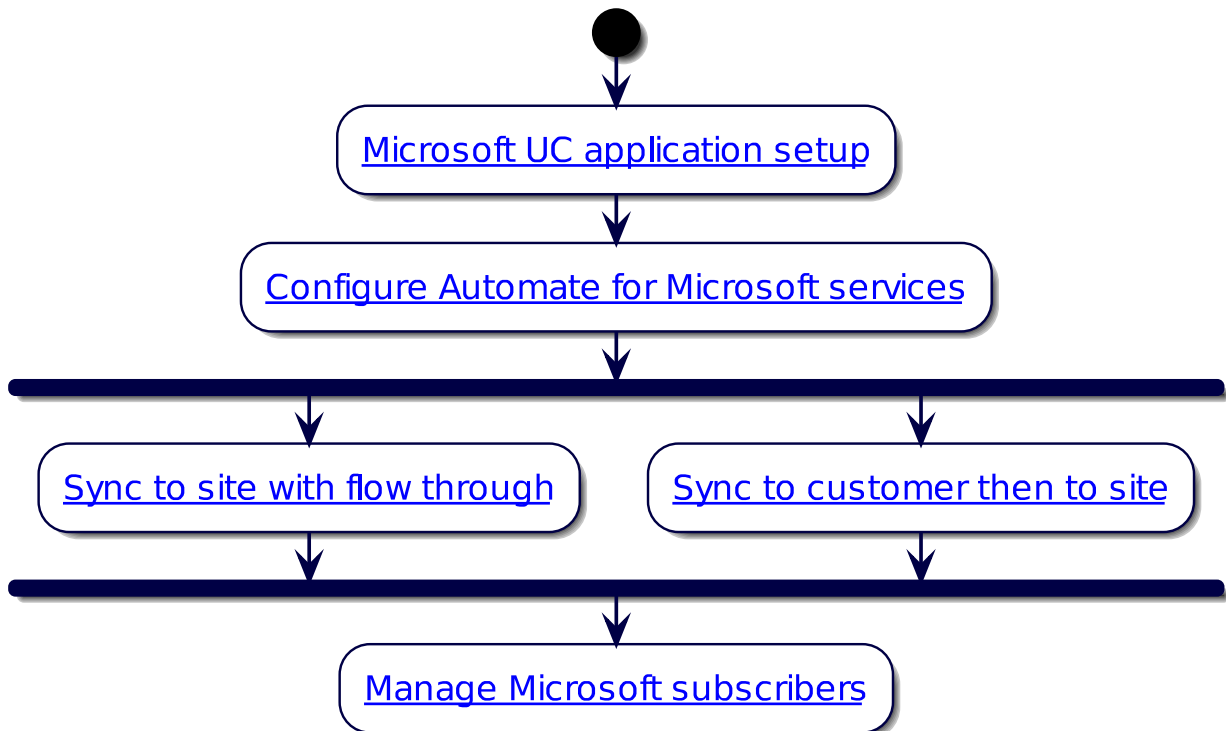
- Microsoft Entra ID
- Microsoft Teams
- Exchange Online
- On-premise Active Directory
- Skype for Business Server
- Exchange Server

---

**Note:** Microsoft changed the name of Azure Active Directory to Microsoft Entra ID in August 2023.

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The flowchart provides a high level workflow for the Microsoft solution in VOSS Automate.

**Microsoft Overview Flowchart****Related Topics**

- *Microsoft Quick Start Guide for VOSS Automate*
- *Microsoft UC Application Setup*
- *Configure Microsoft Tenant Connection Parameters*
- *Microsoft Licenses*
- *Introduction to Microsoft Teams Dialplan Management*
- *Configure Microsoft Tenant Dialplan*
- *Introduction to Microsoft Teams Policies*
- *Overbuild for Microsoft*
- *Model Filter Criteria*
- *Setting up Flow Through Provisioning*

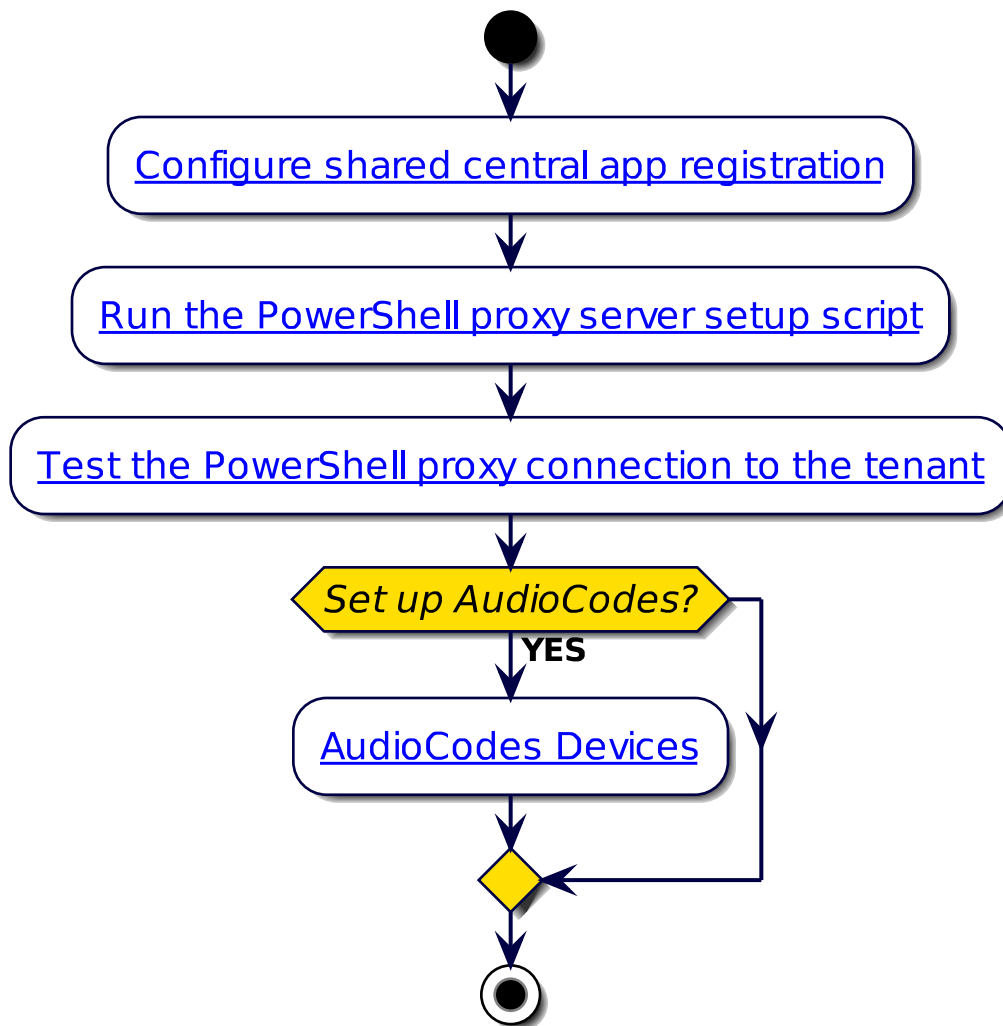
## 10.2. Microsoft UC Application Setup

Microsoft

### 10.2.1. Overview

To allow VOSS Automate to manage and provision Microsoft applications, VOSS Automate must be able to authenticate with Microsoft Entra, PowerShell proxy servers (one or more) Microsoft Teams, and Microsoft Exchange Online.

**Note:** Setting up the UC applications is the first step for integrating Automate with Microsoft. For the other steps, see *Microsoft Quick Start Guide for VOSS Automate*.



**Note:** For details around the URLs, ports, and protocols that VOSS Automate uses to connect to the PowerShell proxy and the Microsoft 365 tenant, and which the PowerShell proxy uses to connect to the

tenant, see:

"Network Communications External to the Cluster" in the VOSS Automate Installation Guide or Platform Guide.

## Related Topics

- [Microsoft Quick Start Guide for VOSS Automate](#)

### 10.2.2. Devices for Microsoft UC Application Setup

The table describes the devices configured for Microsoft UC application setup (authentication, authorization, and PowerShell proxy):

Device	Description
Microsoft Graph API	Used for managing cloud-based apps. VOSS Automate uses Microsoft Graph API to interact with Microsoft Entra. Registering VOSS Automate as an application object in Microsoft Entra provides authentication and authorization for VOSS Automate.
PowerShell Proxy Servers	VOSS Automate accesses and provisions Microsoft Teams using PowerShell. Authentication and authorization are enforced on the PowerShell proxy and in the Microsoft 365 tenant.
Microsoft Teams	VOSS Automate uses the PowerShell proxy server and the Microsoft Teams PowerShell module to manage MS Teams settings. PowerShell scripts authenticate to Microsoft Teams via an Application Registration. Basic Authentication and credentials associated with a service account in the tenant are used to Provision Resource Accounts in Microsoft Teams.
Exchange Online	VOSS Automates uses the PowerShell proxy server and Microsoft Exchange Online PowerShell module to manage MS Exchange Online components. VOSS Automate authenticates using app-only authentication, which requires a certificate and private key installed on the PowerShell proxy.

#### Microsoft Graph API

VOSS Automate uses the Microsoft Graph API (if available) to manage cloud-based applications, such as Microsoft Entra.

**Note:** When available, the Microsoft Graph API is the preferred choice, for the following reasons:

- Greater simplicity
- Intervening proxy is not required
- Lower latency

- More secure authentication options
- More granular permissions management

As the Microsoft Graph API matures, VOSS Automate can easily be updated to leverage new Graph functionality; new templates can be added, and existing ones can be updated. Template updates can be deployed with no downtime or service impact.

### Windows PowerShell and PowerShell Proxy Servers

If the Microsoft Graph API is not available, and for on-premise applications, VOSS Automate uses Windows PowerShell, along with PowerShell management modules provided by Microsoft. In this case, VOSS Automate requires access to at least one Windows computer to use as the PowerShell proxy server.

VOSS Automate manages Microsoft Teams and Microsoft Exchange Online using the PowerShell proxy servers running Windows PowerShell. The PowerShell proxy servers execute remote PowerShell cmdlets.

The table describes how PowerShell Proxies may be used to manage on-premise or cloud-based applications:

On-premise apps	Join the PowerShell proxy server to the domain under management. If using VOSS Automate to manage multiple on-premises customer domains, add at least one domain-joined PowerShell proxy for each domain.
Cloud-based apps	Use a PowerShell proxy server to manage multiple Microsoft 365 tenants. A PowerShell proxy that manages only cloud-based applications can optionally be configured as a workgroup server.

Authentication and authorization may be enforced in two places:

- On the PowerShell proxy
- In the Microsoft 365 tenant

When using Windows PowerShell for Microsoft apps management, VOSS Automate creates separate PowerShell sessions via the PowerShell proxy servers for each Microsoft application being managed for a specific customer tenant or domain.

All PowerShell sessions for a particular customer may be hosted by the same PowerShell proxy server, or you can configure a separate PowerShell proxy server for each PowerShell session. Optionally, the PowerShell proxy servers hosting the PowerShell sessions may be dedicated for this purpose exclusively.

### Related Topics

- [Run PowerShell proxy server setup script](#)



## WinRM and WSMAN

Automate provides a script for setting up the PowerShell proxy server. The script configures WinRM (Windows Remote Management service).

Windows Server includes the “Windows Remote Management” (WinRM) service, which implements the “Web Services-Management” protocol (WSMan):

- VOSS Automate connects to the WinRM service on the PowerShell proxy and provides credentials for an elevated local service account on that server
- The WinRM service executes commands from the set provided by the Microsoft Teams and Microsoft Exchange PowerShell modules.

Once connected, VOSS Automate pushes PowerShell scripts (which it generates “on the fly”) to the PowerShell proxy, and instructs WinRM to execute the scripts and return the results. The Microsoft Teams and Exchange Online Management PowerShell modules (provided by Microsoft) then connect to the Microsoft 365 tenant.

## Related Topics

- [Run PowerShell proxy server setup script](#)

## PowerShell Proxy Deployment Topologies

### PowerShell Proxy Server Domain Membership

PowerShell proxy servers may be joined to a Microsoft Entra domain.

Domain membership is required if you’re using VOSS Automate to manage or extract data from any on-premises component, such as Skype for Business Server, on-premises Microsoft Entra, or on-premises Exchange Server.

Domain membership is optional in all other scenarios.

## Redundancy

Deploying two or more PowerShell proxy servers provides redundancy. PowerShell proxy servers can be scaled and made highly available by interposing a load balancer between VOSS Automate and the PowerShell proxy servers.

Load balancer requirements:

- Must forward incoming HTTP and HTTPS requests on TCP ports 5985 and 5986
- Must be configured in “IP Affinity” mode so that all incoming requests from a specific IP address are preferentially routed to the same PowerShell proxy. This is done to maintain the integrity of HTTP sessions that can consist of multiple HTTP requests.

When deploying VOSS Automate as a multi-node cluster and the load balancer is configured in “IP Affinity” mode, each Unified Node will have all its requests routed to the same PowerShell proxy.

A properly configured load balancer will distribute the overall load from all the Unified Nodes across the deployed PowerShell proxy servers. When a PowerShell proxy goes out of service the load balancer will route incoming traffic to the surviving servers, bypassing the failed one.

### **Outbound Internet Proxy**

Some organizations require all traffic outbound to the public Internet (including traffic to Microsoft 365 tenants) to traverse an outbound Internet proxy server for audit logging and, optionally, authentication.

### **Microsoft Entra**

VOSS Automate uses the Microsoft Graph API at <https://graph.microsoft.com> over TCP port 443 to interact with Microsoft Entra.

Microsoft's application registration process provides authentication and authorization services for VOSS Automate.

You can configure the permissions granted to the VOSS Automate application based on the management use cases for which VOSS Automate has been designated. For example, you can grant permission to VOSS Automate to manage end user license assignments, or you can withhold that permission (in which case VOSS Automate will only be able to view existing license assignments, limiting the VOSS Automate workflows available to you).

### **Microsoft Teams**

VOSS Automate uses the PowerShell proxy and the Microsoft Teams PowerShell module to manage Microsoft Teams end user, service, device policies, and telephony settings.

PowerShell scrips authenticate to Microsoft Teams via an Application Registration. Basic Authentication and credentials associated with a service account in the tenant is used to provision Resource Accounts in Microsoft Teams.

You must assign at minimum the following role to the service account used for managing Microsoft Teams:

Role	Description
Teams Administrator	<p>Provides full access to all MS Teams, manages service requests, and monitors service health.</p> <p>Use cases:</p> <ul style="list-style-type: none"> <li>• List MS Teams users</li> <li>• Retrieve Teams user identity, attributes, and assigned policies</li> <li>• Update MS Teams user attributes and assigned policies</li> <li>• Enable / disable Enterprise Voice for MS Teams users</li> <li>• Create, read, update and delete MS Teams policies</li> <li>• Create, read, update, and delete MS Teams Enterprise Voice configuration, including Voice Routing Policies, PSTN Usages, Voice Routes, PSTN Gateways, and Tenant Dialplans</li> <li>• Create, read, update, and delete MS Teams Call Queues and Teams Auto Attendants</li> <li>• Create, read, update, and delete MS Teams endpoints, including Teams Phones, Common Area Phones, Collaboration Bars, and Teams Rooms</li> </ul>

### Microsoft Exchange Online

VOSS Automate uses the PowerShell proxy server, along with Microsoft's Exchange Online PowerShell module, to manage MS Exchange Online user mailboxes, shared mailboxes, room mailboxes, and distribution groups.

VOSS Automate uses app-only authentication for Microsoft Exchange Online.

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**Note:** For more information about app-only authentication, see [App-only authentication | Microsoft Docs](#).

---

For app-only authentication, you will need to create an X.509 certificate with a private key. The certificate and private key must be installed on the PowerShell proxy server. The certificate can be created in Automate and used in the Microsoft tenant setup. Automate uploads the certificate to the PowerShell proxy server and installs it. Automate also updates the thumbprint in the tenant data. The public key is exported from Automate and imported into Microsoft Entra.

The certificate can also be imported into Automate from the customer.

When registering the Automate application object with Microsoft Entra, you'll upload the certificate (with only the public key) and assign Exchange Online API permissions and an appropriate RBAC role to the application.

## Microsoft Entra permission for managing Exchange Online

VOSS Automate requires the following Microsoft Entra permission to manage Exchange Online:

Microsoft Entra	Description
Exchange.ManageAsApp	Allows a registered application to access Exchange Online resources

## RBAC role for managing Exchange Online

VOSS Automate requires the following RBAC role for managing Exchange Online:

RBAC Role	Description
Exchange Administrator	Users with this role have global permissions within Microsoft Exchange Online. Also can create and manage all Microsoft 365 groups, manage support tickets, and monitor service health.

**Note:** For custom administrator user roles, ensure the associated Access Profile allows for all operations on all MS Exchange models; that is: Access Profile type: `device/msexchangeonline/*`

For details, see [Access Profile Permissions and Operations](#).

# 10.3. App Registration

## 10.3.1. Introduction

This topic describes how to set up shared central application (app) registration authentication for Microsoft Graph, Microsoft Teams PowerShell, and Microsoft Exchange PowerShell, for a new Microsoft tenant. This task includes assigning permissions and roles.

Your authentication methods and permissions come from the central app registration. Roles must be assigned to the app registration manually.

When adding a new tenant and you wish to use Microsoft Exchange, you must either generate a certificate or import an existing certificate and have Automate manage it. Automate pushes the certificate to the PowerShell proxy.

- To generate a certificate in Automate, see [Generate a Certificate for Application Registration](#)
- To use an existing certificate, see [Upload a Certificate to use for App Registration](#)

**Note:** Microsoft requires that you use app registration for authentication. If you wish to use basic authentication with service account credentials, please contact VOSS support for assistance. Until Microsoft implements changes to their resource account infrastructure, basic auth is required to create, update,

---

and delete resource accounts. List (import/sync) of resource accounts is supported with app registration authentication in Automate 24.1.

---

### 10.3.2. About Shared Central App Registration

In shared central app registration, either VOSS (for hosted and general customers) or a Service Provider Partner (in a reseller environment), builds and maintains the app registration in their Microsoft Entra ID tenant, and performs organizational and application validation with Microsoft.

Users from multiple tenants/Entra ID organizations are allowed to leverage the application.

VOSS or the Service Provider Partner (SPP) provides the customer with an admin grant link, for example, [https://login.microsoftonline.com/common/adminconsent?client\\_id={client-id}](https://login.microsoftonline.com/common/adminconsent?client_id={client-id}).

The customer clicks on the link and agrees, using their Global Admin user. Then they need to assign the Teams and Exchange Administrator roles to the application, like any other user in Entra ID.

VOSS or the SPP maintains the certificate and/or secrets securely, and ensures that they're added to VOSS when renewal is required.

Once updated, PowerShell proxies automatically receive the updated certificates from VOSS Automate. These settings are maintained at a global or reseller level in VOSS Automate, with customer/tenant-level overrides, if required.

### 10.3.3. Configure Shared Central App Registration

This procedure configures Central App Auth and assigns the Teams Administrator role and the Exchange Administrator role (if you're using MS Exchange) to the app.

1. Authorize the app in the relevant Microsoft tenant to add Central App to your tenant (VOSS hosted app):

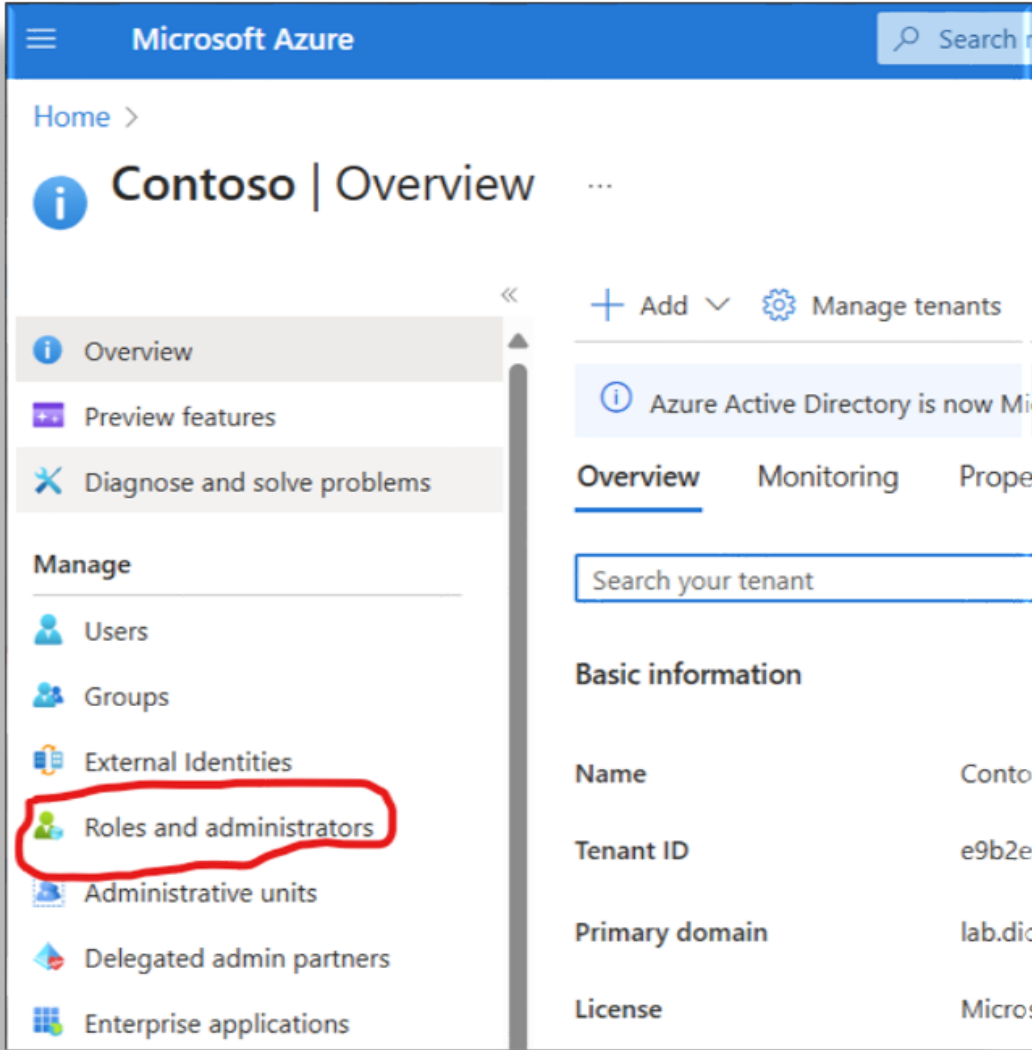
[https://login.microsoftonline.com/common/adminconsent?client\\_id=bbaa714a-a571-4d13-a6e1-4758621b74](https://login.microsoftonline.com/common/adminconsent?client_id=bbaa714a-a571-4d13-a6e1-4758621b74)

2. Assign the *Teams Administrator* role and the *Exchange Administrator* role to the app:

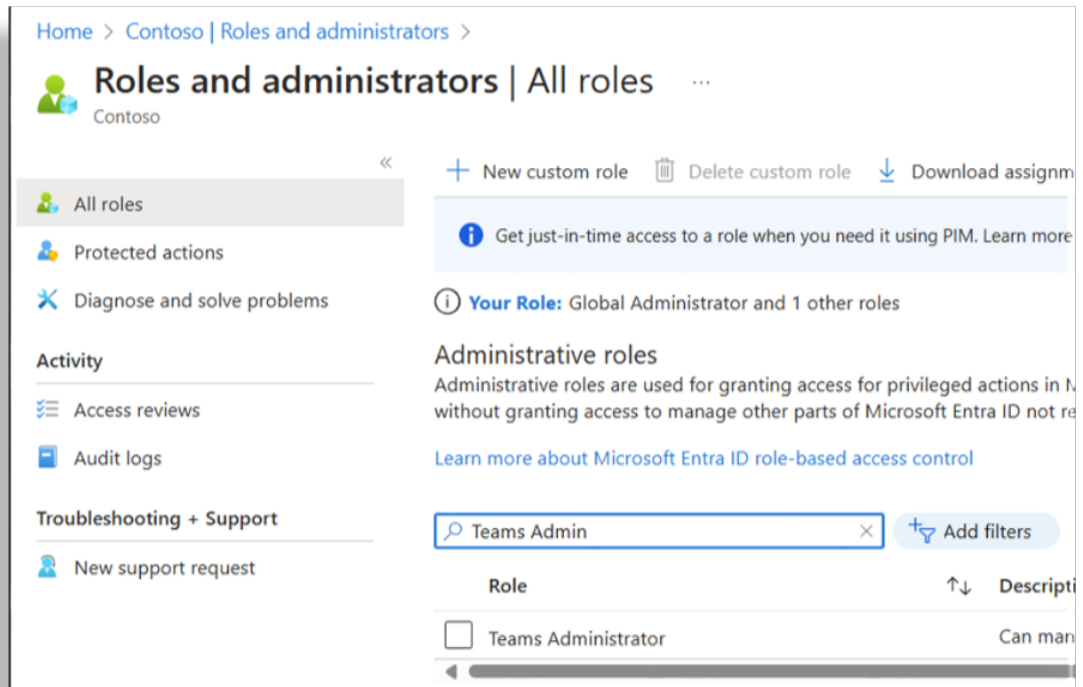
- a. Go to the **Entra ID** section of the Microsoft Azure Portal:

[https://portal.azure.com/#view/Microsoft\\_AAD\\_IAM/ActiveDirectoryMenuBlade/~/Overview](https://portal.azure.com/#view/Microsoft_AAD_IAM/ActiveDirectoryMenuBlade/~/Overview)

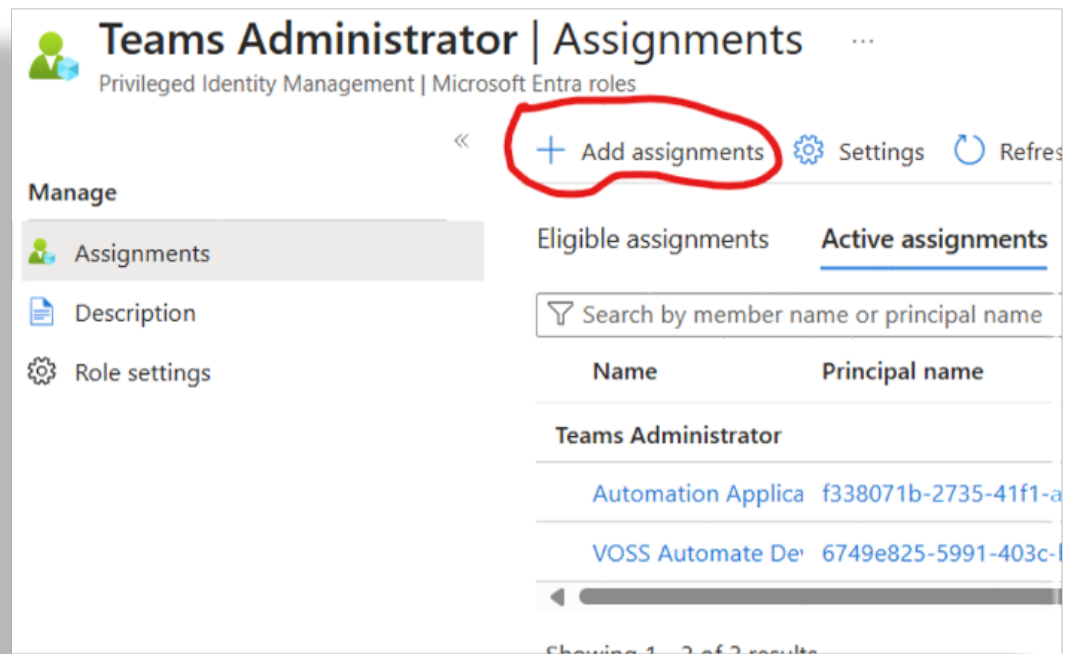
- b. Navigate to **Roles & Administrators**.



c. Search for *Teams Administrator*.



d. Open **Teams Administrator**, then click **Add Assignments**.



e. Select **No member selected**.

**Add assignments** ...

Privileged Identity Management | Microsoft Entra roles

**Membership** Setting

**i** You can also assign roles to groups now. [Learn more](#)

**Resource**  
Contoso

**Resource type**  
Directory

Select role ⓘ  
Teams Administrator

Scope type ⓘ  
Directory

Select member(s) \* ⓘ  
**No member selected**

- f. Search for **VOSS**, then select the checkbox for **VOSS Automate App**.

Try changing or adding filters if you don't see what you're looking for.

Only groups eligible for role assignment are displayed. [Learn more](#)

Search  
VOSS  
1 result found

All Users Groups Enterprise applications

	Name	Type	Details
<input checked="" type="checkbox"/>	VOSS Automate App	Central App	Enterprise ap... 67082083c990c08900040c05f511b403b8

Selected (1)  
Reset

VOSS Automate App  
07082083c990c08900040c05f511b403b8

- g. Click **Next**.
- h. At **Enter justification**, fill out a reason for the assignment in the text field.

---

**Note:** You can add any description in this field.

---



**Add assignments** ...

Privileged Identity Management | Microsoft Entra roles

Membership **Setting**

Assignment type ⓘ

Eligible

Active

Maximum allowed assignment duration is permanent.

Permanently assigned

Assignment starts

06/04/2024 10:04:11 AM

Assignment ends

12/01/2024 9:04:11 AM

Enter justification \*

Application Access to Teams

**Assign** < Prev Cancel

- i. Click **Assign**.

The new assignment may take a few minutes to complete before it appears in the assignment list (**Teams Administrator | Assignments**).

- j. Repeat step 2 from the **Teams Administrator | Assignments** page, but this time, on **Teams Administrator | Assignments**, search for the **Exchange Administrator** role.

3. Install the certificate on the VOSS Automate server.

---

**Note:** If you're using VOSS (hosted) Central App, the certificate is already installed.

---

4. Configure the VOSS Automate Microsoft tenant to use the "customer" Tenant ID you approved for earlier, along with the App ID (Client ID) and certificate as necessary.

For example, for VOSS Central App customers:

- App Name: VOSS Automate Central App

- Client Id: bbaa714a-a571-4d13-a6e1-4758621b7460
- App Created Date Time: 6/4/2024 3:24:31 PM
- CertificateThumbprint : 2BF36F11BE9317C9217BE6847BEDXXXXXXXXXXXX

## 10.4. Run PowerShell proxy server setup script

### 10.4.1. Overview

VOSS provides a script to automate the setup of the Windows PowerShell proxy server for for Microsoft Teams and (optionally) Microsoft Exchange Online.

---

**Note:** You can run the script on a new PowerShell proxy server, or use an existing one. A single PowerShell server can be used by multiple tenants, with or without Microsoft Exchange.

---

#### Pre-requisites

- Download the script from the client portal: <https://voss.portalshape.com>
- You'll need a Windows server >=2019
- You must have local Administrator privileges on the PowerShell proxy server.

### 10.4.2. Execute the script

This procedure runs the PowershellProxySetup\_24.1.0\_v1.0 script.

1. Transfer the downloaded PowershellProxySetup\_24.1.0\_v1.0 script to the Microsoft PowerShell proxy server.
2. On the Windows server, run the script as an Administrator.
3. **Are you using a currently active service user account, or do you need to create one?**
  - **Using a currently active service user account.** Press **Enter** to proceed.
  - **Creating a new service user account.** Fill out the name you want to use for the service user account that will be created, then press **Enter** to proceed.

---

**Note:** If you don't provide a service user account name, the script uses the currently active user account.

---

4. Fill out a password for the service user account to be assigned. If you're using the current service user account, fill out the password for that user.
5. Press **Enter**.
6. **Are you using an outbound internet proxy?**
  - **Yes.** Fill out the proxy server IP/FQDN and port in the following format: xxx.xxx.xxx.xxx:yyyy (for example, 192.168.1.1:3128)

- **No.** Leave the field blank.

7. Press **Enter**.

The script executes, performing the following steps:

---

**Note:** You may be prompted to allow the script to connect to NuGet and the PSGallery providers to download and install the correct PowerShell modules. Select Y (yes) for these prompts.

---

- Checks that the local admin service account is present
- Configures the outbound internet proxy
- Configures WinRM (Windows Remote Management service)
- Installs/updates .NET framework
- Installs/updates PowerShell modules
- Checks that OpenSSH server is enabled and running
- Checks that the privileged scheduled task is present
- Checks that debug tools are present
- Installs PowerShell 7

## Related Topics

*Step 1: Microsoft UC Application Setup*

## 10.5. Test the PowerShell Proxy Connection to the Tenant

### 10.5.1. Test the connection from PowerShell to Microsoft Teams

This procedure tests the connection to Microsoft Teams from a non-privileged PowerShell session.

1. From a PowerShell session, configure a test session for an outbound Internet proxy (if your PowerShell Proxy server is behind an outbound Internet proxy that requires authentication):

```
$w = New-Object System.Net.WebClient

$w.Proxy.Credentials = (Get-Credential) (when prompted, enter your
outbound proxy credentials)
```

---

**Note:** The credentials you enter above persist only for the duration of this PowerShell session, and are deleted when you exit the PowerShell session.

See the caveat regarding proxy authentication, at: [PowerShell Proxy Deployment Topologies](#)

---

2. Verify the version you're using, (e.g. 6.1.0):

```
Get-Module -ListAvailable -Name MicrosoftTeams
```

- Issue the following command to test the connection to Microsoft Teams and to perform a test query, and when prompted, you'll need to enter your MS Teams service account credentials:

```
Connect-MicrosoftTeams -Credential (Get-Credential)
Get-CsOnlineUser -ResultSize 1 | Select DisplayName
```

**Note:** Perform step 1 first if your PowerShell Proxy is behind an outbound Internet proxy that requires authentication.

- Verify that you have successfully connected to the tenant and retrieved one random user.

### Related Topics

- [Microsoft Quick Start Guide for VOSS Automate](#)

## 10.5.2. (Optional - Exchange Online only) Test the connection from PowerShell to Microsoft Exchange

- Use the following command to test the connection:

```
Connect-ExchangeOnline -CertificateThumbPrint <certificate_thumbprint> -AppID
↳<client_id> -Organization $online_admin_domain
```

**Note:** You will use your certificate\_thumbprint, client\_id and online\_admin\_domain, as in the following example:

```
Connect-ExchangeOnline -CertificateThumbPrint
↳A2DEF024C59B4969A30A8892F832F418DF09F6 -AppID 5ff3dc33-c8db-48ba-b86e-
↳642d84d42ae0 -Organization VossSolutions0365.onmicrosoft.com
```

- Use the following command, then confirm that you can see a user mailbox:

```
Get-EXOMailbox -ResultSize 1
```

## Related Topics

- [Microsoft Quick Start Guide for VOSS Automate](#)

## 10.6. Sync in Azure Users

Users are synced in from Azure once you've set up the Microsoft UC applications (including PowerShell). Next, you'll need to configure the Microsoft tenant connection parameters.

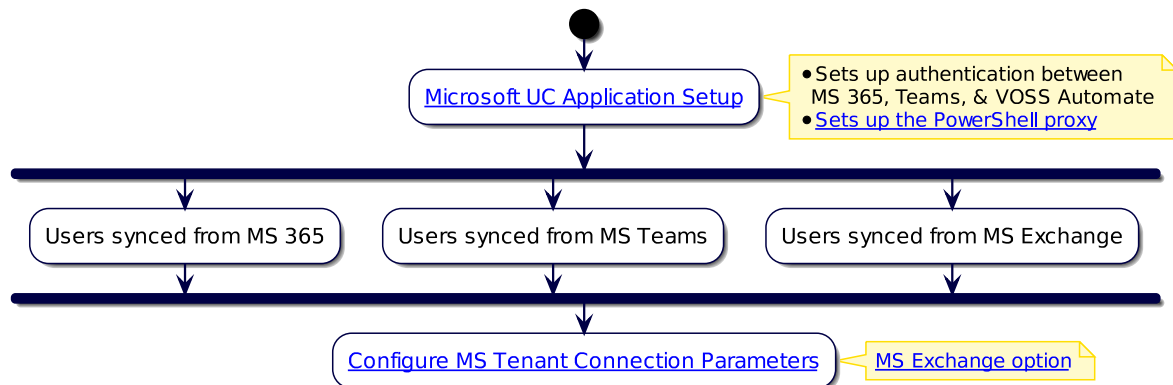
When using Microsoft to manage UC provisioning, you will need a number of different portals in a tenant:

- Azure
- Microsoft 365 Admin Center
- A portal on the Microsoft Teams side for telephony (once users are licensed through Microsoft Office 365)
- Optionally, you can also add MS Exchange to the tenant

VOSS Automate combines these functions into a single management interface, allowing service providers to import data from multiple Microsoft tenants and to manage these customers (or tenants) from a single portal and login.

The diagram describes the initial configuration required to integrate Microsoft with VOSS Automate:

- You'll need to install and configure one or more Microsoft Windows PowerShell Proxy servers. This allows VOSS Automate to access Azure via the PowerShell. For details, see [Run PowerShell proxy server setup script](#)
- Once you've installed the Microsoft Windows PowerShell service, you'll use the IP address and credentials of the proxy server to configure the Microsoft tenant.



## Next Steps

Configure VOSS Automate for Microsoft Services in the Core Feature Guide

# 10.7. Sync Microsoft Users to Sites

## 10.7.1. Overview

When setting up VOSS Automate for Microsoft, the final step involves syncing in Microsoft users.

**Note:** Syncing Microsoft users to sites is the final step for integrating Automate with Microsoft. For the other steps, see [Microsoft Quick Start Guide for VOSS Automate](#).

You can choose to either directly sync in the tenant dialplan, policies, licenses and Microsoft users to the customer, or configure sync with flow through provisioning before syncing in Microsoft data and users:

- [Sync to Customer, then to Site](#)
- [Sync to Site with Flow Through Provisioning](#)

The table compares the two sync types for Microsoft data and users.

Sync to Customer, then to Site	Sync to Site, with Flow Through Provisioning
<p>Sync users to customer level, and then to sites schedules.</p> <p><b>Step 1:</b> Run a full pull sync to create default syncs and schedules, and move all of the following to the customer level:</p> <ul style="list-style-type: none"> <li>• Tenant dialplan</li> <li>• Policies</li> <li>• Licenses</li> <li>• Microsoft users</li> </ul> <p><b>Step 2:</b> Configuration for moving users to sites:</p> <ul style="list-style-type: none"> <li>• Configure model filter criteria (for overbuild)</li> <li>• Enable overbuild in the site defaults</li> <li>• Configure Quick Add Groups</li> <li>• Configure subscriber profile</li> <li>• If using Microsoft Enterprise Voice, configure internal number inventory for sites</li> </ul> <p><b>Step 3:</b> Two options for moving users to sites:</p> <ul style="list-style-type: none"> <li>• Run overbuild to move two or more users (batch)</li> <li>• Else, run Quick Subscriber to move a single user to a site</li> </ul>	<p>Configure VOSS Automate to sync in Microsoft users as fully provisioned subscribers directly to the sites.</p> <p><b>Step 1:</b> Configure the following:</p> <ul style="list-style-type: none"> <li>• Model filter criteria</li> <li>• Site defaults</li> <li>• Quick Add Groups</li> <li>• Subscriber profile</li> <li>• Configure the Microsoft tenant</li> <li>• Flow through provisioning criteria</li> <li>• Global settings (enable flow through)</li> </ul> <p><b>Step 2:</b> Run a sync to create default syncs and schedules.</p> <ul style="list-style-type: none"> <li>• The sync creates default syncs and schedules, and syncs in the following to the customer: <ul style="list-style-type: none"> <li>– Tenant dialplan</li> <li>– Policies</li> <li>– Licenses</li> </ul> </li> <li>• Syncs in Microsoft users as fully provisioned subscribers, to the sites.</li> </ul>

**Note:** See [Introduction to Microsoft Onboarding and Offboarding](#) for details around setting up Automate for managing licenses via a configuration template and Quick Add Groups or Subscriber from Profile or field

display policies (FDPs).

---

### 10.7.2. Sync to Customer, then to Site

This section provides a workflow overview for moving Microsoft users to the sites once the Microsoft tenant has been added and a full pull sync has been performed. The sync imports the tenant dialplan, policies, licenses, and Microsoft users to the customer level. Now users must be provisioned and moved to the appropriate sites.

---

**Note:** Use these steps if you chose not to sync users directly to sites (in a sync with flow through after setting up the NDLs).

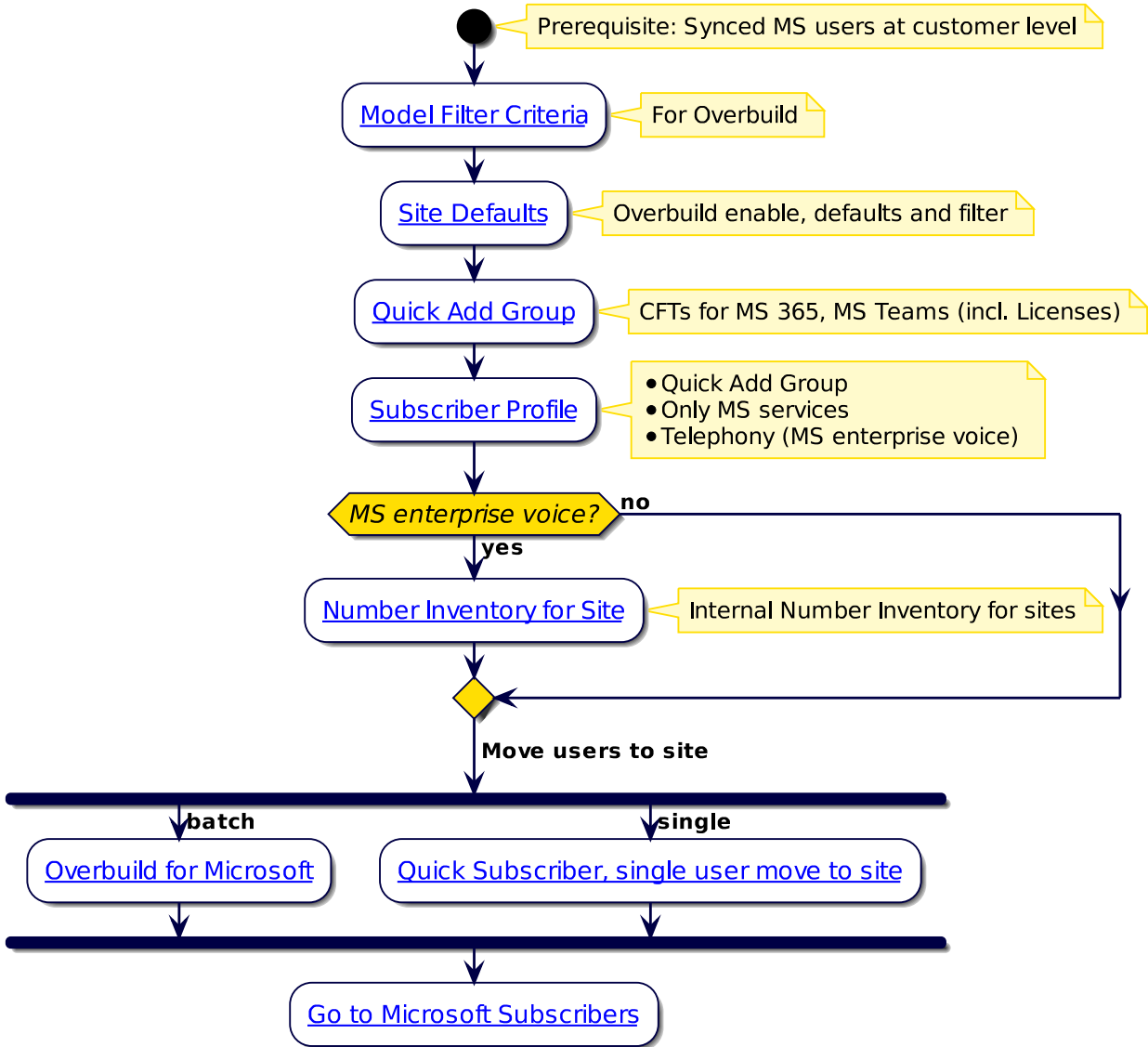
---

#### Prerequisites:

- *Configure Automate for Microsoft Services*

#### Workflow to sync to customer then to site

The flowchart sets out the steps to move Microsoft users to the sites after an initial sync to move users to the customer level:



**Related Topics**

- *Introduction to Microsoft UC Integration*
- *Sync to Site with Flow Through Provisioning*



### 10.7.3. Sync to Site with Flow Through Provisioning

When using sync with flow through provisioning for Microsoft users, you'll need to configure several settings in VOSS Automate (including flow through provisioning criteria) before the initial sync from the Microsoft Cloud. This allows VOSS Automate to apply the correct configuration, licenses, policies, and services to imported users, and to move users to sites.

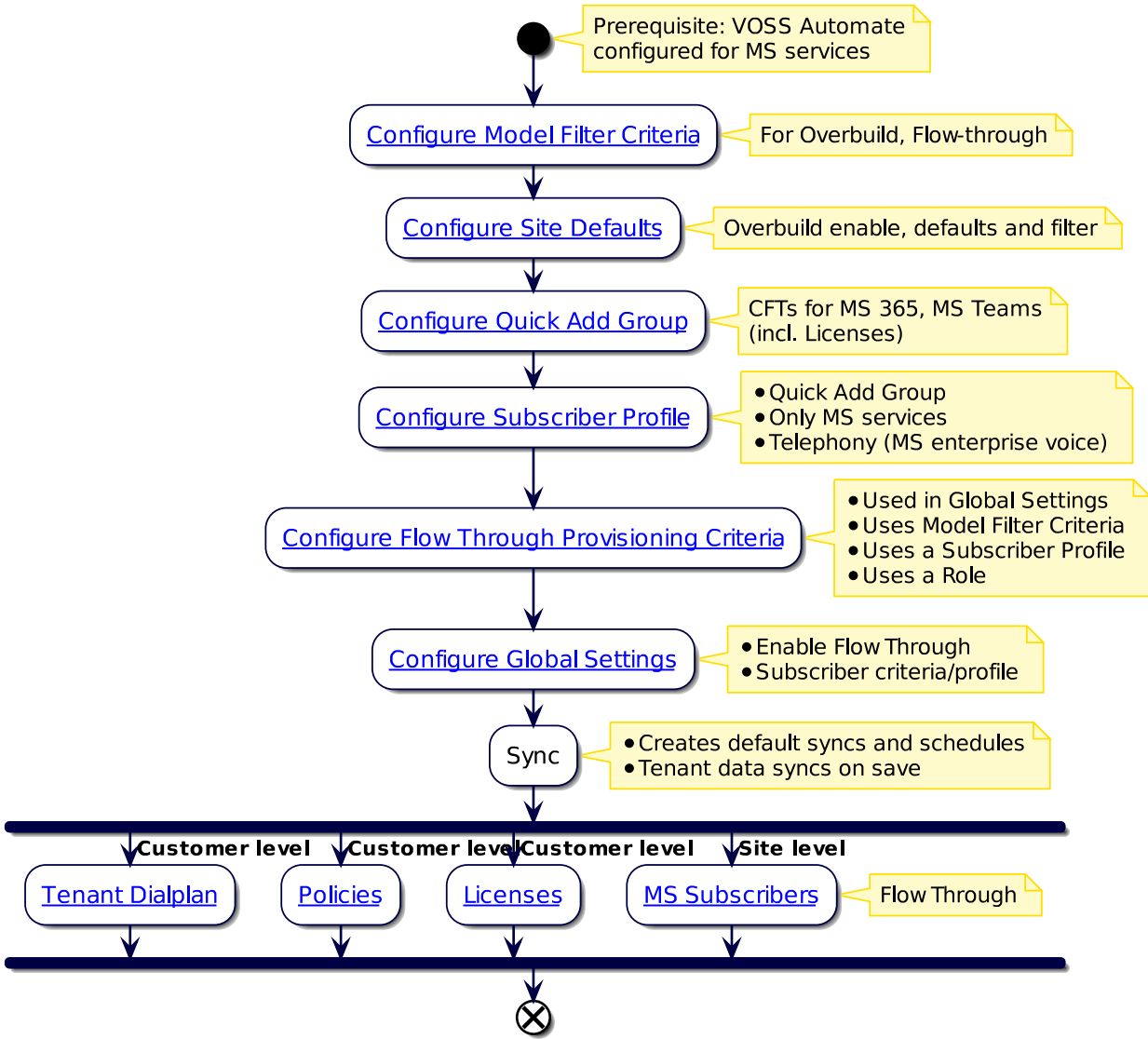
Once you run the sync, the tenant dialplans, policies, and licenses are imported to the customer level, while users are imported, provisioned, licensed, and moved to the correct sites, as subscribers.

#### Prerequisites:

- Microsoft UC Application Setup in the Core Feature Guide
- Configure Automate for Microsoft Services in the Core Feature Guide

#### Workflow to sync to site with flow through provisioning

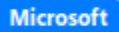
The flowchart sets out the sync with flow through of Microsoft user and services:



**Related Topics**

- Microsoft Quick Start in the Core Feature Guide
- Flow Through Provisioning in the Core Feature Guide

## 10.8. Configure Microsoft Tenant Connection Parameters



**Note:** References in this section to “PowerShell Proxy” refer to the MS Windows host running PowerShell commands. References to just “Proxy” refer to the HTTP proxy server that the the Windows PowerShell host

uses to access the tenant in the cloud.

This procedure configures the following connections:

- From Automate to the PowerShell Proxy
- Between the PowerShell Proxy and the tenant
- The Graph API connection between Automate and the tenant

The screenshot shows a web interface for configuring a Microsoft Tenant connection. The browser address bar shows 'Microsoft Tenant > Synergy'. The interface is organized into four main sections, each with a blue header:

- Tenant:**
  - Name: Synergy
  - Description: New Tenant with All Licenses for...
- Microsoft Application Authentication:**
  - Client ID: 029baa50-0c79-469b-9a96-bf647
  - Tenant ID: 18b54a78-571c-4e5f-8df1-a1508f
  - Certificate: [Dropdown menu]
  - Certificate Thumbprint: ACB63C705F4F44EE02AA110792B1046Cf
  - Secret: [Text field]  Show
- Powershell Server Authentication:**
  - Host: 10.120.10.2
  - Username: WSMAN-svc
  - Password: [Text field]  Show
- Microsoft Teams Admin Account:**
  - Admin Username: [Text field]

### Prerequisites:

You will need:

- The FQDN or IP address of a single-node PowerShell Proxy, or the FQDN corresponding to your load balancer's virtual IP address. See [Run PowerShell proxy server setup script](#)
- The credentials for the local service account you created on the PowerShell Proxy
- Proxy authentication credentials (if the outbound Internet Proxy requires authentication)

---

**Note:** Authenticated proxy is not supported.

---

- The client ID and tenant ID
- Either the client secret (supported for Teams and Graph only, not Exchange) or the certificate (supported for Teams, Graph, and Exchange, and mandatory for Exchange), that you created when registering Automate as an application object with Microsoft Entra ID. For greater security, certificate is preferred.

### To add and configure the Microsoft Tenant

1. Log in to the Automate Admin Portal as a Provider administrator.

---

**Note:** By default, the Provider administrator role is the only role that has the ability to create Tenant connections.

---

2. To add a new tenant, go to (default menus) **Apps Management > Microsoft Tenant**, then:
  - Click **Add**.
  - Choose the hierarchy. Typically, this is Customer.
3. At the **Tenant** fieldset, fill out a name and a description for the tenant.

The screenshot shows a form titled "Tenant" with two input fields. The "Name \*" field contains the text "Synergy" and the "Description" field contains the text "New Tenant with All Licenses".

4. At **Microsoft Application Authentication**, fill out values for the application authentication:

---

**Note:** See [App Registration](#) for configuring application registration.

---

- Fill out the **Client ID** and **Tenant ID** values recorded in the application registration setup. See [About Shared Central App Registration](#).

---

**Note:** The tenant ID and the client ID identify the tenant in the Microsoft cloud.

---

- Select a certificate from the drop-down.

---

**Note:** It is strongly recommended that you use a certificate and not a secret. Secret is used only if you don't select a certificate. If you have a certificate and you select it here, the certificate is used for authentication for MS Graph, MS Teams, and MS Exchange.

If you're using MS Exchange, you *must* use a certificate as secrets are not supported for MS Exchange.

The value for **Certificate Thumbprint** is auto-populated when you select the certificate.

If you set up [About Shared Central App Registration](#) with the certificate you'll need to import the certificate into Automate then select it here when adding the tenant.

You can either:

- Generate a certificate in Automate and upload it to MS Entra ID (see [Generate a Certificate for Application Registration](#)), or;
- If you already have a signed certificate from another source in your organization and it's already uploaded to MS Entra ID, you can upload that certificate into Automate and have Automate manage it on itself and on the PowerShell proxy (see [Upload a Certificate to use for App Registration](#)).

#### 5. At PowerShell Server Authentication:

- At **Host**, fill out the FQDN or IP address of a single-node PowerShell proxy, or the FQDN corresponding to your load balancer's virtual IP address.

**Note:** For details around the local hosts file and the TrustedHosts WinRM configuration, see [Run PowerShell proxy server setup script](#).

- At **Username** and **Password**, fill out the credentials for the local service account you created on the PowerShell Proxy. See [Run PowerShell proxy server setup script](#).

#### 6. At Microsoft Teams Admin Account, ignore these fields unless you must use basic authentication (basic auth).

By default, the **Resource Account Basic Authentication** checkbox is clear (disabled), which means that you can only import (sync in) resource accounts. You'll need to enable this functionality to add, modify, or delete resource accounts with basic auth in Automate. However, once Microsoft enforces multifactor authentication, the ability to add, modify, or delete resource accounts in Automate will no longer be possible, regardless of whether this checkbox is selected.

**Important:** Basic auth requires service account credentials and will stop working when Microsoft enforces multifactor authentication on all service accounts (starting July 2024). It is strongly recommended that you use application authentication instead of basic auth. See [App Registration](#). If you must use basic auth, you'll need to contact VOSS support for assistance to set up the required service account.

7. At **PowerShell Server HTTP proxy**, configure the outbound internet proxy connection parameters:

- If you have an outbound internet proxy deployed between the PowerShell proxy and the public internet, select **Use HTTP Proxy**.

**Note:**

- If there is no outbound Internet Proxy deployed between the PowerShell and the public internet, leave both **Use HTTP Proxy** and **Use HTTP Proxy Authentication** unchecked, and leave the **Username** and **Password** fields blank.
- Authenticated proxy is supported.

- If the outbound Internet proxy requires authentication, select **Use HTTP Proxy Authentication**, fill out a username and password.

**Note:** You will have already provisioned the outbound internet proxy's IP address (or FQDN) and port number when you set up the PowerShell proxy. See [Run PowerShell proxy server setup script](#), and note the caveat regarding proxy authentication in [PowerShell Proxy Deployment Topologies](#).

8. Add **Microsoft 365 HTTP Proxy** details to the Microsoft tenant:

- At **MS 365 proxy / MS 365 secure proxy**, set the outbound internet proxy server if required for traffic outbound to the public internet.

The proxy setup defines the route for the MS Graph API communications that the system uses for communication with the MS 365 Cloud tenant.

- If the internet proxy is not authenticated, fill out a MS 365 proxy value with the following format:  
`https://host:port/`
- If the internet proxy requires authentication, fill out a MS 365 secure proxy value with the following format: `https://proxyuser:proxypassword@host:port/`

**Note:** In both cases the host can be a FQDN if resolvable via DNS or the IP address of the internet proxy.

9. At **Microsoft Exchange**:

- If you're using Automate to manage Microsoft Exchange online, select **Enable Microsoft Exchange**.
- At **Admin Domain**, specify the Microsoft Exchange admin domain (the domain of the tenant) used to authenticate.

---

**Note:** The **Admin Domain** field displays once you select **Enable Microsoft Exchange**.

---

The screenshot shows a configuration panel for Microsoft Exchange. At the top left, there is a blue tab labeled 'Microsoft Exchange'. Below the tab, the 'Enable Microsoft Exchange' checkbox is checked. Below that, the 'Admin Domain' field is visible and empty.

10. At **Advanced Settings**, the number of *page size* options can be modified for the Microsoft Tenant to adjust synchronization performance.

By default, the value of the options is set to 999. Only modify this value if you encounter sync errors (e.g., 'Template output exceeded memory limit'). A smaller value may resolve the errors. Note that since a smaller value may affect sync performance, set the option to the largest value that does not cause errors.

- At **MS 365 MsolUser page size**, define the maximum number of records to retrieve at a time from the API related to `device/msgraph/MSOLUser`.

For optimal performance, leave this field blank to use the default value, *999*.

- At **MS 365 Group page size**, define the maximum number of records to retrieve at a time from APIs related to `device/msgraph/Group`.

For optimal performance, leave this field blank to use the default value, *999*.

---

**Note:** For both MsolUser and Groups (starting from 21.4-PB4), the memory limit handling of requests has been increased, so that any previous explicit specification of max page size values less than 999 may not be required anymore, or can be increased substantially.

---

- At **MS Teams Number page size**, define the maximum number of records to retrieve at a time from APIs related to the `msteamsonline/Number` device model. Only set this value if the amount of data returned when using the default value causes an error. By default, an attempt will be made to fetch all records.

11. Click **Save**.

---

**Note:** When saving the tenant with the certificate selected, the certificate is deployed to the PowerShell proxy and installed. You can then import the certificate on the tenant App registration in Microsoft Entra for authentication of all apps (MS Exchange, Teams, and Graph).

---

11. Test your Microsoft tenant connection. You will be prompted to confirm the test.

---

**Note:** In this step you're verifying that Automate can connect to the Microsoft tenant using the Teams and Exchange Powershell modules on the Windows server as well as using the Graph API on the Automate platform.

---

- On the **Microsoft Tenant** page, choose the relevant tenant.
- Click **Test Connection**.

## Modifying a Microsoft Tenant

Modifying a Microsoft tenant will only overwrite those driver parameters in the underlying connections (MSTeamsOnline, MSEXchangeOnline, MSGraph) that are managed by the tenant workflows. Other driver parameters will be left as is.

Also refer to the **Advanced Settings** above to modify the *page size* options for the Microsoft Tenant in order to adjust the synchronization performance.

## Next Steps

- Verify that no changes are needed in user name mapping macros prior to sync. High level administrators with access to the data/MultivendorUsernameMappingMacros model instances should carry out this task.

**Important:** For release 21.5-PB5, Multivendor environments using the data/MultivendorUsernameMappingMacros model at a hierarchy *below* sys level require an additional update. High level administrators with access to this model should ensure instances include:

```
"username_macro_ms_365": [
  "{{ input.UserPrincipalName }}",
  "(( fn.is_none_or_empty input.username == fn.true ))<NOT_FOUND>(( data.User.username_
↳ | username:input.username != ' ' ))<{{ data.User.username | username:input.username }}>
↳ <NOT_FOUND>",
  "(( fn.is_none_or_empty input.username == fn.true ))<NOT_FOUND>(( data.User.username_
↳ | username_ms_365:input.username != ' ' ))<{{ data.User.username | username_ms_365:input.
↳ username }}><NOT_FOUND>",
  "(( fn.is_none_or_empty input.UserPrincipalName == fn.true ))<NOT_FOUND>(( data.User.
↳ username | email:input.UserPrincipalName != ' ' ))<{{ data.User.username | email:input.
↳ UserPrincipalName}}><NOT_FOUND>",
  "(( fn.is_none_or_empty input.UserPrincipalName == fn.true ))<NOT_FOUND>(( data.User.
↳ username | username_ms_365:input.UserPrincipalName != ' ' ))<{{ data.User.username |
↳ username_ms_365:input.UserPrincipalName }}><NOT_FOUND>",
  "(( fn.is_none_or_empty previous.UserPrincipalName == fn.true ))<NOT_FOUND>(( data.
↳ User.username | username_ms_365:previous.UserPrincipalName != ' ' ))<{{ data.User.
↳ username | username_ms_365:previous.UserPrincipalName }}><NOT_FOUND>",
  "(( fn.is_none_or_empty input.UserPrincipalName == fn.true ))<NOT_FOUND>(( data.User.
↳ username | username_ms_teams:input.UserPrincipalName != ' ' ))<{{ data.User.username |
↳ username_ms_teams:input.UserPrincipalName }}><NOT_FOUND>",
  "(( fn.is_none_or_empty previous.UserPrincipalName == fn.true ))<NOT_FOUND>(( data.
↳ User.username | username_ms_teams:previous.UserPrincipalName != ' ' ))<{{ data.User.
↳ username | username_ms_teams:previous.UserPrincipalName }}><NOT_FOUND>",
  "(( fn.is_none_or_empty input.UserPrincipalName == fn.true ))<NOT_FOUND>(( device.cucm.
↳ User.userid | userIdentity:input.UserPrincipalName != ' ' ))<{{ device.cucm.User.userid_
↳ | userIdentity:input.UserPrincipalName }}><NOT_FOUND>",
  "(( fn.is_none_or_empty input.UserPrincipalName == fn.true ))<NOT_FOUND>(( device.cucm.
↳ User.userid | mailid:input.UserPrincipalName != ' ' ))<{{ device.cucm.User.userid |
↳ mailid:input.UserPrincipalName }}><NOT_FOUND>"
],
```

- Perform a sync from the Microsoft tenant to import Microsoft users, tenant dial plan, licenses, and policies to the customer level. You will be prompted to confirm the syncs.



For Microsoft Exchange, ensure that instances for all 4 device models (User mailboxes, Shared Mailboxes, Room Mailboxes, and Distribution Mailboxes) are synced in at the level where the tenant exists.

- Configure the customer-wide site defaults doc (SDD), CUSTOMER\_TEMPLATE. See [Site Defaults Doc Templates](#).
- Add network device lists (NDLs) with Microsoft 365 and Microsoft Teams tenant details. NDLs are required when adding sites. See [Network Device Lists \(NDLs\)](#).
- Create sites.
- Run the overbuild. See: [Overbuild for Microsoft](#).
- Go to [Configure Automate for Microsoft Services](#)

### Related Topics

- [Microsoft Quick Start Guide for VOSS Automate](#)
- Microsoft Overview in the Core Feature Guide
- Microsoft Sync Overview in the Best Practices Guide

## 10.9. Create MS Teams Service Account on Microsoft Cloud

This procedure creates the Microsoft Teams admin user service account for VOSS Automate in the Microsoft 365 Admin Center, and assigns the *Teams Administrator* role.

---

**Note:** The PowerShell proxy server uses the Microsoft Teams service account to manage Microsoft Teams resource accounts.

---

### To create the MS Teams user service account

1. Use your MS account admin user to log in to the [Microsoft 365 Admin Center](#).
2. Go to **Users > Active users**, then click **Add a user**.
3. Fill out user details:
  - Specify first name, last name, display name, and username (e.g. "voss-svc").
  - Choose a domain. You can choose any domain in the drop-down, including the default ".onmicrosoft.com" domain.
  - Create a password for the account.
  - Clear the checkbox that requires the user to change their password when they first sign in.

---

#### Note:

- Make a note of the user name, domain name, and password you create. You'll need these details when setting up the connection parameters in VOSS Automate. See [Configure Microsoft Tenant Connection Parameters](#)
- There is no need to assign a license.

- Assign the user with the **Teams Administrator** role.

---

**Note:** Starting in Q3 2024, Teams administrators must have user management permissions in Microsoft 365 to create resource accounts. If you wish to continue using Automate to create resource accounts, the Service Account should be assigned “User Administrator”, “Global Administrator”, or custom roles that include the “User Management” permission”.

For further details around Microsoft’s changes with regard to resource accounts, see [VOSS Automate 24.1 - Microsoft Customers, Upgrade Planning for App Registration](#)

---

4. Save your changes to create the user.

# 11. LDAP Management

## 11.1. Add and Configure an LDAP Server

### 11.1.1. Add an LDAP Server

This procedure adds and configures a LDAP server for integration with Automate.

---

**Note:** When integrating with a eDirectory LDAP server, OpenLDAP configuration options are followed, except for the primary key configuration options.

---

1. Log in as Provider, Reseller, or Customer administrator.
2. Set the hierarchy node to the node where you want to sync in users from LDAP to Automate.
3. Go to (default menus) **LDAP Management > LDAP Server**.
4. Click **Add**.
5. Configure the LDAP server. See [LDAP Server Configuration](#) for details.
  - Fill out the fields on the **Base** tab/panel.
  - Optionally, on the **Sync List** tab/panel, if you choose LDAP sync list option *Create sync list from template*, you can choose a LDAP sync list template (based on the server type) - either of these:
    - Ldap Sync List Microsoft Active Directory
    - Ldap Sync List Open Ldap

You can choose a template when adding the LDAP server, or update your choice after saving. If you don't choose a template, LDAP sync is not affected by this list. See the tab description, and:

- [LDAP User Sync](#)
  - [LDAP Schedule](#)
6. Click **Save**.
  7. Test the connection to the LDAP server.

If the authentication credentials or search base DN are invalid, the system displays an error, for example:

*Error encountered while processing your request  
caught exception: [Helper] validation failed; Invalid search base db.*

## 11.1.2. LDAP Server Configuration

This topic is a field reference guide for the fields on the **LDAP Server** when adding or updating an LDAP server.

You can select the following tabs on the **LDAP Server** page:

**Note:** Use the toolbar tab/panel button to toggle between displaying these fields in tabs or panels.

- Base
- Sync List

### Base Tab / Panel

Field	Description
Description	Defaults to the current hierarchy level.
Host Name *	Mandatory. Hostname or IP address of the LDAP server.
Port	Port number for LDAP traffic. Defaults to 389.
User DN *	Mandatory. The User Distinguished Name of an admin user that has access rights to the Base DN on the LDAP server. Examples: <ul style="list-style-type: none"> <li>• Administrator@stb.com</li> <li>• OU=LDAP0,DC=stb,DC=com</li> </ul>
Admin Password *	Mandatory. Admin password associated with the user.
Search Base DN *	Mandatory. Base Distinguished Name for LDAP search. This should be a container or directory on the LDAP server where the LDAP users exist, such as an Organization Unit (OU). For example, to search within an OU called CUS01 under a domain called GCLAB.COM, the Search Base DN would be OU=CUS01,DC=GCLAB,DC=COM. Note that the search will traverse the directory tree from this point down and will include any sub OU's which have been added within the OU.
Search Filter	An RFC 2254 conformant string used to restrict the results returned by list operations on the LDAP server.
Server Type *	Either <b>Microsoft Active Directory</b> or <b>OpenLDAP</b> . For AD LDS (ADAM), choose <b>Microsoft Active Directory</b> .
AD Sync Mode *	Defaults to Direct.
Enable Write Operations	This check box is only shown for Microsoft Active Directory servers ( <b>Server Type</b> is <b>Microsoft Active Directory</b> ) when <b>Encryption Method</b> is "Use SSL Encryption (ldaps://)" (port is 636). When enabled, Automate user management allows for the management of users on the LDAP server (add, modify, delete).

Field	Description
CUCM LDAP Directory Name	Optional. The name of the LDAP Directory configured on CUCM that we want this user to be considered synced from. The LDAP Directory must be configured on CUCM already. While this parameter is optional, note the following when this parameter is <i>not</i> set: <ul style="list-style-type: none"> <li>In a top-down scenario, users are added to CUCM as Local Users</li> <li>In a bottom-up sync scenario, users won't be able to log on to Automate</li> </ul>
Encryption Method	Choose between <b>No Encryption</b> , <b>Use SSL Encryption (ldaps://)</b> , or <b>Use StartTLS Extension</b> . <ul style="list-style-type: none"> <li>No Encryption - default port for LDAP is port 389</li> <li>Use SSL Encryption (ldaps://)a - uses port 636 and establishes TLS/SSL upon connecting with a client.</li> <li>Use StartTLS Extension - to transition to a TLS connection after connecting on port 389</li> </ul>
Server Root Certificate	If <b>Trust All</b> is unchecked, the LDAP server's SSL certificate is validated against this root certificate. If no <b>Server Root Certificate</b> is specified, validation is done against any existing trusted CA certificates. Use this option for custom root certificates in <i>.pem</i> format. See "SSO Certificate Management" for more information.
Trust All	Defines whether to disable certificate validation.
Primary Key Attribute	The attribute value used to uniquely identify and search for records on an LDAP server. For example, <code>uid</code> is the attribute when using a 389-Directory Server and <code>entryUUID</code> when using an OpenLDAP server. The attribute must be unique, should not change over time and should not be location specific. If no attribute is entered, <code>entryUUID</code> is used for an OpenLDAP server and <code>objectGUID</code> if the LDAP server is Microsoft Active Directory. <p><b>Note:</b> From v21.4-PB5, Automate introduced support for syncs from an eDirectory LDAP server configured as an OpenLDAP server type, and allows the use of an OctetString-formatted GUID primary key (<code>pk</code>) instead of the <code>entryUUID</code> attribute.</p>
Authentication Scope	Hierarchical scope this server applies to: Local authentication or Full tree authentication. <sup>1</sup>
User sync type	Choose the type of users that can authenticate against this server - options are: <ul style="list-style-type: none"> <li>All users - all users can authenticate against this server</li> <li>Synced users only (default) - only users synced in from LDAP can authenticate against this server</li> </ul>
Authentication enabled	Defines whether the server is available for authentication. Default is True.

**Search Filter examples:**

- `(telephoneNumber=919*)`: all telephone numbers starting with 919
- `((&(OfficeLocations=RTP)(|(department=Engineering)(department=Marketing))))`: office is located in RTP and department is either Engineering or Marketing
- `(&(MemberOf=cn=Admin,ou=users,dc=foo,dc=com)(!(c=US)))`: all Admins except those in the U.S.

User lookup for LDAP authentication is restricted to the `device/ldap` model specified in the **Authentication Attribute: Model Type**. For example, if this attribute was `device/ldap/user`, the LDAP user authentication is restricted to `(objectClass=user)`.

**Related Topics****Sync List Tab / Panel**

A sync list improves performance, and limits sync attributes to those relevant to your scenario.

On this tab you can choose a LDAP sync list option, when adding a new LDAP server or when updating an existing LDAP server (one that was added prior to release 19.3.4).

---

**Important:** The following attributes are always synced in, regardless of the sync list option you choose:

- `sAMAccountName`
  - `userPrincipalName`
  - `mail`
  - `cn`
  - `uid`
  - `description`
- 

The table describes the LDAP sync list options you can choose on this tab:

<sup>1</sup> For details around authentication scope, see [User Login Options by Auth Method and Server Auth Scope](#).

LDAP Sync List Option	Description
No sync list - all fields will be synced	LDAP sync is not driven by a LDAP sync list. All fields are imported (as they were before release 19.3.4).
Create sync list manually	The fields to sync can be added or modified manually. For list override precedence and other considerations, see <a href="#">LDAP Sync Lists</a> .
Create sync list from template	Displays an additional field on the tab (LDAP Sync List Template) and allows you to choose a sync list from a predefined configuration template (CFT). Automate provides default Sync List CFTs for the following: <ul style="list-style-type: none"> <li>• Microsoft AD servers</li> <li>• OpenLDAP servers</li> </ul> These CFTs contain LDAP attributes that are typically required to be synced with LDAP. Once you've applied the template, or if a template is not used, a sync list is visible and configurable directly on a saved LDAP server's <b>Sync List</b> tab. See <a href="#">LDAP Sync Lists</a> .

## 11.2. LDAP User Sync

### 11.2.1. Overview

You'll need to set up an LDAP user sync to sync in users from a specified LDAP directory into Automate.

Users synced in from LDAP appear at the hierarchy node where the LDAP user sync object exists. Once synced in, you can manage these users in Automate (via the User Management menu). For example, you may want to move users to other hierarchies, or to push users to CUCM.

When syncing in from LDAP, some fields are always imported into Automate, while others are excluded. For details, see [Introduction to LDAP Authentication in Automate](#)

### 11.2.2. Delete or Retain Associated Accounts at User Sync

You can configure (via **Customizations > Global Settings**) the LDAP user sync to delete or retain Cisco (CUCM) subscriber voicemail and Webex accounts when running syncs after deleting a subscriber.

- On the **Webex App** tab of the Global Settings, choose whether to retain or delete the Webex app account
- On the **Voicemail** tab of the Global Settings, choose whether to retain or delete the voicemail account.

### Related Topics

- For details around LDAP server setup and authentication settings, see [Add and Configure an LDAP Server](#)
- [Global Settings](#)

### 11.2.3. Add LDAP Sync

This procedure adds a LDAP sync to prepare for syncing users in from LDAP to Automate.

1. Log in as Provider, Reseller, or Customer administrator.
2. Set the hierarchy path to the node of the LDAP server you want to sync users from.
3. Go to (default menus) **LDAP Management > LDAP User Sync**.
4. Click **Add**.
5. Fill out details for the sync:



Field	Description
LDAP Server	Mandatory. The LDAP server you're syncing from.
LDAP Authentication Only	<p>This setting is available only in Automate, and is disabled by default. Leave unchecked (clear) to sync in users from LDAP (from a predefined LDAP directory). In this case, the user passwords are authenticated against this LDAP directory.</p> <p>Select this checkbox (enable) to prevent user sync from the predefined LDAP directory. In this case:</p> <ul style="list-style-type: none"> <li>• Only the users passwords are authenticated against the LDAP directory</li> <li>• You can add users manually via the GUI, API, bulk load, or sync users in from CUCM.</li> </ul>
User Model Type	<p>Defines the LDAP object (from the configured LDAP server), and is used to import and authenticate users.</p> <ul style="list-style-type: none"> <li>• When LDAP server is Microsoft Active Directory, the default is device/ldap/user.</li> <li>• When LDAP server is AD LDS (ADAM), set to device/ldap/userProxy.</li> <li>• When LDAP server is OpenLDAP, the default is device/ldap/inetOrgPerson.</li> </ul> <p>Contact the LDAP server administrator if you need to identify a non-default User Model Type to use.</p>
LDAP Authentication Attribute	<p>The attribute used for creating an LDAP user.</p> <p>When Server Type is Microsoft Active Directory, options are: employeeNumber, mail, sAMAccountName, telephoneNumber, userPrincipalName.</p> <p>When Server Type is OpenLDAP, options are: employeeNumber, mail, telephoneNumber, uid.</p> <p>Custom values for a deployment are also allowed.</p>
Attribute	This value is used for LDAP authentication against LDAP when <b>LDAP Authentication Only</b> is enabled.

User Entitlement Profile	Choose the User Entitlement Profile that specifies the devices and services to which users synced in from the LDAP server are entitled. The chosen entitlement profile is assigned to each synced in user. It is checked during user provisioning to ensure the user's configuration does not exceed the allowed services and devices specified in the entitlement profile.
User Role (default)*	The default role to assign to the synced user (if no other LDAP custom role mappings are applicable for the synced user, then this fallback/default role will be applied). Mandatory.
User Move Mode	Defines whether users are automatically moved to sites based on the filters and filter order defined in <b>User Management &gt; Manage Filters</b> .
User Delete Mode	Defines whether users are automatically deleted from Automate if they are deleted from the LDAP directory. If set to automatic, all subscriber resources associated with the user, such as a phone, are also deleted.  <b>Warning:</b> Setting this option to <i>Automatic</i> will delete <i>all</i> users from the LDAP server (in Automate and in the UC apps, phones, services, and so on).
User Purge Mode	Defines whether users are automatically deleted from Automate if they are purged from the LDAP device model. An administrator can remove the LDAP user from the device layer even if the user has not been removed from the LDAP directory.  <b>Warning:</b> Setting this option to <i>Automatic</i> will delete <i>all</i> users from the LDAP server (in Automate and in the UC apps, phones, services, and so on).

6. Inspect the default mappings and modify if required, see [User Field Mapping](#).
7. Click **Save** to add the LDAP sync.

---

**Note:** By default, the new LDAP sync is initially inactive. See [LDAP Schedule](#).

---

8. In the Global Settings, define whether to retain or delete associated webex and/or voicemail accounts in the user sync that runs after deleting a subscriber. See topic Global Settings (Webex App tab, Voicemail tab)

## Related Topics

- Global Settings in the Core Feature Guide

### 11.2.4. LDAP Sync Scenarios (Top-Down and Bottom-Up)

The table summarizes the two LDAP user sync scenarios that Automate supports:

- Top-down
- Bottom-up

**Note:** Although you can have different LDAP sync types at different parts of the hierarchy, it is recommended that you run either top-down or bottom-up LDAP syncs.

Sync scenario	Description
Top-down	Users are synced <i>directly</i> from the LDAP directory. User data is sourced from one or more LDAP directories. This setup defines how users are matched to be pulled in (for example, OU definition, LDAP filter, field filters, etc). Recommended for flow-through provisioning.
Bottom-up	Users are synced <i>indirectly</i> from the LDAP directory, that is, where applications are integrated and syncing the users from the LDAP directory. For example, the system syncs via the CUCM, which is syncing to LDAP.

**Note:** In a top-down or bottom-up LDAP sync, a system configuration template sets the CUCM (LDAP) user's identity field (`userIdentity`) to the user principal name (UPN), `userPrincipalName`, if it exists; otherwise it uses the email address. This is useful where a user has a different email address to the UPN and needs to be correctly mapped following a LDAP sync, and then the user is moved to a site.

## 11.2.5. LDAP Sync Lists

The table describes, for LDAP sync, LDAP sync lists, arranged in override order:

1. <i>Always synced list</i>	Fields required to list LDAP Users on the GUI
2. <i>Drop Field List</i>	Fields never imported from LDAP
3. <i>Data Sync Blacklist (denylist)</i>	A change in these fields does not trigger an update
4. <i>Model Type List</i>	From the LDAP data sync. Set up and used in scheduled syncs
5. <i>LDAP Sync List (manual or from CFT)</i>	Fields to be imported from LDAP as set up with the LDAP server

### Always Synced List

The following fields are always synced in an LDAP sync as their values are required to list LDAP users on the GUI:

Column Name	Field Name
Cn	cn
Uid	uid
Description	description
Mail	mail
User Principal Name	userPrincipalName
SAM Account Name	sAMAccountName

### Drop Field List

Any items in the LDAP Sync List from DROP\_FIELD\_LIST are excluded from the sync. This list is read-only.

```
DROP_FIELD_LIST=[
  'photo',
  'jpegPhoto',
  'audio',
  'thumbnailLogo',
  'thumbnailPhoto',
  'userCertificate',
  'logonCount',
  'adminCount',
  'lastLogonTimestamp',
```

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```
'whenCreated',
'uSNCreated',
'badPasswordTime',
'pwdLastSet',
'lastLogon',
'whenChanged',
'badPwdCount',
'accountExpires',
'uSNChanged',
'lastLogoff',
'dSCorePropagationData'
]
```

### Data Sync Denylist

See Settings (Data Sync Workflow Execution Control) in the Advanced Configuration Guide.

An LDAP sync list won't override any of the Data Sync Denylist attributes (default or custom) in `data/Settings`. That is, for fields that appear in both the LDAP Sync List and in the Data Sync Denylist, where the field value is different on the LDAP server, the LDAP sync won't trigger any update for the LDAP entity during a sync.

### Model Type List

Given an existing LDAP server with a LDAP Sync List configured, when executing a data sync against the LDAP server, the *existing Model Type List functionality* from the LDAP data sync is maintained and takes precedence over the LDAP Sync List.

See:

- [Create a Targeted Model Type List](#)
- [Controlling a Data Sync with a Model Type List](#)

### LDAP Sync List

A new LDAP server or one that existed in the system prior to release 19.3.4 allows you to choose the **LDAP Sync List Option**:

- No sync list
- Create sync list manually
- Create sync list from template

The configuration template (CFT) can also be created and applied to a server. See [LDAP Sync List Configuration Templates](#).

**Important:** Besides the sync override order indicated above, manual or template sync lists are bound by the following considerations:

- If no sync list is set up, LDAP sync is not affected by this list.

- When updating the default sync list (or any sync list you choose), a full sync is required (during the next scheduled, or a manual sync). See the **Sync and Purge** menu, and for more information about data sync and data sync cache, see [Data Sync Types](#).

Until a full LDAP user import is performed, user details are updated in the local cache (when opening a management page).

For these reasons, it is recommended that such updates and syncs should be scheduled for off-peak times, particularly where a large number of users requires a large sync.

- For users targeted for Cisco-based services, a field must be mapped to the surname field for users. It is therefore important to include a field in the Sync List that is mapped to the 'surname' field, typically sn.

---

For details on the LDAP Sync List on the LDAP server, see: [Add and Configure an LDAP Server](#).

---

**Note:** By default LDAP user details shown on the GUI display all `device/ldap/user` fields. It is recommended that you create a FDP for `device/ldap/user` to contain *only* the fields from your LDAP Sync List in order to view LDAP user details according to your configuration.

---

### 11.2.6. LDAP Sync List Configuration Templates

Administrators can clone the default sync list Configuration Templates (CFTs) to a hierarchy, and modify them for use during initial LDAP server setup. Modified CFTs are available at the hierarchy on the **Sync List** tab (from the **LDAP Sync List Template** drop-down).

Two default CFTs are provided. Both can be cloned:

- **Ldap Sync List Microsoft Active Directory**
- **Ldap Sync List Open Ldap**

The table describes the default CFT fields:

Ldap Sync List Microsoft Active Directory Model Type: device/ldap/user	Ldap Sync List Open Ldap Model Type: device/ldap/InetOrgPerson
sAMAccountName	uid
mail	mail
givenName	givenName
sn	sn
title	title
department	departmentNumber
displayName	displayName
employeeNumber	employeeNumber
employeeType	employeeType
homePhone	homePhone
ipPhone	
telephoneNumber	telephoneNumber
mobile	mobile
otherMailbox	
facsimileTelephoneNumber	facsimileTelephoneNumber
l	l
c	
streetAddress	
st	street
postalCode	postalCode
physicalDeliveryOfficeName	physicalDeliveryOfficeName
manager	manager
memberOf	memberOf
objectClass	objectClass
o	o
ou	ou

If new LDAP attribute names are added to the cloned CFT and modified on the GUI, type the names in. Initially, all attribute names are imported. The full attribute list and naming is available on the GUI **Sync List** tab from the default sync list for the server. See: [Add and Configure an LDAP Server](#).

Enter a descriptive name for the cloned CFT, which will then show in the hierarchy on the drop-down list of **Sync List** CFTs that are available when you modify an LDAP server or create a new server.

### 11.2.7. Multiple LDAP Organization Units Per Hierarchy

Large corporations and institutions with multiple domains or agencies may require more than one LDAP Organizational Unit (OU) to be configured at a hierarchy.

Automate allows for multiple LDAP OUs at a hierarchy by providing for a *unique combination* of the following LDAP server properties at the hierarchy:

- IP address
- Port
- search base DN

Multiple search base DN's can therefore be configured at the *same hierarchy* for different organizations within the same company, so that administrators and self-service users can successfully authenticate. For example:

LDAP server setup:

IP	Port	Search base DN	Hierarchy
1.2.3.4	389	ou=SharedOUA,dc=voss-solutions,dc=com	Provider.Customer
1.2.3.4	389	ou=SharedOUB,dc=voss-solutions,dc=com	Provider.Customer

Users:

- userA: ou=SharedOUA,dc=voss-solutions,dc=com
- userB: ou=SharedOUB,dc=voss-solutions,dc=com

## 11.3. LDAP Schedule

### 11.3.1. Overview

You can sync users in to VOSS Automate from LDAP by activating a scheduled sync, or by running a manual sync.

### 11.3.2. Activate a LDAP Scheduled Sync

This procedure activates a LDAP sync from a schedule.

#### Prerequisites

- LDAP server must be present

#### Perform these steps:

1. Go to (default menus) **LDAP Management > LDAP Schedule**.
2. Click on a LDAP schedule.
3. On the **Base** tab, select the **Active** checkbox.



4. Click **Save**.

The system attempts to sync users from the LDAP server. It may take a few minutes for the users to show up in VOSS Automate.

---

**Note:** You can't cancel a sync once it's running, and you can't delete an LDAP server while a sync is in progress.

---

5. Once the sync completes, verify that users are synced in:

- Navigate to the LDAP server hierarchy to view the lists on the **LDAP Users** menus.
- Verify that users are synced in from LDAP, at (default menus) **User Management > Users**.

### Related Topics

- For details around running a manual LDAP sync, see *Sync or Purge LDAP Users*.
- For details on sync lists and scenarios, see *Introduction to LDAP Authentication in Automate*.

## 11.4. LDAP Custom Role Mappings

### 11.4.1. Overview

LDAP custom role mapping allows you to apply (in top-down deployments only) customized roles, to LDAP synced and moved users. The default roles are overwritten.

The table describes how LDAP custom role mapping works for LDAP user sync and LDAP user move:

Action	Description
LDAP user sync	<ul style="list-style-type: none"> <li>• By default, users synced in from LDAP are assigned the role configured in 'User Role(default)', in the LDAP user sync.</li> <li>• The role specified in the custom role mapping takes precedence over the 'User Role(default)', when both of the following conditions are met: <ul style="list-style-type: none"> <li>– The user's <b>Active Directory Group</b> Membership matches a group configured in the custom role mapping</li> <li>– The hierarchy of the LDAP user sync matches the <b>Target Role Context</b></li> </ul> </li> </ul>
LDAP user move	<ul style="list-style-type: none"> <li>• By default, users moved manually to a hierarchy (using 'Move Users') are assigned the role specified in 'Set Default Role'.</li> <li>• The role specified in the custom role mapping takes precedence over the 'Set Default Role' chosen in 'Move Users', when both of the following conditions are met: <ul style="list-style-type: none"> <li>– The user's <b>Active Directory Group</b> matches a group configured in the custom role mapping.</li> <li>– The user's destination hierarchy type matches the <b>Target Role Context</b>.</li> </ul> </li> <li>• By default, a user moved to a hierarchy automatically (using a filter), is assigned the role specified in the filter in 'Set Default Role'.</li> <li>• The role specified in the custom role mapping takes precedence over the 'Set Default Role' defined in the filter, when both of the following conditions are met: <ul style="list-style-type: none"> <li>– The user's <b>Active Directory Group</b> Membership matches a group configured in the custom role mapping.</li> <li>– The user's destination hierarchy type (specified in the filter), matches the <b>Target Role Context</b>.</li> </ul> </li> </ul>

### 11.4.2. Add a LDAP Custom Role Mapping

In top-down deployments only, this procedure applies customized roles to LDAP synced and moved users, and overwrites default roles.

1. Log in as Provider or Reseller administrator.
2. Set the hierarchy to where the LDAP custom role mapping must be added.
3. Go to (default menus) **LDAP Management > LDAP Custom Role Mappings**.
4. Click **Add**.
5. Fill out the fields (all are mandatory):

Field	Description
Active Directory Group	The user's Active Directory group, derived from 'memberOf', from the LDAP Schema. This must be an exact match of the value defined in Active Directory, for example, CN=Administrators,CN=Builtin,DC=test,DC=net.
Target Role Context	The hierarchy for which the custom role mapping will be applied. This must match the hierarchy type where the users are synced, or their destination hierarchy when moved. For example, if a user is assigned a 'CustomerAdmin' role, and the LDAP user sync is configured at Customer level, then the <b>Target Role Context</b> must be set to Customer. If a user is assigned a 'SiteAdmin' role, and is being moved (manually or automatically) using 'Filter to a Site', then <b>Target Role Context</b> must be set to Site.
Target Role	The role to apply to the user if their <b>Active Directory Group</b> and <b>Target Role Context</b> are matched. This must be a valid role at the user's destination hierarchy. This can be defined at a specific role or as a macro. For example, if the user is assigned a 'SiteAdmin' role, the role can be defined as the exact name of the role or defined as a macro, which allows re-use for any site name e.g. {{macro.SITENAME}}SiteAdmin.

6. Click **Save**.

## 11.5. Introduction to LDAP Authentication in Automate

VOSS Automate supports LDAP authentication and can be used either standalone (LDAP Authentication only) or in conjunction with LDAP syncing of users:

LDAP sync and authentication	<ul style="list-style-type: none"> <li>• Users are synced in from LDAP.</li> <li>• LDAP authenticates these users.</li> <li>• LDAP user sync is available for Active Directory (AD) and OpenLDAP.</li> </ul>
LDAP authentication-only (standalone)	<ul style="list-style-type: none"> <li>• Users are added locally or are synced in from CUCM.</li> <li>• LDAP authenticates these users.</li> <li>• Not available for OpenLDAP.</li> <li>• Requires VOSS Automate version 10.6(3) or later.</li> </ul>

### Note:

- VOSS Automate provides LDAP server support for case-insensitive search base DN's. For example, on an LDAP server, the following search base DN's are equal:
  - CN=Users,DC=example,DC=com
  - cn=Users,dc=example,dc=com

### LDAP authentication workflow

1. User provides their credentials in the VOSS Automate system Login page.
2. Authentication request is sent to the relevant LDAP server(s), based on the user's authentication setup:

Default authentication setup	<p>Matching username and password</p> <ul style="list-style-type: none"> <li>• VOSS Automate username and password must match the username and password in the LDAP server (based on the LDAP field chosen for <i>username</i>).</li> <li>• Once authenticated, the LDAP username is mapped to VOSS Automate user to determine access, role, and so on.</li> </ul>
Alternative authentication setup	<p>Non-matching username and password</p> <p>VOSS Automate supports authentication for mapping non-matching usernames. This is useful where the username in VOSS Automate and the UC apps is different to the username in LDAP. For example, if the LDAP username is bobsmith but the username in VOSS Automate is bsmith, then choose LDAP as the authentication type and set the LDAP username (bobsmith in this case) to match the username of bsmith in VOSS Automate. You would do this via the LDAP authentication attribute, such as sAMAccountName, mail, or userPrincipalName (which define the field where the username is sourced from, and which is used to authenticate the user.)</p>

---

**Note:** For LDAP authentication, the password rules of the VOSS Automate credential policy don't apply as the password is managed in the LDAP directory. Other credential policy rules are applied (such as session length), as these are managed in VOSS Automate.

---

**Related Topics**

- [LDAP User Sync](#)
- [Configure LDAP Authentication-only \(standalone\)](#)

## 11.6. Configure LDAP Authentication-only (standalone)

This procedure sets up LDAP for authentication-only, in VOSS Automate.

**Note:** Users can be added locally or synced from CUCM:

Scenario where LDAP authentication is the default	When users are LDAP synced in CUCM and then synced into VOSS Automate
Scenario where LDAP authentication is not the default	<ul style="list-style-type: none"> <li>• When users are manually configured in CUCM and then synced into VOSS Automate</li> <li>• When users are manually configured in VOSS Automate</li> </ul>

You can change the default behavior, as described in [View and Update LDAP Authentication Users](#).

### To set up LDAP for authentication-only . . .

1. Log in as Provider, Reseller, or Customer administrator.
2. Choose the hierarchy where you have the LDAP server set up (the server you're using to authenticate users).
3. Go to (default menus) **LDAP Management > LDAP User Sync**.
4. Click **Add**.
5. Fill out the relevant details:

Field	Description
LDAP Server	Choose the LDAP Server where you are authenticating users.
LDAP Authentication Only	<p>Disabled by default, which means users will be synced from the configured LDAP directory and their passwords are authenticated against that LDAP directory.</p> <p>When enabled:</p> <ul style="list-style-type: none"> <li>• The LDAP server is used only to authenticate users.</li> <li>• Only available at hierarchy nodes with an LDAP server, so not available for users created at sites.</li> <li>• Fill out the <b>CUCM LDAP Directory Name</b> for the LDAP server. When more than one LDAP server sync is created and you don't provide this detail, no LDAP users are created and the transaction log shows a warning.</li> <li>• Users won't be synced from the configured LDAP directory but their passwords are authenticated that LDAP directory.</li> <li>• You can manually add users from the GUI or API, bulk load them, or sync them from CUCM.</li> </ul>
User Model Type	Read-only. Identifies the LDAP object (defined in the configured LDAP server), used to authenticate users.
LDAP Authentication Attribute	<p>Mandatory. Choose the LDAP Attribute for authenticating users.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• sAMAccountName (only option for AD, and the default for AD)</li> <li>• uid (only option for OpenLDAP, and the default for OpenLDAP)</li> <li>• mail</li> <li>• employeeNumber</li> <li>• telephoneNumber</li> <li>• userPrincipalName (AD or hybrid, for MS)</li> </ul> <p>These are the same values CUCM uses for LDAP Attribute for User ID.</p> <p>Active Directory (AD) only:</p> <p>For these user types, don't choose <b>userPrincipalName</b>, unless the <b>userPrincipalName</b> value was set as the Username when the user was created:</p> <ul style="list-style-type: none"> <li>• Users created using the VOSS Automate GUI</li> <li>• Users created using the VOSS Automate API</li> <li>• Users bulk loaded into VOSS Automate</li> <li>• Users manually created in Unified CM and synced into VOSS Automate</li> </ul> <p>For users synced from LDAP into CUCM and then into VOSS Automate:</p> <p>Caveats (AD and OpenLDAP)</p> <p>For users synced from LDAP into CUCM and then into VOSS Automate:</p> <ul style="list-style-type: none"> <li>• We strongly recommend selecting the same LDAP Authentication Attribute as Unified CM uses for LDAP Attribute for User ID.</li> <li>• If you sync users into Unified CM using attributes other than sAMAccountName/uid, do not choose sAMAccountName/uid.</li> </ul> <p>If you sync users from LDAP into CUCM using employeeNumber, choose employeeNumber for the LDAP Authentication Attribute. However, to get the LDAP Authentication to work properly, one of these conditions must be met:</p> <ul style="list-style-type: none"> <li>• Before syncing users from CUCM to VOSS Automate, set the Employee Number field on CUCM Server FieldMapping tab to userid</li> <li>• Define the LDAP for Authentication Only sync before syncing users from CUCM into VOSS Automate</li> </ul>

6. Click **Save**.

All users with `SyncToHierarchy` set to the hierarchy of the LDAP server now use the LDAP server for authentication. Users are added to the LDAP Authentication Users list.

## 11.7. View and Update LDAP Authentication Users

All users that use LDAP for authentication are displayed on the **Users** form (default menu **User Management > Users**). This list includes users that use LDAP for authentication only, and users that have been synced from LDAP.

**Note:** To view LDAP Authentication Users only, filter the list to display **LDAP** users.

**Perform the following steps:**

1. Log in as provider, reseller, or customer administrator.
2. Choose **User Management > Users**.
3. Filter on the **Sync Source** column to display **LDAP** users.
4. Click **Add** to add a new LDAP user or select an existing LDAP user to update. For each user that uses LDAP for authentication the following information is displayed on the **Account Information** tab:

Field	Description
LDAP Server	The LDAP server being used for authentication.
LDAP Username	Matches the value of the LDAP authentication attribute which is specified in the User Model Type field of the LDAP User Sync configuration.

5. To disable LDAP authentication for a user, select the user and click **Delete**. LDAP Authentication for the user is removed from the Users list. Local authentication is used for the user to log in.
6. To update LDAP authentication for a user, select the user, make the updates and click **Save**. You can update only the LDAP Username field. However, LDAP authentication fails if the corresponding change is not also done on LDAP.

## 11.8. Re-provision Synced LDAP Users

This procedure re-provisions users that were synchronized from an LDAP server, in particular, those users that have been updated on the LDAP server and for which these updates have not been propagated through VOSS Automate.

In particular, the re-sync will force an update of the selected users on all UC apps by executing an update Data Sync as well as its associated workflow.

**Perform these steps:**

1. Log in as a customer administrator or higher and select **User Management > Sync & Purge > LDAP Re-Provision Users**.
2. Choose the LDAP Server on which the users need to be re-synced.

3. From the LDAP Users control, add one or more users to re-sync.
4. Click **Save** to start the re-sync action.

## 11.9. Run a CUCM LDAP Directory Sync

This procedure runs an on-demand CUCM LDAP directory sync to add new CUCM users into a Cisco Unified Communications Manager (CallManager/CUCM), from VOSS Automate.

**Note:** This sync uses VOSS Automate's generic driver to perform a doLdapSync AXL request.

For details around regular scheduled syncs, see [LDAP User Sync](#).

To perform a CUCM LDAP directory sync:

1. Log in to the Admin Portal as a Provider administrator or higher.
2. Go to (default menus) **LDAP Management > CUCM LDAP Directory Sync**.
3. From the **CUCM** drop-down, choose a CUCM cluster.
4. From the **CUCM LDAP Directory Name** drop-down, choose the name of the LDAP directory to sync.
5. Select the **Sync** checkbox to define whether the sync will run once you save. The default is True.
6. Save your changes.

If you have the **Sync** checkbox selected on this form, the sync triggers the workflow to add and update CUCM users into the CUCM LDAP directory.

## 11.10. Write back to Active Directory LDAP

### 11.10.1. Overview

For Microsoft Active Directory LDAP Servers, an option is available to enable write back as a part of the Quick Add Subscriber process, for both Quick Add Subscriber for CUCM and for Microsoft Quick Subscriber.

### 11.10.2. Setting up for Write Back to Active Directory LDAP Servers

Before using write back for Microsoft Active Directory LDAP servers, you'll need to set up the environment as follows:

1. At the required hierarchy for the **LDAP Server**:
  - a. **Server Type** is `microsoft_active_directory`.
  - b. **Port** is 636.
  - c. **Encryption Method** is Use SSL Encryption.
  - d. **Enable Write Operations** is enabled.
2. Add an **LDAP User Sync** instance at the required hierarchy:



- a. Select the relevant **LDAP Server**.
- b. Select a **LDAP Write Back Template** - see: [LDAP Write Back Template](#).
- c. If the **LDAP Write Back Only** checkbox is enabled, users are *only* synced in for write-back purposes and other user updates are not carried out.

This should only be used for a Microsoft-only type scenario where users are being synced in initially from MS365 or MSTEams and the LDAP Write Back option is configured to write back to Active Directory for the purpose of syncing to Azure.

At the end of the Quick Add Subscriber workflow, write-back is then carried out for target model type device/ldap/user using this **LDAP User Sync** instance.

3. When saving **LDAP User Sync**, a data sync instance is created that applies when a sync is carried out from **Sync & Purge > LDAP Users**.
4. When Quick Add Subscriber or Microsoft Quick Subscriber is run, the LDAP user is updated in accordance with the LDAP write-back template.

### 11.10.3. LDAP Write Back Template

An LDAP Write Back Template is a configuration template for target model type device/ldap/user that contains named macros that will be applied during write-back when the Quick Add Subscriber or Microsoft Quick Subscriber task is carried out.

For example, the following macros can be used in the configuration template selected in **LDAP Write Back Template**.

- LDAP username: `{{macro.DISPLAY_GET_USERNAME}}` - writes back username
- LDAP user first name: `{{macro.DISPLAY_NAME_GET_FNAME}}` - writes back user first name
- LDAP user last name: `{{macro.DISPLAY_NAME_GET_LNAME}}` - writes back user last name
- **Telephone Number**: `{{macro.DISPLAY_GET_FIRST_LINE}}` - write back the first line added to a subscriber when running Quick Add Subscriber.
- **Telephone Number**: `{{macro.DISPLAY_GET_FIRST_LINE_E164}}` - write back the first E164 line added to a subscriber when running Quick Add Subscriber.

---

#### Note:

- When writing back to Active Directory for the purpose of syncing to Microsoft Entra ID for Microsoft Teams provisioning, the LDAP authentication attribute on the LDAP user configuration must be set to `userPrincipalName` and the username mapping on the **User Field Mapping** page must be set to `userPrincipalName` for the specific LDAP server.
  - The configuration template is automatically created for each LDAP server; at the same level of the hierarchy as the LDAP server when **Enable Write Operations** is set to True. There can only be one Write Back configuration template per LDAP server.
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# 12. Entitlement

## 12.1. Introduction to Entitlement

### 12.1.1. Overview

Entitlement in VOSS Automate represents the set of rules for the suite of services and devices available to specified users.

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**Note:** Entitlement is an optional feature. When adding or updating a user or subscriber, you can choose whether to assign an entitlement profile.

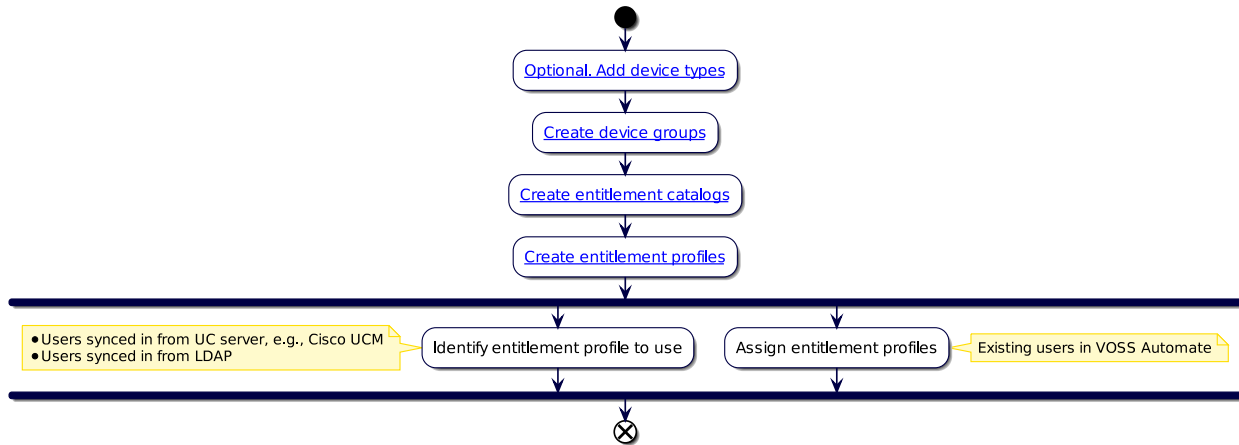
---

#### Related Topics

- [Add Device Type in the Core Feature Guide](#)
- [Create Device Group in the Core Feature Guide](#)
- [Create an Entitlement Catalog in the Core Feature Guide](#)
- [Create an Entitlement Profile in the Core Feature Guide](#)

## 12.1.2. Setting up Entitlement

The diagram provides an overview of the entitlement set up workflow:



The table provides an example for how customers could define different entitlement rule sets for their users:

Customer A	Creates entitlement rules that allows their end users to have: <ul style="list-style-type: none"> <li>• Voice service only</li> <li>• Maximum of two devices:               <ul style="list-style-type: none"> <li>– One device being a flavor of IP set</li> <li>– One device being an analog set</li> </ul> </li> </ul>
Customer B	Creates entitlement rules that allows their end users to have: <ul style="list-style-type: none"> <li>• Voice service</li> <li>• Voicemail service</li> <li>• Maximum of ten devices (limited to SIP sets)</li> </ul>

## 12.1.3. Entitlement Components

The table describes entitlement components. These are the the VOSS Automate models and the rules that define how entitlement works in the system:

Model	Description
Device types	<p>One or more physical devices, which may be grouped into device groups for entitlement purposes.</p> <p>Device types must correspond with supported product types available for the UC vendor, for example, Cisco or Microsoft. The device type data model is pre-populated with a snapshot of current product types.</p> <p>Provider admins can add, update, or remove device types.</p>
Device groups	<p>A group of device types. The same device types may exist across different device groups</p> <p>Provider admins can add, update, or remove device groups.</p> <p>Reseller and customer admins can only view device groups.</p>
Entitlement catalogs	<p>Defines the supported device groups and available services at a particular hierarchy. Within a device group you also specify the maximum allowed total number of devices, and the maximum allowed number of devices in each device group in the catalog.</p> <p>Provider admins can add, update, and delete entitlement catalogs at their hierarchy level and below.</p> <p>Reseller and customer admins can only view entitlement catalogs.</p>
Entitlement profiles	<p>Defines a set of services, device groups, and device limits to which an end user may be subscribed.</p> <ul style="list-style-type: none"> <li>Initial settings are inherited from the first entitlement catalog above it in the hierarchy.</li> <li>Service and devices allowed in the profile can't exceed those allowed by the associated entitlement catalog.</li> </ul> <p>Provider admins can add, update, and delete entitlement profiles at their hierarchy level and below.</p> <p>Reseller and customer admins can only view entitlement profiles.</p>
Entitlement defaults	<p>Default entitlement profiles can be set up and assigned in VOSS Automate, but in some cases, the default is based on settings outside of VOSS Automate, depending on how users are added to VOSS Automate. See Default Entitlement Profiles</p>

#### 12.1.4. Default Entitlement Profile

Entitlement defaults work differently depending on how a user is added to VOSS Automate:

User add option	Description
Bottom-up (UCM user sync)	This is based on the entitlement profile setting on the UCM server (publisher) the user is being synced from. The default entitlement profile is not used in this path.
Quick Add Subscriber	This assigns the entitlement profile selected on the portal/loader by the administrator who adds the subscriber. When using QAS via the portal, it pre-populates the entitlement drop-down with the entitlement profile tagged as default.
LDAP Top-down	Entitlement is determined by the entitlement profile setting on the LDAP User sync that is syncing the user in. The default entitlement profile is not used in this path.
Admin Portal or loader	User added via User Management/Subscriber Management Add. This uses the value provided via the Admin Portal or loader. The default entitlement profile is not used in this path.

**Important:** When a user has an empty value for their Entitlement:

- If the user's Entitlement value is blank, and none of the Entitlement Profiles in the User's hierarchy tree have the **Default Profile** check box selected (set to true), then no Entitlement Profile is applied and no Entitlement checking is done. This means all services and all phones are available to the User.
- If the user's Entitlement value is blank, and one of the Entitlement Profiles **does** have the **Default Profile** check box selected (set to true), in the User's hierarchy tree, then the User will inherit this Entitlement Profile.
- If the **Default Profile** check box is cleared (set to false) from one Entitlement Profile and added to another Entitlement Profile, then this new Entitlement Profile will become the default Profile applied to all Users in the hierarchy below whose Entitlement Profile is blank.

## 12.2. Entitlement Enforcement

### 12.2.1. Device Groups

A user to whom an entitlement profile is applied is limited to devices in the device groups assigned in the entitlement profile. Adding a Phone to a user in Subscriber Management fails if the added Phone is not in a device group assigned to the entitlement profile applied to the user.

### 12.2.2. Device Limits

A user to whom an entitlement profile is applied is subject to the following device limits set in the entitlement profile:

- Total number of devices
- Total number of devices in a device group

Adding a Phone to a user in Subscriber Management fails if the total number of devices limit or the total number of devices in a device group limit is exceeded.

### 12.2.3. Transaction Log

The transaction log messages contain detailed information that can be used to determine what entitlement profile limitation caused an action to fail.

### 12.2.4. Service Levels

The table describes the impact on a user when a service is disabled in the entitlement profile applied to the user.

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**Note:** An entitlement profile can be explicitly assigned to a user, or implicitly applied if an entitlement profile is designated as the default entitlement profile in a hierarchy node at or above the user's hierarchy node.

---

Service disabled	Result
Default Profile	(ENTERPRISE) Defines whether this entitlement profile is the default entitlement profile displayed in the Quick Add Subscriber <b>Entitlement Profile</b> drop-down.
Voice	Adding a phone to a user in Subscriber Management fails. For an existing user with a phone with this profile (where voice is disabled), the update of the user from "Subscriber Management" fails, unless the existing phones for the user are dissociated.
Voicemail	Adding Voicemail to a user in Subscriber Management fails. For an existing user with Voicemail, updates in Subscriber Management fail after an entitlement profile with Voicemail disabled is applied to the user.
Presence	Enabling Cisco Unified Communications Manager IM and Presence Service for a user in Subscriber Management fails. For an existing user with Cisco Unified Communications Manager IM and Presence Service enabled, updates in Subscriber Management fail after an entitlement profile with Presence disabled is applied to the user.
Extension Mobility	Adding Extension Mobility to a user in Subscriber Management fails. For an existing user with Extension Mobility, updates in Subscriber Management fail after an entitlement profile with Extension Mobility disabled is applied to the user.
Single Number Reach	For a new user, adding Single Number Reach in Subscriber Management fails, and for an existing user with Enable Mobility checked, adding Single Number Reach fails after an entitlement profile with Single Number Reach disabled is applied to the user.
Conferencing	Adding or assigning Conferencing feature to the subscriber fails if this field is enabled. For an existing subscriber if you enable Conferencing and an entitlement profile with Conferencing disabled is applied, the update operation fails.
Contact Center	Contact Center is not available for a new subscriber if this field is disabled. If Contact Center is enabled for an existing subscriber, and an entitlement profile with Contact Center disabled is applied, the update operation fails.

## 12.3. Add a Device Type

VOSS Automate is prepopulated with a list of current product types. However, the provider administrator may add additional device types as needed.

### To add a new device type:

1. Log in as provider administrator.
2. Choose **Entitlement > Device Types** (default).
3. Click **Add**.
4. Enter the new device type.
5. Click **Save**.

The new device type is added to the list of available device types that can be assigned to a device group.

## 12.4. Create Device Group

Device groups are used in entitlement catalogs and entitlement profiles to limit entitlement to a defined subset of available device types.

### To create a device group:

1. Log in as provider administrator.
2. Choose **Entitlement > Device Groups**.
3. Click **Add**.
4. Enter a name and optional description for the device group.
5. Choose devices from the list of available device types and move them into the selected list by clicking **Select**.
6. Click **Save** to create the device group.

You can use the device group in entitlement catalogs and in entitlement profiles.

## 12.5. Create an Entitlement Catalog

Entitlement catalogs are used in entitlement to limit the devices and services that entitlement profiles (those defined at the same hierarchy or below) may assign to users.

Entitlement catalogs can be defined at the provider, reseller, or customer hierarchy level. Only one entitlement catalog may be defined at a given hierarchy node.

---

**Note:** The animation shows the procedure for creating both an entitlement catalog *and* an entitlement profile. An entitlement catalog must exist at or above the hierarchy level at which you want to create the entitlement profile.

---

### Pre-requisites:

- An entitlement catalog must exist at Provider level.
- Device groups you want to add to a catalog at the current hierarchy must first be added to a catalog higher in the hierarchy. For example, before adding a device group to a catalog at Customer level, you'll need to add the device group to a catalog at Provider or Reseller level.

### To add an entitlement catalog:

1. Log in as provider administrator.
2. Choose the hierarchy where you want to create the entitlement catalog.

---

**Note:** You can only create one entitlement catalog at each hierarchy.

---

3. Go to (default menus) **Entitlement > Catalogs**.
4. Click **Add**.



5. On the **Catalogs** page, complete the basic configuration for the new entitlement catalog:
  - Enter a name and optionally, a description.
  - Choose the services to include in this entitlement catalog. Options are: Voice, Voicemail, Presence, Extension Mobility, Single Number Reach, Conferencing, Collaboration.
  - Specify the maximum number of devices allowable for the entitlement catalog. The maximum number can't exceed the total of the maximums for all the device groups included in the entitlement catalog.

---

**Note:** Restrictions defined for device groups, device counts, and services in a catalog at a particular hierarchy apply to entitlement profiles and catalogs at that hierarchy, and below. For example, restrictions in a catalog at customer level apply at that customer and to all sites below the customer.

Also:

- An entitlement profile can't be more restrictive than its associated entitlement catalog.
  - An entitlement catalog can't be more restrictive than an entitlement catalog at a higher level of the hierarchy.
- 

6. Add device groups:

---

**Important:** While one entitlement profile can have many device groups, device types in those groups must be unique across these groups. The same device can't be added to more than one device group.

---

- Click the Plus (+) icon at **Device Groups**.
  - From the **Device Group** drop-down, choose a device group to include in the entitlement catalog.
  - Specify the maximum number of devices allowed for the selected device group. The maximum number for any device group can't exceed the maximum number of devices for the catalog.
7. Click the Plus icon (+) to add more device groups to the entitlement catalog.
  8. Click **Save** to add the new catalog.

Next steps:

- Create entitlement profiles, at or below the hierarchy level of the entitlement catalog (see: [Create an Entitlement Profile](#)).

## 12.6. Create an Entitlement Profile

Entitlement profiles are used to define the services and devices a user is entitled to.

An entitlement catalog restricts the service and devices that can be assigned via an entitlement profile. An entitlement profile can further restrict the services and devices that may be assigned to a user. An entitlement profile can't give a user more services and devices than what is defined in the entitlement catalog.

You can assign an entitlement profile to users when:

- Syncing users into VOSS Automate from LDAP.
- Syncing users into VOSS Automate from a UC server, such as Cisco Unified Communications Manager (CUCM).

- Adding or updating a user VOSS Automate, using Subscriber Management or User Management.

**Prerequisites:**

- Add an entitlement catalog at or above the hierarchy node where you're adding the entitlement profile. See [Create an Entitlement Catalog](#)

---

**Note:** The animation shows how to create an entitlement catalog *and* an entitlement profile. An entitlement catalog must exist at or above the hierarchy level at which you want to create the entitlement profile.

---

**To create an entitlement profile:**

1. Log in as provider administrator.
2. Choose the hierarchy where you want to create the entitlement profile.

---

**Note:** You can add multiple entitlement profiles at any hierarchy, provided each entitlement profile has a unique name at that hierarchy.

---

3. Go to (default menus) **Entitlement > Profiles**.
4. Click **Add** to open the **Profiles** screen.
5. Fill out field values. Ensure you provide all mandatory values.

---

**Note:** The Maximum Number of Devices and Maximum Number of Devices in a Group are limitations for each individual user, not for all users in the system.

---

Field	Description
Name	Mandatory. The entitlement profile name. The name must unique within the hierarchy.
Description	Optional. Provide a description of the entitlement
Default Profile	Defines whether this is the default entitlement profile at this hierarchy node. Any other entitlement profile at this hierarchy node that was previously chosen as the default is now no longer the default.
Available Services	Choose the services to assign via this entitlement profile: <ul style="list-style-type: none"> <li>• Voice</li> <li>• Voicemail</li> <li>• Presence</li> <li>• Extension Mobility</li> <li>• Single Number Reach</li> <li>• Conferencing</li> <li>• Collaboration</li> <li>• Contact Center</li> </ul>
Maximum Number of Devices	Mandatory. Defines the maximum number of devices allowed for this entitlement profile. The maximum number cannot exceed the total of the maximums for the entire device group included in the entitlement profile.
Device Group	Mandatory. Choose a device group to include in this entitlement profile.
Maximum Number of Devices in Group	Mandatory. For the selected device group, specify the maximum number of devices allowed. The maximum number for any device group cannot exceed the maximum number of devices for the profile.

- Optionally, click the Plus sign (+) adjacent to **Device Groups** to add more device groups to the entitlement profile.

---

**Note:** You can add multiple device groups to an entitlement profile, provided device types in these groups are unique across the groups.

---

- Click **Save**.

The new entitlement profile can now be assigned to users.

### Related Topics

- [Contact Center](#)

# 13. User Management

## 13.1. Users

### 13.1.1. Introduction to User Management

#### Overview

VOSS Automate supports various types of users:

Administrators	<ul style="list-style-type: none"><li>• These users access the system to perform admin tasks</li><li>• Can be assigned to any hierarchy: Provider, Customer, or Site</li></ul>
End users	<ul style="list-style-type: none"><li>• These users are set up with services in the system</li><li>• Can be created at any level of the hierarchy, but can only become subscribers (and be assigned services) at the Site level.</li></ul>
End User + Admin	A single user account can be configured as <i>both</i> an End User (with services) and as an Administrator by assigning an Authorized Admin Hierarchy containing a self-service role to the user - see: <a href="#">Authorized Admin Hierarchy</a> .

---

**Important:** When upgrading from 19.X or earlier, please refer to the *VOSS-4-UC 21.1 Release Changes and Impact* PDF document on the Documentation Portal for details on model and workflow changes in 21.1 / 21.2. Customizations related to these changes may be affected.

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## Related Topics

- [User Authentication Methods](#)
- [View Users](#)
- [Add Admin Users](#)
- [Update a User](#)
- [User Management Scenarios](#)
- [User Sync Source](#)
- [User Field Mapping](#)
- [Localization Language](#)

## How Users are Added to the System

Users may be added to VOSS Automate from these sources:

- Synced in from LDAP, and promoted to a user (including flow through provisioning)
- Synced from CUCM (Cisco Unified Communications Manager)
- Synced from Azure (Microsoft users)
- Bulk loaded, via a Bulk loader template
- Manually created

---

**Note:** Conflicts between users synced from different sources are handled according to the strategy described in [Managing Duplicate Usernames](#). For information about user password management, depending on the source of the user, see Password Management.

---

Users are typically associated with a site. You can create move filters to automatically assign users to sites once they are synced from LDAP or from CUCM. Bulk loaded and manually created users can be moved using filters or by individually selecting users.

Cisco users associated with a site can be added to the CUCM that appears in the network device list (NDL) assigned to that site. When a Cisco user is added to CUCM, it becomes a subscriber, and can be provisioned with various collaboration services.

For details around how Microsoft users are synced in from Azure and then moved to the sites as subscribers, see [Microsoft Subscribers](#)

## User Authentication

Authentication (auth) methods define how a user is authenticated when logging in to VOSS Automate, either Automatic, LDAP, SSO, or Local.

If an identity provider (IdP) server is deployed at a hierarchy node above the site, you can configure VOSS Automate to provide single sign-on (SSO) support for users created or synced at that hierarchy node.

---

**Note:** Typically, Microsoft users will not need to log in to VOSS Automate. Their default auth method is Automatic. When the default auth method is set to LDAP, VOSS Automate checks with the LDAP server to verify the user's credentials. Once verified, the user is logged in to VOSS Automate.

---

## 13.1.2. Users and Subscribers

### Overview

Users become subscribers in Automate when they're provisioned with services.

The Automate “user” concept allows you to stage users into Automate before assigning a site and UC applications. As part of the process of assigning users with phones and/or services and configuring these in the downstream UC app, the system creates a subscriber entry for the user. For example, once an Automate user is sent to the Cisco Unified Communications Manager (CUCM), a corresponding subscriber is created in the system.

The table summarizes the main differences between Automate users and subscribers:

Automate user	<ul style="list-style-type: none"> <li>• Exists only on Automate.</li> <li>• Represents Automate local data associated with a user.</li> <li>• Includes the user's details.</li> <li>• Can exist on different hierarchy levels.</li> <li>• Can be created independently of a user (can exist on its own).</li> <li>• Can be created on Automate directly or imported from an external source, such as LDAP.</li> <li>• Becomes a subscriber when it is assigned with phones and/or services.</li> <li>• Managed via the <b>Users</b> page (default menu: <b>User Management &gt; Users</b>).</li> </ul>
Subscriber	<ul style="list-style-type: none"> <li>• Exists on the UC applications, such as CUCM, Cisco Unity Connection (CUC), Microsoft, Avaya, WebEx.</li> <li>• Represents UC application data associated with a user.</li> <li>• Is always associated with a user since it is created once the corresponding Automate user is sent to a downstream UC app.</li> <li>• Exists only at site level on Automate. Therefore, before a user is provisioned with phones and/or services, it must be placed in the relevant site.</li> <li>• Managed via the <b>Subscribers</b> page (default menu: <b>Subscriber Management &gt; Subscribers</b>).</li> </ul>

## Users, Subscribers, and the User Provisioning Workflow

Both users and subscribers are impacted during user provisioning operations, such as LDAP sync, CUCM sync, or user bulk loading.

A typical “top-down” approach to user provisioning progresses from LDAP, to Automate user, to subscriber.

1. Sync user from LDAP into Automate. An Automate user is created.
2. Move the Automate user to a site (default menu: **User Management > Move Users**)
3. Push the user to the UC applications. The corresponding subscriber can be created from either of the following:
  - **Subscribers** page (default menu: **Subscriber Management > Subscribers**)
  - **Quick Add Subscriber** page (default menu: **Subscriber Management > Quick Add Subscriber**).

---

**Note:** You don’t need to send all Automate users to a UC application, such as CUCM, and have a corresponding subscriber created; this is the administrator’s decision, based on criteria associated with each user. It is recommended that you filter out any users from LDAP that are not eligible for UC services. It is possible that some ineligible users can’t be filtered due to missing attributes and thus get synced into Automate. These users remain as Automate users (a corresponding subscriber is not created).

---

### Additional Functionality of Automate User

Automate users also allow:

LDAP sync	The workflows to manage syncing users from LDAP.
LDAP authentication	Enabling and disabling LDAP authentication.
SSO	Enabling and disabling SSO authentication.
Provisioning status	Tracking where the user comes from (LDAP, CUCM, manual configuration), and the hierarchy the user was originally added to.
Moving users	Between hierarchy nodes.

### Automate User and Corresponding Subscriber

All subscribers have a corresponding Automate user. This allows the user to sign in to Automate (using either local authentication, LDAP authentication, or SSO authentication), and to track the provisioning status.

You can create a subscriber directly, via:

- The Admin portal
- Bulk load
- CUCM sync

An Automate user instance is created automatically. If staging is not required (such as when configuring a subscriber directly on a site, using bulk loading), the admin doesn’t need to add an Automate user explicitly (as a separate step).

---

Subscribers provide all of the UC application provisioning logic by distributing the user configuration to each of the UC applications, and combine most of the data associated with a user into one logical entity:

- CUCM users
- Phones
- Lines
- Extension Mobility profiles
- Remote destinations
- Voicemail
- WebEx users

A subscriber is simply a representation of data in the UC applications. Each subscriber “comes into existence” when the UC application end user is created, and disappears when the UC application end user is deleted (either on the UC application, such as CUCM directly or from Automate). The subscriber is removed even if there are phones, lines, or profiles remaining that were previously associated with the corresponding user.

When the UC application data is created (such as the CUCM end user), you can view the subscriber in the summary list view. When the UC application data is deleted (such as the CUCM end user), the subscriber disappears.

Unlike Automate users, there is no local data in Automate that defines the subscriber; it is all based on data in the UC applications themselves.

In the **Subscribers** list view (default menu: **Subscriber Management > Subscribers**), any user that has a UC applications end user instance appears in the list, regardless of whether there is any other data associated with the user (such as phone or line).

---

**Note:** Any changes on the UC application, such as adding or deleting end users, appear in Automate only after syncing. Refer to the “Data Sync” section of the Guide for more information on data syncing.

---

Since subscribers are a representation of the data in the UC applications, they may be updated either in Automate or in the UC applications directly.

- When updating a subscriber on the **Subscribers** page (default menu: **Subscriber Management > Subscribers**), the data on the UC application is updated immediately.
- When updating a subscriber directly in the UC applications, the changes are visible in Automate the next time you view the subscriber.

### Related Topics

- User Provisioning Use Cases in the Core Feature Guide
- Multi-vendor Subscribers in the Core Feature Guide



### 13.1.3. View Users

The **Users** list view (default menu **User Management > Users**) displays users at or below the current hierarchy node. Users can be created in the system in various ways, depending on your setup:

- Synced in from LDAP and promoted to a user
- Synced in from applications (for example, Voicemail or Conferencing)
- Added to Automate when creating an end user
- Added to Automate when creating an admin user

User creation can also vary across different hierarchies in the system.

Note the following user details:

<b>Sync Source</b>	<p>The source application of user data, for example: <b>LOCAL</b> indicates that the user has been manually created in Automate and has not been synced from LDAP or from Cisco Unified Communications Manager (CUCM).</p> <p><b>CUCM</b> indicates that the user exists on both Automate and CUCM, and is not synced from LDAP. The user may have been created first on Automate (top-down) or created on CUCM and synced into Automate (bottom-up).</p>
<b>Sync Type</b>	<p>Identifies the user that was synced from a device as indicated by <b>Sync Source</b> according to a type. The setting is read-only and assists in for example distinguishing LDAP sync users (bottom-up CUCM-LDAP or or top-down LDAP). Example values:</p> <ul style="list-style-type: none"> <li>• <b>CUCM-Local</b>: if the sync source is <b>CUCM</b> and user is synced from CUCM</li> <li>• <b>CUCM-LDAP</b>: if the sync source is <b>CUCM</b> and user is LDAP synced</li> <li>• <b>LDAP</b>: if the sync source is <b>LDAP</b> and user is LDAP synced</li> <li>• <b>LOCAL</b>: sync source is LOCAL</li> </ul>
<b>User Type</b>	<p>Administrators (<b>Admin</b>) who are users accessing the system in order to perform administrative activities</p> <p>End users (<b>End User</b>) that will be set up with services in the system.</p> <p>Users with multiple roles (<b>End User + Admin</b>)<sup>1</sup></p>
<b>Auth Method</b>	See: User Authentication Methods <sup>2</sup>
<b>License Audit Status</b> <sup>3</sup>	<p>From release_21.4-PB5 onwards, the results of the last license counting process can be viewed as a <b>License Audit Status</b> field or when viewing a specific user. When viewing a specific user, the linked services details will indicate the services the user is consuming for further details. The license status field will indicate if the user is:</p> <ul style="list-style-type: none"> <li>• Licensed - consuming a license</li> <li>• Unlicensed - not consuming a license</li> <li>• Unknown - status has not been determined yet - typically means the user was added since the last calculation was run</li> </ul>

- Click on a user to view its details. See also: [View a User's Provisioning Status](#).
- Click **Add** to add a user manually.

<sup>1</sup> **User Type**: see: [Add Admin Users](#).

<sup>2</sup> **Auth Method**: see: [User Authentication Methods](#).

<sup>3</sup> This column will only show after the first run of the license-audit-service. See the Licensing and Subscriber Data Export Guide.

### 13.1.4. Add Admin Users

#### Overview

If you're adding a multi-role admin user, the user must first reside at site level and then be assigned a self-service **Role** by a system administrator, and a selected **Authorized Admin Hierarchy** instance that has an administrator role.

If needed, this step should also be carried out manually in the case of synced in users or users moved to a site.

Note that enabling the system setting **Additional Role Access Profile Validation** will restrict **Authorized Admin Hierarchy** roles to those with linked access profiles that are in the *subset* of the administrator's own access profile.

If the role is set to an administrator role and an **Authorized Admin Hierarchy** instance is also specified for the user, the role on **Authorized Admin Hierarchy** takes precedence. This is NOT a recommended configuration.

#### Related Topics

- Additional Role Access Profile Validation in Settings topic in the Advanced Configuration Guide.

#### Manually Add an Admin User

This procedure manually adds an admin user in Automate.

1. Log in at the hierarchy node where you want to create the admin user.
2. Go to (default menu) **User Management > Users** to open the **Users** page.
3. Click **Add**.
4. Fill out details for the admin user on tabs or panels of the *Users Page*.

---

**Note:** You'll need to fill out at least the mandatory field values. Note that the read-only **User Type** field can have the following values:

- "Admin" - this value is defined by the admin role
  - "End User + Admin" - this value is defined by a data/AuthorizedAdminHierarchy instance associated to the user as well as a self-service role
- 

5. Click **Save** to add the new admin user.

You can view transaction progress and details in the Transaction Logs (when adding, updating, or deleting a user).

---

**Important:** Users are typically added or updated on Automate from the sync source, such as LDAP, CUCM, or CUC. See *User Sync Source* for more details.

Sync source precedence may override user input. When updating a user on Automate and the following conditions exist, field values are updated from the sync source and not from data input to Automate (in this case, the fields are read-only in the Admin Portal):

- Exists on a sync source

- Has mapped fields
  - Has a higher precedence than LOCAL (Automate) data
- 

### Related Topics

- [Users Page](#)
- [User Field Mapping](#)
- [Authorized Admin Hierarchy](#)
- [User Login Options by Auth Method and Server Auth Scope](#)
- [Update a User](#)
- [Hybrid Cisco-Microsoft Management](#)
- [Role-based Access](#)
- [User Authentication](#)
- [Transaction Logging and Audit in the Core Feature Guide](#)

#### 13.1.5. Users Page

This page allows you to view, add, and update a user.

You can select the following tabs on this page:

- User Details
- Account Information
- Contact Information
- Hybrid Status
- Provisioning Status
- Services
- Custom
- LDAP

## User Details

Fields	Description
User Name*	Sign-in username. This field is mandatory.
Role*	Choose the user's role. This field is mandatory. The list of created roles to choose from include those with the current hierarchy in the <b>Hierarchies Allowed</b> list. <sup>1</sup>
Entitlement Profile	Choose the entitlement profile that specifies which devices and services the user is entitled to.
Language	Choose the user's language. Note: If no language is selected, the language is inherited from the nearest hierarchy node (at or above the user) that has a default language configured. If no default language is configured anywhere in the hierarchy at or above the user, the user's language is English. Note: If a language is manually set for a user, that language remains unchanged even if the user is moved to a new place in the hierarchy. However, if the language is inherited, then the user's language changes when the user is moved to a hierarchy node that has a different default language.
Exclude from Directory	If this check box is selected, the user will <b>not</b> appear in the corporate directory accessed via Automate Phone Services - <sup>2</sup>
Sync Source	Identifies the application from which the user (and user data) was synced, i.e. LOCAL (Automate), CUCM or MS-LDAP. This field is read only.
User Type	Read-only. Determined by the role interface. ("Admin", "End User" or "End User + Admin") - <sup>3</sup>
Auth Method	Identifies the authentication method for the user - <sup>4</sup> This section is <i>applicable to End Users only</i> . <ul style="list-style-type: none"> <li>• Local - Automate User</li> <li>• Automatic - If LDAP or SSO set at hierarchy or above, use this</li> <li>• LDAP -<sup>5</sup></li> <li>• SSO -<sup>6</sup></li> </ul>
LDAP Server and Username	Only editable when <b>Auth Method</b> is LDAP
LDAP Username	Only editable when <b>Auth Method</b> is LDAP
SSO Identity Provider	Only editable when <b>Auth Method</b> is SSO
SSO Username	Only editable when <b>Auth Method</b> is SSO. Defaults to Automate username.
Authorized Admin Hierarchy	Selected for users with multiple user roles to enable administrative capabilities for end users. <sup>7</sup>

## Account Information

This tab/panel allows the administrator to manage user account information, including:

- Change Password on next Login
- Credential Policy
- Disabled (Y/N)
- Reason for Disable
- Time Locked Due to Failed Login Attempts
- Time of Last Successful Login
- Locked (Y/N)
- Number of failed login attempts since last successful login
- Time of last password change
- Time of last password change by user

## Contact Information

This tab/panel is relevant only to end users.

Defines contact information for the user, such as employee number, employee type, country, state, street, department, manager, Fax number, directory URL, Jabber ID, telephone number, mobile, and IP phone.

## Hybrid Status

This tab/panel is relevant only to end users and is available if the Global Setting **Enable Cisco / Microsoft Hybrid** is enabled on the **Enabled Services** - see [Global Settings](#).

For details on the **Hybrid Status** tab and managing hybrid users, see: [Hybrid Cisco-Microsoft Management](#).

## Provisioning Status

Provides a read-only view of the user's provisioning status, including multi-vendor provisioning if applicable.

---

<sup>1</sup> See [Add and Edit Roles](#)

<sup>2</sup> See [Configure Phone Services](#)

<sup>3</sup> See Authorized Admin Hierarchies and Roles under [Role-based Access](#)

<sup>4</sup> See [User Authentication Methods](#)

<sup>5</sup> See [View and Update LDAP Authentication Users](#)

<sup>6</sup> See [Single Sign On \(SSO\) Overview](#)

<sup>7</sup> See [Authorized Admin Hierarchy](#)

## Assigned Lines

This tab/panel is relevant only for hybrid multi vendor scenarios. The fields are blank by default.

The fields on this tab are used to capture line details for users set up with an integrated service between two vendors (for example, Cisco and Microsoft).

## Provisioning Status

This tab/panel is relevant only to end users.

Provides a view showing the composition of the user, this typically includes:

- CUCM
- CUC
- Automate user hierarchy
- CUCM user hierarchy
- CUC user hierarchy
- CUCM 1 to N

Select the **Provisioned** check box to view additional CUCM's if applicable.

If the user is added to an LDAP server (see the **LDAP** section below), then the provisioning status will also show the server here next to the **LDAP** label.

## Services

This tab/panel is relevant only to end users, and provides direct links to the associated user apps, including: CUCM User, CUC User Voicemails, Webex App user, Pexip, UCCX Agent, MS 365 user, MS Teams user, and MS Exchange user. For example, clicking on the link for MS Exchange user opens the user's User Mailboxes settings page.

## Custom

This tab/panel is relevant only to end users. User defined customized strings and booleans.

## LDAP

If a secure Microsoft Active Directory LDAP server (port 636) is configured higher in the user hierarchy and the server has **Enable Write Operations** checked, user details can be managed on the server if it is selected from the **LDAP Server** drop down list. Only secure LDAP servers are listed. If no suitable servers have been set up, then the tab will not display any fields.

If no such Microsoft Active Directory LDAP server is configured and enabled, the tab will show a message to indicate this.

For setup server details, see: [Add and Configure an LDAP Server](#). If the Microsoft Active Directory LDAP server is configured and the user already exists on this server, the tab will show a message to indicate this.

The **Description** field will display in the Microsoft **Active Directory Users and Computers** interface.

The **User Account Control** dropdown supports the following UserAccountControl values (associated with codes):

- **Normal Account** (512)
- **Disabled Account** (514)
- **Enabled, Password Not Required** (544)
- **Disabled, Password Not Required** (546)
- **Enabled, Password Doesn't Expire** (6648)
- **Disabled, Password Doesn't Expire** (66050)
- **Enabled, Password Doesn't Expire & Not Required"** (66080)
- **Disabled, Password Doesn't Expire & Not Required"** (66082)

---

**Important:**

- User management on the LDAP server from this tab/panel is *not* supported if the **LDAP server** is not secure, in other words if indicated with port 389.
- When adding a user to the LDAP server for the *first* time:
  - A **Password** is required.
  - The **Action > Push To Ldap** menu must be used to add the user. The **Save** menu can then be used upon subsequent user updates on the LDAP server. (If the **Save** button is used the first time, other user details will be saved, but no LDAP user is added.)

---

When the LDAP user is added, the **User Details** tab/panel will show the **Sync Source** and **Sync Type** of the user as LDAP.

For details on updating and deleting the user on the LDAP server, see: [Update a User](#).

---

**Note:**

- If SSO is enabled for the hierarchy node where the user is added, the corresponding SSO user is created.
- IdPs are not configured at the site hierarchy node. Therefore, you can enable SSO for a user created at the site level only by performing these steps. Open the **SSO User** form (default menu **Single Sign On > SSO User**), click **Add**, and choose the IdP that can authenticate the user.

---

### 13.1.6. Update a User

Users are typically added or updated on Automate from the sync source, for example, LDAP, CUCM, or CUC. See [User Sync Source](#).

---

**Important:** Sync source precedence may override user input. If you update a user on Automate that . . .

- Exists on a sync source
- Has mapped fields
- Has a higher precedence than LOCAL (Automate) data



Only the mapped fields are updated from the sync source. Data in these fields is updated from the sync source and not the user input added in Automate. These fields are typically read-only in Automate Admin Portal.

For user authentication method (Auth Method) changes when updating, see [Authentication Method Setting Rules](#).

---

### Manage Users - Sync Source Scenarios

- [Add User Sync Scenarios](#)
- [Update User Sync Scenarios](#)
- [LDAP Add Sync Scenarios](#)
- [LDAP Update and Delete Sync Scenarios](#)

See also [User Field Mapping](#)

Updating an admin user that has become a subscriber creates a sync with the application highest on the User Sync Source precedence, and according to the field mapping for that source. The sync occurs once you click **Save**.

### Admin User Password Update

If the Admin user password is updated, user passwords on CUCM, CUC, and Webex are also updated if these have been provisioned for the user.

---

**Note:** Since different UC apps can have different password strictness rules, the update transaction will only succeed if the strictness rules of *all* the UC apps have been met. Otherwise, the update transaction will roll back.

Administrators should therefore choose a password that meets the requirements of all the UC apps.

---

### User added as Microsoft Active Directory LDAP User

If a user was added as a Microsoft Active Directory LDAP user (see: [Add Admin Users](#)), then:

- Additional fields on the User tabs are exposed that can be saved to the Microsoft Active Directory LDAP server.
- Updates to user details on the **LDAP** form tab will update the Microsoft Active Directory LDAP server when clicking **Save**.
- If user updates made directly on the Microsoft Active Directory LDAP server will reflect on VOSS Automate once the user is again synced in Automate from the **Sync & Purge** menu.

The [Users Page](#) toolbar provides these additional actions for managing a user:

- **Align Hierarchy to Sync Source**

For example, if the user's sync source is 'CUCM', and the data/User is at Customer level and the CUCM user is at site level, then the data/User instance will be moved from Customer level to the CUCM's hierarchy, that is, to the site level.

- **Align Hierarchy to User**

All other related instances of the user (e.g. CUCM, device/cucm/User, device/cuc/user, etc.) will be moved to the hierarchy of the data/User instance.

- **Delete From Ldap**

Relevant only for Microsoft Active Directory LDAP server.

The delete transaction succeeds only for users on Microsoft Active Directory LDAP servers on port 636, where the **Enable Write Operations** setting is checked. Thus, if *Write* operations are enabled on the associated LDAP server and the LDAP server is a secured Active Directory LDAP server, the LDAP user (device/ldap/user) is removed, and the VOSS user (data/User) is updated, that is, the sync type/source is set to *LOCAL* to reflect LDAP removal.

See also, [Add Admin Users](#)

If there is an associated CUCM user, the CUCM user and the VOSS user are updated. In this case:

- The CUCM user is converted to a Non-LDAP user and the LDAP directory name is removed (set to clear).
- The VOSS user's (data/User) sync type is updated to *CUCM-Local*.

- **Push To Ldap**

Creates an LDAP user (if the LDAP user does not exist).

Requires availability of an LDAP server that allows write back and is configured as a secure Microsoft Active Directory server. This server must be on port 636, with **Enable Write Operations** checked.

Used when adding user details on the **LDAP** form tab for the *first time* and first adding the LDAP user - see: [Add Admin Users](#). Thereafter, clicking the **Save** button also updates the LDAP user details on the LDAP server. However, if any user details have been updated for the LDAP server, this **Push To Ldap** menu option will also save these.

On the **Users** list view (default menu, **User Management > Users**), click on a non-LDAP user you wish to push to LDAP. On the LDAP tab/panel, choose the LDAP server, fill out a description and password, and click **Action > Push to LDAP**. The LDAP user is created on the selected LDAP server.

This menu option can't be used for Automate LDAP-synced users (in which case a system message on the LDAP tab displays *Push to LDAP is not allowed*).

See [Add Admin Users](#)

## 13.2. Provisioning

### 13.2.1. Example End-user Provisioning Workflow

This topic describes a sample end-user provisioning workflow.

**Prerequisites:**

Complete the following customer onboarding tasks before performing end-user provisioning with VOSS Automate:

- Devices defined (CUCM, UC apps, WebEx)
- Network Device Lists (NDLs) created

- Single Sign On enabled, if necessary
- LDAP integration enabled, if necessary
- Any customer equipment to be monitored defined
- Customer sites defined with associated NDLS
- Customer and site dial plans configured
- Directory Number Inventory configured
- Voice Mail service defined and associated with a customer

**To perform end-user provisioning:**

---

**Note:** Not all steps apply for all customers. Some steps can be performed in alternate order.

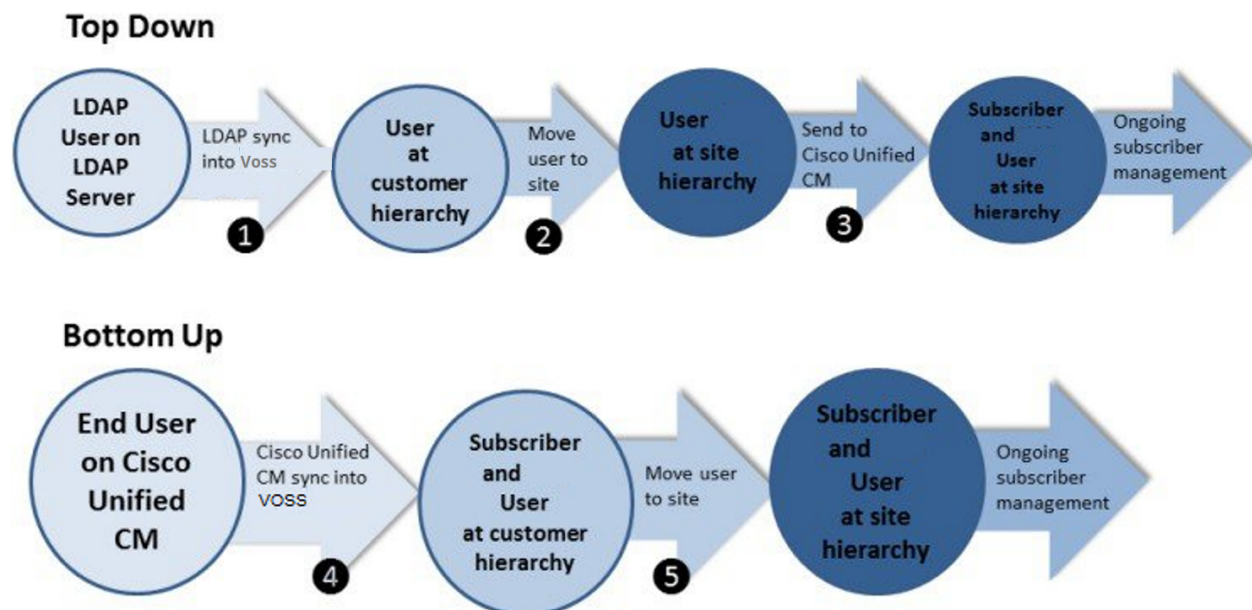
---

1. Sync users from the LDAP server:
  - Set up LDAP for user syncs
  - Sync users from LDAP
2. If LDAP sync is not used and users are provisioned on CUCM, you can synchronize users from Unified CM. For more information, see [Sync CUCM Users, Lines, Phones](#).
3. In addition to synchronizing users, you can manually create users. For more information, see [Add Admin Users](#).
4. (Optional) You can explicitly assign a credential policy to a user. For more information, see [Assign a Credential Policy to a User](#).
5. Move users to sites using any of the following methods:
  - a. Define move filters. For more information, see [Create a Filter to Move Users](#).
  - b. Enable automatic user moves for synchronization. For more information, see [Automatically Move Users Synchronized from Cisco Unified CM](#).
  - c. Manually move users. For more information, see [Move Users](#).
6. Push manually created and LDAP-synchronized users to Unified CM. For more information, see [Manually Add Users to CUCM](#).
7. Manage subscribers (see under [Add a Subscriber](#)):
  - a. Configure a Phone with a Line.
  - b. Associate a Phone to a Subscriber.
  - c. (Optional, Provider) Change the Class of Service for the Subscriber from the Class of Service set in the Site Defaults. For more information, see [Configure Class of Service](#).
8. (Optional) Associate voice mail to a subscriber (see under [Add a Subscriber](#)):
  - a. Associate the Voice Mail Service to a Subscriber.
  - b. Associate a Voice Mail Profile to a Line.
  - c. Enable Call Forward to Voice Mail.
  - d. Reset a Phone.
9. (Optional) Associate the Extension Mobility Service to a subscriber (see under: [Add a Subscriber](#)):
  - a. Add Login/Logout Service on CUCM.

- b. Import UC Services and Service Profiles.
  - c. Subscribe the Login/Logout Service to a Phone.
  - d. Associate the Extension Mobility Service to a Subscriber.
10. (Optional) Configure conferencing. For more information (see *Introduction to Conferencing* and *Add a Subscriber*).
  11. Configure Single Number Reach for a Subscriber (see under: *Add a Subscriber*).
  12. Associate a Service Profile to a Subscriber and Enable IM and Presence.

### 13.2.2. User Provisioning Use Cases

The following are two typical user provisioning use cases:



Use the following menus in VOSS Automate to perform the operations shown in the preceding figure:

1. **User Management > Sync & Purge > LDAP Users**
2. **User Management > Move Users**
3. Performed by any of the following:
  - **User Management > Users**
  - **Subscriber Management > Subscribers**
  - **Subscriber Management > Quick Add Subscriber**
4. **User Management > Sync & Purge > CUCM Users, Lines, Phones**
5. **User Management > Move Users**

In each diagram, the user starts on an external server, either an LDAP (for example, Open LDAP or Active Directory), or on Cisco Unified CM. When the user is synced into VOSS Automate, either a VOSS Automate User is created, or both a VOSS Automate User and Subscriber are created. For each step, the diagram also shows the hierarchy node where the user exists. The result in both cases is that both a Subscriber and a VOSS Automate User exist. From that point, the user is primarily managed from Subscriber Management.

### 13.2.3. View a User's Provisioning Status

To view a user's current provisioning status.

1. Log in as provider, reseller, or customer administrator.
2. Go to (default menu) **User Management > Users** to open the Users list.
3. Click on the user to open the Users[username] page.
4. Select the **Provisioning Status** tab.
5. View The information is displayed for the user as it is visible to the administrator.

The **Provisioned** check box is selected by default so that *only provisioned data* is shown. You can clear the check box to show all un-provisioned data.

Example application fields as provisioned:

Field	Description
VOSS user	User's username.
CUCM	Unified CM server to which the user is synced.
CUC	Unity Connection server to which the user is synced.
LDAP	LDAP server to which the user is synced.
Webex App	Webex App server where the user exists.
Pexip	Pexip server where the user exists.
Synced To	Hierarchy level where the user was originally synced to or created at.
VOSS User Hierarchy	User's current hierarchy node in VOSS Automate.
CUCM User Hierarchy	User's current hierarchy node on Unified CM.
CUC User Hierarchy	User's current hierarchy node on Unity Connection.
LDAP User Hierarchy	User's current hierarchy node on LDAP.
Webex App User Hierarchy	User's current hierarchy node on Webex App.
Pexip User Hierarchy	User's current hierarchy node on Pexip.
CUCM 1	An alternate Unified CM server to which the user is synced.

## 13.3. Authentication

### 13.3.1. User Login Options by Auth Method and Server Auth Scope

The sections below provide two views of user login authentication:

- A flowchart ([Login Authentication Process](#)) that outlines VOSS Automate's authentication checks when the authentication method is set to *Automatic*.
- Two matrices showing successful user login based on specific server and user configurations, and whether the user uses an SSO login URL:
  - *IdP (SSO): User on IdP server, and SSO login URL used*

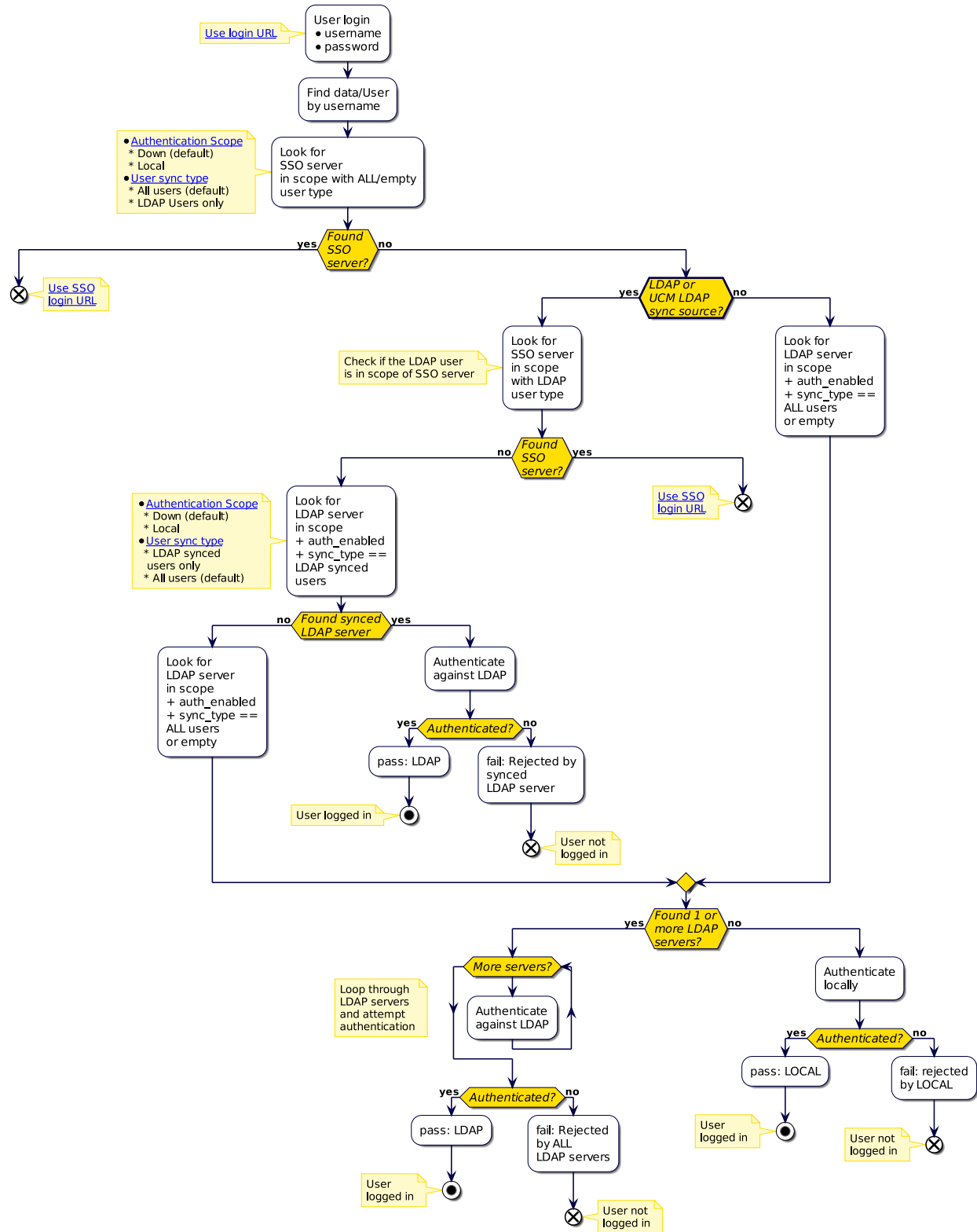
- *No IdP (SSO): LDAP configured and enabled for authentication*

### **Login Authentication Process**

The flowchart below shows the authentication process in VOSS Automate when a user logs in where the authentication method on VOSS Automate is set to *Automatic*.

Settings and conditions to check include:

- User login and settings (user and authentication)
- Servers (SSO, LDAP) set up and their settings (scope and authentication)
- System settings (global authentication method)



## Authentication Matrix

Users can log in to VOSS Automate (Yes or No) based on their authentication method, the user sync type, and the server authentication scope:

User authentication method	The <i>Auth</i> method, either <i>Local</i> , <i>LDAP</i> , <i>SSO</i> , or <i>Automatic</i> . See also: <ul style="list-style-type: none"> <li>• <a href="#">User Authentication</a></li> <li>• <a href="#">Add Admin Users</a></li> </ul>
User sync type	Who can authenticate, either <i>all users</i> or <i>LDAP-synced</i> . See also <a href="#">Add and Configure an LDAP Server</a>
Server authentication scope	The hierarchy, either of the following: <ul style="list-style-type: none"> <li>• Current hierarchy and below</li> <li>• Current hierarchy only</li> </ul> See also: <a href="#">Add and Configure an LDAP Server</a> and <a href="#">SSO Identity Provider</a>

**Note:** If an IdP server is in scope and authentication method is set to *LDAP*, authentication is attempted against LDAP on login.

If the authentication method is set to *Automatic*, *IdP (SSO)* authentication takes precedence.

### IdP (SSO): User on IdP server, and SSO login URL used

The table displays a matrix indicating either Yes (Y) or No (N) for whether users can log in to VOSS Automate based on the user authentication method, their sync type, and the server authentication scope, for users on an IdP (SSO) server, using a SSO log in URL:

User auth method	Server authentication scope (hierarchy):			
	Current hierarchy and below		Current hierarchy only	
	User sync type - who can authenticate:			
	All users	Synced users	All users	Synced users
Local	N	Y	Y (If user not at server node)	Y
LDAP	N	Y	Y (If user at server node)	Y (If user at server node)
SSO	Y	Y (If LDAP synced user)	Y	Y (If user LDAP synced at server node)
Automatic	Y	Y (If LDAP synced user)	Y (If user at server node)	Y (If user LDAP synced at server node)



### No IdP (SSO): LDAP configured and enabled for authentication

The table displays a matrix indicating either Yes (Y) or No (N) to define whether users can log in to VOSS Automate based on the user authentication method, their sync type, and the server authentication scope, for users not on an IdP (SSO) server, where LDAP is configured and enabled for authentication:

User auth method	Server authentication scope (hierarchy):			
	Current hierarchy and below		Current hierarchy only	
	User sync type - who can authenticate:			
	All users	Synced users	All users	Synced users
Local	N	Y	Y (If user not at server node)	Y
LDAP	Y	Y	Y (If user at server node)	Y (If user at server node)
SSO	N	N	N	N
Automatic	Y (if synced user)	Y (if synced user)	Y (If user synced at server node)	Y (If user synced at server node)

## 13.3.2. User Authentication

### Overview

When logging in to a user interface, a user's credentials can be authenticated based on their credentials in:

- The internal system database
- An LDAP-based external authentication server
- A SAML-based identity management server

User type	Description
Administrators	A user who can log in to the administrator interface. The presence of an administrator interface means that a system user instance exists.
Subscribers	System users that have, or are linked to, user accounts in one or more UC applications. Subscriber management supports the management of UC application user accounts, which may in turn also be configured for local, LDAP, or SAML authentication.
API users	System users that connect directly to VOSS Automate, using the API. The system controls access to its service through HTTP basic authentication.

## User Authentication Methods

VOSS Automate supports the following authentication methods for accessing the system (for administrators and end users):

- Local authentication
- LDAP Authentication
- Single-Sign-on (SSO)

The user's setup determines the type of authentication required to access the system.

The table describes the **Auth Method** settings that determine the authentication method:

Auth Method	Description
Automatic	<p>The system setup determines the authentication method, for example, the presence and viability of LDAP servers, SSO IdPs, and so on. The scope, user type, and Auth Enabled settings on the server determines viability:</p> <ul style="list-style-type: none"> <li>• If a viable IdP server is detected, authentication defaults to SSO. Since this requires using the special SSO Login URL, login from the VOSS Automate login page will fail.</li> <li>• If viable LDAP servers are found, authentication is attempted against each server until one is successful or all fail. LDAP servers that have errors are skipped.</li> <li>• If neither of these external servers are found (IdP or LDAP), local authentication occurs.</li> </ul> <p>Authentication is performed in order of preference, in the user's hierarchy, or above:</p> <ol style="list-style-type: none"> <li>1. Local user <i>only if</i> no LDAP, SSO IdP, in this hierarchy or above</li> <li>2. LDAP server</li> <li>3. SSO identity provider (IdP)</li> </ol>
Local	<p>User authentication is based on the password defined and stored locally in VOSS Automate, and the VOSS Automate credential policy defines the rules for the password (complexity, aging, etc), as well as further limits on session length, and so on. Local authentication can be done using username or email address. Local authentication is allowed if the authentication method is Local, and there are viable SSO and/or LDAP servers in scope (viable servers in the hierarchy). Users authenticated in this way are allowed to change their password once logged in. Password change is also available for Local users where such sync type CUCM-LDAP; where sync source is CUCM and user is LDAP synced.</p>

Auth Method	Description
LDAP	The authentication method is LDAP authentication. Additional details can be provided to tie the user to a specific LDAP server or an alternate username can match to the one in LDAP (default is the VOSS Automate username). When using LDAP Authentication, the password rules that are a part of the credential policy in VOSS Automate do not apply, since the password is managed in the LDAP directory. Other credential policy rules, such as session length, are however applied, since these are managed by VOSS Automate.
SSO	The authentication method is Single Sign-on (SSO). Additional details can be provided to tie the user to a specific SSO IdP server or alternate username can match to the one in the IdP (default is the VOSS Automate username). The VOSS Automate credential policy is irrelevant, since password rules, session length, and so on are all managed by the IdP outside of VOSS-4UC. Single Sign-on support is for authentication only. It does not use authorization capabilities that are possible via SAML to control the user's permissions <i>within</i> the application. No logout is supported when using SSO (single sign-out); that is, VOSS Automate will not initiate the termination of a session with the IdP (the VOSS session remains active as long as there is an active IdP session).

For SSO, see also [Single Sign On \(SSO\) Overview](#).

### Authentication Method Setting Rules

When adding or modifying users, the user's Authentication Method is based on the **User Default Auth Method** setting in the system Global Settings, as well as on the rules outlined in the table below:

For details on these Global Settings, refer to the "Global Settings" topic in the Advanced Configuration Guide.

Action	Auth Method Setting Rule
Add user from GUI	GUI default to Global Setting, but can be changed.
Modify user from GUI	GUI default to current user Auth Method, but can be changed.
LDAP Add user sync	Automatic
LDAP modify user sync	Leave setting as is.
Unified CM add user	Apply setting from Global Settings.
Unified CM modify user	Leave setting as is.
Quick Add Subscriber add user	Apply setting from Global Settings.
Quick Add Subscriber modify user	Leave setting as is.

### 13.3.3. Credential Policies

#### Overview

Credential policies are sets of rules that define user sign-in behavior at various levels of the hierarchy. For example, to facilitate user account security, VOSS Automate authenticates user sign-in credentials before allowing access to the system. Additionally, administrators can configure settings for events such as failed sign-in attempts and lockout duration.

Credential policies can be applied at any hierarchy level. A credential policy applied at a particular hierarchy defines allowed user sign-in behavior at that hierarchy.

#### Related Topics

- [Introduction to Hierarchies](#)
- [Authorized Admin Hierarchy](#)

#### Default Credential Policy

While credential policies are not mandatory at specific hierarchy levels, a default credential policy is defined at the sys.hcs level.

Administrators at lower levels can copy and edit the default policy, if required, or they can save the default credential policy at their own hierarchy level so that it can be applied to users at that level.

#### Inherited Credential Policies

If an administrator at a specific level of the hierarchy has not created a credential policy at their hierarchy level, the credential policy is inherited from the closest level above.

If a Provider administrator has defined a credential policy, but a Customer administrator has not defined a credential policy, the customer hierarchy automatically inherits the credential policy from the Provider level.

#### Custom Credential Policies

A different credential policy can be defined for each user.

For each administrator user where IP address throttling (sign-in Limiting per Source) is required, a credential policy should be manually created and assigned. This credential policy must have an IP address, and username and email throttling enabled.

#### Related Topics

- [Customized Credential Policy](#)

## Credential Policies, SSO Authenticated Users, and LDAP Synced Users

Credential policies are not applicable for SSO authenticated users. For LDAP synced users, only the session timeouts are applicable.

### 13.3.4. Standard Users and Login

#### Overview

For a system user that uses the standard authorization method, the password is stored in the internal system database.

---

**Note:** VOSS Automate uses the PBKDF2 algorithm with an SHA256 hash, a key stretching mechanism recommended by the National Institute of Standards Technology (NIST), Computer Security Resource Center (CSRC).

---

#### Login URL and Page Theme

Standard users log in at the following URL: `https://{hostname}/login`

A login page page theme can be applied to the login page during the log in process. To do this, add a suffix `?theme={theme_name}` where `{theme_name}` is an available theme.

Example: `https://{hostname}/login/?theme=default`

#### Username Format and Hierarchy

When logging in, the username can be entered in either of the following formats:

- `{username}@hierarchy`
- `{email address}`
- `{username}`

---

**Important:** If logging in with just `{username}`, your username must be unique at the hierarchy level, else login fails. In this case, log in using either `{username}@hierarchy` or `{email address}`. Email address must be unique in the system.

---

Hierarchy is in dot notation and corresponds with the hierarchy to which the user belongs. The hierarchy level is the level at which the user is created. On the login form, the hierarchy is prefixed with `sys`.

Example: `johndoe@sys.VS-OPS.VS-Corp.Chicago`

## Related Topics

- [Standard Users and Login](#)
- [Setting the Default Theme](#) (if a theme is applied to the login screen)

### 13.3.5. LDAP Users and Login

#### Overview

When creating a system user using the LDAP authorization method, specify the LDAP server and the LDAP username.

The LDAP username corresponds to the login Attribute Name specified in the LDAP network connection.

#### Login URL

LDAP users log in at the following URL: `https://{host name}/login`

#### LDAP Username Format

When logging in with LDAP credentials, the username is in the following format: `{user ID}@hierarchy`

Regardless of the login Attribute Name specified in the LDAP network connection, the user email address can be used to log in.

---

#### Note:

- `@hierarchy` is not required when the user ID corresponds to the user's email address.
  - `{user ID}` corresponds to the login attribute name (for example, email address, user principal name, `sAMaccountName`). The login attribute name is configured in the Authentication attribute of the LDAP device connection associated with this hierarchy.
  - The hierarchy is in dot notation and corresponds with the hierarchy to which the user belongs. The hierarchy level is the level at which the user is created.
- 

### 13.3.6. SSO Users and Login

#### Overview

When creating a system user using Single Sign-On (SSO) authorization, the SSO Identity Provider (IdP) must be specified, and the SSO username.

## Login URL

SSO users log in at these URLs, which point to the IdP for SSO authentication with VOSS Automate, and eventual redirect to the relevant interface:

- SSO log in URL: `{{"https://{host name}/sso/{Login URI}/login}}"`

Example: `https://host.Agency1.CustomerA.com/sso/CustomerA/Agency1/login`

---

**Note:** This URL format also applies to self-service users.

---

- Admin role log in URL: `{{https://{host name}/admin/sso/{Login URI}/login}}`

This URL is specific to the admin role. It points to the IdP for SSO authentication, and redirects to the admin portal: `{{https://{host name}/admin/sso/{Login URI}/login}}`

---

**Note:** SSO URLs redirect to the default admin portal, with endpoint: `/portal/`. See also the section on SSO Users at: [Log In to the Admin Portal](#).

---

## IdP(SSO) Credentials

Log in using the relevant SSO identity provider (IdP) credentials.

# 13.4. User Services

## 13.4.1. Multi Vendor Subscribers

### Overview

VOSS Automate supports multi vendor subscribers, which allows you to provision and manage services from one or more vendors on the VOSS Automate platform. For example, to use both Microsoft meeting and collaboration tools and Cisco tools.

### Single Vendor and Multi Vendor Subscribers

VOSS Automate supports provisioning for a number of categories of subscriber, representing either a single or multi vendor deployment:

Single or Multi Vendor	Description
Single vendor subscriber	Subscribers using services from a single vendor, for example, either all Cisco services, or all Microsoft services.
Multi vendor subscriber	Subscribers using services from two or more vendors.
Multi vendor hybrid subscriber	Subscribers using services from two or more vendors, with services configured for integration, for example, with dial plans and routing.

## Related Topics

- Enable Multi Vendor Subscribers in the Core Feature Guide
- Global Settings
- Role-based Access for Multi Vendor Subscriber in the Core Feature Guide
- Entitlement in the Core Feature Guide
- Users and Subscribers in the Core Feature Guide
- View Subscribers in the Core Feature Guide
- [User Calling Settings](#)
- [Microsoft Exchange](#)
- [User Voicemail Settings](#)
- [Access Profile Permissions and Operations](#)

## View and Manage Multi Vendor Subscribers

This procedure displays and updates multi vendor subscribers.

**Note:** On a multi vendor subscriber's configuration details page, you can also manage the subscriber via any quick actions available on the page, but note the following:

- Quick Actions for multi vendor subscriber are defined via the Multi Vendor FDP (MultiVendorFDP) in the field display policy (FDP) for the page. See [Enable Multi Vendor Subscribers](#).
- For details around the available quick actions for multi vendor subscriber, the subscriber type they apply to, and the impact of changes via the Quick Actions, see:
  - [Configure Quick Actions for Multi Vendor Subscribers](#)
  - [Quick Actions for Multi Vendor Subscriber](#)

1. In the Admin Portal, go to (default menus) **User Management > User Services > Multi Vendor Subscribers**.
2. View the summary list of the multi vendor subscribers.

Username	First Name	Last Name	Email	Entitlement Profile	User Type	Services
AAAGlobalEnhancedAdmin			AAAGlobalEnhancedAdmin@aaaglobal.com		Admin	
Aaron.Barker@Voss0365dev.onmicrosoft.com			Aaron.Barker@Voss0365dev.onmicrosoft.com		End User	
Aaron.Hernandez@visionoss-dev.info			Aaron.Hernandez@visionoss-dev.info		End User	
Abbot.SmithTheDamned@Voss0365dev.onmicrosoft.com			Abbot.SmithTheDamned@Voss0365dev.onmicrosoft.com		End User	
AberdeenServiceAA@Voss0365dev.onmicrosoft.com			AberdeenServiceAA@Voss0365dev.onmicrosoft.com		End User	
acarstel01	Andy	Carstel	acarstel01@ab-group.com		End User	
Ada.Schneider@visionoss-dev.info			Ada.Schneider@visionoss-dev.info		End User	
Adelev@vossautobuild.onmicrosoft.com	Adele	Vance	Adelev@vossautobuild.onmicrosoft.com		End User	📞 ☁️ ✉️
adervers01	Andy	Dervers	adervers01@ab-group.com		End User	
admin@vossautobuild.onmicrosoft.com	admin	PT	admin@vossautobuild.onmicrosoft.com		End User	📞 ☁️ ✉️
Alba.Strong@visionoss-dev.info			Alba.Strong@visionoss-dev.info		End User	
AlterLakeAdmin			AlterLakeAdmin@csnb.com		Admin	
AltiumShareLine		shareLine		RST Entitlement Profile	End User	📞
amandamandyA	Amanda			RST Entitlement Profile	End User	

The table describes a few caveats around icons in the **Services** column of the list view:



Users with Microsoft services	<ul style="list-style-type: none"> <li>• The Voice icon (phone) displays only when the user has a feature type of <i>PhoneSystem</i> enabled, which means that they're licensed for the voice service in Microsoft Entra.</li> <li>• The Collaboration icon (cloud) displays only when the user has a feature type of <i>Teams</i> enabled, which means that they're licensed for Microsoft Teams IM/collaboration in Microsoft Entra.</li> <li>• The <b>Feature type</b> field displays read-only values in <i>Quick Subscriber</i>.</li> <li>• Clicking the <b>MS Exchange</b> icon (envelope) opens <code>device/msexchangeonline/UserMailbox</code> (the user's Microsoft Exchange mailbox settings).</li> <li>• The Microsoft Voicemail icon displays when the subscriber has the Microsoft voicemail service enabled. You can manage the subscriber's voicemail settings from within Automate or on the Microsoft online portal. Changes are immediately and automatically synced between Automate and the Microsoft online portal. Click on the icon to open the voicemail settings. You can also edit these settings from the Microsoft Voicemail Settings card on the multi vendor subscriber's management page.</li> </ul>
Users with Webex App	<p>Included icons may be for collaboration, conferencing, voice, and/or voicemail, provided the user has the required license. For example:</p> <ul style="list-style-type: none"> <li>• The Conferencing icon (monitor) displays when the user has a license where the name of the license (the pattern) contains the text "meeting" (for example, "Meeting 25").</li> <li>• The Collaboration icon (cloud) displays when the user has a license where the name of the license (the pattern) contains the text "messag" (for example, "Messaging").</li> </ul>
Headset and phone	<p>A headset icon displays in the <b>Services</b> column for users that have a headset connected to an associated phone.</p>

### 3. Manage multi vendor subscribers from the list view. For example, you can:

- Filter the list
- Add a new multi vendor subscriber
- Move multi vendor subscribers (one or more)

- Delete multi vendor subscribers (one or more)

---

**Note:** For all multi vendor subscribers you delete from the list view, their services are also deleted, and, if applicable, their hybrid status is updated. Additionally, when deleting Microsoft multi vendor subscribers, they are also off-boarded (that is, their licenses are removed).

The VOSS user is retained only for LDAP or MS365 users.

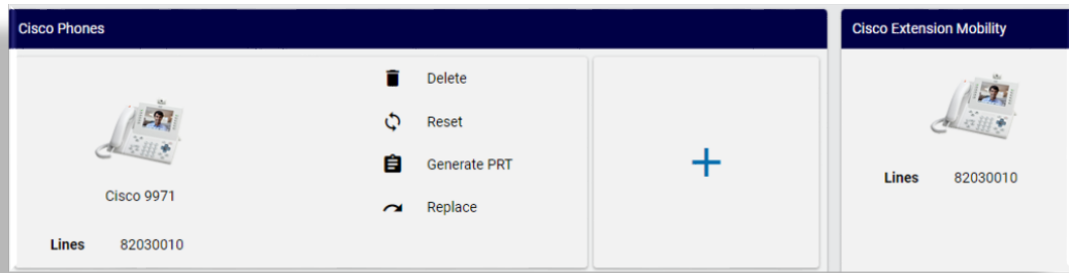
---

4. To view or update the settings of a selected multi vendor subscriber, click on the subscriber in the list view to open their configuration details page. Here you can:

- Choose an entitlement profile
- View and manage phones and lines

---

**Note:** For subscribers with associated softphones, the phone product model name displays below the Phone icon on the cards. This is useful where the subscriber has multiple phones and you need to easily distinguish between different phone models.



- Delete the multi vendor subscriber.

---

**Note:** When deleting a multi vendor subscriber:

- If applicable, the subscriber's hybrid status is updated
  - Non-Microsoft multi vendor subscriber - deletes the subscriber along with their services
  - Microsoft multi vendor subscriber - deletes the subscriber along with their services, and offboards the subscriber (removes their license)
  - Bottom-up LDAP multi vendor subscriber - device/cucm/User and data/User is deleted
  - LDAP or MS365 users - the VOSS user is retained:
    - \* Top-down LDAP user - deletes the user, and retains the data/User and device/ldap user instances are
    - \* Microsoft provisioned user - data/User is retained if there is an associated Microsoft user
- 

- View and manage existing, available services, which may include Microsoft user calling settings, Microsoft voicemail settings, Microsoft Teams, Cisco Webex, Cisco Voicemail, and other enabled services.

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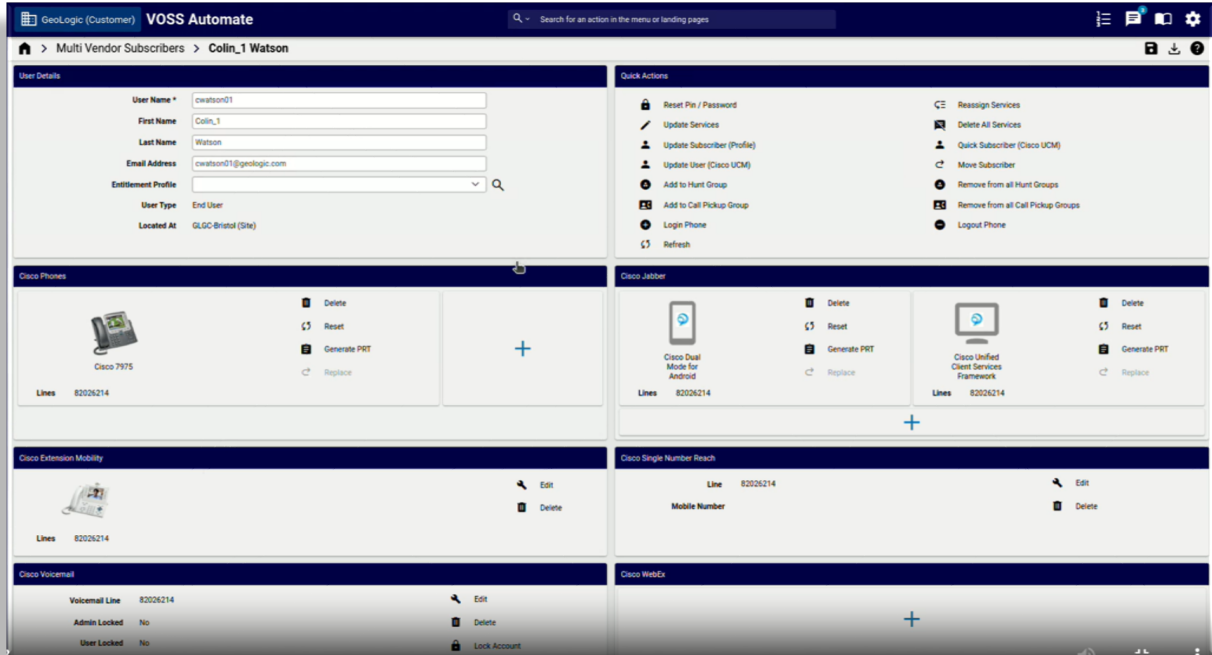
**Note:**

- For users with multiple remote destinations associated to their single number reach (SNR), the Cisco Single Number Reach card on the management page displays only the *first* associated SNR remote destination profile and the *first* associated remote destination to that SNR.
- For users licensed with a Webex Calling Professional license, the following cards also display on their User Details view:
  - \* **Webex Devices:** for devices available to the user
  - \* **Webex Voicemail:** if the Voicemail setting is enabled, options for sendAllCalls, sendBusy-Calls, sendUnansweredCalls, edit link to Voicemail.
  - \* **Webex Calling Settings:** Barge In, Caller ID, Call Forward, Call Recording, Call Waiting, Intercept, edit link to Calling Settings.

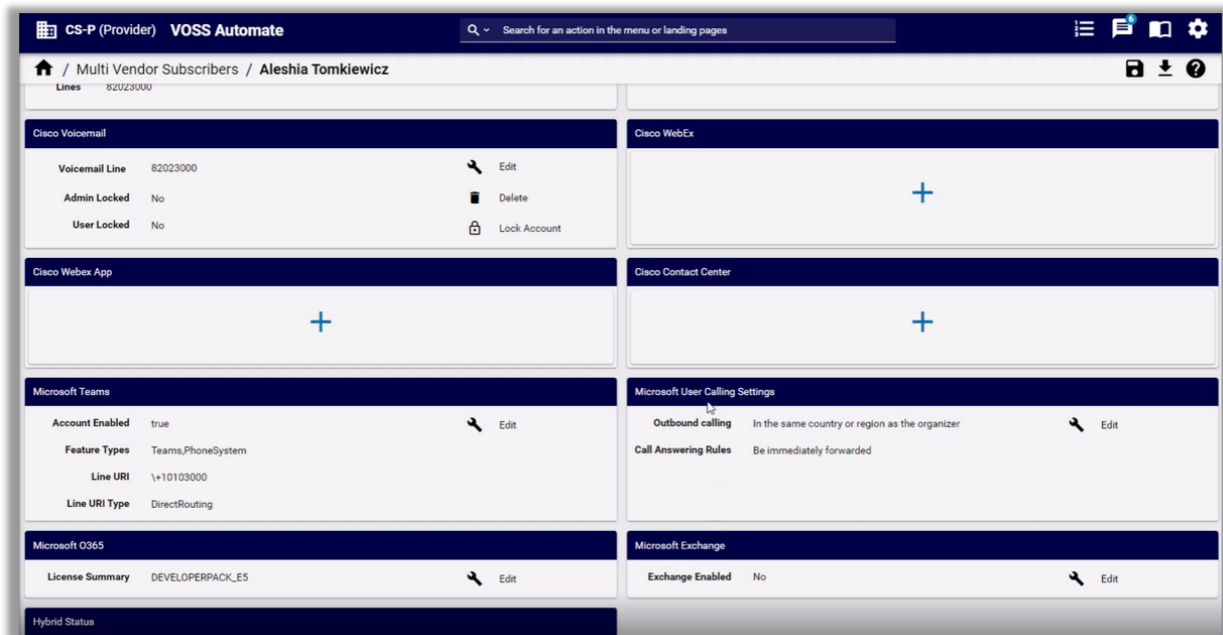
The image shows users with Webex App, and how they show up in the the list view and on their configuration details page:

The screenshot displays the CUCM interface for a user named JohnD012. The top section shows a table of subscribers with columns for Username, First Name, Last Name, Email, Entitlement Profile, User Type, and Services. The user JohnD012 is selected. Below the table, the configuration details for JohnD012 Doe012 are shown in a grid. The grid includes sections for Cisco Phones, Cisco Single Number Reach, Cisco Voicemail, and Cisco Webex App. A red arrow points to the 'Licenses' section in the Cisco Webex App card.

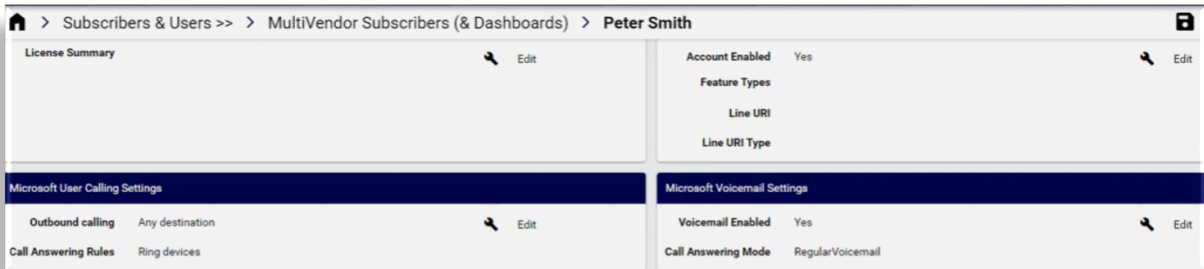
### Example: Multi vendor subscriber with Cisco services



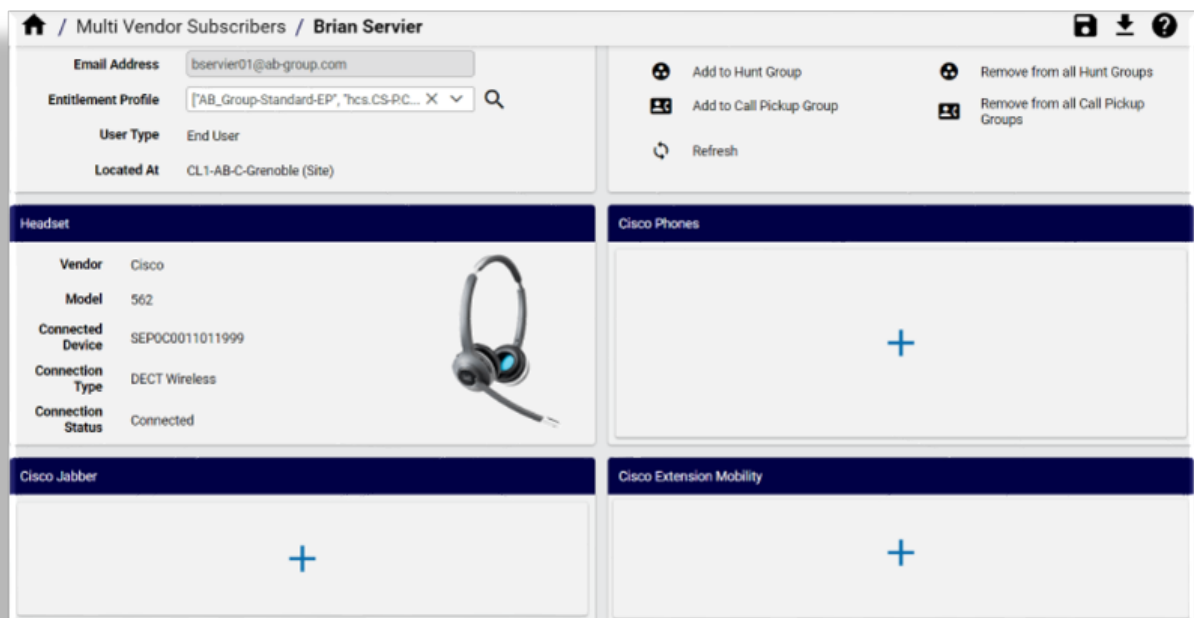
Example: Multi vendor subscriber with Microsoft Teams



**Example: Multi vendor subscriber's user calling and voicemail settings**



**Example: Multi vendor subscriber's headset settings**



### Example: Multi vendor subscriber - Cisco Webex App User with Webex Calling Professional license, showing Cisco Webex App User Calling Settings

The screenshot displays the user management interface for Neil Herson, a multi-vendor subscriber. The interface is divided into several sections:

- User Details:** Contains input fields for User Name (neilherson@gmail.com), First Name (Neil), Last Name (Herson), and Email Address (neilherson@gmail.com). It also features a dropdown for Entitlement Profile, a User Type of 'End User', and a Located At field 'VOSS-GBR-Leeds (Site)'.
- Quick Actions:** A list of actions including 'Reset Pin / Password', 'Delete All Services', 'Add Subscriber (QAS)', 'Refresh', 'Reassign Services', 'Add Subscriber (Profile)', and 'Update Group Membership'.
- Cisco Webex App User:** Shows 'Login Enabled' and 'Invite Pending' as 'Yes', with 'Edit' and 'Delete' icons. The 'Licenses' section lists: Meeting 25 party, Free meeting, Meeting - Webex Enterprise Edition, Messaging, Call on Webex, Webex Calling - Professional, Free screen share, and Free message.
- Cisco Webex App User Calling Settings:** Displays various settings: Caller ID (Location Number: +441135123910), Voicemail Send (Busy), Barge (Enabled), Call Forward (Busy (Dest: +441135123915), No Answer (Dest: +441135123919)), Call Waiting (Enabled), Call Intercept (Enabled), and Call Recording (Enabled).

### Related Topics

- [Single Number Reach](#)
- [Voicemail](#)
- [User Calling Settings](#) (Microsoft subscribers).
- [Configure Quick Actions for Multi Vendor Subscribers](#)

### Merge Two Users into a Single Multi Vendor Subscriber

VOSS Automate provides a merge tool for consolidating duplicate user accounts from two different vendors (two data/User instances with the same email address) that have been imported from different vendors, into a single, Cisco-Microsoft multi vendor subscriber.

This case is required where you have imported two user accounts from different vendors, for example, Cisco and Microsoft, and you add or update their email addresses to the same email address. In this case, the merge tool workflow (`Merge_Relation_User` workflow) is triggered when it finds the duplicate email address for the two data/User instances.

You can use the view for the merge tool (`view/ConsolidateUsers`) to define the primary user (which is retained once merged), and the secondary user (which is deleted once merged). The services of the secondary user will then be merged into the primary user.

When consolidating these two accounts, the default provisioning workflow of the merge tool (`ConsolidateUsers`) copies details of the secondary user into the primary user, and moves any device models associated with the secondary user to the hierarchy of the primary user:

- Copies the username (Cisco or Microsoft) of the secondary user to the primary user
- Copies the Zoom username of the secondary user to the primary user
- Copies the email address of the secondary user to the primary user
- Copies the email address to the Cisco subscriber, if the primary CUCM user is local
- Deletes the secondary user (the `data/User` instance of the secondary user)

Once successfully merged, a log entry is added to `data/HcsUserManagementLogDAT`, and the primary user is assigned a VOSS username, as a multi vendor subscriber.

---

**Note:**

- The secondary user cannot be a CUCM user (Cisco subscriber) as it cannot be deleted. Only secondary users that match the primary user can be merged.
  - The secondary user cannot be configured as a hybrid user - remove this setting before merging users.
  - The merge tool does not allow consolidation of the user accounts if both the primary and secondary user accounts are CUCM users.
- 

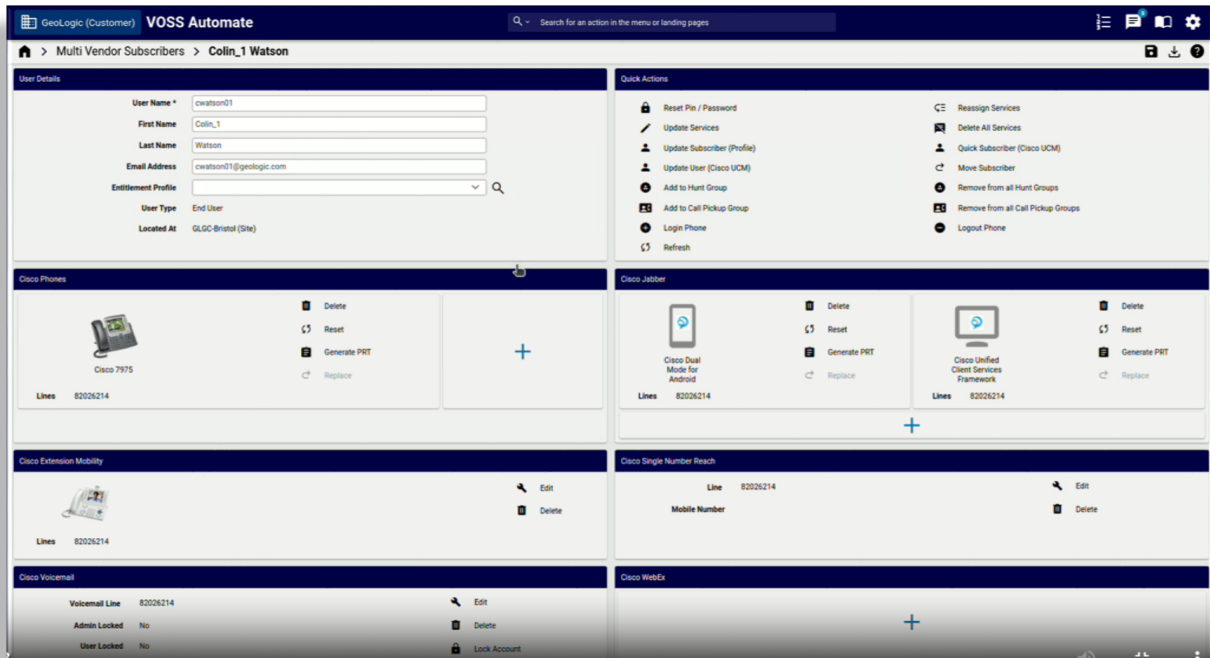
### Quick Actions for Multi Vendor Subscriber

Quick actions allow you to easily access frequently used activities, for example, to reset a PIN or password, or to add a subscriber. Multi vendor subscriber includes a set of quick actions that are configured via the multi vendor subscriber field display policy (`MultiVendorFDP`; fallback FDP is default).

Quick actions added to the `MultiVendorFDP` field display policy (FDP) appear as links on the **Quick Actions** card on the management page of the selected multi vendor subscriber.

While some quick actions are also available as stand-alone features or functionality that can be accessed via a menu or dashboard link (or via the Search bar), other quick actions, such as *Update User (Cisco UCM)*, are only available as a quick action.

The availability of a quick action also depends on the user type or the environment, for example, Cisco or Microsoft, multi vendor or hybrid. You'll also require appropriate permissions on your access profile to have some quick actions available to you. By default, the access profiles that ship with the system (except for Operator access profiles) have *read*, *write*, and *export* permissions on all multi vendor subscriber quick actions and service card actions that are views, for example, `view/DeleteCucmHuntGroupAllMembers` (quick action, *Remove from all Hunt Groups*), `view/DeleteSubscriberService` (quick action *Delete all services*), or `view/AddExtensionMobility` (service card action, *Add Extension Mobility*).



Quick action links trigger the following behavior in the system:

- Some quick actions, such as *Update User (Cisco UCM)*, are only available as a quick action link that launches a dialog (or overlay) on the current page, and allows you to perform a specific action (related to the quick action).
- Some quick actions are shortcuts to a menu or dashboard for the feature, such as the *Quick Subscriber (Cisco UCM)* or *Quick Subscriber (MS)* link, which opens the *Quick Add Subscriber* page directly from the quick link.
- In some cases, the quick action launches a dialog (or overlay) on the current page for performing a specific action related to the quick action, such as *Add to Hunt Group* or *Remove from All Hunt Groups*, while the full functionality for the feature is *also* available via a menu or dashboard.

In this case, you may also access the functionality via the menu (or fill out the feature name, for example, *Hunt Groups*, in the Admin Portal Search bar, and press Enter to locate the page).

## Related Topics

- [Access Profile Permissions and Operations](#)



### Quick Actions (All Users)

The table describes quick actions that support all users:

Quick Action	Description
Refresh	<ul style="list-style-type: none"> <li>Available to admin users with an access profile that has <i>read</i> permissions on the <i>relation/User</i> model</li> <li>Performs a live refresh (non-cached GET request) of device models for all services from external devices, including (where applicable), Cisco user and services, Pexip, UCCX, Webex App user and config, and Microsoft user and services.</li> </ul>
Delete all Services	<ul style="list-style-type: none"> <li>Available to users with an access profile with read-write permissions on <i>view/DeleteSubscriberService</i></li> <li>Removes all the selected subscriber's services. For Cisco UCM, services are deleted/disassociated. For Microsoft subscribers, their licenses are also removed and they're off-boarded.</li> <li>Click on the warning to confirm (Yes/No) whether to delete all services</li> </ul>

**Note:** You can find more information about Automate's caching policies in [Default Cache Control Policy](#).

### Quick Actions (Cisco UCM and Microsoft)

The table describes quick actions that support Cisco UCM and Microsoft:

Quick Action	Description
Update Subscriber (Profile)	<ul style="list-style-type: none"> <li>Multi vendor environment (Cisco UCM/Microsoft/Webex users)</li> <li>Launches the <b>Add Subscriber from Profile</b> page, with the username populated based on the selected user.</li> <li>The multi vendor subscriber FDP should include the <code>qa_update_subscriber_from_profile</code> quick action.</li> <li>The administrator access profile should have read-write permissions for <i>view/AddSubscriberFromProfile</i>.</li> <li>Cisco UCM or Microsoft Tenant should be provisioned at the necessary hierarchy level (above or at the user's hierarchy).</li> </ul>

### Quick Actions (Cisco UCM)

The table describes quick actions that support Cisco UCM:

Quick Action	Description
Quick Subscriber (Cisco UCM)	<ul style="list-style-type: none"> <li>• Launches <b>Cisco Quick Subscriber</b>, with the username auto-populated for the selected user.</li> <li>• Cisco UCM should be provisioned at the necessary hierarchy level (above or at the user's hierarchy level).</li> <li>• The multi vendor subscriber FDP should include the qa_cucm_qas quick action.</li> <li>• The administrator access profile should have read-write permissions for view/QuickSubscriber.</li> </ul>
Update User (Cisco UCM)	<ul style="list-style-type: none"> <li>• Launches the <i>Update User (Cisco UCM)</i> form, where you can:               <ul style="list-style-type: none"> <li>– Enable IM and Presence</li> <li>– Update the selected line as the IPCC extension to use when the subscriber is also a contact centre agent</li> <li>– Add or update Conference Now (ad hoc) via CUCM, assign a meeting number, and create an access code</li> <li>– Update the service profile</li> </ul> </li> <li>• The user you're updating must be an existing Cisco user (device/cucm/User).</li> <li>• The multi vendor subscriber FDP should include the qa_update_cisco_user quick action.</li> <li>• The administrator access profile should have the necessary read-write permissions for view/MVS_Cisco_User.</li> </ul>

Quick Action	Description
Move Subscriber	<ul style="list-style-type: none"> <li>• Cisco subscribers only, Microsoft subscribers only, or hybrid Cisco-Microsoft environment</li> <li>• For Cisco subscribers with UCCX agent settings, it is necessary to re-subscribe the user as an agent at the target site and ensure that the associated Team is updated manually.</li> <li>• For Microsoft subscribers, MS Teams users are also moved.</li> <li>• The quick link opens the <b>Move Subscriber</b> feature</li> <li>• Access to the Move Subscriber feature is also available from a menu/dashboard</li> <li>• Your access profile requires read-create permissions on <code>view/MultiVendorServiceUserMove_VIEW</code></li> </ul>
Add to Hunt Group	<ul style="list-style-type: none"> <li>• Cisco subscribers (Cisco only, or hybrid environment)</li> <li>• Access to the Hunt Groups feature is also available from a menu/dashboard</li> <li>• Your access profile requires read-create permissions on <code>view/AddCucmHuntGroupMember</code></li> </ul>

Quick Action	Description
Remove from all Hunt Groups	<ul style="list-style-type: none"> <li>• Cisco subscribers (Cisco only, or hybrid environment)</li> <li>• Access to the Hunt Groups feature is also available from a menu/dashboard</li> <li>• Your access profile requires read-create permissions on <code>view/DeleteCucmHuntGroupAllMembers</code></li> </ul>
Add to Call Pickup Group	<ul style="list-style-type: none"> <li>• Cisco subscribers (Cisco only, or hybrid environment)</li> <li>• Launches a dialog where you can choose the line and the call pickup group</li> <li>• Access to the Call Pickup Groups feature is also available from a menu/dashboard</li> <li>• Your access profile requires read-create permissions on <code>view/AddCucmCallPickupGroupMember</code></li> </ul>

Quick Action	Description
Remove from all Call Pickup Groups	<ul style="list-style-type: none"> <li>• Cisco subscribers (Cisco only, or hybrid environment)</li> <li>• Triggers a warning on the subscriber's page, asking you to confirm (Yes/No) whether to remove the user from all call pickup groups</li> <li>• Access to the Call Pickup Groups feature is also available from a menu/dashboard</li> <li>• Your access profile requires read-create permissions on view/DeleteCucmCallPickupGroupAllMembers</li> </ul>
Login Phone	<ul style="list-style-type: none"> <li>• Cisco subscribers (Cisco only, or hybrid environment)</li> <li>• Access to the EM Login feature is also available from a menu/dashboard</li> <li>• Your access profile requires read-create permissions on view/EmLoginUse</li> </ul>
Logout Phone	<ul style="list-style-type: none"> <li>• Cisco subscribers (Cisco only, or hybrid environment)</li> <li>• Access to the feature (EM Logout) is also available from a menu/dashboard</li> <li>• Your access profile requires read-create permissions on view/EmLogoutUserFromPhones</li> </ul>
Reset PIN/Password	<ul style="list-style-type: none"> <li>• Cisco users, depending on the user type and their services</li> <li>• Microsoft users, only the VOSS password is relevant, and only for admin users</li> <li>• Launches a dialog specific to the quick action on the page</li> <li>• Your access profile requires read-create permissions on view/ResetUCPasswordPinVIEW</li> </ul>

Quick Action	Description
Update Services	<ul style="list-style-type: none"> <li>Subscribers with a Cisco user (CUCM) provisioned, in linked or standard sites.</li> <li>Opens the <b>Update Services</b> page, where you can reconfigure a user's provisioned services and their settings, including description fields, labels, display names, E164 masks, INI settings, and Jabber device names.</li> <li>Your access profile requires read-create permissions on view/ReassignServicesUpdateVIEW</li> </ul>
Reassign Services	<ul style="list-style-type: none"> <li>Subscribers with a Cisco user (CUCM) provisioned</li> <li>A MACD function that allows you to efficiently assign the services, device profiles, lines, Jabber clients, entitlement profile, and E164 masks settings of an existing user to a different user. The internal number inventory (INI) description field is also updated with the name of the new user. This functionality makes it easier to move an existing staff member's services, desk phone, and telephone numbers to a new staff member, while creating a new voicemail box.</li> <li>Your access profile requires read-create permissions on view/ReassignServicesVIEW</li> </ul>

### Quick Actions (Microsoft)

The table describes quick actions that support Microsoft:

Quick Action	Description
Quick Subscriber (MS)	<ul style="list-style-type: none"> <li>Launches <b>MS Quick Subscriber</b>, with the username auto-populated for the selected user.</li> <li>Microsoft Tenant provisioned should be provisioned at the necessary hierarchy level (above or at the user's hierarchy). The multi vendor subscriber FDP should include the qa_ms_qas quick action.</li> <li>Your access profile must have read-create permissions for view/MicrosoftSubscriberQas.</li> </ul>
Update Group Membership	<ul style="list-style-type: none"> <li>Microsoft subscribers (Microsoft only, or hybrid environment)</li> <li>Launches a dialog that lists the MS 365 groups that you can assign to or remove from association with a user. If the MS 365 group you're assigning or removing has licenses assigned, the licenses are also applied or removed.</li> <li>Your access profile must have read-create permissions for view/MsGraphManageGroup.</li> </ul>

Quick Action	Description
Microsoft Exchange	<ul style="list-style-type: none"> <li>• Microsoft subscribers (Microsoft only, or hybrid environment)</li> <li>• Launches a dialog that opens device/msexchangeonline/UserMailbox to allow editing of the MS subscriber mailbox.</li> </ul>

### Related Topics

- [Manage Group Membership](#)
- [Microsoft Exchange](#)

### Quick Actions (Webex)

The table describes quick actions that support Webex:

Quick Action	Description
Quick Subscriber (Webex App)	<ul style="list-style-type: none"> <li>• Launches Quick Subscriber (for the view/WebexTeamsSubscriberQas model) with the username populated for the selected Cisco Webex App user. If you're not at a site, you'll need to choose the relevant site.</li> <li>• Links to the view/WebexTeamsSubscriberQas model.</li> <li>• Your access profile must have read-create permissions for view/WebexTeamsSubscriberQas.</li> <li>• Webex App should be provisioned at the selected site hierarchy or above.</li> <li>• The multi vendor subscriber FDP should include the qa_webex_qas quick action.</li> </ul>

### Related Topics

- [Configure Quick Actions for Multi Vendor Subscribers](#)
- [Menu Layouts](#)
- [Reset UC Passwords](#)
- [Automate Dashboards](#)
- [Field Display Policies](#)
- [Quick Add Subscriber \(Cisco\)](#)
- [Hunt Groups](#)
- [Update Cisco User via Quick Actions](#)
- [Call Pickup Groups](#)
- [Extension Mobility](#)

- *EM Login/Logout*
- *Move Subscriber*
- *Manage Group Membership*
- *Quick Subscriber (Webex App)*

### Configure Quick Actions for Multi Vendor Subscribers

This procedure configures the quick actions that display on the Quick Actions card when viewing a multi vendor subscriber.

To configure the quick actions that display on the card:

1. In the Admin Portal, go to (default menus) **Customizations > Field Display Policies**.
2. In the list view, search for and click on the default multi vendor subscriber field display policy (`MultiVendorFDP`).
3. Clone the FDP, then edit the clone for your requirements:
  - Fill out a name and a description for the FDP.
  - Leave the target model type as `relation/MultiVendorSubscriber`.
  - For **Display Groups As**, choose whether the default display is panels, tabs, or fieldsets.
  - Click the down arrow at **Quick Actions**, then configure the fields to display:

---

**Note:** Leave the **Quick Actions** card in its default position at the top of the dashboard.

See [Enable Multi Vendor Subscribers](#)

---

- Add fields to the card by selecting and moving fields from **Available** to **Selected**.
- Remove fields by selecting and moving fields from **Selected** to **Available**.

---

**Important:** You must select valid fields for the model (allowed services), which in this case is `relation/MultiVendorSubscriber`.

Only valid fields will display on the service cards once you apply the FDP. For multi vendor subscriber, valid field names are prefixed `mvs_user_qa`, where:

- `mvs` is the alias for *multi vendor subscriber*\*
- `_qa` is *Quick Action*

If a service or action is disallowed in the global settings or in the entitlement profile, or if required servers are not installed for the service, the system verification check does not allow display of the service or action on the Subscriber management dashboard (defined via the FDP), and the subscriber can't be provisioned with this service.

---

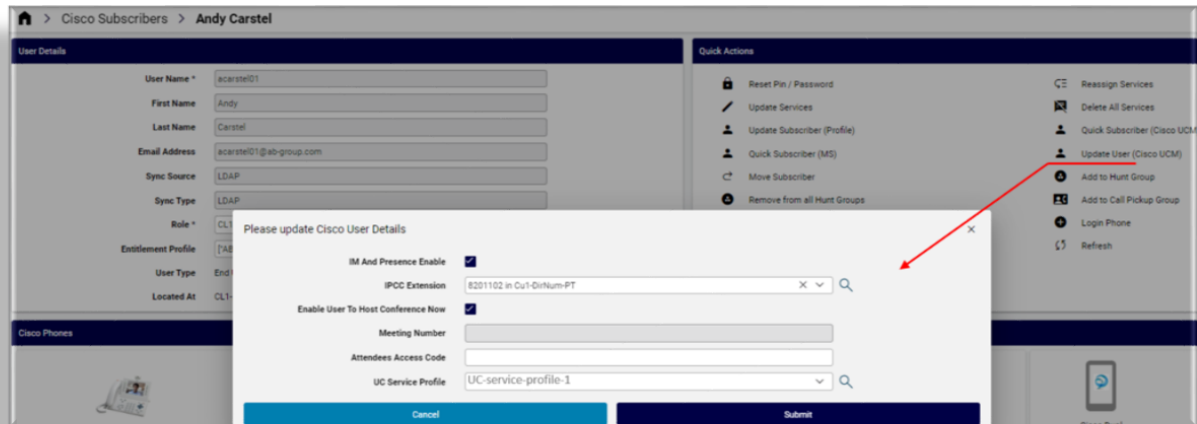
4. Click **Save**.

The next time you view the Quick Actions for a selected multi vendor subscriber, you'll be able to use the quick action to update the subscriber.

## Update Cisco User via Quick Actions

This feature allows you to enable or disable IM and Presence, to choose the IPCC extension, to define whether the user has permissions to host a conference, and to assign a UC service profile.

**Note:** Conference Now is a Cisco Call Manager Ad Hoc conference service, available only to Cisco users. See the Cisco Unified Communications Manager (CUCM) documentation for more information about Conference Now.



### Note:

- The *Update User (Cisco UCM)* quick action is only available for Cisco users who are also multi vendor subscribers, via the **Quick Actions** card on the **Multi Vendor Subscriber** editing form.
- The field for this quick action (*mvs\_user\_qa.qa\_update\_cisco\_user*) must be added to the Multi Vendor Subscriber's field display policy (MultiVendorFDP), in the **Quick Actions** card, via (default menus) **Customizations > Field Display Policies**.

To update a Cisco user for IM and Presence and/or Conference Now:

1. In the Admin Portal, go to (default menus) **User Management > User Services > Multi Vendor Subscribers**.
2. Click on the relevant subscriber.
3. In the **Quick Actions**, click **Update User (Cisco UCM)** to open the dialog, then update the Cisco user:
  - To enable IM and Presence, select **IM and Presence Enable**.
  - Select the IPCC extension from the drop-down.

**Note:** The **IPCC Extension** drop-down lists the line/route partitions associated with this user.

- To enable Conference Now, select **Enable User to Host Conference Now**. When enabling Conference Now:
  - The meeting number displays in the read-only **Meeting Number** field.
  - You can fill out an access code in the **Attendees Access Code** field.



- Optionally, you can also assign a UC service profile via the drop-down.

4. Click **Submit**.

## 13.4.2. Enable Multi Vendor Subscribers

### Overview

This procedure enables and sets up multi vendor subscriber, and involves the following tasks:

- Enable relevant Global Settings.
- Configure the multi vendor field display policy (`MultiVendorFDP`).
- Configure entitlement profiles.
- Verify that you have appropriate servers installed and configured.

### Related Topics

- Multi-vendor Subscribers in the Core Feature Guide
- Global Settings
- *Configure Quick Actions for Multi Vendor Subscribers*

### Step 1: Enable Multi Vendor Subscriber in the Global Settings

1. Log in to the Admin Portal.
2. Select the hierarchy.

---

**Note:** The global setting to enable multi-vendor is typically defined at the customer hierarchy, although it may be enabled/disabled at any level.

---

3. Go to (default menu) **Customizations > Global Settings**.
4. On the **Enabled Services** tab, enable services, as required.
5. Save your changes.

---

**Note:** For new installs of VOSS Automate, once a CUCM is imported and a customer hierarchy and some sites have been created, CUCM services are enabled by default at system level; other services must be enabled, as required. The Global Settings are retained on upgrade.

---

## Step 2: Configure the Multi Vendor Subscriber Field Display Policy

1. In the Admin Portal, go to (default menus) **Customizations > Field Display Policies**.
2. Click on the default multi vendor field display policy (`MultiVendorFDP`) to open its editing screen.
3. Click the toolbar **Clone** icon to create a copy of the default FDP.

---

### Note:

- It is recommended that you clone default templates rather than overwriting default settings.
  - The multi vendor FDP is associated with the model `relation/MultiVendorSubscriber`.
- 

4. Edit the cloned multi vendor FDP for your requirements:
  - To add a new card, click the Plus icon (+); then, configure the card.
  - To delete a card, click the Minus icon (-).
  - To edit a card, click the down-arrow on the card to display editing options:
    - Click **Move Up** or **Move Down** to rearrange the position of cards.

---

**Note:** It is recommended that you leave the **User Details** card and the **Quick Actions** in their default positions at the top of the dashboard.

---

- Change card titles.
- Choose whether to display the card as a fieldset with columns.
- Define the actions you require in the Quick Actions.
- Add fields to a card by selecting and moving fields from **Available** to **Selected**.
- Remove fields by selecting and moving fields from **Selected** to **Available**.

---

**Important:** Select valid fields for the model (allowed services). Only valid fields will display on the service cards once you apply the FDP.

Check the field naming convention when choosing fields, for example:

- Field names prefixed `account_information` are valid for the **User Details** card.
- Field names prefixed `cisco_webex` are valid for **Webex**.
- Multi vendor field name formats, such as `mvs_user_qa`, where:
  - \* `mvs` is the alias for *multi vendor subscriber*\*
  - \* `_qa` is *Quick Action*

For example, the `mvs_user_qa.qa_update_group_membership` field allows for the **Update Group Membership** quick action which opens a transfer box containing a list of MS 365 groups that can be assigned to or removed from the user. If the MS 365 groups have licenses assigned to them, these will then also respectively be applied to or removed from the user. See also the Quick Add Group assigned to the user: *Multi Vendor Subscribers* and *Quick Add (Subscriber) Groups*.

If a service or action is disallowed in the global settings, entitlement profile, or if required servers are not installed for the service, the system verification check does not allow display

of the service or action on the Subscriber management dashboard (defined via the FDP), and the subscriber cannot be provisioned with this service. For example, if the Microsoft service is disabled in Global Services, then quick actions such as MS Quick Subscriber, MS Subscriber Staging and MS Quick Offboard Subscriber are not available.

5. Save your changes.

### Step 3: (Optional) Configure Entitlement Profiles for Multi Vendor

1. In the Admin Portal, go to (default menus) **Entitlement > Profiles**.
2. Click on the relevant entitlement profile to open its editing screen.
3. Select the services you wish to enable for the profile.
4. Save your changes.

### Step 4: Verify Servers

To verify that you have the appropriate servers installed and configured:

1. In the Admin Portal, go to (default menus) **Apps Management**.
2. Select the relevant server, for example, for CUCM, select **CUCM > Servers** to view and manage the servers.
3. Repeat this step to verify the presence of all required servers.

## 13.4.3. Role-based Access for Multi Vendor Subscribers

### Overview

Role access profiles define the permissions that allow subscribers to access services and resources.

### Validation Checks

When provisioning multi vendor services, the system runs validation checks for multi vendor subscriber against each of four tiers in the system, at the relevant hierarchy. The service must be enabled at each tier before the system allows access to the service:

Validation	Interface	Description
1. Global Settings	Admin Portal Navigation (default menu): <b>Customization &gt; Global Settings (Enabled tab)</b>	Enable the service type at the user's hierarchy level, or above.
2. Entitlement profile	Admin Portal Navigation (default menu): <b>Entitlement &gt; Profiles</b>	Enable the service in the entitlement profile assigned to the subscriber, at the relevant site. Services can only be provisioned to a subscriber if their entitlement profile allows those services. The entitlement profile lists the provisioning vendor (per service).
3. Device management	Admin Portal Navigation (default menu): <b>Apps Management &gt; Servers</b>	The relevant servers must be installed and configured before a service can be provisioned. For example, a CUCM server must be installed before CUCM services, such as phones, can be provisioned. If you have two or more vendors provisioning devices, VOSS Automate verifies that the required servers and devices are configured and available for your system.
4. Field display policy	Admin Portal Configure multi vendor FDP: Navigation (default menu) <b>Customizations &gt; Field Display Policies</b>	Clone and edit the default multi vendor subscriber field display policy (default name: MultiVendorFDP).

### Multi Vendor Subscriber Access Validation Example

In this example scenario, a customer admin (or higher) provides a user with site admin role with the ability to view and edit subscriber voice services. The customer admin wants to control the actions the site admin may perform.

- Only the Cisco Voice service is enabled for this site admin
- The site admin may edit subscriber services
- The site admin may not add or delete subscriber services

The table describes the configuration steps to set up this scenario, and the result:

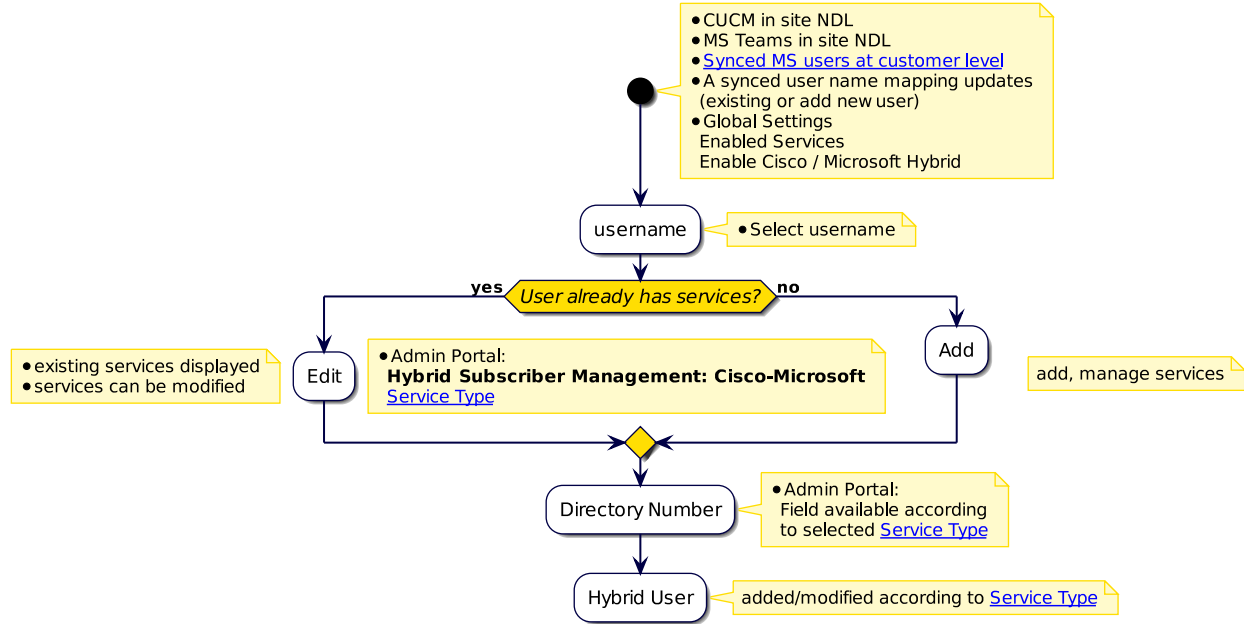
<b>Configuration steps</b>	<ol style="list-style-type: none"> <li>1. Ensure the system has multi vendor subscriber functionality installed.</li> <li>2. At customer level or above, in the Global Settings (<b>Enabled Services tab</b>), enable CUCM only.</li> <li>3. In the Entitlement Profile for this user, enable CUCM Voice Service only.</li> <li>4. At site level, configure the multi vendor subscriber field display policy for the profile: <ul style="list-style-type: none"> <li>• Remove all service cards except Voice.</li> <li>• Remove Add/Delete fields from the Quick Actions panel.</li> </ul> </li> </ol>
<b>Result</b>	<p>The site admin logs in to a multi vendor subscriber enabled system, at the relevant site hierarchy, and:</p> <ul style="list-style-type: none"> <li>• Is unable to add or delete services. Only Edit is available in the Quick Actions</li> </ul>

### Related Topics

- Role-Based Access in the Core Feature Guide
- Multi Vendor Subscribers in the Core Feature Guide
- Global Settings in the Core Feature Guide
- Entitlement in the Core Feature Guide

#### 13.4.4. Introduction to Cisco-Microsoft Hybrid

The flowchart outlines a Cisco-Microsoft hybrid set up in VOSS Automate.



### 13.4.5. Hybrid Cisco-Microsoft Management

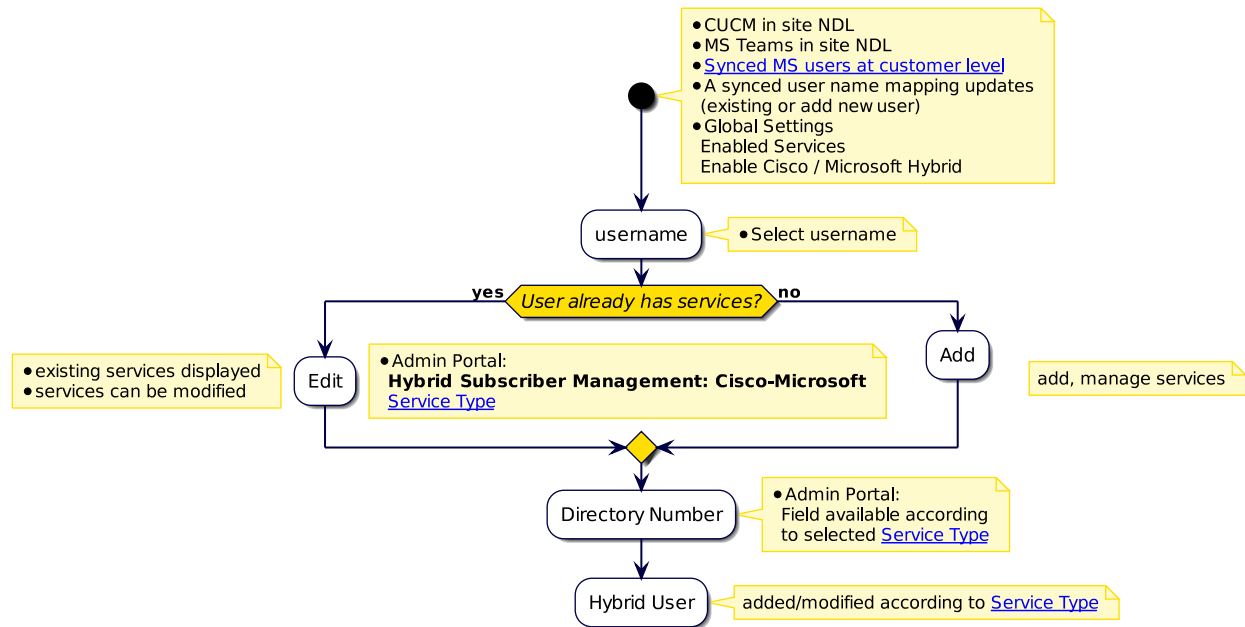
#### Overview

Use the **Hybrid Subscriber Management: Cisco-Microsoft** menu to provision and manage subscribers with Cisco and Microsoft devices and services.

#### Related Topics

- *Subscriber Profiles*
- *Hybrid Service Definitions*
- *Global Settings*
- the Number Inventory Updates for Hybrid Support topic under Number Management

## Provisioning Workflow



## Prerequisites

- The Global Setting **Enable Cisco / Microsoft Hybrid** is enabled, so that the **Hybrid Cisco-Microsoft Management** menu is available. See: **Enabled Services** at [Global Settings](#).
- To add new hybrid users, sync in the MS Teams users at the customer level. For the management of Microsoft users, see: [Microsoft Quick Start Guide for VOSS Automate](#).

## Workflow steps

**Note:** For a selected user from the **User Management > Users** menu, these hybrid user management tasks can also be carried out on the **Hybrid Status** tab of the user by selecting the **Update Hybrid Status** link.

1. Log in to the Admin Portal as a provider admin, at the customer level.
2. Go to (default menu) **Hybrid Cisco-Microsoft Management > Hybrid Subscriber Management: Cisco-Microsoft**
3. Choose the relevant site.
4. On the **Hybrid Subscriber Management: Cisco-Microsoft** page:
  - In the **Username** field, select the user. MS Teams users should be synced in.  
The user's **CUCM User Identity / AD UserPrincipalName** should match **MS Teams UserPrincipalName**
  - To include users higher in the hierarchy in the **Username** drop-down, select **Include users at higher hierarchy**.

5. When managing a user who already has Cisco or Microsoft services, these services will be displayed in the list of fields on the **Existing Services - User Status & Existing Services** form.
6. Select the required hybrid **Service Type** from the drop-down list.  
The **Entitlement Profile** and **Quick Add Group** are hidden as these are associated with the service type.
7. The **Directory Number** drop-down list is available to select a number after selecting a service type.

---

**Note:** If the “Cisco-MS-Hybrid” service type is selected, the choice of Directory Number (Internal or E164) will determine the provisioning.

For details on all the service types, see: [Hybrid Service Definitions](#).

---

### 13.4.6. Hybrid Service Definitions

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**Note:** Consult with VOSS to customize the configuration of Hybrid Service Definitions as well as dialplan additions.

---

A hybrid service refers to a particular multi-vendor configuration in VOSS Automate and is characterized by a collection of settings, templates and workflows that apply to the management of a user to whom it is assigned.

This collection then determines a particular set of vendor services, entitlement profiles, dial plan additions for the user as well as workflows to run during user management.

---

**Note:** Hybrid services require:

- the configuration of the relevant multi-vendor devices on VOSS Automate
  - vendor device user sync into VOSS Automate
- 

When selecting the **Hybrid** option in a **Subscriber Profile**, a **Hybrid Service** can be selected and associated with the profile. This service in the profile is associated with a service definition.

Hybrid user management allows for devices and services to be added to *or removed* from a subscriber in accordance with the current and newly selected hybrid service for a user. The workflows in the current hybrid service run to remove elements prior to the execution of workflows in the new hybrid service to add elements.

For example:

- If a subscriber has service type **MS-Only-Hybrid** and is subsequently updated to have no Microsoft service type, the subscriber is updated to service type **No-Hybrid-Service** and associated entitlement profile.
- If a subscriber has service type **Cisco-MS-Hybrid** and is subsequently updated to service type **Cisco-Only**, MS Teams devices are removed from the subscriber, preferred voicemail is updated to be “Cisco” instead of “MS-Teams” and all multi-vendor entitlement profiles are updated accordingly.

The following hybrid services are defined, with default attributes indicated:

- **Cisco-MS-Hybrid**

User has both Cisco Devices and a Teams Device with an associated E164 number. Cisco Unified CM dial plan configuration allows incoming and outgoing calls.



- **Quick Add Group:** “System Quick Add Group Hybrid Enable User” - contains MS Teams User Template to enable MS Teams
- **Class of Service** and **Entitlement Profile:** by default empty. Select a **Class of Service** to apply to MS Teams users and their calling rights.

The service type offers automatic configuration of services according to the selected **Directory Number** in the Admin GUI: disabling **Use next available line** and then the selected **Line**. This is carried out by a workflow selecting the appropriate dialplan template addition.

---

**Important:** VOSS Automate provides standard template additions to the standard Cisco HCS dialplan. Contact VOSS if you wish to use alternative dial plan additions.

---

- Both Cisco Devices and a MS Teams Device have an associated E164 number.

The E164 Number is shared across all devices, for example:

- \* INI entry = 3334567, mapped to E164 = +15553334567.
- \* The number +15553334567 is set up in Microsoft as the line.

Calls from colleagues with Cisco phones to the user’s Cisco phone will *simultaneously* dial this phone and the MS Teams client. A SNR profile is used on the Cisco User to fork calls to the Teams Client.

- Internal number selected

User has both Cisco Devices and a MS Teams Device with no associated E164 number. An E164 number is generated by adding a prefix (+88800) to the internal number for setup in Microsoft, for example:

- \* INI = 3334567
- \* The number +1888003334567 is generated for use in MS Teams for that user.

The MS Teams user can dial:

- \* internal MS Teams users
- \* internal Cisco users
- \* external PSTN number (off-net via CUCM)

#### • Cisco-No-Services

All Cisco and Teams devices, multi-vendor subscriber services will be removed from the user.

- **Quick Add Group:** “System Quick Add Group Hybrid Disable User” - contains MS Teams User Template to disable MS Teams
- **Class of Service** and **Entitlement Profile:** by default empty Select a **Class of Service** to apply to MS Teams users and their calling rights.

#### • Cisco-Only\_MV\_SD

User has only Cisco devices with an associated E164 Number. Multi-vendor, MS Teams services removed if present.

- **Quick Add Group:** “System Quick Add Group Hybrid Disable User” - contains MS Teams User Template to disable MS Teams
- **Class of Service** and **Entitlement Profile:** by default empty

- **MS-Only-Entvoice\_MV\_SD**

User has only a MS Teams Device and selected Directory Number. MS Teams Dialplan.

- **Quick Add Group:** “System Quick Add Group Hybrid Enable User” - contains MS Teams User Template to enable MS Teams
- **Class of Service** and **Entitlement Profile:** by default empty Select a **Class of Service** to apply to MS Teams users and their calling rights.

- **MS-Only-Hybrid\_MV\_SD**

User has only a MS Teams Device and selected Directory Number. Cisco Unified CM dial plan configuration allows incoming and outgoing calls. Cisco subscriber services are removed if present.

- **Quick Add Group:** “System Quick Add Group Hybrid Enable User” - contains MS Teams User Template to enable MS Teams
- **Class of Service** and **Entitlement Profile:** by default empty Select a **Class of Service** to apply to MS Teams users and their calling rights.

- **MS-Only-No-Entvoice\_MV\_SD**

User has only a MS Teams Device and no Directory Number. No MS Teams Dialplan.

- **Quick Add Group:** “System Quick Add Group Hybrid Disable User” - contains MS Teams User Template to disable MS Teams
- **Class of Service** and **Entitlement Profile:** by default empty Select a **Class of Service** to apply to MS Teams users and their calling rights.

- **No-Hybrid-Service\_MV\_SD**

User has no Cisco or MS Teams Devices.

- **Quick Add Group:** “VOSS-QAG\_ExecUser - 88XX SIP”
- **Class of Service** and **Entitlement Profile:** by default empty

---

**Note:** When managing the hybrid services of administrator users by means of bulk loader sheets:

- Values for the `mvs_hybrid_status` field needs to be one of the service names as listed above.
  - To unset this value in a bulk load sheet, leave the cell value for the `mvs_hybrid_status` field empty.
- 

## Related Topics

- [Hybrid Cisco-Microsoft Management](#)
- [Subscriber Profiles](#)
- the Cisco - Microsoft Hybrid Number Inventory topic under Number Management

## 13.4.7. Hybrid Multi-Vendor Move

### Overview

Use the **Hybrid Cisco-Microsoft Management > Hybrid Multi-Vendor Move** menu where there are existing CUCM users at various sites, and then syncing in the MS users at customer level. A check for mapping matches is carried out at site level to move the corresponding MS users down.

### Prerequisites

- Enable the **Enable Cisco / Microsoft Hybrid** Global Setting so that the **Hybrid Cisco-Microsoft Management** menu is available. See: **Enabled Services** at [Global Settings](#).

### Move Scenarios

All of the Cisco move functionality is available, as well as extra workflows for the hybrid moves.

The following scenarios are supported:

- Scenario 1
  - Move MS Teams, MS 0365
  - Set tenantDialplan (optional), onlineVoiceRoutingPolicy (optional)
  - Move INI and E164 association (if it is in a 1-to-1 association) and create at new site with new country if different
  - Delete SNR at home site and Add SNR at new site
  - Set the INI at new site according to Service Type
- Scenario 2
  - Move MS Teams, MS 0365
  - Set tenantDialplan (optional), onlineVoiceRoutingPolicy (optional)
  - Move INI
  - Delete SNR at home site and Add SNR at new site
  - Set the INI at new site according to Service Type
- Scenario 3
  - Move MS Teams, MS 0365
  - Set tenantDialplan (optional), onlineVoiceRoutingPolicy (optional)
  - new INI at new site
  - Delete SNR at home site and Add SNR at new site
  - Set the INI at new site according to Service Type
- Scenario 4
  - Move MS Teams, MS 0365
  - Set tenantDialplan (optional), onlineVoiceRoutingPolicy (optional)
  - new INI/E164 association at new site

- Delete SNR at home site and Add SNR at new site
- Set the INI at new site according to Service Type
- Scenario 5
  - Move MS Teams, MS 0365
  - Set tenantDialplan (optional), onlineVoiceRoutingPolicy (optional)
  - *Do nothing* with lines, do not select anything in **Lines** tab - the assumption is that there was a bulk pre-move of lines to the new site: INI and/or INI/E164 numbers.
  - Delete SNR at home site and Add SNR at new site
  - Set the INI at new site according to Service Type
- Scenario 6
  - If INI is associated to a range of E164s and there is an attempted move line, then this fails with workflow validation.

**Note:**

- From release 24.1, the **Line Template** dropdown under **Line Configuration** is not used by this feature. Any customizations (for example Field Display Policies) that referenced this field, should be updated to remove references to it.
- If the subscriber has any other Cisco services that were not added by the hybrid feature, such as Phone, EM, RDP, VM etc., these will be moved by the Cisco Subscriber move workflows during the Hybrid-Multivendor-Move calls.
- In **Multi Vendor Service User Configuration**, the **New Role** list of available roles will include those where the **Hierarchies Allowed** list of the role contains the target hierarchy selected in the **Move To Hierarchy** list. See: [Add and Edit Roles](#).

**Related Topics**

- [Global Settings](#)
- [Hybrid Cisco-Microsoft Management](#)
- [Hybrid Service Definitions](#)
- [Subscriber Profiles](#)
- the Cisco - Microsoft Hybrid Number Inventory topic under Number Management

## 13.5. Sync and Purge

### 13.5.1. Introduction to User and Subscriber Syncs

## Overview

Users pushed to Cisco Unified Communications Manager (CUCM) are synced between the user management and subscriber management functions of VOSS Automate. Adding, updating, or deleting a user in one place is automatically reflected in the other.

## Subscribers and Default Entitlement Profiles

New users added to VOSS Automate using Subscriber Management are checked for entitlement against the nearest default entitlement profile, located above the site where you're adding the user.

If no default entitlement profile exists, no restrictions apply to this user. If a default entitlement profile is found, and the user you're adding has devices or services to which this user is not entitled (based on the default entitlement profile), the user add will fail.

### 13.5.2. User Management Scenarios

This section provides details on the actions that are carried out when a user is managed, given the absence or presence of the same user in VOSS Automate applications or LDAP.

#### Add User Sync Scenarios

The table below details add and update scenarios when a user is added that may exist on VOSS Automate, applications or LDAP and the *default* Sync Source precedences apply. The cases are:

- if either the user exists or does not exist on LDAP
- if either the user exists or does not exist on any application that is a sync source (APP SOURCE)

Field sync takes place according to:

- Sync Source - see [User Sync Source](#).
- the User Field Mapping that applies - see: [User Field Mapping](#).

---

**Important:** Sync Source precedence may override user input. If you update a user on VOSS Automate:

- that exists on a sync source
- has mapped fields
- has a higher precedence than LOCAL (VOSS Automate) data

the data of these fields will be updated from the sync source and not the user input added in VOSS Automate. The Admin Portal would typically render these fields read-only.

---

The detailed scenarios for the operation: *adding a user* (model: relation/User) are:

data/ User exists	device/ ldap/ User exists	device/ <APP>/ User exists	Hierarchy	Action	User Sync Source
Y			same as user	Error: user exists	
			current	Create data/User	LOCAL
	Y		same as LDAP user	Create data/User, Update data/User, based on sync source	LDAP
		Y	same as APP user	Create data/User, Update data/User, based on sync source	APP SOURCE
	Y	Y	same as APP user	Create data/User, Update data/User, based on sync source	LDAP
	Y		below LDAP user hierarchy	Create data/User, Update data/User, based on sync source, Move LDAP user to data/User hierarchy	LDAP
		Y	below APP user hierarchy	Create data/User Update data/User based on sync source Move App user to data/User hierarchy	APP SOURCE
	Y	Y	below APP user hierarchy	Create data/User Update data/User based on sync source Move LDAP user to data/User hierarchy	LDAP
	Y		above LDAP user hierarchy	Error: Create User Log entry with message	LDAP
		Y	above APP user hierarchy	Error: Create User Log entry with message	APP SOURCE
	Y	Y	above APP user hierarchy	Error: Create User Log entry with message	LDAP

### Update User Sync Scenarios

The table below details data sync sources and update actions when a user is updated and the *default* Sync Source precedences apply. The cases are:

- if either the user exists or does not exist on LDAP
- if either the user exists or does not exist on any application that is a sync source

Field sync takes place according to:

- the User Field Mapping that applies - see: [User Field Mapping](#).

**Important:** Sync Source precedence may override user input. If you update a user on VOSS Automate:

- that exists on a sync source
- has mapped fields

- has a higher precedence than LOCAL (VOSS Automate) data

the data of these fields will be updated from the sync source and not the user input added in VOSS Automate. The Admin Portal would typically render these fields read-only.

The detailed scenarios for the operation: *updating a user* (model: *relation/User*) are:

data/ User ex- ists	device/ ldap/ User exists	device/ <APP>/ User exists	Hierarchy	Action	User Sync Source
Y			same as user	Update data/User	LO- CAL
Y	Y		same as user or LDAP user	Update data/User Non Mapped Fields only Update data/User based on sync source	LDAP
Y		Y	same as user or APP user	Update data/User Update App/User using reverse App map	APP SOURCE
Y	Y	Y	same as any of user, APP LDAP user	Update data/User Non Mapped Fields only Update data/User based on sync source Update App/User using reverse App map	LDAP
Y	Y		below user or LDAP user	Update data/User Non Mapped Fields only Update data/User based on sync source	LDAP
Y		Y	below user or APP user	Error: Create User Log entry with message RBAC issue	APP SOURCE
Y	Y	Y	below any of user, LDAP, APP user	Error: Create User Log entry with message RBAC issue	LDAP
Y	Y		above user or LDAP user	Error: Create User Log entry with message	LDAP
Y		Y	above user or APP user	Error: Create User Log entry with message	APP SOURCE
Y	Y	Y	above any of user, LDAP, APP user	Error: Create User Log entry with message	LDAP

### LDAP Add Sync Scenarios

The table below details data sync sources and update actions when an LDAP user is added and the *default* Sync Source precedences apply. The cases are:

- if either the user exists or does not exist on LDAP
- if either the user exists or does not exist on VOSS Automate or any application that is a sync source

Field sync takes place according to:

- the User Field Mapping that applies - see: [User Field Mapping](#).

**Important:** Sync Source precedence may override user input. If you update a user on VOSS Automate:

- that exists on a sync source
- has mapped fields
- has a higher precedence than LOCAL (VOSS Automate) data

the data of these fields will be updated from the sync source and not the user input added in VOSS Automate. The Admin Portal would typically render these fields read-only.

---

The detailed scenarios and actions for the operation: *syncing an LDAP user* (sync source is always LDAP) are:



<b>data/ User exists</b>	<b>device/ ldap/ User exists</b>	<b>device/ &lt;APP&gt;/ User exists</b>	<b>Hierar- chy</b>	<b>Action</b>
Y			same as user	Update data/User Create data/User
	Y		same as LDAP user	Error Create User Log entry with message Purge current LDAP user
		Y	same as APP user	Create data/User Update data/User based on sync source Update APP data based on sync source
Y	Y		same as LDAP or APP user	Error Create User Log entry with message Purge current LDAP user
Y			below user	Update data/User Move LDAP user to data/User hierarchy
	Y		below LDAP user	Error Create User Log entry with message Purge current LDAP user
		Y	below APP user	Create data/User Update data/User based on sync source Update APP data based on sync source Move data/User and LDAP user to APP hierarchy
Y	Y		below LDAP or APP user	Error Create User Log entry with message Purge current LDAP user
Y			above user	Error Create User Log entry with message Purge current LDAP user
	Y		above LDAP user	Error Create User Log entry with message Purge current LDAP user
		Y	above APP user	Create data/User Update data/User based on sync source Update APP data based on sync source
Y	Y		above LDAP or APP user	Error Create User Log entry with message Purge current LDAP user
Y		Y	above user or APP user	Create data/User Update data/User based on sync source Update APP data based on sync source

## LDAP Update and Delete Sync Scenarios

The table below details data sync sources and update actions when an LDAP user is added and the *default* Sync Source precedences apply. The cases are:

- if either the user exists or does not exist on LDAP
- if either the user exists or does not exist on VOSS Automate or any application that is a sync source

Field sync takes place according to:

- the User Field Mapping that applies - see: [User Field Mapping](#).

**Important:** Sync Source precedence may override user input. If you update a user on VOSS Automate:

- that exists on a sync source
- has mapped fields
- has a higher precedence than LOCAL (VOSS Automate) data

the data of these fields will be updated from the sync source and not the user input added in VOSS Automate. The Admin Portal would typically render these fields read-only.

The detailed scenarios and actions for the operation: *deleting an LDAP sync* - manually (M) or automatically (A) - are:

Operation	data/ User exists	device/ ldap/ User exists	device/ <APP>/ User exists	Action	User Sync Source
LDAP DELETE SYNC (M)	Y	Y		Update data/User	LOCAL
LDAP DELETE SYNC (M)		Y			
LDAP DELETE SYNC (M)	Y	Y	Y	Update data/User based on sync source Update APP data based on sync source Convert CUCM user to local user	LOCAL
LDAP DELETE SYNC (A)	Y	Y		Delete data/User	
LDAP DELETE SYNC (A)		Y			
LDAP DELETE SYNC (A)	Y	Y	Y	Delete data/User source Delete relation/Subscriber	

The detailed scenarios and actions for the operation: *updating an LDAP sync* (sync source is always LDAP) are:

data/User exists	device/ldap/ User exists	device/<APP>/ User exists	Action
Y	Y		Update data/User
	Y		Create data/User
Y	Y	Y	Update data/User based on sync source Update APP data based on sync source

### 13.5.3. User Sync Source

VOSS Automate provides a list of applications from which to sync user data and internally maintains a sync precedence hierarchy of these applications in order to determine the master sync source.

Application:

- MS\_LDAP
- OPEN\_LDAP
- LDAP
- CUCM
- CUC
- AVAYA\_SYSTEM\_MANAGER
- BROADWORKS
- MICROSOFT
- MS\_365
- PEXIP
- UCCX
- WEBEX\_TEAMS
- ZOOM
- MS\_TEAMS
- LOCAL

Choose **User Sync Source** to see the default application.

#### Related Topics

- [Add User Sync Scenarios](#)
- [Update User Sync Scenarios](#)
- [LDAP Add Sync Scenarios](#)
- [LDAP Update and Delete Sync Scenarios](#)

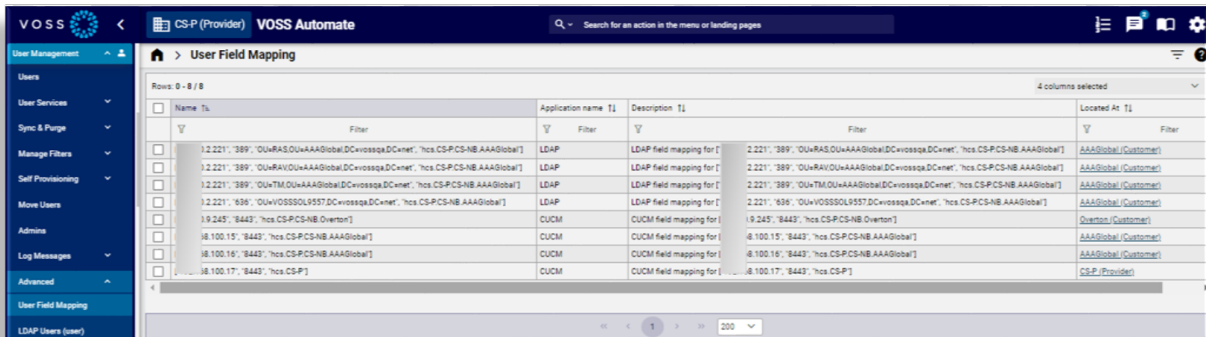
## 13.5.4. User Field Mapping

### Overview

User field mapping in VOSS Automate refers to the alignment of data fields between Automate user data and other applications. The field mapping is required when syncing data between Automate and other systems.

To view field mappings in Automate, go to (default menus) **User Management > Advanced > User Field Mapping** (or type *user field mapping* into the **Search** bar and perform an *action search* to locate the page).

On the **User Field Mapping** page you can view the list of available field mappings at the current hierarchy and below.



Name	Application name	Description	Located At
12.221; '389'; 'OU=RAS,OU=AAAAGlobal,DC=vossqa,DC=net'; 'hcs-CS-P-CS-NB-AAAAGlobal']	LDAP	LDAP field mapping for [	AAAAGlobal / Customer
12.221; '389'; 'OU=RAV,OU=AAAAGlobal,DC=vossqa,DC=net'; 'hcs-CS-P-CS-NB-AAAAGlobal']	LDAP	LDAP field mapping for [	AAAAGlobal / Customer
12.221; '389'; 'OU=TM,OU=AAAAGlobal,DC=vossqa,DC=net'; 'hcs-CS-P-CS-NB-AAAAGlobal']	LDAP	LDAP field mapping for [	AAAAGlobal / Customer
12.221; '636'; 'OU=VOSSSOL9557,DC=vossqa,DC=net'; 'hcs-CS-P-CS-NB-AAAAGlobal']	LDAP	LDAP field mapping for [	AAAAGlobal / Customer
19.245; '8443'; 'hcs-CS-P-CS-NB-Overton']	CUCM	CUCM field mapping for [	Overton / Customer
18.100.15; '8443'; 'hcs-CS-P-CS-NB-AAAAGlobal']	CUCM	CUCM field mapping for [	AAAAGlobal / Customer
18.100.16; '8443'; 'hcs-CS-P-CS-NB-AAAAGlobal']	CUCM	CUCM field mapping for [	AAAAGlobal / Customer
18.100.17; '8443'; 'hcs-CS-P']	CUCM	CUCM field mapping for [	CS-P / Provider

Automate provides a set of default (read-only) field mappings (named default) at the system level (sys) hierarchy. The default user field mappings are cloned and given an application name whenever an application is added at a hierarchy. For example:

- For CUCM applications, the name may be the IP address
- For LDAP applications, the name may be the business key of the LDAP server

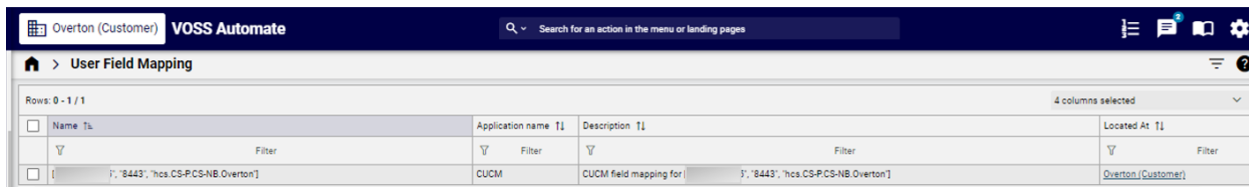
**Note:** Users are only sourced from CUCM and LDAP (MS LDAP and OpenLDAP) instances so only these instances are created. The default instances are only visible at sys level.

When a CUCM cluster or LDAP server is added at, for example, customer level, these default mappings are cloned down to that customer level, and then become editable.

LDAP is used for both Microsoft AD and OpenLDAP

The cloned mapping displays on the **User Field Mapping** page and applies to user management at the hierarchy.

The image shows a cloned mapping at a customer hierarchy:



Name	Application name	Description	Located At
'1'; '8443'; 'hcs-CS-P-CS-NB-Overton']	CUCM	CUCM field mapping for [	Overton / Customer

The mapping that applies at the sync hierarchy is used when values are written to Automate user data (for an application that is the sync source).

For example, the default CUCM mapping contains a mapping between the Automate “User Name” and the CUCM `userid`. When syncing user data from a CUCM source, the sync updates the Automate user.

The table describes mapping for applications stored in the `data/UserFieldMapping` model. These applications create cloned instances at the server level:

Application Name	Model Type	UC Source
CUCM	<code>device/cucm/User</code>	CUCM
LDAP	<code>device/ldap/user</code>	MS Active Directory
LDAP	<code>device/ldap/InetOrgPerson</code>	OPEN_LDAP

When syncing user data from a CUCM source, where this default CUCM field mapping applies at the hierarchy, the sync updates the VOSS Automate user. You can view the sync source for these users in the **Sync Source** column in the list view of the **Users** page, via (default menus) **User Management > Users**. In this case, the sync source is CUCM.

---

**Important:** If application users related to a custom field mapping exist in VOSS Automate, existing mapped fields are read-only and can't be updated.

---

You can define up to ten custom values for each of the following field types, which can also be mapped:

- Up to 10 custom strings
- Up to 10 custom list of strings
- Up to 10 custom booleans

After a sync, custom values display on the **Custom** tab of an entry on the **Users/username** page. To view these values, go to (default menus) **User Management > Users**, click on a username in the list to open the **Users/username** page, and select the **Custom** tab

### Related Topics

- For MS\_365, see: [Microsoft Mappings](#)

### LDAP Mappings

- LDAP Username
  - For Microsoft Active Directory, this is typically the `sAMAccountName`.
  - For AD LDS (ADAM), the `sAMAccountName` attribute is not part of the default schema, but can be added if required. Confirm with the LDAP server administrator. Alternatively, use `uid`.
  - For OpenLDAP, this is typically the `uid`.
- Sn (Surname)

## Microsoft Mappings

This section lists the user mappings from Microsoft users (device/msgraph/MsolUser) to Automate users. This default mapping instance in data/UserFieldMapping is not available for further configuration.

```
"name": "default"
"description": "Default MS_365 field mapping"
"application": "MS_365"
"model_type": "device/msgraph/MsolUser"
"username": "UserPrincipalName"
"email": "UserPrincipalName"
"first_name": "FirstName"
"last_name": "LastName"
"country": "Country"
"department": "Department"
"display_name": "DisplayName"
"city": "City"
"mobile": "MobilePhone"
"physical_delivery_office_name": "Office"
"postal_code": "PostalCode"
"state": "State"
"street": "StreetAddress"
"telephone_number": "PhoneNumber"
"title": "Title"
```

## View User Field Mappings

To view LDAP and CUCM user field mappings:

1. Log in to the Admin Portal.
2. Choose a hierarchy.
3. Go to (default menus) **User Management > Advanced > User Field Mapping** to open the **User Field Mapping** page.
4. View the list of mappings at the hierarchy.
5. Click on a user field mapping to view its details.

---

**Important:** Some fields in the hierarchy-specific field mapping are read-only. Any changes you make apply only to *new* users (field mapping changes won't apply to existing user data at this hierarchy).

---

[Home](#) > [User Field Mapping](#) > [ 245, "8443", "hcs.CS-P.CS-NB.Overton" ]

**User Field Mapping**

<b>Name *</b>	[ 245, "8443", "hcs.CS-P.CS-NB.Overton" ]
<b>Description</b>	CUCM field mapping for [ 245, "8443", "hcs.CS-P.CS-NB.Overton" ]
<b>Application name *</b>	CUCM
<b>Model Type</b>	device/cucm/User
<b>Data Exist</b>	<input checked="" type="checkbox"/>
<b>User Name</b>	userid
<b>Email Address</b>	mailid
<b>First Name</b>	firstName
<b>Last Name</b>	lastName
<b>Building Name</b>	
<b>Title</b>	title
<b>Department</b>	department
<b>Directory URI</b>	directoryUri
<b>Display Name</b>	displayName
<b>Employee Number</b>	
<b>Employee Type</b>	
<b>Home Phone</b>	homeNumber
<b>IP Phone</b>	
<b>Telephone Number</b>	telephoneNumber
<b>Mobile</b>	mobileNumber
<b>Other Mailbox</b>	
<b>Facsimile Telephone Number</b>	
<b>Unverified Mail Box</b>	
<b>City</b>	
<b>Country</b>	
<b>Street</b>	
<b>State</b>	
<b>Postal Code</b>	
<b>Timezone</b>	
<b>Physical Delivery Office Name</b>	

### 13.5.5. Users Synced from LDAP to VOSS Automate

When users are synced top-down from LDAP into VOSS Automate, LDAP authentication is enabled by default in VOSS Automate for these users.

When LDAP users are pushed to Unified CM (CUCM) and Cisco Unity Connection (CUC), authentication is either LDAP or local authentication, depending on how the applications are configured.

If LDAP authentication is not configured in CUCM or CUC, the user is considered to be a local user in UC applications.

### 13.5.6. User Synced from LDAP to VOSS Automate (SSO Enabled)

Passwords are defined and enforced at the Identity Provider (IdP) when the user is synced from LDAP to VOSS Automate with SSO enabled.

### 13.5.7. Users Synced from LDAP to CUCM

When a user is synced from LDAP to Cisco Unified Communications Manager (CUCM), the password is not synced like other user information that is pulled from LDAP.

If LDAP Authentication is enabled, the password in the LDAP server is used, unless the password was changed locally in CUCM, forcing the CUCM password to be used. However, if LDAP Authentication is not enabled, the default password is whatever was configured in CUCM as the default. If no default password is defined, then configure a password manually.

### 13.5.8. Users Synced to VOSS Automate

Passwords are not transferred when users are synced from Cisco Unified Communications Manager (CUCM) to VOSS Automate. An administrator must configure the passwords before the accounts can be used.

The following CUCM users are affected: users that were manually added to CUCM and users synced from LDAP.

### 13.5.9. Sync or Purge LDAP Users

This procedure syncs or deletes (purges) users that were synced from an LDAP server.

1. In the Admin Portal, select the hierarchy where the LDAP server exists.
2. Go to (default menu) **User Management > Sync & Purge > LDAP Users**.
3. Complete the following fields:



Field	Description
Remove Log Messages	Select the check box if you want to remove user management logs before synchronizing or purging.
Remove Log Direction	Choose <b>Local</b> to remove logs at the hierarchy of the LDAP server. Choose <b>Down</b> to remove logs at and below the hierarchy of the LDAP server. This field appears only if the <b>Remove Log Messages</b> check box is selected.
LDAP Server *	Choose the Organization Unit of the LDAP Server from which you need to sync or purge the users. This is mandatory field.
LDAP Action *	Choose synchronize or purge. This field is mandatory.

4. Click **Save** to trigger the transaction.

View transaction progress and details in the Transaction Logs.

### Related Topics

- Transaction Logging and Audit in the Core Feature Guide.

#### 13.5.10. Sync CUCM Users, Lines, Phones

This procedure syncs users, lines, and phones from Cisco Unified Communications Manager (CUCM).

**Note:** Syncing lines and phones is intended only for self-provisioning. It is not intended for a full migration scenario. Only Jabber and desk phones can be synced from CUCM. Single Number Reach (SNR) and Extension Mobility are not supported in terms of adding to CUCM first and then syncing into Automate.

Use model instance filters (MIF) to detect users that haven't been synced, and purge them from the affected site. After the users are purged, re-import the CUCM.

1. In the Admin Portal, set the hierarchy path to the hierarchy node where the CUCM server exists.
2. Go to (default menu) **User Management > Sync & Purge > CUCM Users, Lines, and Phones**.
3. Fill out configuration options for the sync:

Field	Description
Remove Log Messages	Defines whether you want to remove user management logs before syncing.
Remove Log Direction	Displays only if <b>Remove Log Messages</b> is selected. Options are <i>Local</i> or <i>Down</i> . <ul style="list-style-type: none"> <li>• Select <b>Local</b> to remove logs at the hierarchy of the selected CUCM.</li> <li>• Select <b>Down</b> to remove logs at and below the hierarchy of the selected CUCM.</li> </ul>
Action	Mandatory. Select <b>Synchronize users, lines, and phones from CUCM</b>
Cisco Unified CM	Mandatory. Choose the CUCM server. Data is synced from the selected CUCM.

- Click **Save** to start the sync.

You can view transaction progress and details in the Transaction Logs.

### Related Topics

- Transaction Logging and Audit in the Core Feature Guide

## 13.5.11. LDAP Sync Actions

LDAP Sync Action allows you to perform a bulk sync for users from multiple Organization Units (OU) of any LDAP server.

**Note:** You can also select the required OUs of a single LDAP server, and perform the users sync only from the selected OUs.

- Log in to the Admin Portal as a Provider, Reseller, or Customer administrator.
- Go to (default menus) **Apps Management > Advanced > LDAP Sync Actions**.
- Choose the required sync action from **Action** drop-down:

Action	Description
Import	Bulk syncs users from multiple Organization Units.
EnableScheduleSync	Enables syncing for already LDAP scheduled job.
DisableScheduleSync	Disable syncing for already LDAP scheduled.

- Select the required LDAP Server from the **Available** field to the **Selected** field.
- Click **Save**.
- Click **Move Up** or **Move Down** to alter the order of user syncing action for LDAP Server.

## 13.5.12. Purge a CUCM User from VOSS Automate Only

This procedure purges a single CUCM user from the VOSS Automate database only, while leaving it on the associated CUCM.

**Note:** If the same user is synced from multiple CUCMs, it results in a duplicate user on VOSS Automate.

- Log in as provider administrator or higher.
- Set the hierarchy path to the hierarchy node where the CUCM server is.
- Go to (default menu) **User Management > Sync & Purge > Local-Purge CUCM User**.
- Complete the following fields.

Field	Description
Cisco Unified CM	Choose the CUCM from which the user was synced.
User Name	From the <b>User Name</b> drop-down list, choose the user you want to delete from VOSS Automate.

5. Click **Save** to purge the selected user from VOSS Automate.

---

**Note:** The user remains on the associated CUCM.

---

## 13.6. Manage Filters

### 13.6.1. Create a Filter to Move Users

This procedure creates a filter that will allow you to select multiple users, based on one or more user attributes, so that you can use the filter to move these users to a different hierarchy.

**Note:**

- Users moved with the filter must match all attributes in the filter, for example, a filter with State=Missouri and City=Kansas City, does not match a user in Kansas City, Kansas.
- Filters are automatically applied during LDAP and Cisco Unified Communications Manager user synchronization, if the User Move mode is set to automatic.
- Filters created here to filter users is not the only method to filter users. Refer to [Model Filter Criteria](#) for an alternative method - which is also the recommended method.

To define the filter:

1. Go to (default menu) **User Management > Manage Filters > Define Filters**.
2. Click **Add**.
3. On each tab, locate user attributes for the filter: **Base**, **Extended**, or **Custom**

Provide the following information:

Field	Description
Name	Mandatory. Enter a name for the filter.
Move To Hierarchy	Choose the target hierarchy node. This field is mandatory.
Move To Role	Choose the role to be assigned to the user after the move. The available roles depend on the target hierarchy node selected. This field is mandatory. The list of available roles will include those where the <b>Hierarchies Allowed</b> list of the role contains the target hierarchy selected in the <b>Move To Hierarchy</b> list. <sup>1</sup>
Condition	Choose a condition for at least one of the available filters.
Value	Specify the value to evaluate for the condition. Set this field for at least one of the available filters.

Example: Set the City Filter to Condition=isexactly and Value=Toronto to move users in Toronto to the target hierarchy node and give them the target user role.

4. Click **Save**.

You can use the filter to manually move users using the **Move Users** form (default menu **User Management > Move Users**).

## 13.7. Self Provisioning

### 13.7.1. Introduction to Self Provisioning

The Cisco Unified Communications Manager (CUCM) self provisioning feature allows an end user or administrator to add an un-provisioned phone to a CUCM system with minimal administrative effort. A phone can be added by plugging it into the network and following a few prompts to identify the user.

The following process is used to self-provision a phone:

1. The user or admin connects the phone to the network.
2. The phone auto-registers.
3. The user or admin dials the IVR application and satisfies the prompts.
4. The IVR application deletes the auto-registered phone and adds it back using templates associated with the user via their User Profile.

There are two requirements related to self-provisioning:

1. Before a phone can be self-provisioned, the user must exist in CUCM along with their primary extension, Self-service ID, and user profile.
2. After the phone is self-provisioned, in order to do additional subscriber management for the user in VOSS Automate, the user, line, and phone must be at the site level in the VOSS Automate hierarchy.

<sup>1</sup> See: [Add and Edit Roles](#).

### 13.7.2. Enable Self Provisioning

This procedure enables self-provisioning for a subscriber using Quick Add Subscriber (QAS).

1. Go to (default menus) **Subscriber Management > Quick Add Subscriber**. From the **Username** drop-down list, select a user.
2. Select the **Enable Self Provisioning** checkbox. The **Self Provisioning User Profile** drop-down appears.
3. From the **Self Provisioning User Profile** drop-down, choose a Self Provisioning User Profile. These were previously created under **User Management > Self Provisioning > User Profile**.
4. In the **Lines** field, click the Plus icon (+) to display the **Directory Number** drop-down.
5. Choose a line from the **Directory Number** drop-down.
6. Click **Save**.
7. Go to **Subscriber Management > Subscribers** and choose the same user from the Subscribers list view.
8. Verify that the **Self-service** and **User Profile** fields display the same settings as those set in Quick Add Subscriber.

### 13.7.3. Bottom-Up User Management

A bottom-up approach to user management means users are configured on Cisco Unified Communications Manager (Unified CM) and synced into VOSS Automate. Two possible methods for bottom-up user management are:

- Sync LDAP directory into Unified CM. Do not configure the LDAP directory sync in Unified CM to use a line mask or DN pool to create the user's primary extension. Instead, the user's primary extension and self-service ID are generated in VOSS Automate, using a line mask, universal line template, and self-provisioning user profile at the site level.

Note:

During LDAP sync to Unified CM, the user is assigned a User Profile via the Feature Group Template associated with the LDAP directory. In order for the line mask configured at the site on VOSS Automate to get applied, the User Profile assigned previously must be empty or it must be named the 'Standard (Factory Default) User Profile'.

- Use Unified CM Quick User/Phone Add to create a user and the user's primary extension.

### 13.7.4. Top-Down User Management

A top-down approach to user management means users and lines are configured on VOSS Automate and pushed into Cisco Unified Communications Manager (Unified CM). Users may be added via LDAP sync, the Admin Portal, or bulk loading. When users are pushed to Unified CM the user's primary extension is created, and when a phone is self-provisioned for the user, the phone is automatically moved to the user's Site.

Use either of the following methods to configure the user in VOSS Automate:

- Generate the user's primary line and self-service ID using a line mask, universal line template, and a user profile at the site level.

- Set the self-service ID per user using Quick Add Subscriber.

---

**Note:** You can associate multiple devices (Jabber, iPhone, iPad, 78xx series IP phones, and 88xx series IP phones) to a single subscriber through VOSS Automate (Subscriber Management > Subscribers). This cannot be done through Quick Add Subscriber (QAS) as the default 9971 is added through QAS.

Using a combination of the methods above is possible but is not recommended. For example, you can enable the line mask at the site and use Quick Add Subscriber to set the primary line for some users while not setting it for others. When the line mask is applied, it first checks to see if a primary extension is already assigned to the user (perhaps via Quick Add Subscriber). If a primary extension is already assigned, the line mask is not applied.

---

### 13.7.5. CUCM Configuration for Self-Provisioning

To use self-provisioning, regardless of whether top-down or bottom-up user management is used, you must complete these one-time configuration tasks on Cisco Unified Communications Manager (CUCM):

- Ensure that the Cisco CallManager, Cisco CTIManager, and Self-Provisioning IVR services are activated
- Configure Auto Registration
- Create one partition and calling search space unique for self-provisioning
- Configure an Application User and credentials so the system can connect to the IVR self-provisioning service
- Configure a CTI Route Point (provides the number that users dial to connect to the IVR)
- Configure Self-Provisioning with the Application User and CTI Route Point

Refer to the Cisco Unified Communications Manager documentation for details.

### 13.7.6. Site Configuration for Self-Provisioning

Regardless of whether top-down or bottom-up user management is used, ensure that the following items have been configured in VOSS Automate:

Enterprise deployment:

- Site Defaults: **Site Management > Defaults**
- Internal Number Inventory: **Internal Number Inventory Management > Internal Number Inventory**

Provider deployment:

- Site Dial Plan: **Dial Plan Management > Site > Dial Plan**
- Site Defaults: **Site Management > Defaults**
- Directory Number Inventory: **Dial Plan Management > Customer Management > Add Directory Number Inventory**

### 13.7.7. Generate a User's Primary Line

For top-down management, the system creates the user's primary line, associates the line as the primary extension, sets the self-service ID, and sets the user's profile. These activities occur when users are pushed to Cisco Unified Communications Manager (CUCM).

For bottom-up management, the user's primary line is created (if necessary) when the user is moved to a site, or updated once at a site.

You create the line when you perform these tasks.

- Apply the line mask to a user attribute (typically the user's phone number).
- Use the Universal Line Template (ULT) to determine the route partition name and other line attributes. The ULT is specified in the self provisioning user profile, which is specified in the site's default user profile.

For this approach, the administrator configures these items at the site level.

1. Configure universal device templates. See [Add a Self Provisioning Universal Device Template](#).
2. Configure universal line templates. See [Add a Self Provisioning Universal Line Template](#).
3. Configure self provisioning user profile. See [Add a Self Provisioning User Profile](#).
4. Configure a site default user profile. See [Set a Default User Profile for a Site](#).
5. Configure the line mask. See [Add Self-Provisioning Line Mask](#).

### 13.7.8. Specify the Primary Line per Subscriber

In the top-down method that uses Quick Add Subscriber, the primary line pattern is specified by the admin. This creates the user's primary line, associates it as the primary extension, sets the self-service ID, and sets the user profile. The line attributes come from Quick Add Group configuration. Therefore, the Universal Line Template does not need to be configured.

**Perform these steps:**

1. Configure Universal Device Template(s). See [Add a Self Provisioning Universal Device Template](#).
2. Configure Self-Provisioning User Profile(s). See [Add a Self Provisioning User Profile](#).
3. Configure a Site Default User Profile. See [Set a Default User Profile for a Site](#).
4. Configure primary line per user.

For Quick Add Subscriber, add at least one line, and select the Self-Service ID check box.

### 13.7.9. Add a Self Provisioning Universal Device Template

When the administrator or user self-provisions a phone, Cisco Unified Communications Manager (CUCM) deletes the auto-registered phone and adds the phone back into the database. The Universal Device Template (UDT) for the user's profile determines the various phone settings for the user's phone.

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the site node where you want to configure self-provisioning.
3. Choose **User Management > Self-Provisioning > Universal Device Template**.

4. Click **Add**.
5. Enter the following required UDT information.

---

**Note:** These fields can be pre-populated, depending on customer, site, and dial plan configuration: Name, Location, Common Phone Profile, BLF Presence Group

---

Field	Description
Name	Enter the name of the UDT.
Location	Use locations to implement call admission control (CAC) in a centralized call-processing system. CAC regulates audio quality and video availability by limiting the amount of bandwidth for audio and video calls over links between locations. The location specifies the total bandwidth that is available for calls to and from this location.
Common Phone Profile	Choose a common phone profile.
Phone Personalization	Enable this setting to allow the UDT to work with Phone Designer, a Unified Communications widget. The widget lets a user customize the wallpaper and ringtones on a device.
Busy Trigger	This setting, which works with Maximum Number of Calls and Call Forward Busy, determines the maximum number of calls to be presented at the line. If the busy trigger is set to 40, incoming call 41 is rejected with a busy cause (and is forwarded if Call Forward Busy is set). If this line is shared, all the lines must be busy before incoming calls are rejected.
Max Number Of Calls	You can configure up to 200 calls for a line on a device. As you configure the number of calls for one line, the number calls that are available for another line decreases.
MultiLevel Precedence and Pre-emption	This setting specifies whether a device that can preempt calls in progress uses the capability when it places an MLPP precedence call.
Do Not Disturb Option	When you enable DND on the phone, this parameter allows you to specify how the DND features handle incoming calls.
Blf Presence Group	Enter the presence group applicable for busy lamp field buttons.
Device Mobility Mode	Turn the device mobility feature on or off for this device or choose Default to use the default device mobility mode. Default setting uses the value for the Device Mobility Mode service parameter for the device.

6. Enter the following optional, but highly recommended information. These fields can be pre-populated, depending on customer, site, and dial plan configuration.

Field	Description
Device Pool	Enter a site-specific device pool.
Owner User ID	The userid of the user associated with the phone. The recommended is Current Device Owner's User ID.



7. Enter other optional settings, if applicable.
8. Click **Save**.

### 13.7.10. Add a Self Provisioning Universal Line Template

The Universal Line Template (ULT) is used before self-provisioning actually takes place. ULTs are used to create directory numbers on Cisco Unified Communications Manager (CUCM). A directory number is identified by a pattern (the number portion) and a route partition. A directory number also has various settings that can be configured for the line. When a directory number is created using a ULT, the ULT determines the route partition and the line settings.

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the site node where you want to configure self-provisioning.
3. Choose **User Management > Self-Provisioning > Universal Line Template**.
4. Click **Add**.
5. Enter the following required Universal Line Template information.

Field	Description
Name	The name of the universal line template
Location	Use locations to implement call admission control (CAC) in a centralized call-processing system. CAC regulates audio quality and video availability by limiting the amount of bandwidth for audio and video calls over links between locations. The location specifies the total bandwidth that is available for calls to and from this location.
Partition	Enter the route partition used to create lines at the site.
Blf Presence Group	Enter the presence group applicable for busy lamp field buttons.

6. Fill out additional optional settings, if applicable.
7. Click **Save**.

### 13.7.11. Add a Self Provisioning User Profile

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the site node where you want to configure self-provisioning.
3. Choose **User Management > Self-Provisioning > User Profile**.
4. Click **Add**.
5. Enter the user profile information.

Field	Description
Name	Enter the name of the user profile. This field is mandatory.
Universal Line Template	Enter a site-specific ULT. This field is highly recommended.

6. Click the **Device Template Desk Phone** tab.
  - a. Click '+' to add a new template.
  - b. From the **Device Security Profile** drop-down, choose **Model-independent Security Profile**.
  - c. From the **Sip Profile** drop-down, choose the required SIP Profile.
  - d. Select the **Allow Control of Device From Cti** checkbox.
  - e. From the **Calling Search Space** drop-down, choose the appropriate option, for example Cu2Si4-InternalOnly-CSS.
7. Click the **Line Template** tab.
  - a. Click '+' to add a new template.
  - b. From the **Partition** drop-down, choose the appropriate partition, for example Cu2-DirNum-PT.
  - c. From the **Calling Search Space** drop-down, choose the appropriate calling search space, for example Cu2Si4-InternalOnly-CSS.
  - d. From the **Voice Mail Profile** drop-down, choose the appropriate option, for example Default.
8. Click **Save**.
9. Fill out additional, optional settings, if applicable.

### Next Steps

- Set a default user profile for a site.

#### 13.7.12. Set a Default User Profile for a Site

Set a default user profile for a site, to be used when no user profile is specified when adding a subscriber.

##### Perform these steps:

1. Choose **Site Management > Defaults**.
2. Click the user profile to set as the default.
3. On the **General Defaults** tab, and from the **Default User Profile (for User Self Provisioning)** drop-down, choose the default user profile for the site.
4. Click **Save**.

#### 13.7.13. Add Self-Provisioning Line Mask

##### Perform these steps:

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the site node where you want to configure self-provisioning.
3. Choose **User Management > Self-Provisioning > Line Mask** (default).
4. Click **Add**.
5. Provide the following information:

Field	Description
Description	A description of the Line Mask.
User Attribute*	Select the user attribute used to generate the user's primary extension. The default is 'telephoneNumber'. This field is mandatory.
Mask*	Provide a mask which gets applied to the user attribute. The result is used as the user's primary extension. For example, assume user attribute is telephoneNumber and the mask is 4XXXX. Special characters and blanks are stripped from the user attribute before applying the mask. If the mask is applied to '(919) 867-5309', the user's primary extension would be set to 45309. This field is mandatory.

6. Click **Save**.

## 13.8. Move Users

### 13.8.1. Pushing Users to CUCM

#### Overview

In VOSS Automate, user management involves a series of steps to integrate new users from the following sources:

- Synced from the LDAP directory
- Synced from CUCM (Cisco Unified Communications Manager)
- Manual configuration within Automate

One step in this process is to push the user to the CUCM assigned to the customer and site where the user was added.

You can push a user to the CUCM from Automate in two ways:

<b>Automatic Push</b>	Enable <b>Auto Push to CUCM</b> in (default menus) <b>Site Management &gt; Sites</b> (in the site details)
<b>Manual Push</b>	Executed for individual users via (default menus) <b>User Management &gt; Users</b> and <b>Subscriber Management &gt; Quick Add Subscriber</b>

Automate offers various options for provisioning users with phones, lines, and other services and features. Depending on the option you choose, users can be automatically pushed to CUCM.

Auto push to CUCM is recommended if users are synced in from an LDAP server, or if users are manually configured on Automate and then provisioned with phones, lines, and other services (via **Subscriber Management**), regardless of whether you configure subscribers through the Admin Portal, bulk loaders, or the API.

**Note:** If users are initially configured on CUCM and then synced into Automate, auto push to CUCM is unnecessary as the users are already present on CUCM.

## Auto Push Users to CUCM

### Enable Auto Push to CUCM

By default, auto push to CUCM is disabled in Automate.

To enable auto push to CUCM:

1. Go to (default menus) **Site Management > Sites**.
2. Click on a site to open its settings.
3. In **Site Details**, select **Auto Push Users to CUCM**.

### When are users auto pushed to a CUCM?

Users are automatically pushed to a CUCM under these conditions:

- When users are moved to a site (via filters, username, or usernames) and that site has a NDL (network device list) containing a CUCM.
- When an NDL containing a CUCM is added to a site after the site is created.
- When a CUCM is added to an NDL that is linked to a site, then users on the site are pushed to the CUCM.
- When a new user is created at a site, and that site has a NDL containing a CUCM.

### Manually Add Users to CUCM

You can manually add users to CUCM from hierarchy nodes between customer and site, inclusive.

To verify that users are available as subscribers, with assigned phones, lines, and features, go to (default menus) **Subscriber Management > Subscriber**.

### Related Topics

- [Quick Add Subscriber \(Cisco\)](#).

## 13.8.2. Automatically Move Users Synced from CUCM

This procedure automatically moves users that were synced from Cisco Unified Communications Manager (CUCM), using previously defined move filters.

1. Choose **Apps Management > CUCM > Servers**.
2. Click the CUCM server to modify.
3. Click the **Publisher** tab.
4. From the **User Move Mode** drop-down, choose **Automatic**.
5. Click **Save**.

Users are automatically moved based on the previously defined move filters.

### 13.8.3. Move Users

#### Overview

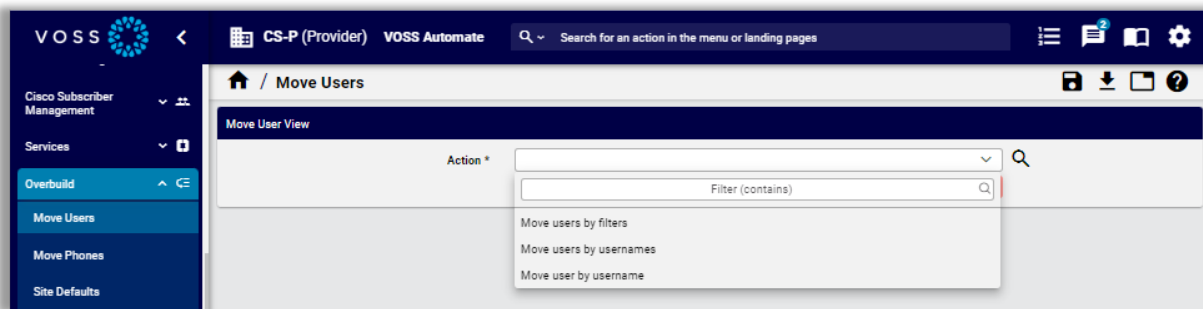
You can move users between any hierarchy nodes at or below the hierarchy node where the users were originally created or synced in. Typically, users synced in at a Customer hierarchy node are moved to various customer sites.

When moving a user, you will choose their role at the target hierarchy.

**Note:** The **Move Users** page in VOSS Automate can be accessed via:

- **User Management > Move Users.**
- **Overbuild > Move Users.**

Alternatively, use the Search function in VOSS Automate to locate **Move Users**.



You will need to consider the restrictions that apply when moving users:

Scenario	Description
Moving users pushed to CUCM	<ul style="list-style-type: none"> <li>• CUCM users can only be moved down the hierarchy. For example, from Customer to Site.</li> <li>• A Network Device List (NDL) containing the same CUCM the users were pushed to must be referenced at or below the target hierarchy node.</li> </ul>
Moving users between sites	<ul style="list-style-type: none"> <li>• (Enterprise and Provider) You can't move users between customers.</li> <li>• (Enterprise deployments) You can't move users from one site to another site as this will fail with dialplan errors.</li> <li>• (Provider deployments) You can only move users between sites that: <ul style="list-style-type: none"> <li>– Reference the same NDL</li> <li>– Have the same type of site dial plan</li> <li>– Are associated with the same country</li> </ul> </li> </ul>

**Note:** When moving a user for SLC dialplan the lines associated to the agent line and the shared line show

warnings in the form of logs.

---

### Related Topics

- Create a Filter to Move Users in the Core Feature Guide
- Automatically Move Users Synced from CUCM in the Core Feature Guide

### Move Users from Customer to Site

This procedure moves users from a Customer to a Site.

#### Pre-requisites:

- Create relevant filters. See [Create a Filter to Move Users](#)

#### To move a user from the customer level to a site:

1. In the Admin Portal, go to (default menus) **User Management > Move Users**.

---

**Note:** Alternative step: Go to (default menus) **Overbuild > Move Users**. The procedure is the same regardless of the menu path.

---

2. From the **Action** drop-down, choose an option for moving the user/s:

Action	Description
Move users by filters	<p>Moves users based on one or more user attributes, for example, City or Street.</p> <ol style="list-style-type: none"> <li>At <b>Move From Hierarchy</b>, select the hierarchy node from which you are moving the user.</li> <li>At <b>Filters</b>, choose one or more move filters from the <b>Available</b> list, and click the arrow to move the filters to the <b>Selected</b> list. Click the up/down arrows to change the order of the filters, which determines the order in which they are applied.</li> </ol>
Move users by usernames	<p>Moves multiple users at once, by their username (bulk move).</p> <ol style="list-style-type: none"> <li>At <b>Move From Hierarchy</b>, choose the hierarchy node from which you are moving the users.</li> <li>From the <b>Move To Hierarchy</b> drop-down, choose the target hierarchy node.</li> <li>From the <b>Set Default Role</b> drop-down, choose the default role for the moved users. This default role will be assigned to the moved users unless valid LDAP Custom Role Mappings have been configured, which take precedence over the default role.</li> <li>Click <b>Users +</b>, and from the drop-down, choose the user to move, repeat for each user you want to move. Alternatively select the <b>Move All Users</b> checkbox to select all the users.</li> </ol>
Move user by username	<p>Move a single user, by their username.</p> <ol style="list-style-type: none"> <li>At <b>User</b>, choose the user to move.</li> <li>At <b>Move To Hierarchy</b>, choose the target hierarchy node.</li> <li>From the <b>Set Default Role</b> drop-down, choose the default role to assign to the moved user. This default role will be assigned to the moved users unless valid LDAP Custom Role Mappings have been configured, which take precedence over the default role. The list of available roles will include those where the <b>Hierarchies Allowed</b> list of the role contains the target hierarchy selected in the <b>Move To Hierarchy</b> list.<sup>1</sup></li> </ol>

3. Click **Save**. Users are moved.

4. Go to (default menus) **User Management > Users** to verify that users were moved to the correct target hierarchy.

<sup>1</sup> See: [Add and Edit Roles](#).

## Related Topics

- For more details around moving one or more users by username, see [LDAP Custom Role Mappings](#)

## Move Users from One Site to Another Site

**provider**

As an administrator, you can move users from one site to another with their assigned devices and services intact.

---

**Note:** Certain conditions must be met for a site-to-site move to succeed. These conditions differ slightly for users in non-SLC dial plans and users in SLC dial plans.

---

### Move users between sites with non-SLC dial plans

When moving a user with their devices and services between sites with a non-SLC dial plan configured, VOSS Automate checks the following conditions:

- Both sites must be configured with a SLC dial plan.
- Both sites must use the same NDL.
- Both sites are in the same country.
- The SyncTo hierarchy is a parent of both sites.
- The target site data/SiteDefaultsDoc contains the required default settings (that is, they are not empty nor null).
- The role is valid at the target site.

When moving a user from one (non-SLC) site to another (non-SLC) site, the following models and relations are moved with the user:

- relation/User
- relation/Voicemail
- relation/Subscriber
- relation/SparkUser
- relation/LineRelation
- relation/HcsCucmCcTagREL
- data/InternalNumberInventory

Various fields are updated for the target site (by the target site's site defaults) for the models that are moved. These fields include (but are not limited to), the following:

- Voicemail Pilot Numbers
- Unified CM Device Pool
- Unified CM Location
- Unified CM Region, and others



The following fields are updated for the device/cucm/Line model:

- Calling Search Space Name
- Route Partition Name
- Share Line Appearance Css Name

The following models are updated for relation/Subscriber:

- Device Profile
- Remote Destination Profile
- Phones

Each of these models contains a **Lines** field, which in turn can contain individual lines. In a site-to-site move, the E164 Mask and Route Partition Name fields are updated for each line contained in these models.

Additionally, the move updates some fields within these individual models:

- Remote Destination Profile
  - Device Pool Name
  - Route Partition Name within the Line Associations
- Phones
  - Device Pool Name
  - Location Name

You will need to update these values if you wish to use the overbuild with your existing CUCM data in the future.

The following models trigger a warning message when you attempt to move them from one site to another. While VOSS Automate does not prevent you from moving these models, a system message describes the possible implications for moving them:

- E.164 associations
- Call pickup groups
- Hunt lists

---

**Note:** When using an API for a older version of VOSS Automate (prior to v11.5.1), the Move Users function has the previous behavior. Devices and services do not move with a user.

---

### Move users between non-SLC sites with directory number routing configured

For moves between non-SLC sites with directory number routing (DNR) configured at *either* site, a system message is triggered to warn that any lines associated to the user being moved may not work correctly unless you take one of the recommended actions provided. See the Advanced Configuration Guide to perform the first recommended action.

---

### Move users between sites with SLC dial plan configured

When moving users between sites with a SLC dial plan configured, the required conditions are the same as with non-SLC plans. The only difference is that no error is triggered when the system check detects an SLC dial plan configuration for the customer.

---

**Note:** When moving users from a dial plan site to a non-dial plan site, the users are set to a default CSS.

---

When moving users from one SLC site to another SLC site, the same models and relations are moved as for sites with non-SLC dial plans, with the following exceptions:

- When moving relation/Subscriber -> Lines:
  - Lines are disassociated from all phones and the relation.
  - Removing the line from **Subscriber Management > Phones** should remove the primary line from the relation.

These models are **not** handled when moving SLC dial plans, because the line does not move:

- Internal Number Inventory (INI)
- E.164 Association
- E164 Inventory
- Call Pickup Group
- Hunt List

The following models trigger a warning message when you attempt to move them from one site to another. While VOSS Automate does not prevent you from moving these models, a system message notifies you of the possible implications of moving them:

- Agent line associations
- Lines associated to a subscriber's phones, device profile, or RDP
- Voicemail

### Moving Microsoft Users

Moving a Microsoft user manually (via **User Management > Move User**), also moves the following models:

- device/msgraph/MsolUser
- device/msteamsonline/CsOnlineUser
- device/msexchangeonline/UserMailbox

These models are moved regardless of the source and target hierarchies.

### 13.8.4. Site-to-Site User Move Transaction Log Errors

Transaction log errors occur with a site-to-site user move, if the following conditions are not met:

- Each site is not in the same country.
- (Provider deployment) Sites must have the same types of dial plans (SLC vs. Non-SLC).
- The target site *data/SiteDefaultsDoc* contains the needed default settings (that is, they are not empty or null).
- Move is not outside the *sync\_to\_hn*.
- Role is valid at move to site.
- UC applications resources are set to false.

Review the transaction log for error messages and actions to resolve the errors.

### 13.8.5. Convert User Type CUCM-LDAP to CUCM Local

This tool is used to convert a CUCM-LDAP user account to a CUCM Local User. If the user exists on CUCxn Server then the user is also converted to a Local User, that is, the user on CUCxn is set to “Do not Integrate with LDAP Directory”.

Converting a user from CUCM-LDAP to CUCM Local is typically required when the user has been deleted from the LDAP Server, the Unified CM has synced with the LDAP Server, and the user has been set to “Inactive”. In this scenario, the user would be deleted when the Garbage Collection process runs on the Unified CM.

Converting the user to a CUCM Local user prevents the user from being automatically deleted.

- Only users with CUCM-LDAP type are shown by default in the **User to Convert** drop-down.
- If the **Show Inactive LDAP Users Only** check box is selected, the list of users is filtered to only show the “CUCM-LDAP” users with a status of “Inactive”, i.e. status value = 2.

An Inactive User on CUCM is a user that was deleted from the LDAP Server, and CUCM synced with the LDAP server after the deletion took place. Inactive Users will be deleted from CUCM when the Garbage Collector next runs on CUCM.

- Password. The password entered here will be used to set the password for the user on CUCM and CUCxn.

Informational fields show:

- Current User Hierarchy
- LDAP Directory Name
- Current User Status:
  - Active (1): the user is still in LDAP since the last sync
  - Inactive (2): the user is not in LDAP since the last sync

### 13.8.6. Managing Duplicate Usernames

Users are created in a sync with LDAP or CUCM (Cisco Unified Communications Manager), or they're created manually in VOSS Automate.

**Important:** Usernames for admin and non-admin users must be unique within the hierarchy, both upwards and downwards. User emails must be unique system-wide.

All users are created according to these duplicate username guidelines:

- A user's username can't be updated if another user in the current hierarchy has the same username. This restriction includes above, below, or at the same level in the current hierarchy.
- You can't add a user with the same username as another user that is above, or was originally above before being moved, the current hierarchy.
- You can't manually add a user with the same username as another user at the same level or below in the current hierarchy.
- You can't convert a user to a subscriber or CUCM user if another user at the same level or below the CUCM in the current hierarchy has the same username.
- A user may or may not be synced from LDAP or CUCM if another user at the same level or below in the current hierarchy has the same username.

This condition depends on the source of the existing user.

The following tables describe sync conditions for users created in a LDAP or CUCM sync.

#### Users created in an LDAP sync:

Source of existing user	Action
LDAP	Simple user update, if the user is coming from the same LDAP server
CUCM	Update user, update provisioning status with LDAP server and SyncTo info
Manually created	Update user, update provisioning status with LDAP server and SyncTo info

#### Users created in a CUCM sync:

Source of existing user	Action
LDAP	User is not synced
CUCM	Simple user update, if the user is coming from the same CUCM server
Manually created	Update user, update provisioning status and SyncTo info with CUCM server

## Users created in Automate and auto pushed to CUCM

The table refers to subscribers created in Automate using:

- Subscriber Management > Subscribers
- Subscriber Management > Quick Add Subscriber
- Auto Push feature on Site

Quick Add Subscriber and Subscriber Management create subscribers and users, while Manage Users and the Auto Push to CUCM feature convert existing users into subscribers.

Source of existing user	Action
LDAP	Update user, update provisioning status with CUCM server (keep SyncTo info the same)
CUCM	No action or updates are necessary
Manually created	Update user, update provisioning status with CUCM server and update SyncTo to the CUCM hierarchy if the current SyncTo is below it

### Note:

- If a user can't be created or updated during an LDAP or CUCM sync, a log is created in **User Management > Log Messages**, and the sync succeeds.  
If a user can't be created or updated manually, an error message is generated.
- If the duplicate user check fails, the transaction fails and the user is not converted to a subscriber.
- If a user's SyncTo value is updated, SSO User updates can result. The SSO User's IDP is set to the IDP configured at the new SyncTo hierarchy node. If no IDP is configured at the new SyncTo hierarchy node, the SSO User is deleted, if it existed. If an IDP is configured at the new SyncTo hierarchy node, but no SSO User exists, an SSO User is created at the user's hierarchy node.
- An update is blocked if two duplicate users are from the same source but originate from different servers.

## 13.9. Admins

### 13.9.1. Manage Local Administrators and Operators

This procedure adds administrators for intermediate nodes, and adds or edits local administrators or operators.

**Note:** Default local VOSS Automate administrators are created when provider, reseller, customer, and site hierarchy nodes are established.

An administrator for a particular hierarchy level can create or modify the administrators and operators at that hierarchy level and any level below. For example, a Customer XYZ administrator can create other Customer XYZ administrators and site administrators for Customer XYZ.

1. Log in as an administrator.
2. Set the hierarchy path:
  - To add or edit an administrator or operator at a level below your current level, set the hierarchy path at the top of the window.
  - If you have signed in as provider administrator and want to create a customer administrator, set the hierarchy path to the customer for which you want to create the administrator.
3. Go to (default menu) **User Management > Admins**) to open the **Admins** list.
4. To edit an existing administrator or operatory:
  - Click on the relevant user to open the Users[username) form.
  - Make the changes you require.
  - Save your changes.
3. To add a new administrator or operator:
  - Click the plus icon (+) to open the Users/New Record form.
  - Fill out the field values. Mandatory fields are indicated with an asterisk (\*):

Field	Description
Username	Sign-in username. This field is mandatory.
Email Address	User email address.
Role	Choose the administrator's role. This field is mandatory. <ul style="list-style-type: none"> <li>• For a provider, reseller, customer, or site administrator or operator, the available roles are limited to those applicable to the hierarchy level.</li> <li>• For an intermediate node administrator or operator, the available roles are limited to those associated with the nearest non-intermediate node above the intermediate node in the hierarchy.</li> </ul>
Password	Set the password. This field is mandatory.
Language	Choose the administrator's language. Note: If no language is chosen, the language is inherited from the nearest hierarchy node (at or above the administrator) that has a default language configured. If no default language is configured anywhere in the hierarchy at or above the administrator, the administrator's language is English.
Sync Source	This is set LOCAL when the administrator is created on VOSS Automate.
User Type	Cannot be edited - determined by the Role interface (administration / selfservice).

5. Click **Save**.

## 13.10. Session Timeouts

### 13.10.1. Session Timeout Rules

The following rules apply to the idle session timeout and absolute session timeout values that can be applied to users via a credential policy:

- Setting the absolute session timeout to 0 disables it.
- The absolute session timeout takes priority over the idle session timeout. Therefore, setting the absolute session timeout to a value less than the idle session timeout effectively disables the idle session timeout.
- Credential policy session timeouts do not apply to SSO authenticated users. For SSO authenticated users, VOSS Automate honors the SessionNotOnOrAfter SAML 2.0 attribute, which is equivalent to an absolute session timeout, although controlled by the IDP.

---

**Note:** Timeout limits will initiate the display of timeout limit notifications in the Admin Portal - see: [Timeout Limit Notifications](#).

---

### 13.10.2. Timeout Limit Notifications

Timeout Limit Notifications are displayed in accordance with the Credential Policy that is associated with a user. See: [Customized Credential Policy](#) and [Session Timeout Rules](#).

From 60 seconds before the session limit, in other words before a session expires, a warning message "Session will expire in [n] seconds" will show in the Admin Portal and will count down.

If the idle session limit generated the message (and the idle session limit is set to less than the absolute session limit), the user has the option to click the **Stay Logged In** button to extend the session. If the absolute session timeout is about to be reached, the user has the option to click the **Log Out Now** button to return to the login screen or to click **OK** to dismiss the message and finalize work before logout. All transactions submitted after clicking **OK** will be processed.

If the user does not click a button on the warning message box, the user is logged out and the Admin Portal returns to the login screen.

SSO users see the message:

"Your Single sign-on session will expire in [n] seconds. All transactions submitted after clicking **OK** will be processed. When the session expires, you will be automatically redirected to the log-in page."

For the Admin Portal theme modification of the notification, refer to the Advanced Configuration Guide.

## 13.11. User Accounts and Passwords

### 13.11.1. Manage Passwords

Passwords can be set by default in various ways, and can be configured between LDAP, Automate, and other systems, such as CUCM (Cisco Unified Communications Manager).

#### Managing Your Own Account Password

Locally authenticated logged in users and administrators can manage their own account passwords.

---

**Note:** Users authenticated via Single Sign On (SSO) or LDAP do not have access to the Change Password functionality as these passwords are not managed in VOSS Automate. However, a user with Authentication Method set to Local can change their password even if a SSO IdP server is in scope in the hierarchy.

---

#### Self-service User Passwords

Self-service users can reset their passwords from the Self-service Login page. Provided the user updates their local user password first and then logs in to authenticate, the password reset also updates the Self-service user's UC app passwords, including Jabber devices, Voicemail, and WebEx passwords.

### 13.11.2. Passwords and Manually Added Users

#### User Added Manually Through Subscriber Management

A user added through Subscriber Management has the same password that was configured in VOSS Automate when the subscriber was provisioned.

#### User Added Manually Through User Management

A user added through User Management has the local VOSS Automate password that was specified when the user was created. When this type of user is pushed to Cisco Unified Communications Manager (Unified CM), the password is not pushed. Instead the password can be configured in one of the following ways:

- Create a default password with Unified CM
- Set the password in the CUCM end user page



### Create a Default Password with Unified CM

1. Log in to Unified CM as an administrator.
2. Choose **User Management > User Settings > Credential Policy Default**.
3. Choose the line item that has the Credential User to 'End User' and Credential Type to 'Password'.
4. Enter the default password in the confirmation box and click **Save**.

---

**Note:** Ensure that the user has the correct role defined.

---

### Set the Password in the CUCM End User Page

1. Log in to Unified CM as an administrator.
2. Choose **User Management > End User**.
3. Filter for the user you wish to modify.
4. Change password fields for the specified user.

#### 13.11.3. Force User Password Change

You can use a credential policy to force users to change their passwords on initial login. However, an administrator can manually force a user password change on the next login attempt.

To manually force a password change:

1. Log in as provider, reseller, or customer administrator.
2. Choose **User Management > Users**.
3. Click the user whose password you want to be changed on the next login attempt.
4. Click the **Account Information** tab.
5. Select the **Change Password on Next Login** check box.
6. Click **Save**.

The next time the user attempts to log in, they are prompted to change their password. Once the password is changed the **Change Password on Next Login** check box is cleared.

#### 13.11.4. Force Administrator Password Change

You can use a credential policy to force administrators to change their passwords on initial login. However, an administrator at a higher hierarchy level can manually force an administrator to change password on the next login attempt.

To manually force an administrator to change their password:

1. Log in as provider, reseller, or customer administrator.
2. Choose **User Management > Admins**.
3. Click the administrator whose password you want to be changed on the next login attempt.

4. Click the **Account Information** tab.
5. Select the **Change Password on Next Login** check box.
6. Click **Save**.

The next time the administrator attempts to log in, they are prompted to change their password. Once the password is changed the **Change Password on Next Login** check box is cleared.

### 13.11.5. Change Your Own Password

Locally authenticated users can change their own password.

**Note:** Locally authenticated users includes users where a SSO IdP is configured at higher levels of the hierarchy, but the user has Authentication Method set to Local.

1. Log in to VOSS Automate.
2. Click the arrow next to the logged in user at the top right-hand side of the screen.
3. Choose the **Change Password** option from the drop-down menu. The **Change Password** screen is displayed.
4. Enter your existing password in the **Old Password** field.
5. Enter your new password in the **New Password** field. Refer to **Minimum Password Length** and **Enable Password Complexity Validation** fields under *Customized Credential Policy* if required.
6. Confirm your new password by re-entering it in the **Repeat New Password** field.
7. Click **Change Password** in the button bar. Your password is changed.

### 13.11.6. Unlock a Locked Out User

This procedure unlocks a user's account, where the user is locked out on account of a credential policy violation.

**Perform these steps:**

1. Log in as provider, reseller, or customer admin.
2. Choose **User Management > Users**.
3. Click the user whose account you want to unlock.
4. On the **Account Information** tab, clear the **Locked** checkbox.
5. Click **Save**.

### 13.11.7. Unlock a Locked Out Administrator

This procedure unlocks an administrator's account, where the administrator is locked out on account of a credential policy violation

**Prerequisites:**

- You must be an administrator user at a hierarchy node above the hierarchy node of the locked out admin user.

**Perform these steps:**

1. Log in as provider, reseller, or customer admin, depending on the location of the locked out administrator.
2. Go to **User Management > Admins**.
3. Click the administrator whose account you want to unlock.
4. On the **Account Information** tab, clear the **Locked** checkbox.
5. Click **Save**.

### 13.11.8. Manually Disable a User Account

This procedure manually disables a user account. Usually, a user account is disabled when the password has expired. However, an administrator can manually disable a user account at any time.

---

**Note:** A user account is typically disabled when the password expires. However, an administrator can disable a user account at any time. Manually disabling a user is preferred to manually locking out a user as you can provide the reason for disabling.

---

**Prerequisites:**

- You must be an administrator to manually disable a user account.

**Perform these steps:**

1. Log in as provider, reseller, or customer admin.
2. Go to **User Management > Users**.
3. Click the user whose account you want to disable.
4. On the **Account Information** tab, select the **Disabled** checkbox.
6. In the **Reason for Disabled** field, enter the reason the account is disabled. The reason is displayed to the user when their next login attempt fails.
7. Click **Save**.

### 13.11.9. Manually Disable Administrator Account

Usually, an administrator account is disabled when the password has expired. However, an administrator at a higher hierarchy level can manually disable an administrator account at any time.

**Note:** Manually disabling an administrator is preferred to manually locking out an administrator as you can provide the reason for disabling.

1. Log in as provider, reseller, or customer admin.
2. Choose **User Management > Admins**.
3. Click the administrator whose account you want to disable.
4. Click the **Account Information** tab.
5. Select the **Disabled** check box.
6. Enter the reason the account is disabled in the **Reason for Disabled** field. This reason will be displayed to the administrator when the next login attempt fails.
7. Click **Save**.

## 13.12. Self-service

### 13.12.1. Introduction to Self-service

Using the VOSS Automate Self-service interface, users can configure their own phone settings, including voicemail, call forwarding, availability, and speed dials.

To access the Self-service interface, a user must be assigned a *selfservice* role in VOSS Automate. A user may get a *selfservice* role in one of the following ways:

- Automatically when synced from LDAP, if the LDAP sync has the user role configured to a *selfservice* role.
- By default when synced from Cisco Unified Communications Manager.
- Manually assigned by an administrator using **User Management > Users**.

To access the Self-service interface, the user enters the following in the browser URL field:

```
https://<Hostname>/selfservice/#/login?theme=[your_theme]
```

**Note:** Access to the Self-service interface and the VOSS Automate Admin Portal are mutually exclusive *unless* the administrator user is assigned *both* of:

- An Authorized Admin Hierarchy instance containing an associated admin role. For details on the Authorized Admin Hierarchy, see: [Authorized Admin Hierarchy](#).
- A *selfservice* role directly to the user.

Otherwise, if an administrator needs access to the Self-service interface, the administrator needs a second user configured in VOSS Automate with a *selfservice* role assigned to it.

If the theme value is set as `login?theme=cisco_selfservice` then the theme will revert to the Self-service theme that has been set as the default.

## 13.12.2. Self-service and User Configuration

As an Administrator, you can:

- Configure various aspects of the Self-service interface
- Provide user access to Self-service
- Configure services for the users as required

The table provides a summary of the configurable items for the Self-service interface.

### Configurable Items in Self-service Interface

Task or Item	Description
User access	<p>A user can log in to the Self-service GUI if a 'System User' entry exists for the user. A 'System User' entry is created automatically when a user is added as a subscriber.</p> <p>You can grant a user access to Self-service by creating a user with a <i>selfservice</i> role directly in the system user interface. A user with this role is not able to view devices or any services associated with the devices. Manually added users also cannot view personal information such as first name, last name, address, department, etc.</p> <p>You can also provide an administrator with user access to the Self-service GUI by assigning an Authorized Admin Hierarchy instance to the admin that also includes an administrator role.</p>
User Authentication	<p>Self-service authentication is controlled by the administration interface using the same three authentication methods: <b>Automatic</b>, <b>LDAP</b>, and <b>SSO</b>.</p>
GUI Themes and Branding	<p>The Self-service GUI interface can be branded by configuring Cascading Style Sheets and images and logos. It uses the same theme upload and download interface used for the administrator GUI. The theme itself however, is different between the administrator and Self-service interface (based on the user role). The log in page theme is also loaded from the URL:</p> <p><a href="https://&lt;host&gt;/selfservice/#/login?theme=mytheme">https://&lt;host&gt;/selfservice/#/login?theme=mytheme</a></p>
Personal Phones (Remote Destinations)	<p>You can automatically assign a remote destination profile (RDP) to a user so that they can manage their own personal phones and simultaneous ring settings. Select the <b>User can enable Personal Phone Management (add Remote Destination Profile)</b> check box on the <b>Personal Phones</b> tab under <b>Customizations &gt; Self-service Feature Display Policy</b>.</p> <p>If no RDP is associated to the user, the Personal Phones management interface in Self-service is hidden. Multiple RDPs for each user are not supported. The Personal Phones management interface in Self-service is also hidden if a user has more than one RDP associated.</p>

For more information, see:

- [Add a Subscriber](#)
- [Add Admin Users](#)
- [User Authentication](#)
- [Create a Custom Self-service Role](#)

Task or Item	Description
Dual-Mode Phones - Mobile ID	If a user has a dual-mode device associated, they can manage the phone number and simultaneous ring settings for the device. If no dual-mode device is associated, the relevant settings are hidden in the Self-service interface.
Voicemail	Voicemail settings are only visible in the Self-service interface if the user has a voice mailbox. Click the <b>Voicemail</b> tab of <b>Customizations &gt; Self-service Feature Display Policy</b> to set voicemail settings, notification devices, and SMS Interfaces.
Passwords and PINS	Users can modify their own Passwords and PINS if the Self-service Feature Display Policy is set to 'Show' these items. Click the <b>My Information</b> tab of <b>Customizations &gt; Self-service Feature Display Policy</b> to change this setting.
Link to a WebEx server	Users have a link to their WebEx server from the Self-service interface if this item is set to 'Show'. Click the <b>My Information</b> tab of <b>Customizations &gt; Self-service Feature Display Policy</b> to change this setting.
Hyperlinks to predetermined objects or items such as a support site or downloadable User Guide	As the administrator, you specify the hyperlinks that appear in the Self-service interface. Refer to the VOSS Automate "Self-service Guide".
Call Forwarding	Displays the call forwarding status of a user's phone lines. You can specify whether Basic or Advanced call forwarding is set to 'Show' in the Self-service interface. Click the <b>Call Forward</b> tab of <b>Customizations &gt; Self-service Feature Display Policy</b> to change this setting.

For more information, see:

- [Phones](#)
- [Voicemail](#)
- [Create a Custom Self-service Role](#)

### 13.12.3. Create a Self-service Link

1. Navigate to the required hierarchy.
2. Go to (default menus) **Customizations > Self Service Links**.
3. Click the Plus icon (+) to add a link.
4. Enter a name for the set of links.
5. Click the Plus icon at **Links** to create one or more links. For each link:

- Provide a description (which will display on the Self-service GUI).
- At the **Link** field, provide the URL, for example: `http://...`

6. Save your changes.

# 14. Role Management

## 14.1. Roles

### 14.1.1. Role-based Access

#### Overview

The system implements role-based access control through:

- Hierarchies and user roles
- Authorized Admin Hierarchies, Authorized Admin Hierarchy roles, and roles

#### Related Topics

- *Introduction to Hierarchies*
- *Authorized Admin Hierarchy*
- *Add Admin Users*

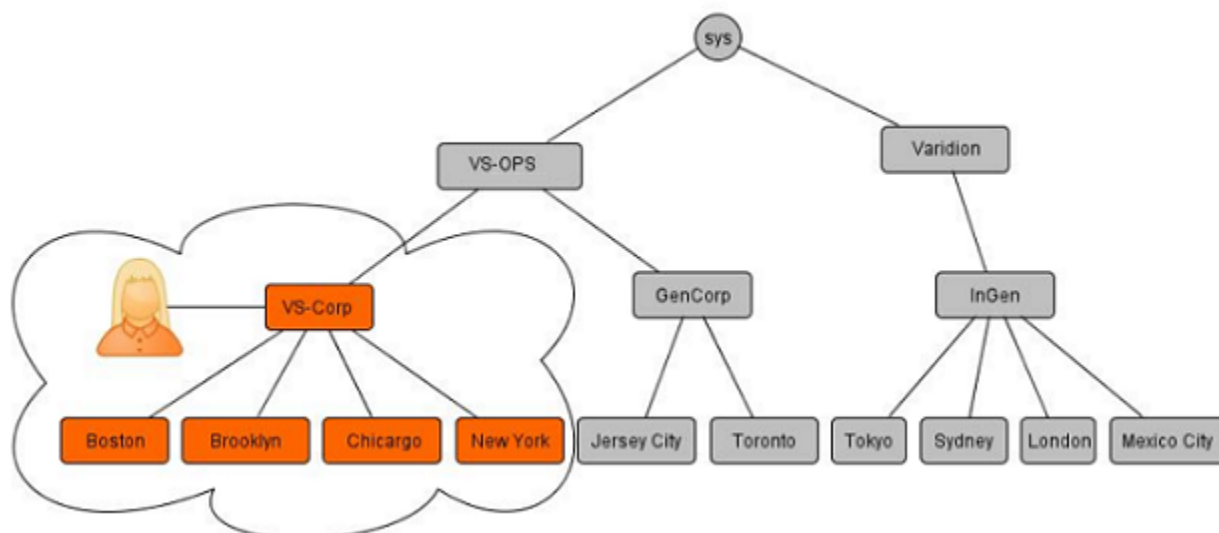
#### Hierarchies

Users are added to the system at a specific hierarchy level and can then only view system resources available to users at that hierarchy.

On the interface, this means that the user has no visibility of nodes outside of the sub-tree starting at the parent hierarchy. The user may change to a level of the hierarchy below the parent hierarchy.

The diagram shows that a user at VS-Corp has no visibility of GenCorp and InGen.





For users at site level and with a self-service role, an **Authorized Admin Hierarchy** instance can be assigned that in turn contains an admin role. Such a user is then a multi-role user. For details, see: [Authorized Admin Hierarchy](#).

### User Roles

From the context of the hierarchy level that a user was created at, role-based access is implemented. When users are added to the system at a hierarchy level, a user role can be assigned to them directly.

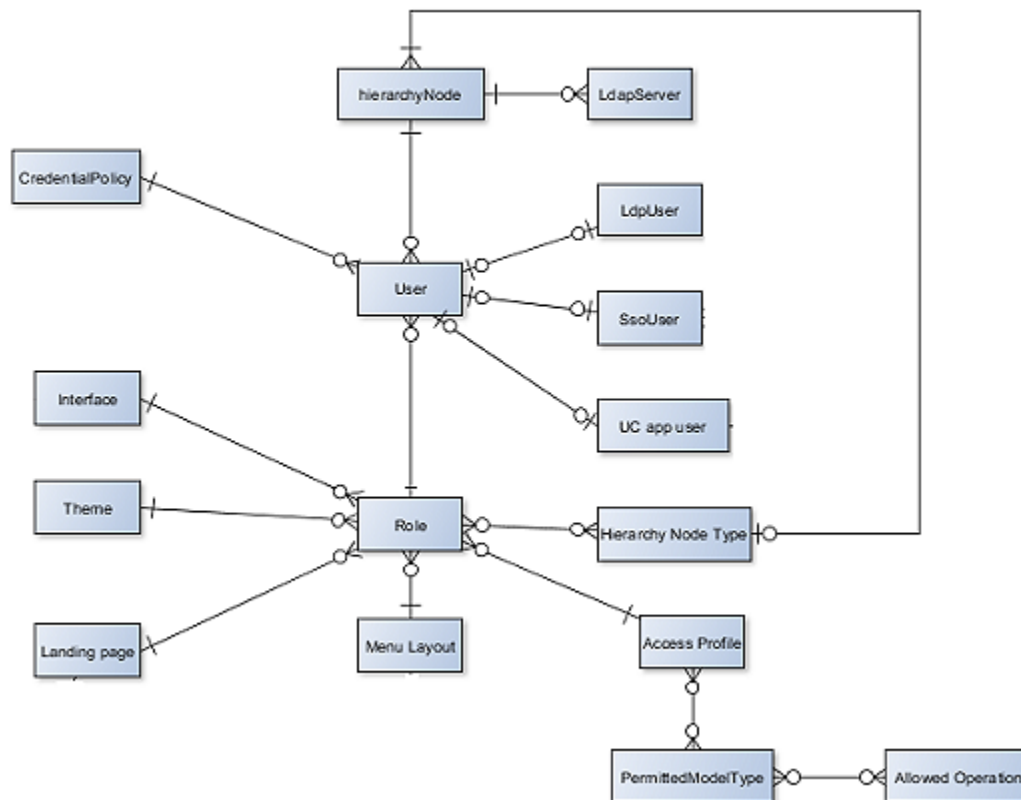
---

**Note:** The created roles can also be selected and added to an Authorized Admin Hierarchy.

---

A user role is a combination of:

- Rules applying to the role:
  - **Hierarchy Type** applied to the role. A role is only available to a user at a hierarchy level that belongs to a **Hierarchy Type** associated with the role. For example, a Site Administrator role may have a rule that associates it with Site and Building hierarchy types, but not Customer hierarchy types. In this way a Site Administrator role cannot be associated with a user created at a Customer hierarchy level. A hierarchy rule is therefore enforced by the role.
  - **Hierarchies Allowed** one or more selected from a list and applied to the role. By default, the selection matches **Hierarchy Type**.
- System permissions to resources from that hierarchy.
- Access Profiles associated with a User Role that determine access specific operations supported by different models and/or on miscellaneous permissions.
- The visibility of resource attributes.
- The look and feel of the interface.
- Default values of resource attributes.



### Related Topics

- Role-based Access for Multi-vendor Subscriber in the Core Feature Guide
- User Roles in the Core Feature Guide

## 14.1.2. Authorized Admin Hierarchy

### Overview

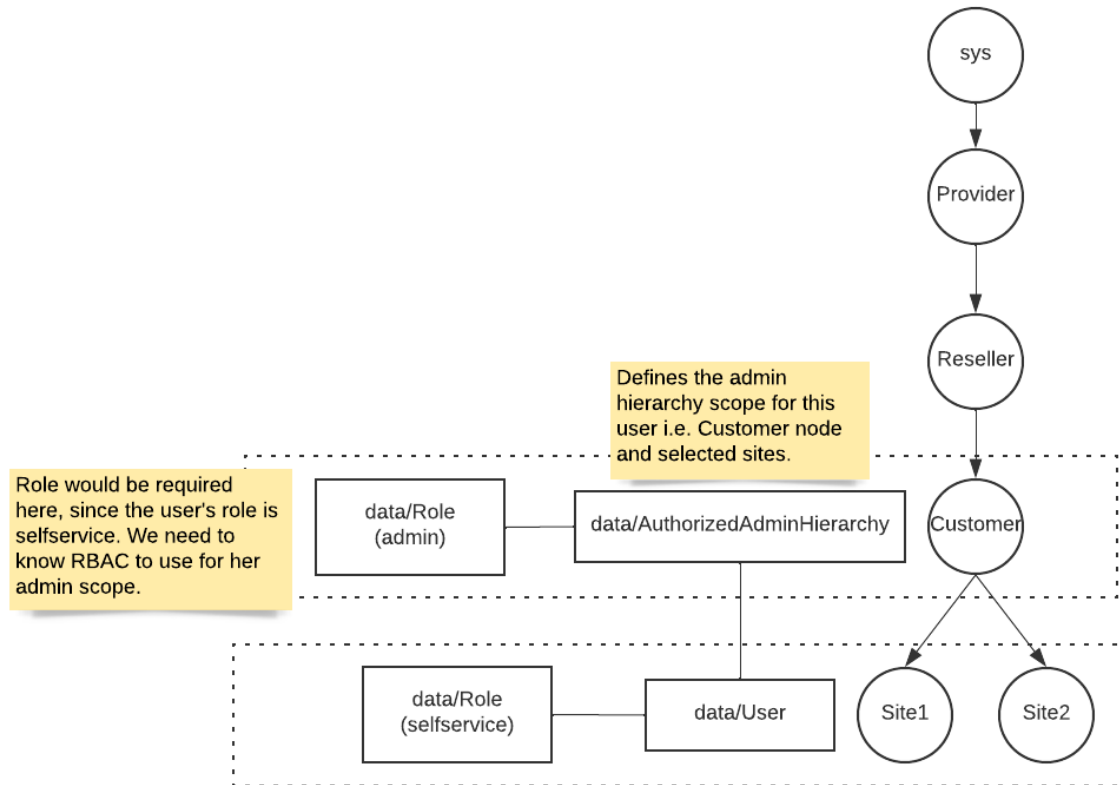
VOSS Automate allows a single user account to be configured as both an End User (with services) and as an Administrator, and supports the following:

- A single set of credentials for administration and end user access
- Simplified external authentication (LDAP and SSO)
- Support for concurrent use of both Admin and Self-service portals in same browser

An Authorized Admin Hierarchy instance contains a role. This instance can then be assigned to a user so that if the user is then also assigned a self-service role, the user is then an end user with admin access: a user with multiple user roles - both a self-service role and this role from the Authorized Admin Hierarchy instance. See: [User Roles](#).

**Important:** When an Authorized Admin Hierarchy is set for a user, the hierarchy of that instance (the model `data/AuthorizedAdminHierarchy` instance) as well as its descendants will be visible as authorized hierarchies for administration purposes.

Users with multiple user roles then have a **User Type** of “End User + Admin”. See: [Add Admin Users](#).



Upon user login, the VOSS Automate system then assigns the appropriate role to the user in accordance with the requested portal:

Portal	Role
Automate Self-service	selfservice
Automate Admin	administration

**Note:**

- A user with multiple roles can also access both self-service and admin portals during one login session, but a logout on any portal would end the login session on both portals.
- For multi-role admin user SSO login options, see: [SSO Scenarios for Multi User Roles](#) under [SSO SP Settings](#).
- When multi-role users perform administrative actions, they can manage their own services such as adding new Phones and Lines. However, the administrators would not be able to make modifica-

---

tions that altered their own role-based access configuration, such as change of role and associated Authorized Admin Hierarchy.

---

### Manage Authorized Admin Hierarchy

Configuring Authorized Admin Hierarchy involves these high-level tasks:

- Create an instance of Authorized Admin Hierarchy at the relevant hierarchy level.
- Provision the end user as usual.
- Associate the end user with an Authorized Admin Hierarchy instance.

To create an instance of an Authorized Admin Hierarchy:

1. Log in as Customer or Provider administrator and choose **Role Management > Authorized Admin Hierarchy**.
2. To add or modify an Authorized Admin Hierarchy instance, either add or modify the instance **Name** and select the **Role**.

Available roles will also include those roles containing the current hierarchy where the created Authorized Admin Hierarchy instance resides, in their **Hierarchies Allowed** list - see: [Add and Edit Roles](#).

3. Click **Save**

#### Related Topics

- [Add Admin Users](#)
- [Introduction to Self-service](#)
- [SSO SP Settings](#)
- For API details, see the REQUEST-PORTAL API request header in: the API Request Headers section in the API Guide.

### 14.1.3. User Roles

VOSS Automate ships with a powerful role-based access framework that ties a user role to menu layouts, access profiles, dashboards, and themes.

---

**Note:** The system comes with a default set of roles, menu layouts, access profiles, dashboards, and themes.

---

Default roles:

- HCS Admin
- Provider
- Reseller
- Customer
- Site
- User

- `MicrosoftOnlyRole` (for a Microsoft-only scenario)
- `MvsEnhancedCustomerAdministrator` and `MvsEnhancedProviderAdministrator` (for multi-vendor scenarios)

A user role in the system combines the look and feel of the system interface with a number of default permissions and values.

Each user role is a combination of:

Component	Description
Dashboard	The content of the first page you see when logging in, including links on the page.
Menu layout	The menu layout associated with a user role defines the available menu, and where relevant, may also include the configuration templates and the field display policies (FDP) that apply to the resources that the menu links to.
Theme	The appearance of the user interface can be associated with a role.
Access profile	Permissions for resources are defined in Access Profiles. An Access Profile can be associated with a user role.
Interface	Defines the application interface the role definition applies to. Roles support the Administration interface and the Self Service interface.

When creating or updating a user, you can select their role. The user will then have a dashboard, menu, theme, and interface defined for their user role. For example, the Configuration Template defaults and settings as well as Field Display Policy views of the menu associated with the role apply.

A user role may be assigned to more than one users. The user hierarchy and role serve as components of role-based access control in the system.

A number of default user roles are provided. Each user role has a predefined dashboard, menu layout and access profile. Each of these elements, including theme, can be customized.

---

**Note:** Users cannot modify their own user role or the associated Access Profile, Menu Layout, Dashboard or any of the Configuration Templates or Field Display Policies associated with the role.

---

A role may be associated with a specific hierarchy. For example, the Site Admin role can only be assigned to a user at the Site hierarchy level.

### Related Topics

- [Add and Edit Roles in the Core Feature Guide](#)
- [Role-based Access in the Core Feature Guide](#)
- [Role-based Access for Multi Vendor Subscribers and Multi Vendor Subscribers](#)

---

## 14.1.4. Add and Edit Roles

### Overview

Provider administrators can manage the roles that are available for administrators, operators, and users at lower levels in the hierarchy.

### Edit a Role

To edit an existing role:

1. Log in as provider administrator.
2. Go to **Role Management > Roles**.
3. Locate the role you want to change; then, click on the role to open it.
4. Update the role settings, as required.
5. Save your changes.

---

**Note:** If hierarchy node types are removed from the **Hierarchies Allowed** list while users or Site Defaults reference this node type, then the update cannot be saved. The transaction **Message** shows:

“Cannot update Role. Some User(s) or Site Defaults exist with the hierarchy rules defined in this role.”

---

### Add a Role

To add a new role:

1. Log in as provider administrator.
2. Choose **Role Management > Roles**.
3. Click **Add**.
4. Define role settings:

Setting	Description
Name*	Name of the role. This field is mandatory.
Hcs Component Access*	Determines the type of HCS components a user with this role is permitted to access. Options are: <ul style="list-style-type: none"> <li>• Fulfillment and ServiceAssurance (all HCS applications)</li> <li>• Fulfillment Only</li> <li>• Service Assurance Only (ServiceAssurance only)</li> <li>• Self Service (End user, Self Service access)</li> </ul>
Service Assurance Role Type *	Mandatory. The type of operation a user with this role can perform, either Administrator or Operator.
Hierarchy Type*	Hierarchy level at which this role is created and and can be assigned. For example, at Provider level, the following values are allowed: Provider, Reseller, Customer, and Site. While at the Reseller level, the following values are allowed: Reseller, Customer, Site.
Hierarchies Allowed	Allowed Hierarchies where this role can be assigned to a user. Where a user is at a specific hierarchy, available roles will then include all roles that include that specific hierarchy in the <b>Hierarchies Allowed</b> list. Refer to the <b>Hierarchies Allowed List Impact</b> below. When the role is saved, the selected <b>Hierarchy Type</b> is added to the <b>Hierarchies Allowed</b> list if it is not included. If the <b>Hcs Component Access</b> field has <b>Fulfillment and ServiceAssurance</b> selected, at least one entry must be available here.
Description	Description of the role.
Access Profile*	Permissions for resources are defined in Access Profiles. This field is mandatory.
Menu Layout	The menu layout assigned to the role. Controls the menu options available to users assigned to the role.
Dashboard	The home page assigned with the role. Controls what the home page looks like for users assigned to the role.
Theme*	The name of the theme assigned to the role. The theme controls the overall look and feel of the Admin Portal. This field is mandatory.
Self Service Feature Display Policy	The selected Self Service Feature Display Policy that is associated to the role.
Self Service Links	Provide useful links to Self Service end users.

5. Click **Save** to save the role.

### Hierarchies Allowed List Impact

The following areas in the system are impacted by list entries available in the **Hierarchies Allowed List** of a role:

- [Authorized Admin Hierarchy](#)
- [Hybrid Multi-Vendor Move](#)
- [Add Admin Users](#)
- [Create a Filter to Move Users](#)

- *Move Users*
- *Move Subscriber*
- *Site Defaults*

## Microsoft-only Role

Starting with version 21.3-PB1, VOSS Automate ships with a Microsoft-only role (`MicrosoftOnlyRole`) and accompanying role-based access control elements, which are predefined for a Microsoft-only user interface experience. These elements include predefined field display policies, dashboards (`MicrosoftOnlyDashboard`), and menus (`MicrosoftOnlyMenu`). Installing these templates provides the baseline for a Microsoft-only version of VOSS Automate, and hides non-Microsoft GUI elements, such as the FDPs, menus, and dashboards reflecting functionality used for managing Cisco devices.

To use the `MicrosoftOnlyRole` in VOSS Automate:

1. Log in to VOSS Automate as `hscadmin`.
2. Go to (default menus) **Role Management > Roles**.
3. Locate **MicrosoftOnlyRole** in the list view.
4. Select the role in the list (or click on the role to open it).

---

**Note:** This role ships with a standard access profile and a predefined menu layout and dashboard.

---

5. Click **Export** to export the role to a JSON file, and save the file to your local computer.
6. Edit the JSON file to specify the hierarchy where you want to use the role.

```

export_2022-05-16_17-47-15.774280.json
{
  "meta": {},
  "resources": [
    {
      "meta": {
        "model_type": "relation/HcsRoleREL",
        "pkid": "627f48fc0f692ffefca5de73",
        "schema_version": "2.1",
        "hierarchy": "sys.hcs",
        "tags": []
      },
      "data": {
        "hierarchyType": "Provider",
        "name": "MS_Only_Role",
        "privileges": "READ_WRITE",
        "hcsComponentAccess": "FF_SA",
        "role": {
          "menu_layout": "MS_Only_Menu",
          "name": "MS_Only_Role",
          "landing_page": "MS_Only_LP",
          "selfservice_links": "",
          "theme": "default",
          "access_profile": "HcsProviderAdminAP",
          "interface": "administration",
          "description": "Enterprise Provider for MS Only "
        }
      }
    }
  ]
}

export_2022-05-16_17-47-15.774280.json
{
  "meta": {},
  "resources": [
    {
      "meta": {
        "model_type": "relation/HcsRoleREL",
        "pkid": "627f48fc0f692ffefca5de73",
        "schema_version": "2.1",
        "hierarchy": "sys.hcs-MS-Only",
        "tags": []
      },
      "data": {
        "hierarchyType": "Provider",
        "name": "MS_Only_Role",
        "privileges": "READ_WRITE",
        "hcsComponentAccess": "FF_SA",
        "role": {
          "menu_layout": "MS_Only_Menu",
          "name": "MS_Only_Role",
          "landing_page": "MS_Only_LP",
          "selfservice_links": "",
          "theme": "default",
          "access_profile": "HcsProviderAdminAP",
          "interface": "administration",
          "description": "Enterprise Provider for MS Only "
        }
      }
    }
  ]
}

```

7. Go to (default menus) **Administration Tools > Import**.
8. Browse to the location you saved the JSON file, then click **Import**.
9. Go to (default menus) **Role Management > Roles** to verify that the role now exists also at the hierarchy you specified.



10. At the hierarchy where you wish to assign the role to a user (Provider or Customer), go to (default menus) **User Management > Admins**. Choose a user (or add a user), then on the **User Details** tab, from the **Role** field, choose the role (MicrosoftOnlyRole) you imported to this level, and save your change.

### 14.1.5. Clone a Role

This procedure clones an existing role for a specific hierarchy node (provider, reseller, customer, or site).

To clone a role:

1. Log in as hcsadmin (Provider deployments), or entadmin (Enterprise deployments), or Provider administrator.

---

**Note:** Administrators can clone roles associated with, or below, their level in the navigation hierarchy.

---

2. Choose **Role Management > Roles**.
3. Click the role that you want to clone.
4. Choose **Action > Clone**.
5. In the **Role** field, enter a unique name for the role.

---

**Note:** Provide a descriptive name, using up to 50 alphanumeric characters, including spaces, period(s), hyphens (-), and underscores (\_).

---

6. Optionally, in the **Description** field, add a description for the role.
7. Click **Save**.

The role is saved to the hierarchy that appears in the breadcrumb.

### 14.1.6. Create a Service Assurance Only Role

To restrict an administrator to performing only service assurance tasks, you need to create the appropriate service assurance only role.

1. Log in as entadmin (Enterprise deployment), hcsadmin (Provider deployment), or Provider administrator.
2. Go to (default menus) **Role Management > Roles**.
3. Click **Add**.
4. Enter a name, and optionally a description, for the role.
5. Select the hierarchy type for the role.

Controls the hierarchy level that the role is available at.

6. From the **Hcs Component Access** drop-down, choose **Service Assurance Only**.

The privileges, menu layout, and dashboard values are automatically set to the appropriate values for a service assurance only role and cannot be overridden.

7. Optionally, select a theme for the role.

8. Click **Save**.

### 14.1.7. Create a Fulfillment Only Role

To restrict an administrator to performing only fulfillment tasks, you need to create the appropriate fulfillment only role.

1. Log in as entadmin (Enterprise deployment), hcsadmin (Provider deployment), or Provider administrator.
2. Go to (default menus) **Role Management > Roles**.
3. Click **Add**.
4. Enter a name, and optionally a description, for the role.
5. Select the hierarchy type for the role.  
Controls the hierarchy level that the role is available at.
6. From the **Hcs Component Access** drop-down, choose **Fulfillment Only**.
7. Choose the privileges for the role.
8. Optionally, select a menu layout, dashboard, and theme for the role.
9. Click **Save**.

### 14.1.8. Create a Custom Self-service Role

This procedure modifies the default Self-service feature display policy (FDP), creates a custom Self-service role (*selfservice*), and assigns the custom Self-service role to users.

VOSS Automate provides a default Self-service feature display policy. When providers, resellers, customers, and sites are added in VOSS Automate, the default Self-service feature display policy is assigned automatically to the *selfservice* role at each level of the hierarchy. The default Self-service feature display policy allows you to perform the following tasks in the Self-service interface:

- Add Voicemail
- Enable Remote Destination Profile (RDP)
- Manage phones and phone lines (but adding smart devices is not allowed)
- Assign configuration templates for phones, RDP, and voicemail
- Link to Launch Webex from Self-service interface

Most options are set to **Show**, rather than **Hide** to indicate that the Self-service user can view and edit the item in the Self-service interface. For example, My Availability, Speed Dials, Call Forward Basic, Advanced Call Forwarding, Ring Schedules, Advanced Timer options, Password, and PIN are all set to **Show**.

#### Perform these steps:

1. Log in as Provider administrator or higher.
2. Clone the default feature display policy:
  - a. Go to (default menus) **Customizations > Self Service Feature Display Policy**.
  - b. In the list view, click on the Default Self-service feature display policy. The Self Service Feature Display Policy (Default) screen opens.

- c. To create a copy (clone) of this Default FDP, click the **Clone** icon. The copy (clone) you created opens in the editing screen.
- d. On the **Details** tab, type a new name for the Self-service feature display policy in the **Name** field.
- e. Configure options for the clone on the tabs of this screen: **Details, Phones, Personal Phones, My Information, Voicemail, Call Forward**:

On the **Phones, Personal Phones** and **Voicemail** tabs, there are two similar check boxes (one associated with entitlement, the other not). For example, on the **Voicemail** tab, the first check box is labeled **User can enable Voicemail (Add a Voicemail Account)** and the second check box is labeled **User can enable Voicemail only if the user is entitled to Voicemail**.

If the Entitlement Feature is used, that is an Entitlement Profile is associated to the subscriber on the **Entitlement Profile** drop-down on the **Subscriber Management > Subscribers** page, then select the second check box. If an Entitlement Profile is not associated to the subscriber, then select the first check box, as the second check box is no longer applicable.

Similarly, select the appropriate check boxes on the **Phones** and **Personal Phones** tabs.

To	Do
Allow users to add their own smart devices	On the <b>Phones</b> tab, click <b>User can add own smart devices</b> .
Add more phones or devices from Cisco Unified Communications Manager	On the <b>Phones</b> tab, complete information to add the phones or devices to the <b>Device Configuration Templates for User</b> area of the screen.
Change the Default RDP configuration template	On the <b>Personal Phones</b> tab, choose a different template from the <b>Device Configuration Template for End-User Remote Destination Profile Add</b> drop-down menu.
Change the Default Voicemail configuration templates	On the <b>Voicemail</b> tab, choose different templates from the drop-down menus.
Show/hide individual Voicemail options such as Voicemail Basic, Voicemail Devices, Phone Notification Device, Voicemail Alternative Extensions	On the <b>Voicemail</b> tab, choose <b>Show</b> from the specific drop-down menus.
Show WebEx link in the Self-Service interface	On the <b>My Information</b> tab, select <b>Show</b> from the <b>Link to Webex self service portal</b> drop-down menu. Note: The WebEx link (Protocol, Address, Port, and Site Name) must be defined in <b>Device Management &gt; WebEx &gt; Servers</b> and the subscriber must have access to WebEx on the <b>WebEx</b> tab ( <b>Subscriber Management &gt; Subscribers</b> ). Ensure that when you expand the WebEx user form, the <b>Enable CET</b> and <b>Enable PMR</b> check boxes under <b>Privilege</b> are selected.
Hide Self-Service options from users	Choose <b>Hide</b> from the appropriate drop-down menus.

- f. Click **Save**. The custom Self-service feature display policy appears in the list and can be assigned to Self-service roles.
3. Assign the custom Self-service feature display policy to one or more Self-service roles.
    - a. Go to (default menus) **Role Management > Roles**.
    - b. Choose a Provider, Reseller, Customer, or site level Self-service role.
    - c. From the **Self Service Feature Display Policy** drop-down menu, choose the custom Self-service feature display policy you created in step 2.
    - d. Click **Save**.
    - e. If desired, repeat sub-steps b to d for other Self-service roles.
  4. If a Cisco Unified Communications Manager sync or LDAP sync is not performed, manually assign the custom Self-service role to one or more existing users.

---

**Note:** You do not need to perform this step for new users who are added to the system in the future. New users are automatically assigned the Self-service role that you specify for the reseller, customer, or site when it is added to the network.

---

- a. Log in as Provider, Reseller, or Customer administrator.
- b. Go to (default menus) **User Management > Users**.
- c. Choose the user for whom you want to assign the custom Self-service role.
- d. From the **User Details** tab, at the **Role** drop-down, choose the custom Self-service role.
- e. Click **Save**.

### 14.1.9. Create a Business Admin Role

From VOSS Automate release 21.4 onwards, users who previously used the original Business Admin Portal can now be assigned a custom role in the VOSS Automate interface so that the administrator user experience and interface aligns with the Business Admin Portal.

For login options, see: [Log In to the Admin Portal](#).

VOSS Automate provides the following elements to make this possible:

- A set of dashboards that can be cloned and customized and then assigned to a custom menu layout. These dashboards allow for counters, charts and panels.

For details on these dashboards, see: [Dashboards for a Business Admin Role](#).

- A customer and site administrator menu layout that each use the dashboards referred to above and which can be cloned and modified to assign to a Business Admin role.

For details on these menu layouts, see: [Menu Layouts for a Business Admin Role](#).

- New search functionality in VOSS Automate, in particular, a “What would you like to do?” type search interface. See : [Search in VOSS Automate](#).

## Further References

- [User Roles](#)
- [Add and Edit Roles](#)
- [Automate Dashboards](#)
- [Menu Layouts](#)
- [Search in VOSS Automate](#)
- [Admin Portal Evolution PDF on the Customer Portal](#)

## 14.2. Themes

### 14.2.1. Introduction to Themes

#### Overview

Themes allow you to configure the look and feel of the entire user interface, including images, logos, colors, fonts, sizing, and positioning. Themes can also be used to manage the login and interface header text, and the theme you choose can be applied to the Login page.

You can add any number of new themes, and edit existing themes. VOSS Automate ships with a default theme, which can be used as a baseline template.

Themes are associated with user roles, and are typically associated with a specific customer (company).

#### Related Topics

- [Less Files and Customizing Themes in the Advanced Configuration Guide](#)
- [Create a Theme in the Admin Portal in the Core Feature Guide](#)

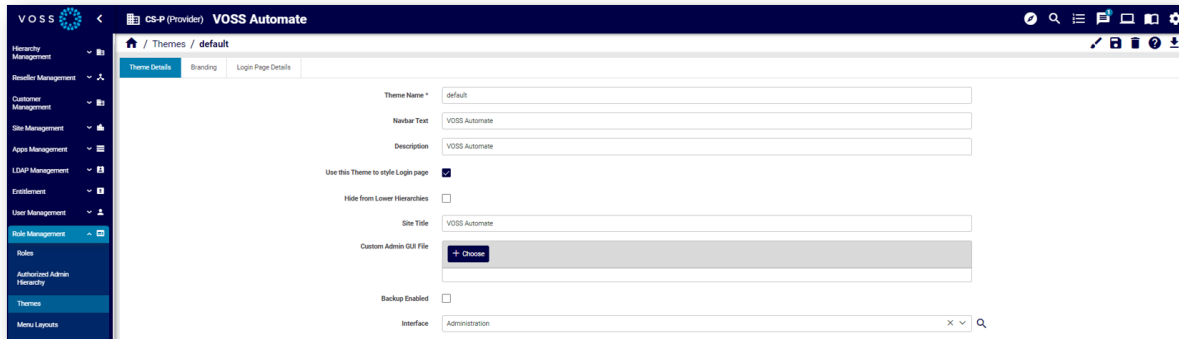
#### Managing Themes

There are two ways to manage themes in the Admin Portal:

File-based themes (Less files)	If you're using a file-based theme, this takes precedence. This is a CSS file that may be added, downloaded/exported, edited, and re-imported, to apply a theme. For more information, see <i>Less Files and Customizing Themes</i> in the Advanced Configuration Guide.
Custom branding options	Configured directly within the GUI

**Note:** File-based themes are not used for the Admin Portal.

To access theme management functionality in the Automate Admin Portal, go to (default menus) **Role Management > Themes**.



## Securing Themes

When importing a file-based theme to VOSS Automate at a particular hierarchy, you can choose to hide the theme from users at lower levels of the hierarchy via this setting on the Themes page: **Hide from Lower Hierarchies**.

In this case, the theme won't display in the list view for admins at lower levels of the hierarchy.

## Applying a Theme to the User Interface

When importing or updating a file-based theme, you can choose the interface where the theme should apply, either the Admin Portal (default), or to the Self-service interface. If no interface is specified, the default applies.

In the Themes settings (via **Use this Theme to style Login page**), you can choose to apply a theme used for an interface, to also apply to the Login page across the system, for the selected interface.

---

**Note:** Currently, the system allows only a single theme to be applied to the Login page per interface. This means that a new or updated theme applied to a combination of interface and Login page for an existing theme overwrites the theme applied to the Login page style on the existing theme with the same interface setting.

---

The Login page theme can also be applied to the Login page when logging in. In this case, you add a suffix to the login request URL.

## 14.2.2. Manage Themes

### Overview

You can use the **Themes** page in the Admin Portal to create a theme.

---

**Note:** To access the Themes page in the Admin Portal, go to (default menus) **Role Management > Themes** or use the **Search** bar to locate the page.

---

You can select the following tabs on the **Themes** page in the Admin Portal:

- Theme Details
- Branding
- Login Page Details

## Themes Page

### Theme Details Tab

On the Theme Details tab of the Themes page you specify theme details:

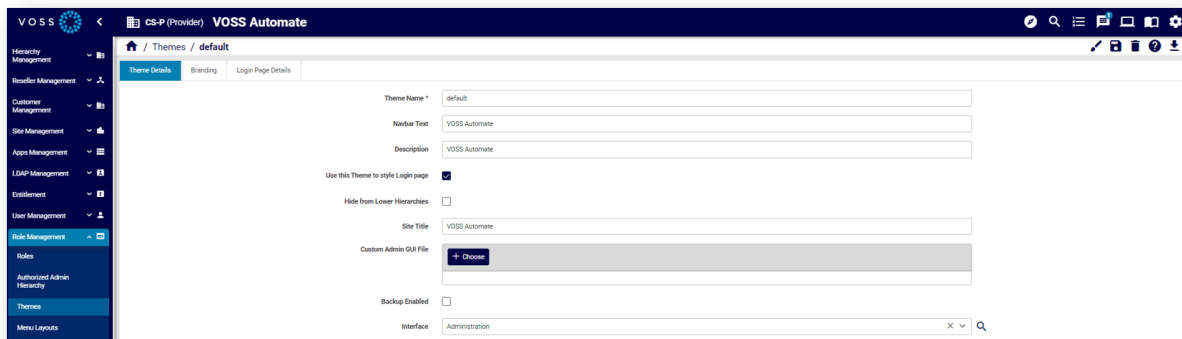
- Provide a theme name and a description

---

**Note:** Valid characters allowed for the theme name are in the range: a-zA-Z0-9\_.

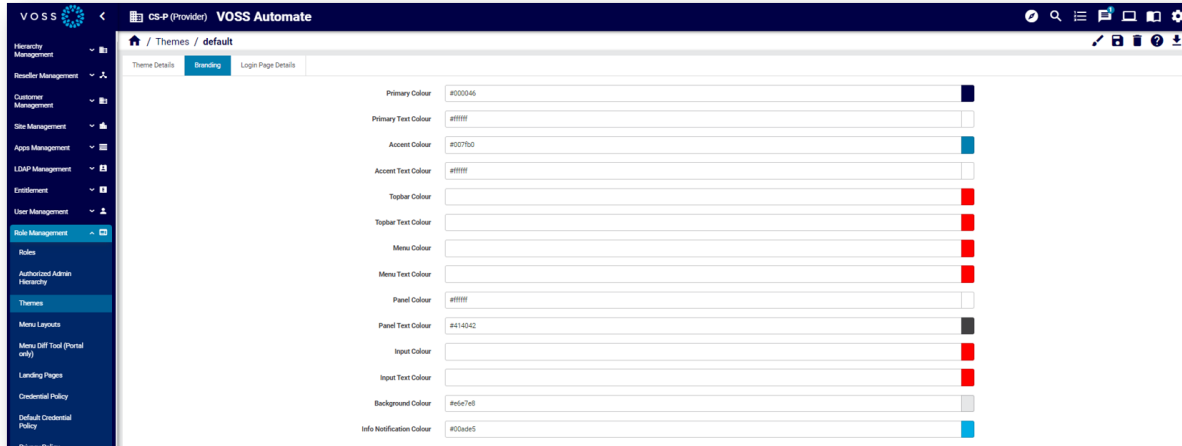
---

- Specify navigation bar text
- Define whether to use the theme to style the Login page
- Define whether to hide the theme from lower hierarchies
- Specify the site title
- Upload a custom theme file, if applicable
- Enable or disable backups
- Define the GUI where the theme is applied



### Branding Tab

On the **Branding** tab, you can change colors via the color picker or by typing in the color hex value. When no colors are chosen in this tab, the defaults apply.



When uploading images for the theme:

- Note the file size and *width x height* pixel dimension size restrictions. A system message displays if the image is too large.
- Only PNG files are supported for the Logo image. Other images can be PNG or JPEG.
- For image filenames, you can use the following characters and character types:

ALPHA / DIGIT / "-" / "." / "\_" / "~" / "#"

Image details:

- **Favicon:** The favicon for the site. Shown on the tab and when the site is bookmarked.
  - Type: PNG image or with .ico extension.
  - Maximum dimensions: 256x256 pixels.
- **Logo:** This image is used for the logo in the top left of the menu bar.
  - Type: PNG image with a transparent background.
  - Maximum file size: 0.5MB
  - Maximum dimensions: 600 pixels in width and 192 pixels in height.
- **Login Logo:** This image is used for the logo on the login page.
  - Type: PNG image with a transparent background.
  - Maximum file size: 0.5MB
  - Maximum dimensions: 600 pixels in width and 192 pixels in height.
- **Login Background:** This image is used for the login screen background.
  - Type: PNG or JPEG image.
  - Maximum file size: 5MB
  - Maximum dimensions are 1920 pixels in width and 1080 pixels in height.
- **Menu Background:** This image is used for the side menu background.
  - Type: PNG or JPEG image.
  - Maximum file size: 2MB



- Maximum dimensions: 240 pixels in width and 1040 pixels in height.

## Login Page Details Tab

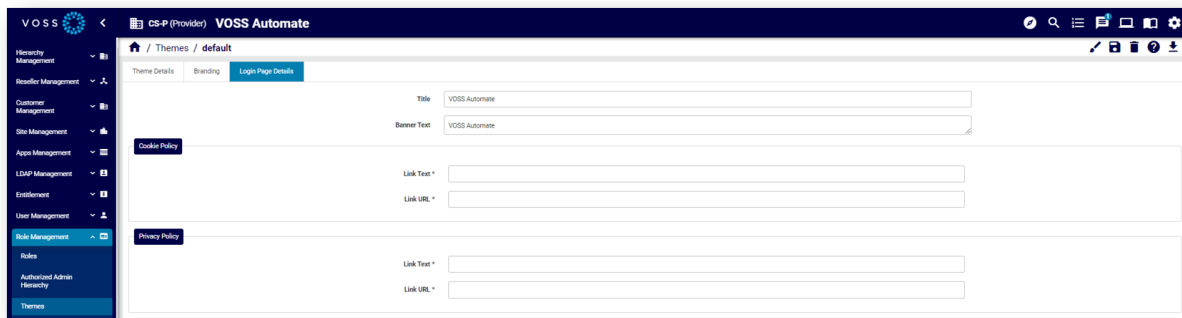
The Login Page Details tab defines the theme for the Login page, including the title and banner text, cookie policy and privacy policy details.

If you add banner text (limited to 2048 characters), this is used at the bottom of the Login page.

References to the cookie policy and privacy policy in the Banner Text field should be added as placeholders, which will then resolve to the **Cookie Policy** and **Privacy Policy** data entered. The placeholders are:

- `{{cookie_policy}}`
- `{{privacy_policy}}`

**Note:** You can add multiple lines for the banner text, including paragraphs. Banner text displays exactly as you add it to this field. Cookie and security references show as links that open in a new browser tab.



## Custom Themes

You can create a custom theme to change the following properties of the Admin Portal:

- Primary and accent colors
- Logo image
- Login screen background image

If the background image also contains logos, it is recommended that these be placed on the bottom of the image.

- Background image for menu
- Browser tab title


Themes created in the Admin Portal can't be exported in full.

---

### Custom Theme File

If you're configuring a theme in the Admin Portal, you can upload a custom Admin Portal theme file. Alternatively, you can customize a theme via the **Branding** tab settings.

### Preview a Theme

When creating a theme, you can use the toolbar **Preview** icon  to see what your theme looks like before assigning it to a user role. Once you assign a theme to a user role it is applied to the GUI.

### 14.2.3. Theme Element Color References for the Admin Portal

---

#### Note:

- Color selection on the **Branding** tab of a theme *always* affects the Admin Portal.  
To edit and manage theme files:  
Refer to Less files and Theme Customization in the Advanced Configuration Guide.
  - Color selection is optional. Where no colors are selected, defaults apply.
  - If manual input of color Hex values is required, ensure the value is prefixed with #.
- 

### Admin Portal Default Colors

Default Color Reference Table:

Title	Field Name	Default Value (Hex)	Notes
Primary Color	primary_colour	#000046	This is the background color for most menus and headers, as well as the text color for links and buttons.
Primary Text Color	primary_text_colour	#ffffff	This is the text color for anything with the primary color background.
Accent Color	accent_colour	#007fb0	This color is used when attention needs to be drawn for important notifications or active buttons and text.
Accent Text Color	accent_text_colour	#ffffff	This is the text color for anything with the accent color background.
Topbar Color	topbar_colour	#000046	The color used for the top bar of the site. Will use the primary color if no value is given.
Topbar Text Color	topbar_text_colour	#ffffff	This is the text color for the top bar. Will use the primary text color if no value is given.
Menu Color	menu_colour	#000046	The color used for the menu on the left. Will use the primary color if no value is given.
Menu Text Color	menu_text_colour	#ffffff	This is the text color for the menu. Will use the primary text color if no value is given.
Panel Color	panel_colour	#f2f2f2	The color used for all the panels in the app.

Title	Field Name	Default Value (Hex)	Notes
Panel Text Color	panel_text_colour	#000000	This is the text color for normal text in the app.
Input Color	input_colour	#ffffff	The background color for input fields. Will use the panel color if no value is given.
Input Text Color	input_text_colour	#414042	The text color for input fields. Will use the panel text color if no value is given.
Background Color	background_color	#e6e7e8	The color of the background behind panels.
Info Notification Color	info_notification_colour	#00ade5	The color used for info notifications.
Info Notification Text Color	info_notification_text_colour	#ffffff	This is the text color for info notifications.
Success Notification Color	success_notification_colour	#68bd17	The color used for success notifications.
Success Notification Text Color	success_notification_text_colour	#ffffff	This is the text color for success notifications.
Warning Notification Color	warn_notification_colour	#fbc403	The color used for warning notifications.
Warning Notification Text Color	warn_notification_text_colour	#000000	This is the text color for warning notifications.
Error Notification Color	error_notification_colour	#dc0c00	The color used for error notifications.
Error Notification Text Color	error_notification_text_colour	#ffffff	This is the text color for error notifications.

On the Admin Portal, consider the color selection on the **Branding** tab:

Primary Colour	#0a660c	
Primary Text Colour	#080808	
Accent Colour	#fff700	
Accent Text Colour	#7340db	
Topbar Colour	#77ff00	
Topbar Text Colour	#f20c0c	
Menu Colour	#a6f5d7	
Menu Text Colour	#121010	
Panel Colour	#00ddff	
Panel Text Colour	#121111	
Background Colour	#008cff	
Info Notification Colour	#004dff	
Info Notification Text Colour	#ede8e8	
Success Notification Colour	#ffd000	
Success Notification Text Colour	#0f0e0e	
Warning Notification Colour	#e86666	
Warning Notification Text Colour	#121111	
Error Notification Colour	#6e0b0b	
Error Notification Text Colour	#ede6e6	
Favicon		<input type="button" value="+ Choose"/>
Logo	coverimageb.png	<input type="button" value="+ Choose"/>
		
Login Logo		<input type="button" value="+ Choose"/>
Login Background		<input type="button" value="+ Choose"/>
Menu Background		<input type="button" value="+ Choose"/>

**Note:**

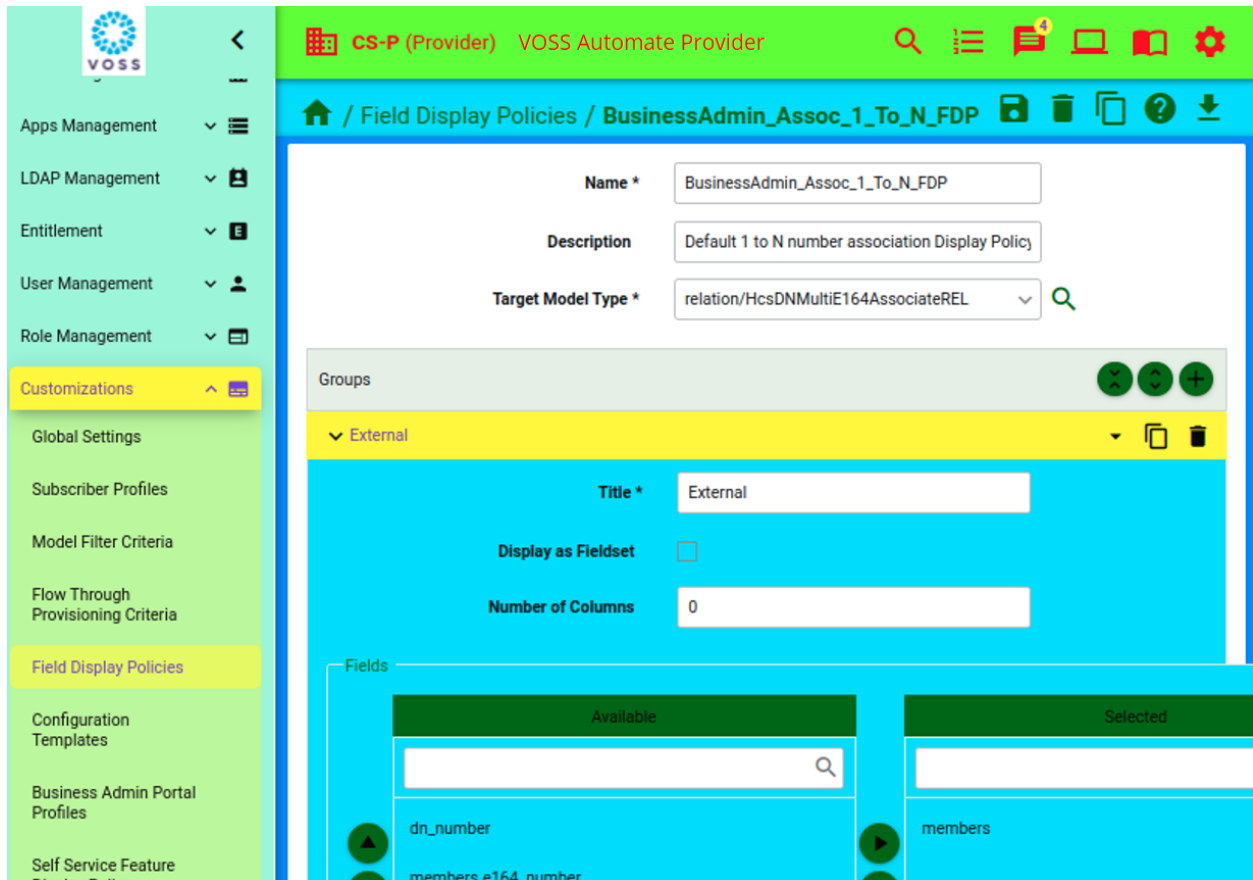
- For details on images and logos, see: [Manage Themes](#).
- If a color value appears blank, default values apply.
- Sub-menu and sub-sub-menu backgrounds are rendered as percentages of the Menu Color.

### Admin Portal

The dashboard features a left-hand navigation menu with the following items: Apps Management, LDAP Management, Entitlement, User Management, Role Management (highlighted), Roles, Themes, Menu Layouts, Menu Diff Tool (Portal only), and Landing Pages. The main content area includes a header with 'CS-P (Provider) VOSS Automate Provider', a search bar, and notification icons. Below the header, there is a 'This is the Header Text' section followed by 'This is the Line Text'. Two large green widgets display 'Land 9' and 'Hierarchy 36'. The bottom section is divided into 'General Administration' (with 'List Transactions' and 'Bulk Load' buttons) and 'Configure Devices' (with buttons for 'Configure CUCMs', 'Configure CUCs', 'Configure CUPs', 'Configure CERs', 'Configure WebEx', and 'Configure IOS').

The 'Field Display Policies' page shows a table with 480 rows. The table has columns for 'Name' and 'Description'. The 'Name' column includes a search filter. The table lists several policies, with 'AdminUser' and 'BundleFDP' highlighted in blue. Other policies include 'AddCustomerAdmin\_FDP', 'AzureAD\_MsolUser\_FDP', 'BasicDataSync', 'BasicDataSyncSchedule', 'BusinessAdmin\_Assoc\_1\_To\_N\_FDP', 'BusinessAdmin\_Assoc\_N\_To\_N\_FDP', and 'BusinessAdminCallPickupGroupFDP'. The 'BusinessAdmin\_Assoc\_1\_To\_N\_FDP' and 'BusinessAdmin\_Assoc\_N\_To\_N\_FDP' policies have descriptions: 'Default 1 to N number association Display Policy for the f' and 'Default N to N number association Display Policy for the l' respectively. The 'BusinessAdminCallPickupGroupFDP' policy has the description: 'Default Call Pickup Group Display Policy for the Business'.

<input type="checkbox"/>	Name	Description
<input type="checkbox"/>	Filter	Filter
<input type="checkbox"/>	AddCustomerAdmin_FDP	
<input checked="" type="checkbox"/>	AdminUser	
<input type="checkbox"/>	AzureAD_MsolUser_FDP	Updated - 13Oct2021
<input checked="" type="checkbox"/>	BasicDataSync	
<input type="checkbox"/>	BasicDataSyncSchedule	
<input checked="" type="checkbox"/>	BundleFDP	
<input type="checkbox"/>	BusinessAdmin_Assoc_1_To_N_FDP	Default 1 to N number association Display Policy for the f
<input checked="" type="checkbox"/>	BusinessAdmin_Assoc_N_To_N_FDP	Default N to N number association Display Policy for the l
<input type="checkbox"/>	BusinessAdminCallPickupGroupFDP	Default Call Pickup Group Display Policy for the Business



#### 14.2.4. Setting the Default Theme

VOSS Automate provides a number of options to set the default theme upon login.

The list below indicates the priority order in which a theme will be applied:

##### 1. URL Parameter

The Login page theme can also be applied to the login page during the log in process. To do this, add URL parameter `theme=<theme-name>` to the login request URL. This applies and overrides any theme that is set as the Login theme.

**Note:** For Self-service, if the theme value is set as `login?theme=cisco_selfservice`, the theme reverts to the Self-service theme set as the default.

For example, when two themes are available in the system, XYZ and ABC, and XYZ login page is set as default:

- Admin Portal (legacy):  
<https://instance/login/> - Login page will show use XYZ theme  
<https://instance/login/?theme=ABC> - Login page will show use ABC theme
- Admin Portal (introduced at v21.2):  
<https://instance/portal/#/admin> - Login page will show use XYZ theme

---

`https://instance/portal/#/login?targetAppMode=admin&theme=ABC` - Login page will show use ABC theme

## 2. Subdomain of hostname

If not 1. above:

If the login URL is not an IP address, but a hostname, then if the *subdomain* of the hostname matches a theme name, this theme will apply.

For example, if the hostname is `customer1.mydomain.com`, and a theme with the name `customer1` exists, then this theme will be applied.

Hostname matching is case-insensitive. Note that if multiple themes are for example available that match case-insensitively, no match will be made and the default theme will be applied.

## 3. Default login theme for the interface

If not 1 and 2 above:

If a theme has been created for the interface and **Use this Theme to style Login page** has been enabled, then this theme will be applied to the interface.

## 4. Pre-defined defaults

If not 1, 2, 3 above:

- For the Self-service interface, the theme `voss_selfservice` will be applied.
- For the Administration interface, the theme with name `default` will be applied.

### 14.2.5. Login Banner

A banner, typically a security notice or user agreement, can be configured at a hierarchy level to show on the Administrator and Self-service login page before login.

High level administrators who have access to the `data/LoginBanner` model can configure the banner. A banner can be created so that:

- Only one instance is allowed per hierarchy

If an administrator or Self-service user logs in and belongs to a hierarchy for which there is no defined login banner, the first banner higher up on the hierarchy is displayed. If no banners are configured, then the user logs in without a banner.

The banner text is displayed in the format that it is entered into the input box upon configuration.

When the banner is configured, users will see the banner displayed on the login page after they enter their credentials and when they click the **Login** button. An **Agree** and **Cancel** button is shown beneath the banner. Users then need to click the **Agree** button to complete the login. If they click **Cancel**, they are returned to the login page.

---

**Note:** This banner is independent of the text on the login screen that may contain a privacy policy reference. The privacy policy text and reference on the login page is configured as a part of the Login Page Details when managing a theme.

---



## 14.3. Menu Layouts and Dashboards

### 14.3.1. Menu Layouts

#### Overview

Menu layouts define the content and structure of menus in the Admin Portal, based on your user role at the hierarchy where you log in.

VOSS Automate allows an administrator (with appropriate permissions) to customize menu layouts for different user roles and hierarchy levels. For example, the menu layouts at Provider level of the hierarchy can be different to menu layouts at Customer or Site level. Customizing menu layouts for different user roles at each hierarchy allows you to hide or show resources appropriate for different roles.

Menu Items									
		Menu Items	Filters	Icon	Title	Description	Condition	Type	Href
☰	+ 🗑️	+	🔍	🗑️	Hierarchy Management				
☰	+ 🗑️	+	🔍	👤	Reseller Management				
☰	+ 🗑️	+	🔍	🗑️	Customer Management				
☰	+ 🗑️	+	🔍	🗑️	Site Management				
☰	+ 🗑️	+	🔍	☰	Apps Management				
☰	+ 🗑️	+	🔍	🗑️	LDAP Management				
☰	+ 🗑️	+	🔍	📄	Entitlement		{{ macro.is_cisco_cucm_enabled }}		

#### Related Topics

- [Navigation - Menu and Dashboards in the Best Practices Guide](#)
- [Advanced Configuration Guide](#)
- [Fixed and Configurable Filters in Menus in the Core Feature Guide](#)
- [HCS Dial Plan Macros in VOSS Automate in the Core Feature Guide](#)

## Menu Layouts, FDPs, and CFTs

When creating or editing a menu layout, you can (optionally) apply a field display policy (FDP) and configuration template (CFT) to refine the view of model entities for the user role. In this way, the FDP and CFT for a specific model is applied as part of the menu layout (in the menu structure); the FDP and CFT are attributes of the specific model entry for that menu layout. This means:

- Different FDPs and CFTs for a specific model can define menu layout variations for that model.
- The required FDP and CFT should be available before you create new menus.

Home / Menu Layouts / HcsProviderMenu

Name \* HcsProviderMenu

Description

Menu Items											
		Menu Items	Filters	Icon	Title	Description	Condition	Type	Href	Field Display Policy	Configuration Template
		+	∇		Hierarchy Management						
		+	∇		Reseller Management						
		+	∇		Customer Management						
		+	∇		Site Management						

Filter (contains)

- ucprep\_DateTimeGroup-Reference-YMD
- ucprep\_DateTimeGroup-Reference-MDY
- HcsVossCER\_Cluster\_VirtualCFT

## Fixed and Configurable Filters

If a menu layout applies to the list view of a model, this list can be filtered by means of a number of filter options that apply to the displayed list. Only instances where the values of a model attribute that match the filter, are then shown. For details, see [Fixed and Configurable Filters in Menus](#)

Fixed Filters

∇ +

∇ No value set

Filter By  🔍

Filter Type  🔍

Filter String

Ignore Case

Configurable Filters

∇ +

∇ No value set

Filter By  🔍

Filter Type  🔍

Filter String

Ignore Case

## Default Menu Layouts

VOSS Automate ships with a number of default menu layouts for the following, hierarchy-based administrator user roles:

- System administrator
- Provider administrator
- Reseller administrator
- Customer administrator
- Site administrator

If you wish to create a new menu layout, you can create a copy (clone) of a default menu layout, edit the settings, and save it as a new, custom, menu layout.

You can also export a menu layout, edit it externally, and re-import it. For example, you can apply an alternative FDP or CFT, or change the order and grouping of items on the menu layout. Designers with access to tag or version tag can apply these to a menu layout so that it can be uniquely identified to track changes.

---

**Note:** The VOSS Automate documentation is based on the default, predefined menu layouts that ship with the system.

To work with menu layouts in the Admin Portal (via the default menus):

- Go to **Role Management > Menu Layouts** to view and edit menu layouts.
  - Go to **Role Management > Roles** to view the menu layout assigned to a particular role, then click on a role and view the value in the **Menu Layout** field (which displays the menu layout for users with this role).
- 

## Best Practice Menus

In addition to the default menu layouts, VOSS Automate provides best practice menus for Provider and Customer administrators, including the associated access profiles and dashboards.

The best practice menus are more business-oriented, and include additional options based on best practice adaptations that may also be included in VOSS Automate.

The table describes the key features of the best practice menus:

Feature	Description
Structure mapped to business use case	<p>A menu order, nesting and naming convention based on common business use.</p> <p>Menus are ordered 'top-down, following the logical order of tasks and the system hierarchies that perform these tasks.</p> <p>Example: For Provider admins, the <b>Cisco UC App Management</b> menu has menus only for these devices, while SMTP server and other settings that Provider admins use are arranged under a menu called <b>Provider Configuration</b>.</p> <p>In a similar way, the <b>Cisco Subscriber Services</b> menu has sub-menus for all the functionality associated with Cisco subscribers in VOSS Automate.</p>
Naming convention	<p>First word capitalized for menu names where the menu is for a <i>form view</i> (input or edit). For example <b>ADD Internal Number Inventory</b></p> <p>Where such menu names start with abbreviations or acronyms, for example, E164, HCS, or LDAP, the capitalization rule applies to the next word in the name.</p>
Menus for URLs	<p>Included in the structure are menus that provide links to other VOSS Automate portals, allowing you to launch a another portal directly from a menu.</p> <p>For this to work, you must update these URLs to match your configuration.</p>

### Considerations when Customizing and Assigning a Best Practice Menu

If you wish to modify a best practice menu and then assign the customized best practice menu to a user role, consider the following:

- To add or update menu layouts, see [Add or Edit a Menu Layout](#)

---

**Note:** A Menu Diff Tool allows you to easily modify menus. See the Advanced Configuration Guide for details.

---

- To view or configure FDPs (field display policies) associated with menu items, see [Add and Edit Field Display Policies](#).
- To view or configure CFTs (configuration templates) associated with menu items, see [Configuration Templates](#).
- For details around access profiles available for the best practices menus, see the list in the **Access Profiles** menu. To modify any access profiles to align with a modified menu, see [Access Profile Permissions and Operations](#).
- Note the dashboards available for the best practices menus. See the list under the **Dashboards** menu.

## Menu Layouts for a Business Admin Role

VOSS Automate provides two sample menu layouts for use or further customization as a Business Administration Portal menu layout. These sample menu layouts display in the **Menu Layouts** list view:

- MenuCustomerAdmin
- MenuSiteAdmin

Administrators can clone these samples to a hierarchy, customize them as needed, and assign them to a specific user role that requires a Business Administration Portal interface.

The sample menus also use sample dashboards to complete this Business Administration Portal interface. For details on the sample dashboards, see: [Automate Dashboards](#).

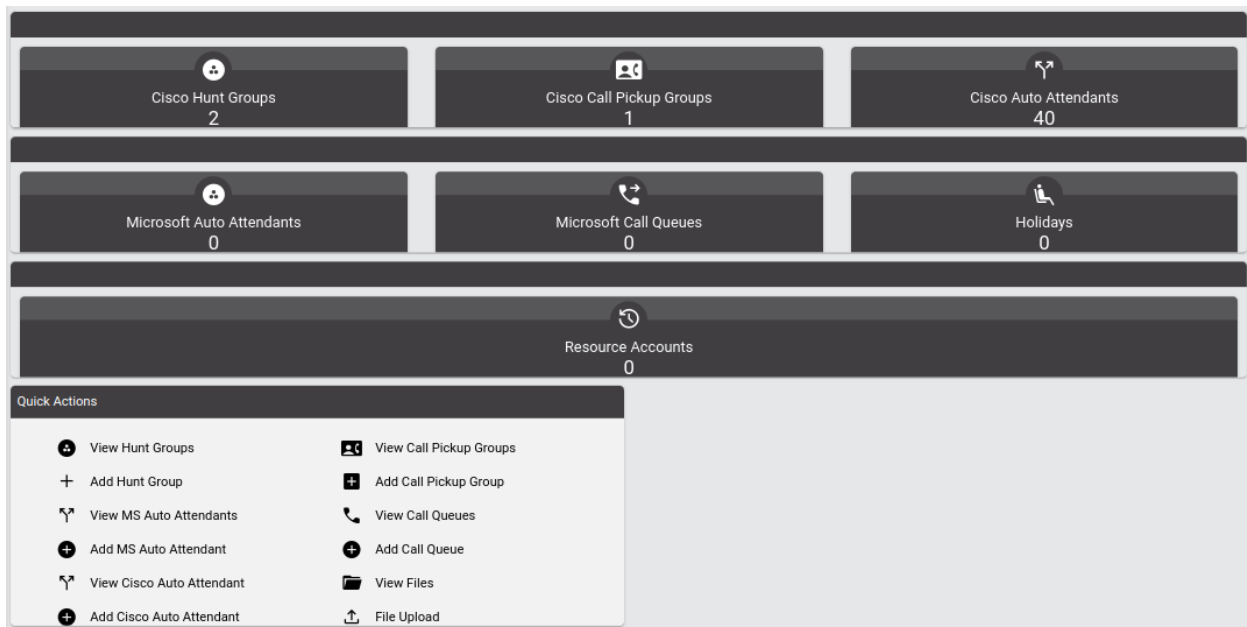
**Note:** The sample menus include conditions on the inclusion of dashboards in accordance with enabled features, services, and devices as in the **Global Settings**. The conditions are in the form of system macros, for example:

```
{{ macro.is_microsoft_enabled }}
```

or

```
{{ macro.is_cisco_cucm_enabled }}
```

The image shows an example of a sample menu displaying the sample Call Groups dashboard:

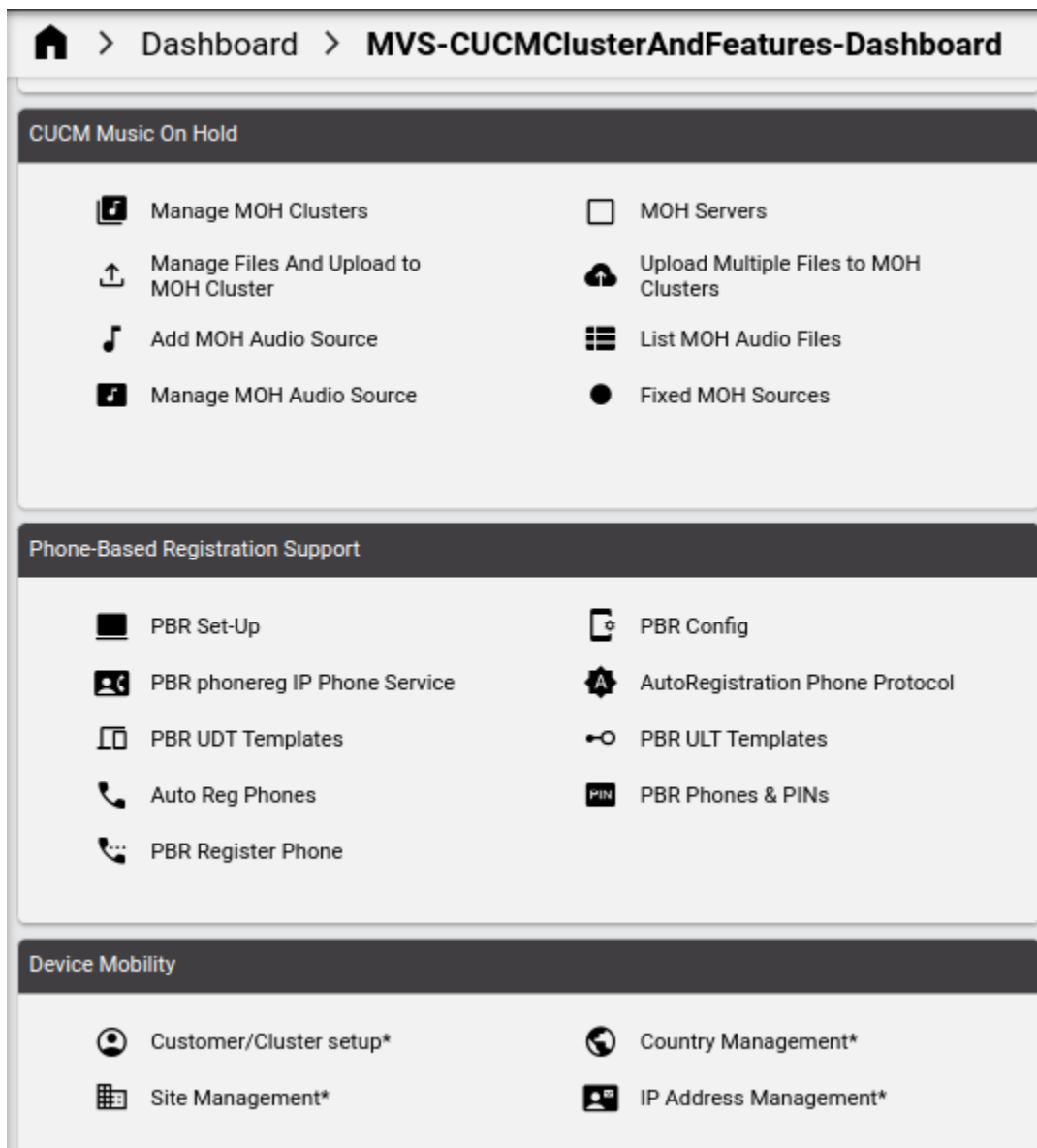


### Enhanced menu layouts and dashboards for multi vendor environments

VOSS Automate provides two sets of menus, dashboards, and access profiles for use or cloning and further customization for multi vendors scenarios. These sets offer best-practice reference role-sets that can be used by service providers.

The set of best practice menus and dashboards is comprehensive and includes some add-on options which are not currently included in the core solution. If you want to use a specific option and get a permission error when trying it using the MVS- set, please reach out to the VOSS service team to discuss.

**Note:** Multi vendor subscriber (MVS) dashboards and menu layouts that contain links referencing an adaptation (add-on), have an asterisk (\*) postfix in the link text.



Microsoft-only deployment items contain MS-Only in the name, and menu names have the MVS prefix:

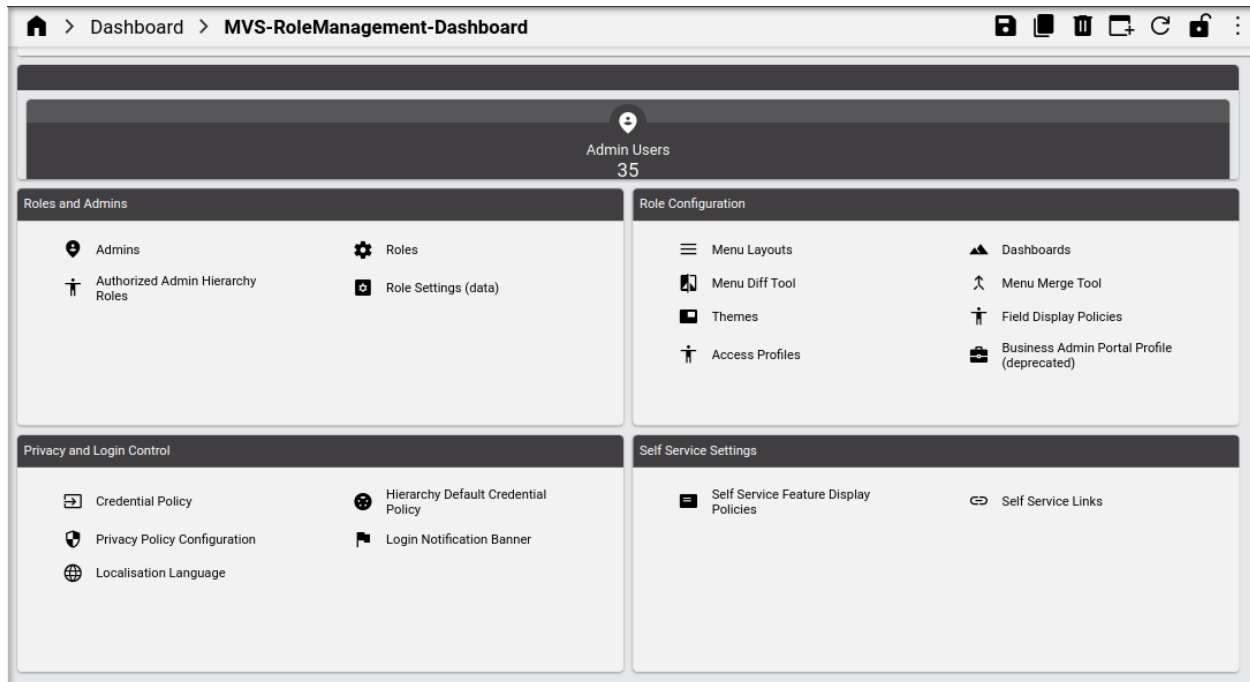
- MVS-EnhancedProviderMenu

- MVS-OperationsCustomerMenu

These menu layouts offer a number of benefits, for example:

- A compact main menu list
- Menu items directing users to dashboards consisting of items that can be selected to carry out a task - grouped into cards and all visible on one page

The comprehensive set of sample dashboards is provided and used in these menu layouts. They are identified by the dashboard name with prefix, MVS-, and suffix, -Dashboard. For example, the **Role Management** dashboard is MVS-RoleManagement-Dashboard.



**Note:**

- In release 21.4-PB3, the landing page MVS-GroupingServices-LP has been updated with a filter to exclude the listing of “user” Call Handlers. If this landing page is in use or previously customized, an updated customization of MVS-GroupingServices-Dashboard is required to enable this change in release 24.1.

This also includes home dashboards:

- MVS-EnhancedProviderAdmin-HomeDashboard
- MVS-Operations-CustomerAdmin-Home-Dashboard

These dashboards can therefore also be cloned and customized as required.

The access profiles associated with these menu layouts and dashboards can also be cloned and configured according to the customized menu layouts and dashboards. They contain the prefix:

- MVS-EnhancedProviderAdminAP
- MVS-OperationsCustomerAdminAP

The **Condition** field in menu layouts and dashboard widgets can be configured for multi vendors by using the macros as conditional values - as per enabled features in **Global Settings**:

- `{{ macro.is_microsoft_enabled }}`
- `{{ macro.is_cisco_cucm_enabled }}`

Sample administrator roles are provided that combine all these elements:

- MVS-EnhancedProviderAdministrator
- MVS-EnhancedCustomerAdministrator

### Add or Edit a Menu Layout

This procedure adds new menus and modifies existing menus. You can create a new layout for your system or update the default menu layout.

1. Log in to the Admin Portal as a Provider or Reseller administrator (or higher).
2. Choose the hierarchy for the new menu layout, for example, Customer.
3. Go to (default menus) **Role Management > Menu Layouts**.
4. Choose an option:

Create a new menu layout, based on settings in an existing menu layout	Recommended method. Click on the menu layout you wish to copy. On the menu layout editing screen, click the toolbar <b>Clone</b> icon. A new record is created with pre-populated settings. Go to the next step to edit settings for the clone to create a new, custom menu layout.
Create a new menu layout as a new record (without existing settings)	Click the toolbar Plus icon (+) to open the <b>Menu Layouts/New Record</b> page. Go to the next step to set up the new menu layout.
Edit an existing menu layout	Click on the menu layout you wish to edit, update its settings, then save your changes. Log out, then log in again to see your changes.

#### Note:

- You can click in a row to edit a value (either type in the field or select an option from a drop-down)
- Rows with nested menu items or links contain a chevron (>) instead of a Plus icon (+) so that you can see which items have child lists.
- An asterisk indicates required values.
- For further details around menu configuration, see [Menu Layouts Field Reference](#).

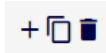
5. At **Menu Items**, configure the main menus and sub-menus, as required

- To re-order menus, click on the hamburger icon and drag items to the required position.
- To add, clone, or delete rows for main menus and nested sub-menus, click the **Plus** icon, **Clone** icon, or **Delete** icon in the relevant row.

**Note:** Clicking the **Delete** icon in a row triggers a system message asking you to confirm that you want to remove the row. This allows you to review the change in case you clicked the **Delete**



icon by mistake. Clicking the toolbar **Save** icon saves all changes to the menu layout you're configuring.



- Add, clone, or delete sub-menus (click the Plus icon in the **Menu Items** column to display nested sub-menus).

Menu Items								
		Menu Items	Filters	Icon	Title	Description	Condition	Type
☰	+ 📄 🗑️	▼	🔍	📊	Hierarchy Management			

Menu Items								
		Menu Items	Filters	Title	Description	Condition	Type	
☰	+ 📄 🗑️	+	🔍	Hierarchy				relation/HcsHierarchyNodeREL
☰	+ 📄 🗑️	+	🔍	Delete Intermediate Node				view/HcsDeleteIntermediateNodeVIEW
☰	+ 📄 🗑️	+	🔍	Localization Language				data/LanguageDefault

- At **Filters**, configure fixed and configurable filters.
- At **Icon**, choose a menu icon (main menus only). See: [Custom Icon Names Reference](#).

Menu Items								
		Menu Items	Filters	Icon	Title	Description	Condition	Type
☰	+ 📄 🗑️	▼	🔍	📊 Business	Hierarchy Manager			

Filter (contains) 🔍

- 🐛 Bug Report
- 🔧 Build
- 📊 Burst Mode
- 📊 Business

- At **Title**, add or edit the menu title, and (optionally), provide a description.
- At **Condition** (optionally), fill out a condition to define when the menu will display.
- At **Display As**, choose an option to define how the menu or sub-menu will display. Options are: Form, List, External Link, or Dashboard.

**Note:**

- The value for **Display As** must be **Form** when the value at **Model Type** is view.
- The value for **Display As** must be **Dashboard** if you're choosing a dashboard.

- At **Type**, choose the model type.

---

**Note:** When type is view (view/ModelType), the value in the **Display As** column must be **Form**.

---

- At **Href**, create internal or external links.

---

**Note:**

- If **Display As** is set to **External Link**, the **Href** value should start with `http`.
- If **Display As** is set to **List**, the internal **Href** value should start with `/api/`.
- If you wish to provide a *sorted list view* of a model in a menu item, the **Href** internal href value can be entered with additional parameters to specify attribute and sort order. In this case, **Display As** should be selected as **List**, with the `direction` parameter to sort.

For example, if **Href** is:

```
/api/data/Countries/?order_by=iso_country_code;direction=desc
```

the list view from the menu item of `data/Countries` will be sorted in descending order, by `iso_country_code`: ZIM, ZAF, VNM, USA, UKR, ... and so on.

---

- At **Field Display Policy**, choose a field display policy, if required.
- At **Configuration Template**, choose a configuration template, if required.
- Select **Set as default Model Type** to define that when a user navigates to a form for that model from a location where any of the FDP, CFT, and title is not available, then the form will contain these elements configured as the default.

---

**Note:** If no default is set, or multiple defaults are set for FDP and CFT selection, the selection is random. Multiple defaults will also yield an error message in the browser console if the Browser Console Log Level is set to Debug (see: [Introduction to the Admin Portal User Interface](#)) The format of the message is:

```
Multiple defaults configured for ... <model-type>
```

It is therefore advisable to explicitly set the default and ensure that only one default is set.

---

- At **Dashboard**, you can instead choose an existing dashboard to associate with the menu item.

---

**Note:**

- You can choose a dashboard for a main menu, sub-menu, or sub-sub-menu.
  - When setting a dashboard, the value in the **Display As** column must be **Dashboard**.
- 

6. Click **Save**. Updated or new menu layouts are saved.

7. Assign the menu layout to the appropriate roles.

## Menu Layouts Field Reference

This section describes menu layout configuration options:

---

**Note:** You can view, add, and edit menu layouts in the Admin Portal via (default menus) **Role Management > Menu Layouts**. See [Add or Edit a Menu Layout](#)

---

Field	Description
Name	Mandatory. The menu layout name.
Description	A description of the menu layout.
Menu Items	This section displays the menus and sub-menus in an editable table layout.

## Menu Items

The table describes configuration options the **Menu Items** rows on the Menu Layouts page:

Column	Description
Reorder	Click on the reorder icon (hamburger) in the relevant row to change the location of a menu.
Add, clone, or delete row	Click an icon to either add a row, clone (copy) a row, or to delete the row. Clicking the <b>Delete</b> icon in a row triggers a system message asking you to confirm that you want to remove the row. This allows you to review the change in case you clicked the <b>Delete</b> icon by mistake. Clicking the toolbar <b>Save</b> icon saves all changes to the menu layout you're configuring.
Menu Items	Click the Plus icon to expand nested menus. Click the chevron to collapse expanded menus.
Filters	Click the filter icon in the relevant row to display a dialog where you can choose fixed and configurable filters for a menu item. Fixed filters cannot be removed. The following options are available for configurable filters: <ul style="list-style-type: none"> <li>• Filter By</li> <li>• Filter Type</li> <li>• Filter String</li> </ul>
Icon	The icon to use for the menu item. Click in the cell to choose an icon. Icons display in the drop-down with a descriptive name.
Title	Click in the cell to add or edit the name (title) of a menu item.
Description	Click in the cell to add or edit the menu description.
Condition	Click in the cell to add or edit a macro that allows you to display/hide a menu and its sub-menus, based on a condition specified in the macro. If the macro evaluates to true, the menus and sub-menus display, else, when false, the menu and its sub-menus are hidden. The default is true (menus and sub-menus you add on this page display by default). See the Advanced Configuration Guide for more information about using macros.
Type	Click in the cell and choose a model type (for example, relation or view) to associate with the menu item. When type is view (view/ModelType), the value for <b>Display As</b> must be <b>Form</b> .

Column	Description
Href	<p>Click in the cell to specify a path as a direct reference to a model type used for the menu item.</p> <p>Links can be external or internal. Hrefs are generally recommended for external links. For backwards compatibility, hrefs can be used for links within the application, to link directly to a form. For example, the Add Phone page would have the following href value: <i>api/relation/SubscriberPhone/add</i></p> <p>In this case, you will need to use JSON format menu import, or bulk load, to add any associated FDPs (field display policies) and CFTs (configuration templates) for the menu item.</p> <p>It is recommended that you do not use hrefs to reference <i>view/</i> type models.</p>
Field Display Policy	<p>Click in the cell to choose a FDP (field display policy) to associate with the menu.</p>
Configuration Template	<p>Click in the cell to choose a CFT (configuration template) to associate with the menu.</p>
Set as default Model Type	<p>If selected, the FDP, CFT and title is taken as default when navigating to this model from outside the menu.</p>

Column	Description
Dashboard	<p>Choose the dashboard to display when clicking on a menu. Mandatory when the value for <b>Display As</b> is <b>Dashboard</b>. Sub-menus and sub-sub-menus can be selected as dashboards. Individual dashboards do not have their own specific context-sensitive help.</p>
Display As	<p>Defines how the menu item displays. Options are: List, Dashboard, Form, External Link, Tree</p> <ul style="list-style-type: none"> <li>• List (default) <p>For two or more instances. If you choose List, and you've selected a default FDP and CFT for the model type, users with a user role associated with the menu layout view the model type based on these options. It is also possible to filter the list view. If you choose List display referenced by type or href, note that a tool (tool/[toolname]) can also be presented as a list, for example: /api/tool/Transaction/?entity=data/Event&amp;operation=execute</p> </li> <li>• Dashboard <p>When <b>Display As</b> is dashboard, you must choose the dashboard to display when a user clicks on the menu item.</p> </li> <li>• <b>Form</b> (for a single instance) <p>If you're using href and you choose the Form display, the href value points to a model instance with the pkid, for example data/Countries/5331a739d0278d7893e26d2e, or ends with /add/. The value for <b>Display As</b> must be Form when the value for <b>Type</b> is view. The view/ model types always open the <i>Add</i> form; thus, if used, the value should not have the /add/ endpoint, for example, as in this JSON:</p> <pre data-bbox="634 1161 1398 1346" style="background-color: #f0f0f0; padding: 10px;"> {   "type": "view/QuickSubscriber",   "display": "form",   "title": "Quick Add Subscriber" } </pre> </li> <li>• External Link <p>Href is required if the value for <b>Display As</b> is External Link. A URL specified as the href value opens as a new browser tab. You'll need to disable pop-up blocking on the users browsers to allow the external link to resolve.</p> </li> <li>• Tree (if available, for two or more instances) <p>Choosing a Tree display shows a tree view of the resource. When using href with Tree display, the href provides the tree path.</p> </li> </ul>

### Custom Icon Names Reference

This reference refers to the icons associated with the **Icon** name drop-downs in the interface.

For details, see: <https://fonts.google.com/icons>

To associate the icon of the in the drop-down, inspect the icon titles on the website, remove the title hyphens and capitalize the first letter of each word.

### Related Topics

- [Fixed and Configurable Filters in Menus](#)
- [Automate Dashboards](#)

## 14.3.2. Menu Diff Tool

System level (hcsadmin, entadmin) and provider administrators have access to the Menu Diff tool on the menu to allow for a side-by-side comparison and management of two selected menu layouts:

- **Source Menu:** a drop-down list of menu layouts from hierarchies at the administrator's hierarchy *and higher*.
- **Target Menu:** a drop-down list of menu layouts from hierarchies at the administrator's hierarchy *and lower*.

The side-by-side forms with the two selected menus can be expanded using the **Expand/Collapse** button.

Menu differences are highlighted as follows:

- The same menu item in both menus but on a different menu path is highlighted.
- A menu item in one menu but not in the other menu is highlighted.

To update the target menu, drag and drop menu items from the source menu to a position in the target menu.

- Where a menu item is now in both menus, it is not highlighted anymore.

---

#### Note:

- All menu properties (e.g. Field Display Policy, model reference, and so on) are copied.
  - If the menu item that is copied contains sub-menus, these are included.
- 

Click **Save** to save changes in the target menu.

## 14.3.3. Fixed and Configurable Filters in Menus

### Overview

VOSS Automate allows you to apply fixed filters and configurable filters on menu layouts.

- [Fixed Filters](#)
- [Configurable Filters](#)

For the use of fixed filters and configurable filters on **Links** widgets on dashboards, see the *Links* topic at [Automate Dashboards](#).

### Fixed Filters

Only high-level administrators can add and modify pre-defined **Fixed Filters** to menus. For these administrators, this option also shows on the Menu Layout design input forms and presents the same interface options as Configurable Filters.

These filters are not visible to the lower level administrators and will *always* apply when the menu item link is used by them. Fixed filter results can however be filtered further by Configurable Filters.

### Configurable Filters

When configuring a menu layout, click the icon in the **Filters** column to open the filter configuration dialog, where you can add one or more configurable filters.

Adding more than one filter results in a logical AND of the filter application.

The screenshot shows a web application interface for configuring filters. The breadcrumb path is 'Home / Landing Pages / HcsProviderLP'. A modal dialog titled 'Please complete Links information.' is open. It has two main sections: 'Fixed Filters' and 'Configurable Filters'. The 'Fixed Filters' section is currently empty, indicated by a plus sign icon. The 'Configurable Filters' section is active and shows a list of filters. One filter is selected, highlighted in red, with the name 'userid'. Below the list, the configuration for this filter is shown: 'Filter By' is set to 'userid', 'Filter Type' is set to 'Contains', 'Filter String' is an empty text input field, and the 'Ignore Case' checkbox is checked. At the bottom of the dialog, there are two buttons: 'Cancel' (red) and 'OK' (grey).

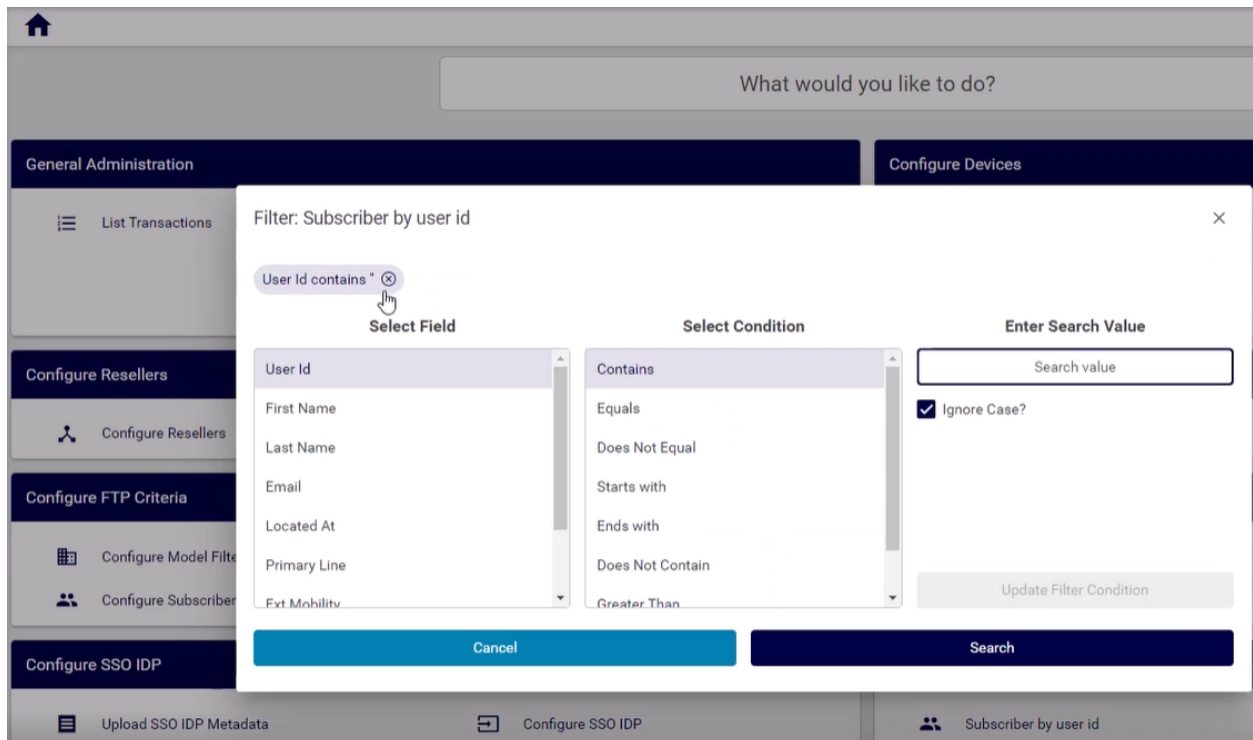
The table describes the **Configurable Filters** fields:



Filter By	Attributes of the selected Type can be selected from the drop-down list.
Filter Type	Select the matching operator to apply when the attribute is matched to the <b>Filter String</b> value: <ul style="list-style-type: none"> <li>• Contains</li> <li>• Does Not Contain</li> <li>• Starts With</li> <li>• Ends With</li> <li>• Equals</li> <li>• Not Equal</li> </ul>
Filter String	Select the value that the matching operator should match by.
Ignore Case	This checkbox defines whether to ignore the case of the <b>Filter String</b> value.

Once you've applied the configurable filters, selecting the menu item in the GUI triggers a pop up **Filter** dialog before rendering the list view, where you can apply or modify the filter before displaying the page related to the or menu.

If a **Filter String** value is entered on **Configurable Filters**, this value can also then be accepted or modified in the **Filter** dialog.



The list view of the results footer row indicates that a filter has now been applied to the list and this filter can

then be further modified and removed from the list view as usual. See [Working with Lists](#)

The screenshot shows a list view titled "Subscriber by user id" with a filter applied: "User Id contains \*". A modal dialog titled "Filter" is open, showing the configuration for this filter. The dialog has three main sections: "Select Field", "Select Condition", and "Enter Filter Value".

- Select Field:** A dropdown menu with "User Id" selected. Other options include First Name, Last Name, Email, Located At, Primary Line, and Ext. Mobility.
- Select Condition:** A dropdown menu with "Contains" selected. Other options include Equals, Does Not Equal, Starts with, Ends with, Does Not Contain, and Greater Than.
- Enter Filter Value:** A text input field containing "ed". Below it is a checked checkbox labeled "Ignore Case?".

At the bottom of the dialog, there are three buttons: "Cancel" (blue), "Filter" (dark blue), and "Update Filter Condition" (dark blue).

**Important:** Standard list view filters on model types (for example if accessible by other menu items) can still be used as described in "Filtering Lists", but these will be removed and replaced by any Configurable Filters on menu items for the corresponding model type.

### 14.3.4. Landing Page Conversion to Dashboards in Release 24.1

When upgrading to Automate release 24.1, existing landing pages on VOSS Automate are converted to dashboards: new data/Dashboard records are created from data/LandingPage records.

In particular:

- Landing page welcome headers are converted to a **Text** widget using Markdown, with the header prefix as **##** and the text prefixed with **###**.
- Landing page **Sections** are converted to dashboard **Links** widgets.

Where a landing page link setting had **Set default Model Type** enabled for a link, this setting is also enabled in the dashboard links widget for each corresponding link.

Long lists of links may result in a scrollbar showing on the widget. In this case, the number of links can be divided into multiple widgets by modifying the converted dashboard.

- Landing page **Counters** are converted to individual counters dashboard widgets, grouping 3 counters into a single widget at a time. The counters use Automate models as source.

The layout of the converted counter widgets can be modified as required.

- Landing page chart **Widgets** are not converted.

Examples are:

- Cisco Headset Summary
- Number Inventory Chart
- Cisco UCCX Agent Stats Chart
- Usage Growth Chart
- Webex Teams License Chart

These can be created and added as a dashboard chart widget if required - see: [Automate Dashboards](#).

- Saved Searches have been moved to the user's **Settings > Account** page.
- For default and custom landing pages in the system, the conversion process retains replaces any landing page indication LP suffix in the name with a dashboard equivalent Dashboard.
- For other custom landing pages found on an upgraded system that included landing page conversion, the original landing page names are retained after conversion as instances of dashboards with the same name.
- Where landing pages allowed a **Condition** to be set at section level, the converted **Links** dashboards only provide conditions for each individual link.
- Where landing pages allowed a **Condition** to be set *as well as* a **Condition** at section level, the converted **Links** dashboards provide both conditions for each individual link - joined with a logical AND.

These dashboards allow for the same functionality as existing landing pages, but have an enhanced editing interface where for example a wide variety of chart widgets can be added to enrich dashboards. It is recommended that the dashboard conversions be inspected and edited if needed.

For details on dashboards, their maintenance and initial sync requirements after the addition of dashboard widgets, see: [Automate Dashboards](#).

A new database and resource model for its data has also been added: Insights reporter resources (data/ReporterResource).

As a part of the landing page to dashboard conversion during upgrade, the following related elements are also migrated:

- **Role:** assigned landing pages are replaced with equivalent dashboards.
- **Access Profile:** landing page type-specific permissions are replaced with equivalent, newly created dashboard permissions to Insights reporter resources. For details, see the *Dashboard Permissions* section in Access Profiles: [Access Profile Permissions and Operations](#).
- **Menu Layout:** menu items containing landing pages as type are replaced with dashboard and the converted dashboard is matched and added. Any landing page `display_as` entries are also converted to dashboard entries.
- **Configuration Template:** references to landing pages are replaced with the dashboard equivalent.
- **Field Display Policy:** groups and `field_overrides` roles containing references to landing pages are replaced with matching dashboards.

### 14.3.5. Automate Dashboards

#### Overview

Dashboards are a collection of configurable widgets on a single page that can serve as a default landing page and can also be made available on a user menu. The widgets can allow for the easy access of frequently used tasks and for a quick view - as a counter, table or chart - of data in the system.

#### Note:

- Where dashboard widgets show data, the hierarchy at which the dashboard containing the widget is displayed, will filter data values and counts accordingly in the respective widgets.
- Dashboard fields showing the item hierarchy (similar to *Located At*) are updated only when a full sync runs. For example, if you've added users to the system and then moved them to a site, any charts, counters, or tables showing a count of users (at that site or at the system level), will only reflect the correct number of users once a full sync runs and not when simply refreshing the dashboard or widget in a real-time sync. In this case, until you run the full sync, the hierarchy fields for these users display on dashboard charts, tables, or widget counters as with no (empty) hierarchy value. See [Dashboard Refresh](#).

Administrator users with roles referring to Access Profiles that allow for the creation and update of dashboards, can design and add dashboards to menus. For details, see: the *Dashboard Permissions* section in Access Profiles: [Access Profile Permissions and Operations](#).

#### Landing Page Dashboards and Generic Solution Dashboards

##### Landing Page Dashboards

Upon upgrading to release 24.1, user landing pages have been converted to dashboards containing the matching landing page data. Users would thus see these dashboards as:

- A home page
- A menu item (VOSS Automate enhanced menus)

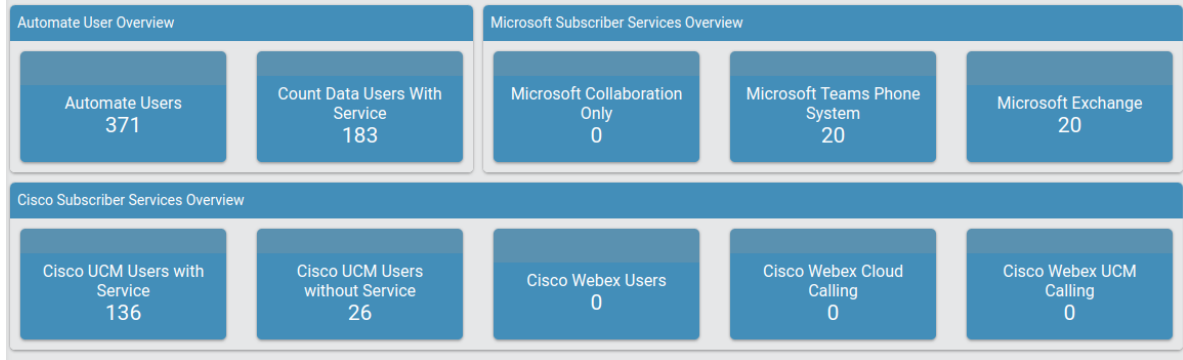
For details on these converted dashboards, see: [Landing Page Conversion to Dashboards in Release 24.1](#).

##### Generic Solution Dashboards

In addition to the dashboards converted from landing pages, VOSS Automate also provides an additional set of default dashboards that are available from default menus.

**Note:** For these generic solution dashboards and any new dashboards to show data prior to the sync schedule, an initial manual sync step is required - see: [Dashboard Refresh](#).

- Menu: **Subscriber Overview** - a dashboard with counter widgets showing subscriber counts.



The sources of the counts are the following models:

- Cisco: relation/Subscriber
  - Microsoft: relation/MicrosoftSubscriber
  - Webex: relation/SparkUser
- Menu: **Subscriber Service Details** - a dashboard with tables showing multi-vendor subscriber services by vendor. Users in the tables can for example be filtered by hierarchy

Summary of Services									
	Provider	Reseller	Customer	Site	Username	First Name	Last Name	Email	License Sta
0	CS-P	CS-AB	AB_Group	CL1-AB-C-Grenoble	rjosephe01	Ronald	Josephe	rjosephe01@ab-group.com	Licensed
1	CS-P	CS-AB	AB_Group	CL1-AB-C-Grenoble	rjosephe01	Ronald	Josephe	rjosephe01@ab-group.com	Licensed
2	CS-P	CS-AB	AB_Group	CL1-AB-DS-HQ-Lyon	egourand01	Edgar	Gourand	egourand01@ab-group.com	Licensed

Microsoft Service Details								
	Provider	Reseller	Customer	Site	Username	First Name	Last Name	Email
0	CS-P	CS-NB	RND		GroupUser@vossautobuild.onmicrosoft.com	Group	User	GroupU
1	CS-P	CS-NB	RND		AA_RA_2@vossautobuild.onmicrosoft.com			AA_RA_
2	CS-P	CS-NB	RND		SM1JanMon10h13@vossautobuild.onmicrosoft.com			SM1Jar
3	CS-P	CS-NB	RND		Tim.Smalls@vossautobuild.onmicrosoft.com	Tim	Smalls	Tim.Sm
4	CS-P	CS-NB	RND		BulkLoadUser4@vossautobuild.onmicrosoft.com	BulkLoadUser4	BulkLoadUser4	BulkLoa
5	CS-P	CS-NB	RND		PradeepG@vossautobuild.onmicrosoft.com	Pradeep	Gupta	Pradeep

Cisco Service Details									
	Provider	Reseller	Customer	Site	Username	First Name	Last Name	Email	UCM User I
0	CS-P	CS-AB	AB_Group	CL1-AB-C-Grenoble	rjosephe01	Ronald	Josephe	rjosephe01@ab-group.com	rjosephe01
1	CS-P	CS-AB	AB_Group	CL1-AB-C-Grenoble	rjosephe01	Ronald	Josephe	rjosephe01@ab-group.com	rjosephe01
2	CS-P	CS-AB	AB_Group	CL1-AB-DS-HQ-Lyon	egourand01	Edgar	Gourand	egourand01@ab-group.com	egourand01

The following tables of subscribers are available:

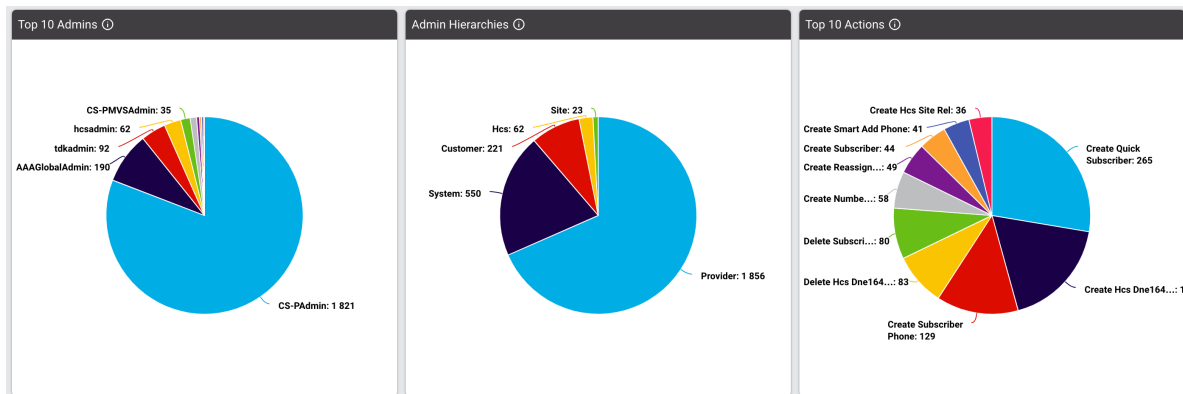
- Summary of Services: User and hierarchy details.
- Microsoft Service Details: User and hierarchy details, Teams features, Line, Number, Voice enabled, Exchange User Principal Name.

- Cisco Service Details: User and hierarchy details, Phone, Line, EM Profile details, SNR details, Voicemail details, Contact Center Agent details.
- Cisco Webex Service Details: User and hierarchy details, Cisco Webex Email.
- Menu: **Transaction Overview** - a transaction analysis dashboard with counter, chart and table widgets showing for example such transaction metrics per user, hierarchy, entity, as well as counts of data sync failures

**Note:**

- Some transaction data will only be available for transactions executed after upgrade to release 24.1, since new fields are introduced and are not populated for older transactions. (The default name for unpopulated data on charts show with a Slice: label.)
- Trend chart date formats follow the current date format, i.e. either: mm/dd or dd/mm.

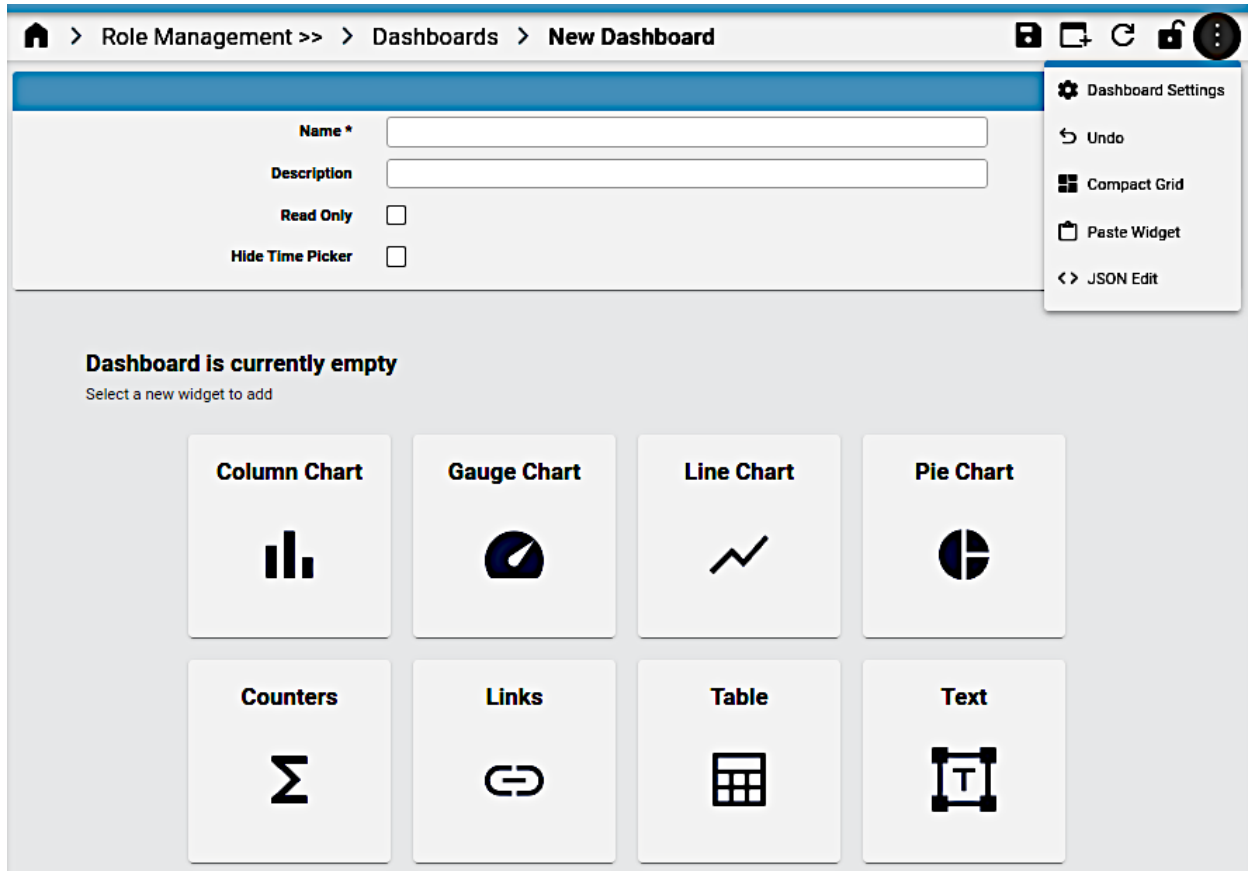
This dashboard therefore provides a good usage overview of the platform.

**Managing Dashboards**

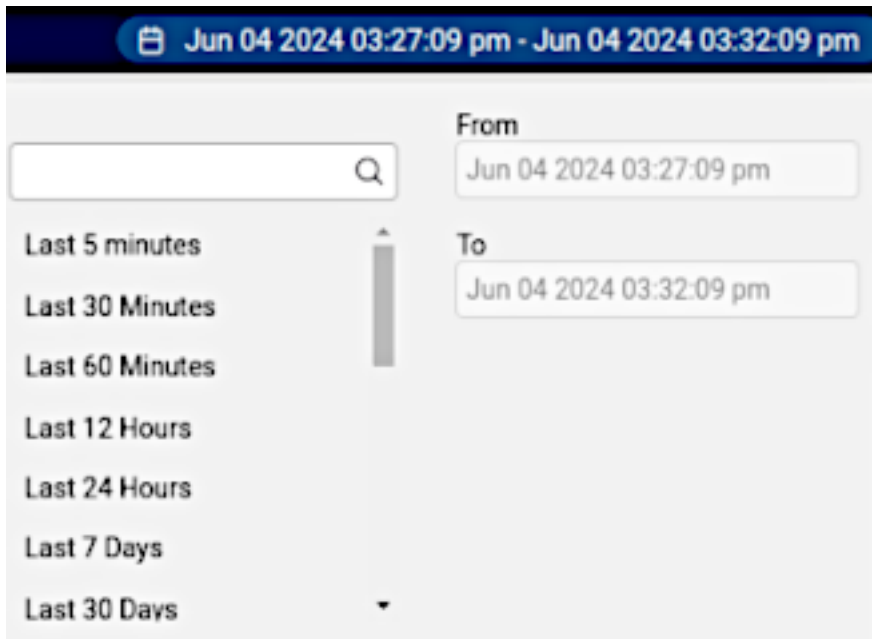
Administrators can manage dashboards from the **Dashboards** link that is a part of the **Role Configuration** on the **Role Management** dashboard.

## Operations on Dashboards

When adding or editing a dashboard, a number of menu items are available to carry out dashboard related tasks.



- Add or Edit:
  - **Name:** the display name of the dashboard
  - **Description:** detailed description to describe the dashboard - available on the **Dashboards** list view.
  - **Read Only:**
  - **Hide Time Picker:** by default, a Time Picker control is available to filter dashboard data by start and end date. Note that future dates cannot be specified by the Time Picker. Select this check box to hide the time picker.



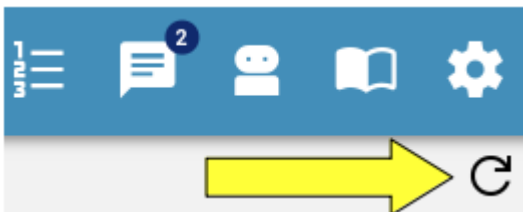
- Clone: Use the **Clone** icon from the dashboard toolbar. The cloned dashboard opens and contains all the widgets of the source dashboard. The cloned dashboard **Name** is the same as the original source dashboard name, but is appended with the text: [CLONE].

---

**Note:** Dashboards with the same name can be available at different hierarchies. When such a dashboard is referenced, this first one found higher up from the administrator user's login hierarchy is selected.

---

- **Refresh Dashboard:** use to update synced data on the dashboard to reflect any system data changes.




---

**Note:** Dashboard widgets each also provide a similar **Refresh** button when hovering over the top bar of the widget - similarly to refresh individual widget data.

---

- Lock: lock the arrangement of widgets
- Dashboard Settings: a toggle menu item to show or hide the dashboard name, description and properties as listed above.
- Undo: revert the dashboard to the state of the last unlock. So, if the lock has been used even once on the dashboard, the unlock will always return the dashboard to the state it was after it was unlocked, even if multiple changes were done since. If the dashboard was never locked, an Undo will lock it, forcing the user to unlock and create a snapshot point. This snapshot is the same as the uploaded dashboard. (Note: the undo functionality is currently under review.)
- Export: Use the **Export** icon from the dashboard toolbar to export one or more instances - for details,



see: [Bulk Export of Model Data](#). Exported dashboards can then be modified and imported at a required hierarchy using the **Import** menu.

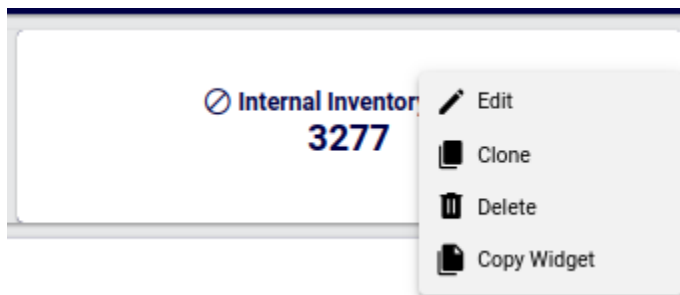
- Compact Grid: automatically optimize the arrangement of widgets on the dashboard, give their current size.
- Paste Widget: Use the **Paste Widget** icon from the dashboard toolbar menu to paste a widget selected with the **Copy Widget** option on the widget menu into the current dashboard. Widgets can therefore be copied between dashboards.
- JSON Edit: Use the **JSON Edit** icon from the dashboard toolbar to edit the dashboard data in JSON. For details, see: [Manage Items](#).

### Operations on widgets

When a dashboard is created or maintained, widgets can be added, removed or edited.

To add a widget, select **Add (+)** from the toolbar and then on the design form, either select the widget from the toolbar or from the provided list of icons:

To edit a widget on a dashboard, select the dashboard from the list and choose **Edit** from the widget's menu. The widget menu provides a number of operations.



- Edit:
  - Use the **Edit** icon from the widget menu to edit the current widget. refer to the details below on available edit options.
- Clone:
  - Use the **Clone** icon from widget menu to clone the widget on the dashboard. The clone can then be edited as required.
- Delete:
  - Use the **Delete** icon from the widget menu to remove the widget from the dashboard.
- Copy Widget:
  - Use the **Copy Widget** icon to copy the current widget in order to paste it into a dashboard using the dashboard **Paste Widget** menu item.

- Export data:

Where a widget offers data in a compatible format, the **Export data** on the widget menu allows for a MS-Excel or comma-separated value (CSV) export to a file, as in the Number Status example below:

```
Status,Count
Used-Utility,6
Cooling,35
```

(continues on next page)

(continued from previous page)

Used, 63  
Reserved, 106  
Available, 3850

**Note:** For widgets where the Resource is an Insights resource, the option to export All Records is not available.

is not available. .. note:

Not **all** widget options **and** possible combinations are covered **in** this document. The widget refresh option can be used to inspect the impact of an option. For assistance **in** creating widgets, you can also contact VOSS support.

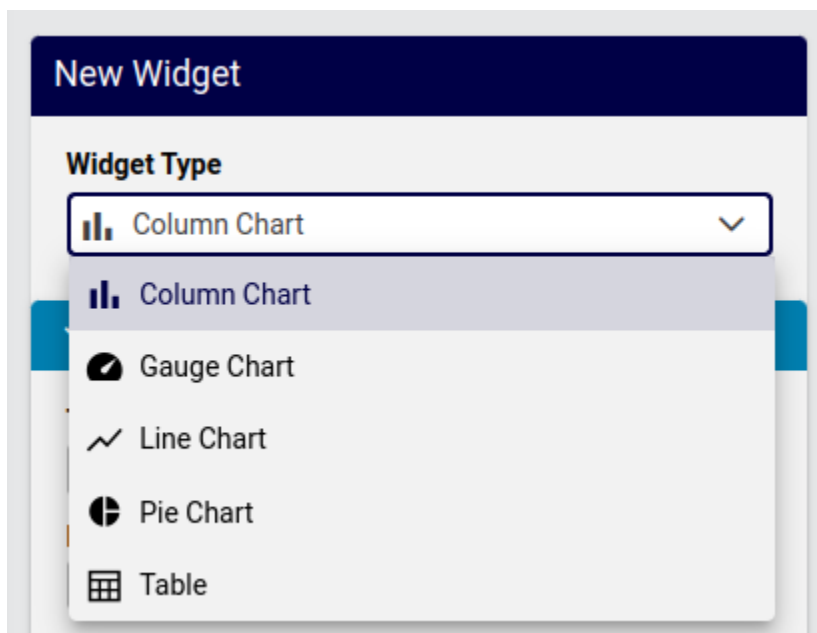
## Chart Widgets

The following chart types are supported by the widgets.

- Column Chart
- Gauge Chart
- Line Chart
- Pie Chart

When a chart widget is selected, it is also possible to switch to another widget format during the edit and design process.

The chart type can be updated from the **Type** drop down. Changes are reflected in real-time during the design of a widget or by using the widget's **Refresh** icon.



## Chart Widget Data Settings

A common list of **Data Settings** are available for chart widgets:

- **Title:** This text will display above the chart
- **Description:** This text will show as a information pop-up when hovering over the circled **i** icon next to the **Title**.
- **Resource:** Charts access the Insights resource. In accordance with configured devices and services, a dropdown list of resource items are available to be referenced in the chart, for example: Number Inventory, Cisco CUC User, Cisco UCM Phone, Microsoft 0365 User.

---

**Note:** In accordance with the selected hierarchy during dashboard management, the real-time display of data will update according to the current hierarchy, so that a widget that for example shows a count of users, will show values in accordance with the selected hierarchy.

---



---

**Important:** For charts, the **Resource** data accessed from an Insights database: Insights reporter resources (data/ReporterResource). When creating charts for the first time *prior to the first scheduled full sync*, it will be necessary that a manual sync of the Insights database is carried out with the Automate database. This requires the execution of a Platform Command Line Interface command. Refer to the *Dashboard Refresh* section below.

---

- **Fields:** In accordance with the selected **Resource**, one or more fields from the resource can be selected as items for the chart.
  - **Field Name:** a dropdown of fields that belong to the **Resource**
  - **Friendly Name:** a text field to provide the **Field Name** with a custom name
  - **Field Type:** a read-only field that indicates the data type of the selected **Field Name**
  - **Operation:** select the operation to be carried out on the **Field Name**. Refer to the example below showing: Grouping Count.

- **Filters:**

Data referenced in widgets can also be filtered by selecting a:

- **Field Name** of the **Resource**
- **Operation** to be used to filter the values of the field selected by **Field Name**.

The availability and function of the operators depends of the data type of the selected field name: text or integer. Select the required operation. For details on the filter options, see: [Reference: Filter Options Availability and Definitions](#).

- **Filter Value:** value to be used by the selected **Operation** to carry out the filter.

Such filters this provide options to make use of a selection of the resource data in the widget.

- **Sorts:** One or more **Field Name** entries can be added and used to carry out sorting by **Sort Type:** Ascending or Descending
- Chart Options:
 

For a detailed reference of chart options, see: [Reference: Chart Options Availability and Definitions](#).
- Drilldown options: see [Reference: Drilldown Options and Conditional Syntax](#)

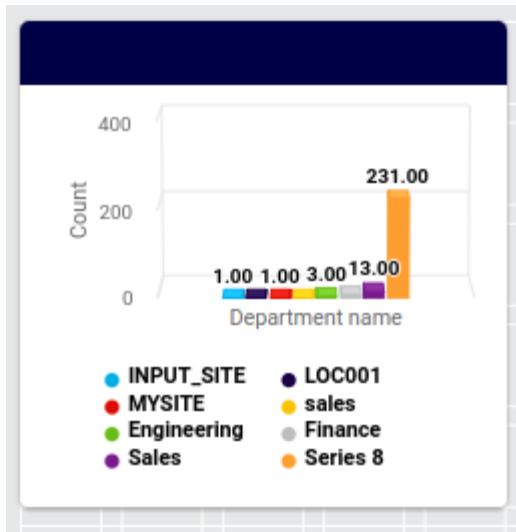
## Chart Widget Example

As an example, consider the following column chart values, with charts illustrating various data and chart settings:

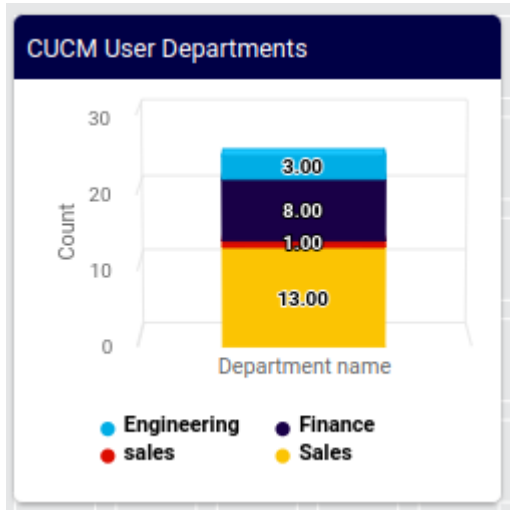
- Title: CUCM User Departments
- Resource: Cisco UCM User
- Field Name: Department
- Operation: Grouping Count  
Shows a column chart with counts of grouped Cisco UCM User departments in columns.
- Filter:
  - Field name: department
  - Operation: Exclude Regex (Case sensitive)
  - Filter Value: SITE
- Filter:
  - Field name: department
  - Operation: Exclude Regex (Case sensitive)
  - Filter Value: LOC
- Filter:
  - Field name: department
  - Operation: !=
  - Filter Value:
- Sorts:
  - Field Name: department
  - Sort Type: Ascending
- Chart Options:
  - Series Limit: All
  - Stack Type: Normal

The examples below show the chart with settings on some of the properties as *not set* or *set* in the example above:

- Unfiltered, unsorted (related settings above are *not set*):



- Filtered, Sorted, Stacked (related settings above are set):



## Counters

Counters are typically used to provide a quick count of a resource, and have the option to display a list view of the values when selecting the counter.

---

**Note:** Counter values reflect the hierarchy at which the counter is viewed.

---

- **Data Source:** Insights or Automate
- **Resource:** only available for Insights
- **Fields:** For Insights resources, one or more instances of **Field Name** can be selected in counters. These field names will then be shown as individual counters in a set of counters. An **Operation** can be selected for these in order to modify the counter.

For example, if a **Field Type** is "Text" and has duplicate values, and the **Operation** on the field is:

- **Grouping Count**, then counters will be shown grouping the duplicate fields into separate totals.

Alternatively, where **Resource** provides values for **Field** that have a **Field Type** of “Integer”, additional **Operation** options are available that apply to integers, for example:

- **Avg**: a ratio of the current field over a total, for example, users with MS Teams Voice over total users
- **Sum**: for example, the sum total users with MS Teams Voice

The **Subscriber Overview** dashboard counters can for example be inspected to see the application of operations on integer fields.

Counters can also for example show a count that is grouped by additional fields. Consider a counter with:

- **Data Source**: Insights
- **Resource**: Multivendor Subscriber Count View
- **Field Name, Field Type, Operation**: count\_data\_users, Integer, Count
- **Field Name, Field Type, Operation**: Provider, Text, Group By
- **Field Name, Field Type, Operation**: Customer, Text, Group By

The counter displays the number of users as grouped by each Provider-Customer



CS-P - Cnip	CS-P - GeoLogic	CS-P - Sily	CS-P - UHouse	CS-P - Tyz
381	135	111	58	32
Number of Data Users	Number of Data Users	Number of Data Users	Number of Data Users	Number of Data Users

- One or more **Filters** can be applied to a selected **Field Name**, using an **Operation** and **Filter Value**.

For example, for **Resource** = “Cisco UCM User”, the settings are:

- **Fields - Field Name**: “firstName”, **Operation**: “Grouping Count”
- **Filters - Field Name**: “firstName”, **Operation**: “Regex (Case sensitive)”, **Filter Value**: ^An.

The resulting counter shows grouped counts of the first names of Cisco UCM users where the first name starts with “An” (case-sensitive).



Anjanette	Andy	Anibal
2	1	1

If for **Fields** above, the **Operation** was “Count”, then a *single value* of the total of all users with first name starting with “An” (case-sensitive) would display in the counter.

- **Type**: only available for Automate resources. This is the selected model type (e.g. data/Countries). A **Title**, **Icon**, **Field Display Policy**, **Condition** and **Configuration Template** can also be applied to the selected model type.
- **Filters**: For Insights resources, field names can be selected and a matching operator selected to apply to the name in order to filter a counter value (as in the example under **Fields** above). For Automate resources, see the topic *Fixed and Configurable Filters in Counters and Links* - that will then be applied when the counter is selected to open the filtered list view.
- **Counter Settings**: a limit on the value can be specified, prefix and suffix text can be inserted for the value, as well as default values for empty groups.

## Links

Links are typically used to offer shortcuts to targets: data or URLs. The data is available from Automate models in the **Type** dropdown.

- **Link Text** and **Icon** can be entered to display the link
- **Condition** : a condition that evaluates to true or false, in VOSS macro syntax, for example, for enabled features:

```

{{ macro.is_avaya_enabled }}
{{ macro.is_cisco_ccx_enabled }}
{{ macro.is_cisco_cucm_enabled }}
{{ macro.is_cisco_cucx_enabled }}
{{ macro.is_cisco_microsoft_enabled }}
{{ macro.is_cisco_webex_enabled }}
{{ macro.is_cisco_webex_teams_enabled }}
{{ macro.is_cisco_zoom_enabled }}
{{ macro.is_microsoft_enabled }}
{{ macro.is_pexip_enabled }}
{{ macro.is_session_border_control_enabled }}
{{ macro.is_voss_phones_enabled }}
{{ macro.is_zoom_enabled }}

```

- **Display As**:
  - External Link - then **Href** is an URL
  - Form and List - when **Type** is selected, this indicates the display format
- **Field Display Policy** and **Configuration Template** can be applied to the selected **Type**.
- See also the topic *Fixed and Configurable Filters in Counters and Links*.

## Note:

- A dashboard link cannot launch another dashboard.
- For long lists of links, scrollbars show on the form to show all items within the widget. It is recommended to split such long lists into separate Link widgets in order to remove the need for scrollbars.

## Fixed and Configurable Filters in Counters and Links

- Fixed Filters

High-level administrators can add and modify pre-defined **Fixed Filters** to Counters and Links. This option also shows on design input forms and presents the same interface options as **Configurable Filters**.

These filters will *always* apply when the widget is used. Fixed filter results can however be filtered further by Configurable Filters.

- Configurable Filters

When configuring a widget open the filter configuration dialog, where you can add one or more configurable filters.

Adding more than one filter using the **Add** option results in a logical AND of the filter application.

**Configurable Filters**

department

**Filter By**  
Department

**Filter Type**  
Equals

**Filter String**

**Ignore Case**

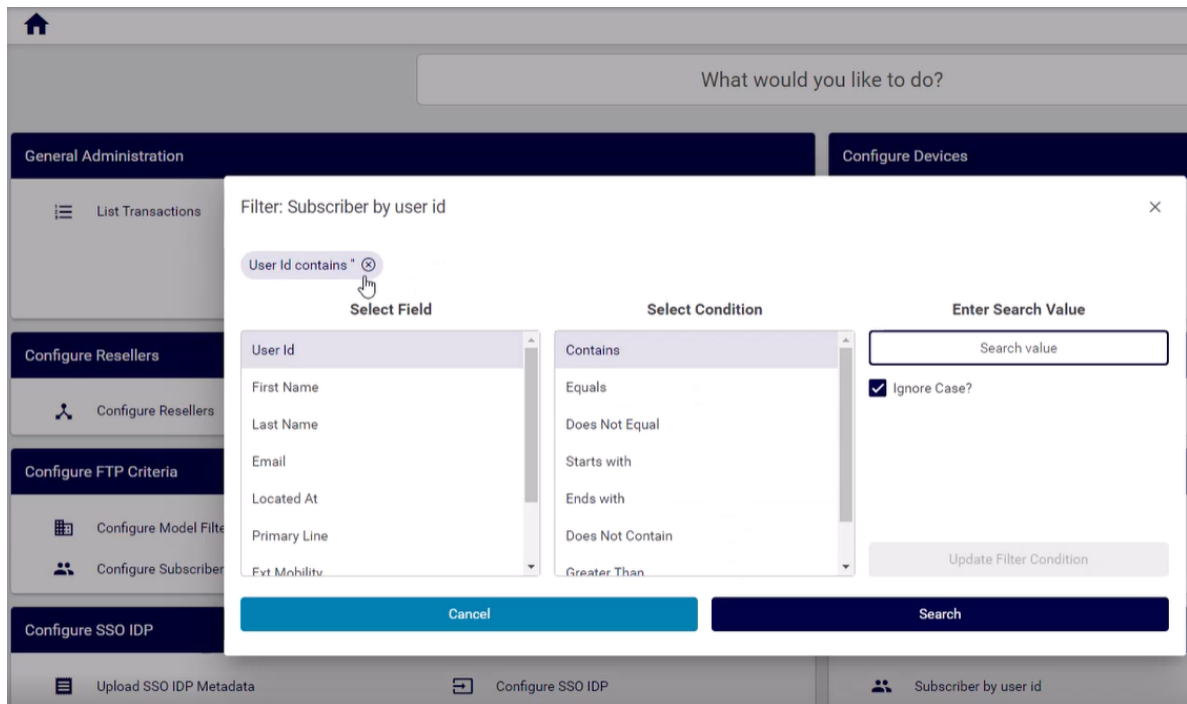
The table describes the **Configurable Filters** fields:



Filter By	Attributes of the selected Type can be selected from the drop-down list.
Filter Type	Select the matching operator to apply when the attribute is matched to the <b>Filter String</b> value: <ul style="list-style-type: none"> <li>- Contains</li> <li>- Does Not Contain</li> <li>- Starts With</li> <li>- Ends With</li> <li>- Equals</li> <li>- Not Equal</li> </ul>
Filter String	Select the value that the matching operator should match by.
Ignore Case	This checkbox defines whether to ignore the case of the <b>Filter String</b> value.

Once you've applied the configurable filters, selecting the counter or link in the GUI triggers a pop up **Filter** dialog before rendering the list view, where you can apply or modify the filter before displaying the page related to the counter or link.

If a **Filter String** value is entered on **Configurable Filters**, this value can also then be accepted or modified in the **Filter** dialog.



The list view of the results footer row indicates that a filter has now been applied to the list and this filter can then be further modified and removed from the list view as usual. See [Working with Lists](#)

The screenshot shows a dashboard titled "Subscriber by user id". At the top, it indicates "Rows: 0 - 200 / 272" and a filter applied: "User Id contains \*". Below this is a table with columns: User Id, First Name, Last Name, Email, Role, and Ent. A filter dialog is open over the table, showing a list of fields to filter on (User Id, First Name, Last Name, Email, Located At, Primary Line, Ext Mobility) and a list of conditions (Contains, Equals, Does Not Equal, Starts with, Ends with, Does Not Contain, Greater Than). The "User Id" field is selected, and the "Contains" condition is chosen. The filter value is "ef". There is a checked "Ignore Case?" checkbox. At the bottom of the dialog are buttons for "Cancel", "Filter", and "Update Filter Condition".

## Table

**Data Source:** Insights or Automate

Available menus and fields upon **Data Source** selection:

- **Insights**
  - **Resource** options available in accordance with the Insights database
  - **Fields:** select fields from the resource to show in the table
  - **Filters:** filter field values from the table
  - **Sorts:** order the table (ascending, descending) by a selected field value
- **Automate:** Model Type, Field Display Policy, Configuration Template
- **Table Options** are available for both data sources.
  - Options to limit, show, hide or format table data and elements
  - Additional field display customization using **Renderers** for fields
- **Drilldown options:** see [Reference: Drilldown Options and Conditional Syntax](#)

Besides standard menu options, a displayed table can also show additional menu options in accordance with enabled features such as:

- Description (circled i icon)
- Drilldown (lightning bolt)
- Filter (funnel icon)

The screenshot shows a table widget titled "Insights resource CUC User playback Volume". The table has two columns: "Volume" and "DisplayName". The data rows are as follows:

Volume	DisplayName
0.00 %	Operator
0.00 %	Undeliverable Messa
0.00 %	Undeliverable Messa
0.00 %	Operator
0.00 %	john wick

A context menu is open over the table, listing the following actions:

- Edit
- Clone
- Delete
- Copy Widget
- Export data

### Table widget example

The example below shows a table widget configuration using an Insights resource, the resultant output display and also a drilldown result.

- Configuration
  - **Resource:** Cisco CUC User

The configuration panel for the widget "Insights resource CUC User playback Volume" is shown. It includes the following settings:

- Widget Type:** Table
- Data Settings:**
  - Title \***: Insights resource CUC User playback Volume
  - Description:** CUC User and playback Volume
  - Data Source:** Insights
  - Resource:** Cisco CUC User

- **Fields:**

- \* Playback volume (integer) is selected as a table column and similar values are grouped using **Operation**: Grouping Count
- \* The user's DisplayName is as a table column
- **Filters**
  - \* DisplayName values containing regex CFT are excluded with a filter.
- **Sorts**: no sorting is done on any column.

### Fields

✕
+

▼ Volume
📄
🗑️

**Field Name**  
 ✕ ▼ 🔍

**Friendly Name**

**Field Type**

**Operation**  
 ✕ ▼ 🔍

▼ DisplayName
📄
🗑️

**Field Name**  
 ✕ ▼ 🔍

**Friendly Name**

**Field Type**

**Operation**  
 ✕ ▼ 🔍

+ Add item

### Filters

✕
+

▼ DisplayName
📄
🗑️

**Field Name**  
 ✕ ▼ 🔍

**Operation**  
 ✕ ▼ 🔍

**Filter Value**

+ Add item

↕
+

> No value set
📄
🗑️

+ Add item
 

#### – Table Options

- \* **Series Limit:** left at default All so no restriction on the number of values to show.

- \* **Hide Index Column:** enabled so an additional first column containing an index value (row number) is not shown.
- \* **Selection Type:** left at default so that a table entry selection selects an entire row.
- \* **Renderers:** the Volume field configured so that its integer value has **Suffix:** %.

▼ Table Options

**Series Limit**

x ▼ 🔍

**Description**

**Over Time**

**Hide Paging Control**

**Hide Count Column**

**Hide Index Column**

**Auto Adjust Columns**

x ▼ 🔍

**Table Alignment**

▼ 🔍

**Selection Type**

x ▼ 🔍

**Default Text**

**Renderers**

▼
▲
+

▼ Volume 📄 🗑️

**Field Name**

**Format Type**

x ▼ 🔍

**Column Alignment**

▼ 🔍

**Prefix**

**Suffix**

> DisplayName ▲ 📄 🗑️

+ Add Item

#### – Drilldown Options

- \* **Filter Options:** set to IN so that a drilldown display contains DisplayName.

- \* **Drilldown Options:** selecting a row - the choice will Link to Automate Resource specified as **Type**
- \* **Type:** the Automate resource type: selected the related Automate resource: relation/Voicemail.
- \* **Drilldown Fields:** the field to highlight in the table as a drilldown link: selected DisplayName.

The screenshot shows a configuration panel titled "Drilldown Options". It contains several sections:

- Filter Options:** A dropdown menu set to "IN".
- Drilldown Options:** A dropdown menu set to "Link to Automate Resource".
- Type:** A text input field containing "relation/Voicemail".
- Drilldown Fields:** A list of fields with "DisplayName" selected. The selected field is highlighted in dark blue and has a trash icon to its right.
- Field Name:** A dropdown menu set to "DisplayName".
- + Add item:** A button to add a new field.

- Output

The table shows 2 columns:

- Volume values with % suffix
- DisplayName with drilldown link



Volume	DisplayName
0.00 %	Operator
0.00 %	john wick
50.00 %	Naomi Tewsen
50.00 %	Nik Dervers
50.00 %	Steve Helmand
50.00 %	Kim Tawvers
50.00 %	Kris Furmer
50.00 %	Harry Rertand
50.00 %	Tim Juliane
50.00 %	Lovall Pascal
50.00 %	Freya Gourand
50.00 %	Mable Valder
50.00 %	Neal Fervier
50.00 %	Matt Kasperson
50.00 %	Beverley Gertrand
50.00 %	Ronald Josephe

- Drilldown result

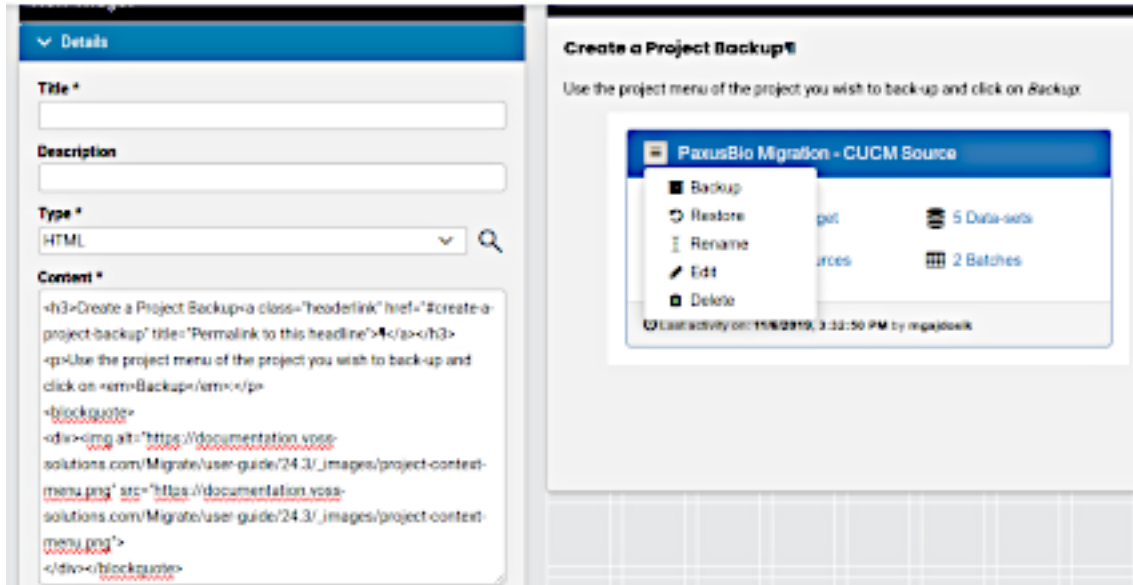
Selecting a row link from the table shows the item as listed in the selected **Drilldown Options**.

Rows: 0 - 1 / 1		Filter: DisplayName equals 'Naomi Tewsen'					8 columns selected	
<input type="checkbox"/>	Alias ↑↓	First Name ↑↓	Last Name ↑↓	Dtmf Access Id ↑↓	Email Address ↑↓	Time Zone ↑↓	Located At ↑↓	
<input checked="" type="checkbox"/>	Filter	Filter	Filter	Filter	Filter	Filter	Filter	
<input type="checkbox"/>	ntewsen01	Naomi	Tewsen	+494074371108	ntewsen01@ab-roup.com	140	CL1-AB-C-Hannover (Site)	

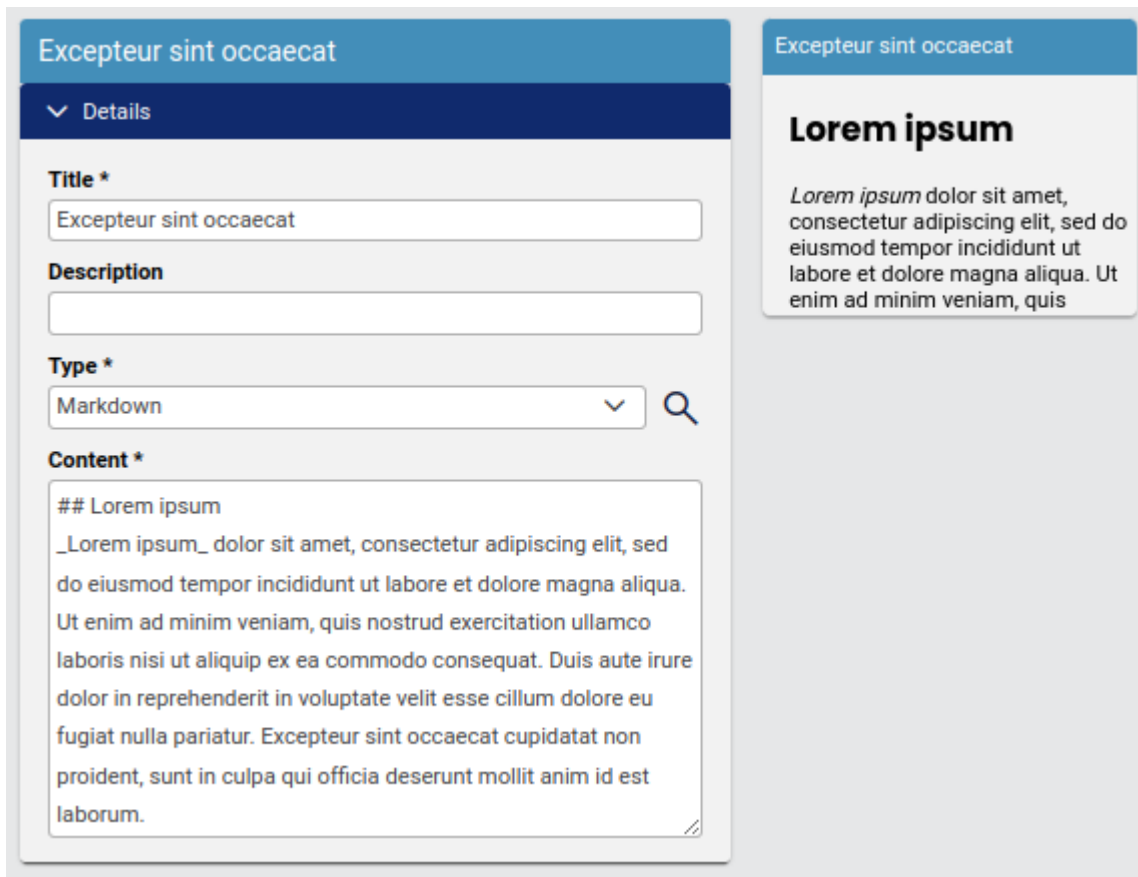
## Text

A widget is available to show text on a dashboard. The input format can be either HTML or Markdown.

- Example Text widgets (HTML):



- Example Text widgets (Markdown):



- Text widgets can be used to create headings, for example:

Design:

Display:

## Dashboard Refresh

A real-time sync process is running to maintain VOSS and Insights databases in sync. After upgrade to release 24.1, and if dashboard management is required prior to the first default scheduled sync, a manual first-time sync from the platform command line (CLI) is required prior to designing a new dashboard:

- **insights sync run full-sync**
- **insights sync run full-transaction**

See: *Insights Analytics* in the Platform Guide.

**Important:** Dashboard fields showing the item hierarchy (similar to *Located At*) are updated only when a full sync runs. For example, if you've added users to the system and then moved them to a site, any charts, counters, or tables showing a count of users (at that site or at the system level), will only reflect the correct number of users once a full sync runs and not when simply refreshing the dashboard or widget in a real-time sync. In this case, until you run the full sync, the hierarchy fields for these users display on dashboard charts, tables, or widget counters as with no (empty) hierarchy value. See [Dashboard Refresh](#).

## Reference: Filter Options Availability and Definitions

The operators below are available as filter options for Insights resource field types:

### Text

- **LIKE (Case Sensitive)** - based on the pattern entered in the filter field, will return the data that matches the pattern from the extracted string. This function is case sensitive. An underscore (\_) in the pattern indicates matches any single character while a percentage sign (%) indicates matches any sequence of zero or more characters.
- **NOT LIKE (Case Sensitive)** - based on the pattern entered in the filter field, will return the data that does not match the pattern from the extracted string. This function is case sensitive. An underscore (\_) in the pattern indicates matches any single character while a percentage sign (%) indicates matches any sequence of zero or more characters.
- **ILIKE (Case Insensitive)** - based on the pattern entered in the filter field, will return the data that matches the pattern from the extracted string. It is *not* case sensitive. An underscore (\_) in the pattern indicates matches any single character while a percentage sign (%) indicates matches any sequence of zero or more characters.
- **NOT ILIKE (Case Insensitive)** - based on the pattern entered in the filter field, will return the data that does not match the pattern from the extracted string. This function is *not* case sensitive. An underscore (\_) in the pattern indicates matches any single character while a percentage sign (%) indicates matches any sequence of zero or more characters.
- **Equals (=)** - based on the pattern entered in the filter field, will return the data that is equal to the pattern from the extracted string.
- **Not Equal (!=)** - based on the pattern entered in the filter field, will return the data that is not equal to the pattern from the extracted string.
- **IN** - based on the pattern entered in the filter field, will return the data that exists within a comma separated list, i.e. 1, 2, 3, 4.
- **NOT IN** - based on the pattern entered in the filter field, will return the data that *does not* exist within a comma separated list, i.e. 1, 2, 3, 4.
- **REGEX (Case Sensitive)** - utilizes POSIX Regular Expressions to extract data. It is case sensitive.
- **REGEX (Case Insensitive)** - utilizes POSIX Regular Expressions to extract data. It is *not* case sensitive.
- **EXCLUDE REGEX (Case Sensitive)** - utilizes POSIX Regular Expressions to extract the data that does not match the pattern. It is case sensitive.
- **EXCLUDE REGEX (Case Insensitive)** - utilizes POSIX Regular Expressions to extract the data that does not match the pattern. It is *not* case sensitive.

## Integer

- Less Than (<) - based on the value entered in the filter field, will return the data that is less than the value from the extracted string.
- Greater Than (>) - based on the value entered in the filter field, will return the data that is greater than the value from the extracted string.
- Less Than or Equal (<=) - based on the value entered in the filter field, will return the data that is less than or equal to the value from the extracted string.
- Greater Than or Equal (>=) - based on the value entered in the filter field, will return the data that is greater than or equal to the value from the extracted string.
- Equals (=) - based on the value entered in the filter field, will return the data that is equal to the value from the extracted string.
- Not Equal (!=) - based on the value entered in the filter field, will return the data that is not equal to the value from the extracted string.
- IN - based on the values entered in the filter field, will return the values that exists within a comma separated list, i.e. 1,2,3,4.
- NOT IN - based on the values entered in the filter field, will return the values that *does not* exist within a comma separated list, i.e. 1,2,3,4.
- REGEX (Case Sensitive / Insensitive) - utilizes POSIX Regular Expressions to extract data.
- EXCLUDE REGEX (Case Sensitive / Insensitive) - utilizes POSIX Regular Expressions to extract the data that doesn't match the pattern.

## Reference: Chart Options Availability and Definitions

### Chart Option Definitions:

- **Series Limit:** Maximum number of groups to display on a chart.
  - **All:** (default) show all values
  - <number>: show maximum <number> values
- **Description:** Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- **Over Time:** By selecting this check box the chart will display the data over the specified time based on the **Interval**, i.e. Minute, Hour, Daily, Weekly and Monthly.
- **Interval:** Used by **Over Time:** Minute, Hour, Daily, Weekly and Monthly.
- **X Title:** Text label displayed along the bottom of the X axis of column and line charts.
- **Y Title:** Text label displayed along the bottom of the Y axis of column and line charts.
- **Is Stacked:** By selecting this check box the chart will stack values by **Stack Type**.
- **Stack Type:** Only for column charts. By selecting this box the chart will stack the values based on the type selected:
  - **None:** (default) no stacking; individual columns for data
  - **Normal:** data stacked into a single column, color coded with values
  - **Percentage:** data stacked into a single column, color coded with percentages

- **Numeric Precision:** Select the decimal precision displayed for each point.
- **Is Horizontal:** By selecting this check box, the chart will display the columns/bars horizontally across the chart.
- **Is 3D:** By selecting this check box, column charts and pie charts will be displayed in a 3D representation.
- **Show Labels:** By selecting this check box, each value that defines the chart will be labeled on the chart.
- **Show Legend:** By selecting this check box, the Field Definition for the values being charted will be displayed in the selected position on the chart with the associated color representation.
- **Gauge Label:** Labels the middle of the gauge with value from field extraction.
- **Min** and **Max:** Place the starting value (**Min**) and the ending value (**Max**) for the gauge needle to traverse, e.g. start at 0 and end at 60,000.
- **Label Inside:** By selecting this check box the value will be labeled with the definition based on the field extraction.
- **Show Bands:** By selecting this check box then the gauge will have a maximum of 3 colored bands indicating certain severity levels. These are user defined thus a good, minor and major severity can be easily defined based on the data elements extracted. Simply place values for each color in the associated box to represent the percentage of the gauge band that color is to occupy. Tip: Make your major issue (Red) 100 thus simply modifying the good and minor automatically recalculates the major.
- **Is Doughnut:** A pie chart is displayed with a hole in the middle.
- **Show Numbers:** A pie chart by default shows slices as a percentage. Use this option to instead show the values of the percentage.

Available **Chart Options** vary according to the chart type:

Chart Option	Column Chart	Gauge Chart	Line Chart	Pie Chart
Series Limit	X		X	X
Description		X	X	X
Over Time	X		X	
Interval	X		X	
X Title	X		X	
Y Title	X		X	
Is Stacked			X	
Stack Type	X			
Numeric Precision	X			
Is Horizontal	X			
Is 3D	X			X
Show Labels	X		X	X
Show Legend	X		X	X
Gauge Label		X		
Min		X		
Max		X		
Label Inside		X		
Show Bands		X		
Is Doughnut				X
Show Numbers				X

## Reference: Drilldown Options and Conditional Syntax

### Drilldown Options

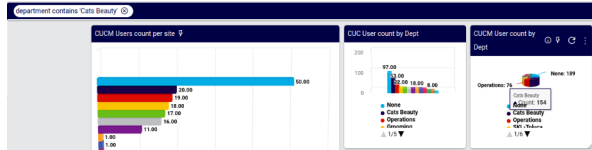
- **Filter Options:** apply to field value match of a selection of the chart or table data (IN, REGEX)

For example, if **Filter Other Widgets** is selected, then IN will match “Ann” exactly in other widgets and REGEX will match “Ann”, “Anne”, “Annie”.

- **Drilldown Options:** the behavior when selecting an item in a chart or table
  - **None** (default)
  - **Filter Other Widgets:** a selected drilldown item will update any other widget that also references the same data instance.

For example a drilldown on a CUC user table where this is enabled, will similarly impact widgets such as charts, counters and tables related to CUC users, so that these widgets will then reflect data from only the single user from the drilldown.

In the example below, the chart widget called **CUCM User count by Dept** has the **Filter Other Widgets** drilldown filter enabled, so that for example selecting a department from the chart also filters the **CUCM Users count per site** chart to only show users at sites belonging to the selected department. The department filter (here: `department contains 'Cats Beauty'`) is also displayed when the filter is active.



#### – Link to Another Dashboard

Used to open another existing widget during drilldown. A **Dashboards** dropdown shows to select the other dashboard.

#### – Launch Third-party URL

- \* Launch a system URL in the system portal. The format of the input is an endpoint relative to the portal: `https://<hostname>/portal/`. For example, if the value entered is `#/admin`, then the drilldown will launch the admin landing page dashboard: `https://<hostname>/portal/#/admin`.
- \* Launch an external, non-system URL in the system portal (if allowed). The format of the input is the full external URL: `https://<external-host>`

#### – Conditional Drilldown

Provides a **Conditional Drilldown** input box into which a JSON formatted condition can be entered. For details on the format, see *Drilldown Conditional* below.

#### • Drilldown Fields:

- **Field Name:** if multiple **Field** values were added for a **Resource**, select a field for the drilldown.

### Drilldown Conditional

When selecting the **Drilldown Conditional** option, the condition needs to be entered in JSON format into the input box. This section provides syntax details and examples for this configuration.

If an item matching the condition is selected from the dashboard, the conditional drilldown is then carried out.

The JSON format is outlined below.

- If conditions are all met
- then carry out actions
- else Defaults ("default...")
- Structure:

```
{
  "conditions": [],
  "actions": [],
  "defaultDrilldown": 1,
  "defaultDashboardId": "",
  "defaultUrl": "",
  "defaultFilterFields": []
}
```

- conditions:

conditions: list of conditions on rules.

- id: "integer" - zero-based



- name: "text" - condition name
- type : "OR" or "AND"
  - \* conditions.type: "AND" means action will be taken when *all* conditions are met.
  - \* conditions.type: "OR" means action will be taken when *one* condition is met.
- rules:
  - rules: list of rules:
    - ruleid: "integer" - zero-based
    - field: "integer" - zero-based
      - Field order in the drilldown tab (0 base)
    - fieldType: "text", "integer" or "float"
    - operator: "=", "!", "<=", ">=", "<", ">" or "regex"
    - operator: "=", "!", "<=", ">=", "<", ">" or "regex"
      - \* fieldType text operator choices: "=", "!", "regex"
      - \* fieldType integer and float operator choices: "=", "!", "<=", ">=", "<", ">"
    - value: value of the field; according to fieldType: "text", "integer" or "float"
- actions:
  - List of actions:
    - drilldown: "integer"
      - \* Drilldown type:
        - 1 (drilldown to other widgets)
        - 2 (drilldown to other dashboard: dashboardid)
        - 4 (drilldown to external link: url)
    - dashboardid: "text"
      - The ID is available as dashboard\_id URL parameter value when on a dashboard.
    - url: "text"
      - The value is a URL containing position variables for filterFields references, whose values in turn are substituted into the URL. The position variables are one based, for example:
 

```
"url": "https://{1}/ui/index.html?{2}"
```

 refers to the first and second filterFields list entries, which in turn take the format
 

```
"filterFields": [0,1]
```

 The value of the first filterFields entry is therefore for example substituted into the URL variable {1} above.
    - filterFields: list of fields ("integer" = index number)
      - Field order in the drilldown tab (0 base)
- Defaults:
  - defaultDrilldown: "integer"
  - defaultDashboardid: "text"

- defaultUrl: "text"
- defaultFilterFields: list of fields ("integer" = index number)  
Field order in the drilldown tab (0 base)

## Examples

- Drilldown to other widgets

Explanation:

- If 7th field ("field": 6) data != 0 and 6th field ("field": 5) <= 0 then
  - \* run action drilldown to other widgets ("drilldown": 1)
    - using filter values of first, second and 4th field ("filterFields": [0,1,3]).
- If the condition is not met, then
  - \* run default action which is drilldown to other widgets ("defaultDrilldown": 1)
    - using filter values of first and second field.

JSON:

```
{
  "conditions": [
    {
      "id": 0,
      "name": "first_condition",
      "type": "AND",
      "rules": [
        {
          "ruleid": 0,
          "field": 6,
          "fieldType": "integer",
          "operator": "!=",
          "value": "0"
        },
        {
          "ruleid": 1,
          "field": 5,
          "fieldType": "float",
          "operator": "<=",
          "value": "0"
        }
      ]
    },
    {
      "actions": [
        {
          "drilldown": 1,
          "dashboardid": "",
          "url": "",
          "filterFields": [
            0,
            1,
            3
          ]
        }
      ]
    }
  ]
}
```

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```

    ]
  }
]
},
"defaultDrilldown": 1,
"defaultDashboardId": "",
"defaultUrl": "",
"defaultFilterFields": [
  0,
  1
]
}

```

- Drilldown to other dashboard

Explanation:

- If second field data is “keller, texas” or 5th field is “TX” then
  - \* run action drilldown to other dashboard ("drilldown": 2, "dashboardid":...)
    - using filter values of first, second and 4th field.
- If the condition is not met, then
  - \* run default action which is drilldown to other widgets
    - using filter values of first and second field.

JSON:

```

{
  "conditions": [
    {
      "id": 0,
      "name": "first_condition",
      "type": "OR",
      "rules": [
        {
          "ruleid": 0,
          "field": 1,
          "fieldType": "text",
          "operator": "==",
          "value": "keller, texas"
        },
        {
          "ruleid": 1,
          "field": 4,
          "fieldType": "text",
          "operator": "==",
          "value": "TX"
        }
      ]
    },
    {
      "actions": [

```

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```

    {
      "drilldown": 2,
      "dashboardid": "M2OQQMVN3IWI102P1686581558847Y2FRT98M8V24GS",
      "url": "",
      "filterFields": [
        0,
        1,
        3
      ]
    }
  ]
}
],
"defaultDrilldown": 1,
"defaultDashboardId": "",
"defaultUrl": "",
"defaultFilterFields": [
  0,
  1
]
}

```

- Drilldown to external link

Explanation:

- If second field data is “keller, texas” or 5th field is “TX” then
  - \* run action drilldown to other external link
    - using filter values of first and second field.
- If the condition is not met, then
  - \* run default action which is drilldown to other widgets
    - using filter values of first and second field.

JSON:

```

{
  "conditions": [
    {
      "id": 0,
      "name": "first_condition",
      "type": "OR",
      "rules": [
        {
          "ruleid": 0,
          "field": 1,
          "fieldType": "text",
          "operator": "==",
          "value": "keller, texas"
        },
        {

```

(continues on next page)

(continued from previous page)

```
    "ruleid": 1,
    "field": 4,
    "fieldType": "text",
    "operator": "=",
    "value": "TX"
  }
],
"actions": [
  {
    "drilldown": 4,
    "dashboardid": "",
    "url": "https://{1}/ui/index.html?{2}",
    "filterFields": [
      0,
      1
    ]
  }
]
}
],
"defaultDrilldown": 1,
"defaultDashboardId": "",
"defaultUrl": "",
"defaultFilterFields": [
  0,
  1
]
}
```

### Dashboards for a Business Admin Role

VOSS Automate provides a set of dashboards, menu layouts, and field display policies that are used in two sample menu layouts - for use or customization as a Business Administration Portal menu layout to be added to a user's role.

### Example dashboards - Business Admin Role

Example - Call Groups setup and display

Home > Role Management > Cisco Hunt Groups > Dashboard Call Groups >

**Data Settings**

**Title \***

**Description**

**Data Source**  
Automate

**Counters**

- > Cisco Hunt Groups
- > Cisco Call Pickup Groups
- > Cisco Auto Attendants
- + Add Item

> Counter Settings

> Drilldown Options

Cisco Hunt Groups  
**117**

Cisco Call Pickup Groups  
**222**

Home > Role Management > Cisco Hunt Groups > Dashboard Call Groups > **Quick Actions**

**Details**

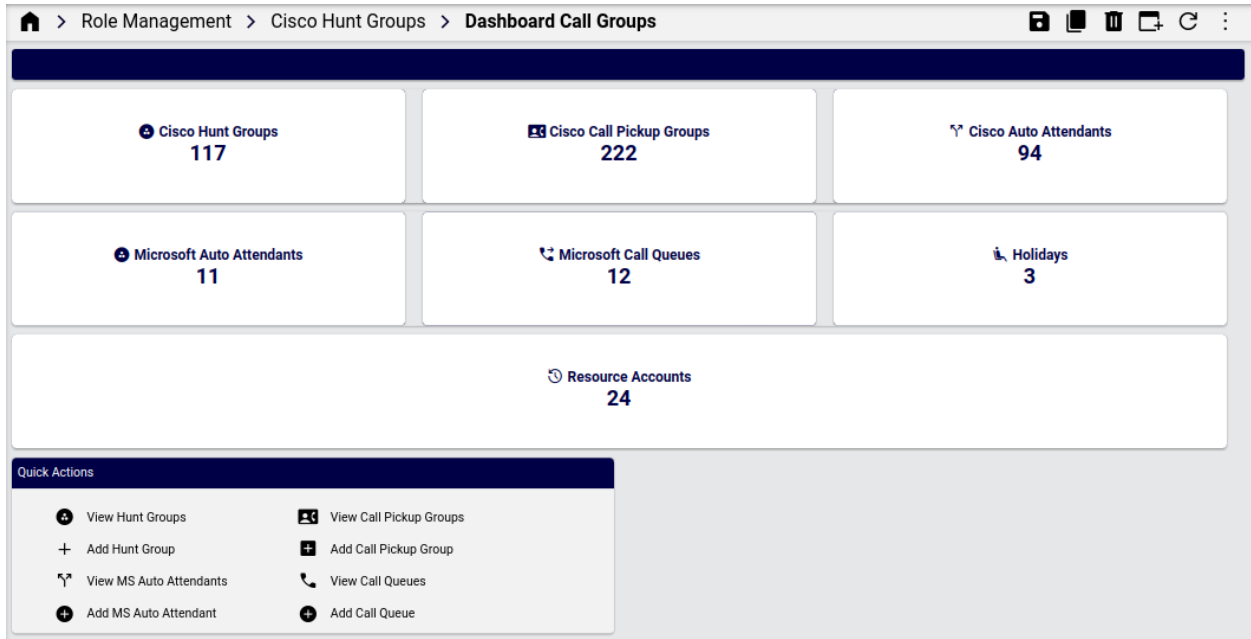
**Title \***  
Quick Actions

**Description**

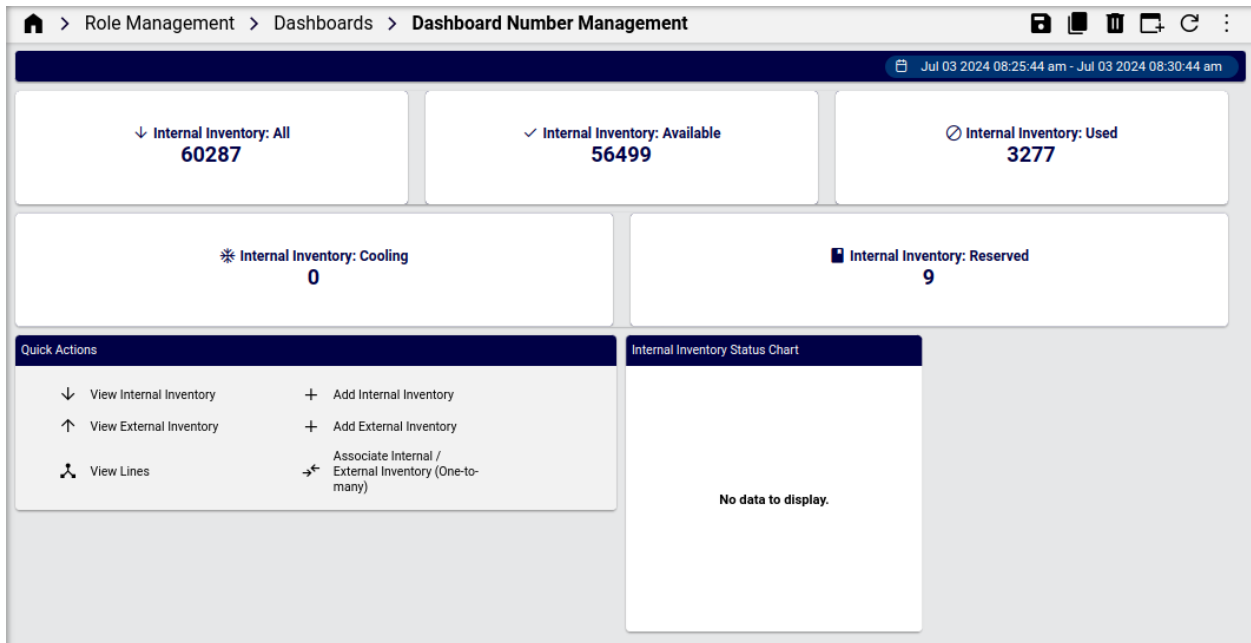
**Links**

- > View Hunt Groups
- > View Call Pickup Groups
- > Add Hunt Group
- > Add Call Pickup Group
- > View MS Auto Attendants
- > View Call Queues
- > Add MS Auto Attendant
- > Add Call Queue
- > View Cisco Auto Attendant
- > View Files
- > Add Cisco Auto Attendant
- > File Upload
- > Cisco Auto Attendant Schedule

<ul style="list-style-type: none"> <li>+ View Hunt Groups</li> <li>+ Add Hunt Group</li> <li>↗ View MS Auto Attendants</li> <li>+ Add MS Auto Attendant</li> <li>↗ View Cisco Auto Attendant</li> <li>+ Add Cisco Auto Attendant</li> <li>🕒 Cisco Auto Attendant Schedule</li> </ul>	<ul style="list-style-type: none"> <li>👤 View Call Pickup Groups</li> <li>+ Add Call Pickup Group</li> <li>📞 View Call Queues</li> <li>+ Add Call Queue</li> <li>📁 View Files</li> <li>📤 File Upload</li> </ul>
--	---



**Example - display of Number Management dashboard**



Dashboard names grouped by sample menu layout names The following lists are the dashboard names grouped by the provided sample menu layout names.

### Field Display Policies

- Field display policies with `customer_admin` in their names are also provided and used for some of the links in the dashboards.
- Field display policies with `BusinessAdmin` in their names are also provided and used for some of the links in the dashboards.

### Dashboards: MenuSiteAdmin

- Dashboard Number Management
- Dashboard MV Subscribers
- Dashboard Phones
- Dashboard Headsets
- Dashboard Voicemail
- Dashboard Collaboration
- Dashboard Conferencing
- Dashboard Contact Center
- Dashboard Call Groups
- Dashboard MS Exchange
- Dashboard Tools

### Dashboards: MenuCustomerAdmin

- Dashboard Site Management
- Dashboard Number Management
- Dashboard MV Subscribers
- Dashboard Phones
- Dashboard Headsets
- Dashboard Voicemail
- Dashboard Collaboration
- Dashboard Conferencing
- Dashboard Contact Center
- Dashboard Call Groups
- Dashboard MS Exchange
- Dashboard Tools



## 14.4. Access Profiles

### 14.4.1. Introduction to Access Profiles

#### Overview

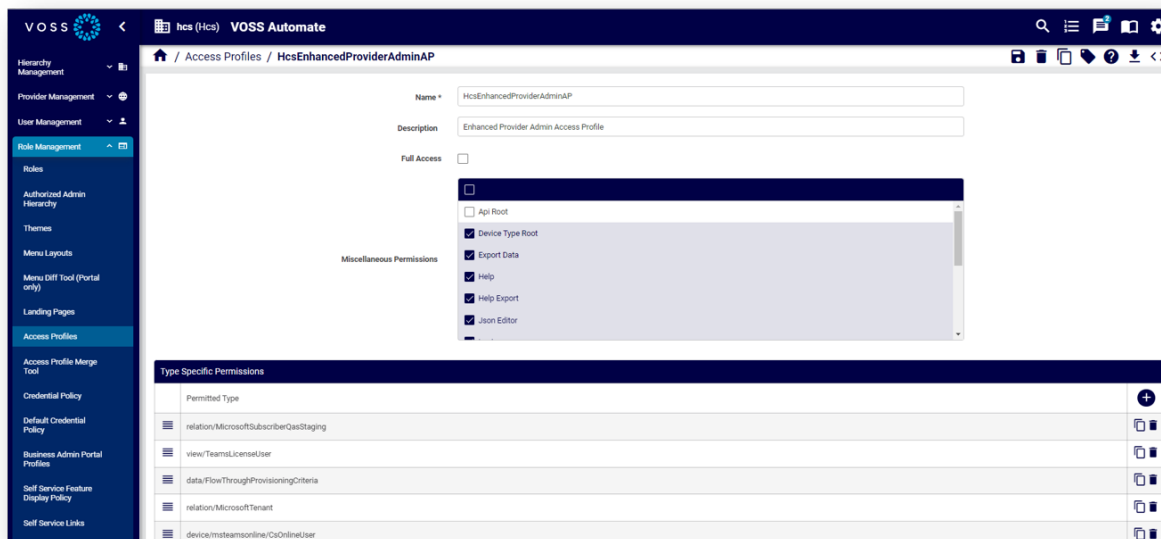
Access profiles define the model types that a user is allowed to access, and are assigned to users via Roles (default menus: **Role Management > Roles**).

**Note:** Access profiles are subject to the following requirements:

- Default access profiles These adhere to the following hierarchy of permissions: **Provider > Reseller > Customer > Site**. For instance, default Customer access profiles have less permissions than Provider access profiles.
- access profiles By default, the access profiles that ship with the system (except for Operator access profiles) have *read* and *export* permissions on all multi vendor subscriber quick actions and service card actions that are views, for example, `view/DeleteCucmHuntGroupAllMembers` (quick action, *Remove from all Hunt Groups*) or `view/AddExtensionMobility` (service card action, *Add Extension Mobility*).
- Cloned access profiles A cloned access profile has equal or less permissions than the access profile of the admin user who creates the clone.

When a system upgrade is performed, the default access profiles are updated in accordance with the above.

**Note:** Existing cloned access profiles are **not** upgraded. You have to manually update them, or re-clone and modify them from the upgraded, default versions as needed.



## Related Topics

- Access Profile Permissions and Operations in the Core Feature Guide

## Manage Access Profiles

Admins at a higher level than Provider admins can view, add, edit, and delete access profiles via (default menus) **Role Management > Access Profiles**.

The list view shows existing access profiles added to the system.

- To add an access profile, click the Plus icon (+) from the list view, then fill out details on the configuration screen.
- To delete an access profile, select an access profile in the list view, then click the **Delete** icon.
- To edit an access profile, click on the access profile in the list to open the configuration screen.

The table describes configuration options when adding or editing an access profile:

Title	Field Name	Description
Name *	name	The name that is given to the access profile.
Description	description	A description for the access profile.
Full Access	full_access	Enabling this flag, grants the user full system access.
Miscellaneous Permissions	miscellaneous_permissions	The list of miscellaneous operations permitted by this access profile.
Type Specific Permissions	type_specific_permissions	Configure permissions per model type for this access profile. These permissions override any Permitted Type permissions using a wild card "*" of the same type.

## Type Specific Permissions

Title	Field Name	Description
Permitted Type *	type	The type that is permitted by this Access Profile. This field supports the use of the * wildcard. The wildcard can be restricted by a Type Specific Permission of the same type.
Permitted Operations	operations	The operations that are permitted by this Access Profile for the given type.

## 14.4.2. Access Profile Permissions and Operations

Administrators *above* Provider level can maintain access profiles as a part of role management. For example, `hcsadmin`.

An access profile assigned to a role provides a general set of permissions and type-specific operations that are associated with specific models.

For type-specific operations, wild cards may be used in model references, for example `data/*`.

---

**Note:** Type-specific permissions that are also configured as general permitted operations will override the general permissions.

---

The default access profiles show typical configurations, for example an Operator-type profile at a hierarchy would *only* require **Read** type-specific permissions, while the administrator profile at the same hierarchy would have **Create**, **Update** and **Delete** permissions for the same type.

The default access profiles of the following administrators above Provider level have full general and type-specific permissions to all models:

- `hcsadmin` (Provider product deployment)
- `entadmin` (Enterprise product deployment)

The lists below provide details on the types of settings.

- **Miscellaneous Permissions**

Many of these are general permissions that can be overridden per model as **Type Specific Permissions**.

The explanations below show the affect of enabling the permission.

- **Api Root:** Access to API root endpoint is permitted.
- **Copilot Chat:** Show and allow the use of the **VOSS Wingman** AI assistant or copilot. This permission also requires the **Enable Copilot Chat** global setting (enabled by default) to be enabled. Refer to the *Settings and Tools* section in the Advanced Configuration Guide.
- **Device Type Root:** Access to API device type model root endpoint is permitted.
- **Export Data:** General permission to export data.
- **Help:** On-line help button is shown.
- **Help Export:** Help data can be exported.
- **Json Editor:** Access to JSON Editor for the editing of model instances. A **JSON Edit** button is available on the GUI form.
- **Login:** Login is allowed.
- **Meta Schema:** Meta schema is accessible.
- **Model Type Choices:** Access to API choices endpoint of model types is permitted.
- **Model Type Root:** Access to API model root endpoint is permitted.
- **Operations:** Operations on models are permitted.
- **Tag:** Models can be tagged.
- **Tool Root:** Access to API tool root endpoint is permitted.

- **Upload:** Uploads are allowed.

- **Dashboard Permissions**

Insights reporter resources (data/ReporterResource) required for the display of data on dashboards can be assigned individually as **Specific Permissions** in an access profile, or grouped into **Dashboard Permission Groups** which can then be assigned - thereby simplifying the management of dashboard permissions. Access profiles allow for the management of these by means of transfer boxes.

If a user has access to a dashboard containing widgets that use reporter resources but the related access profile does not contain the resource, the widget data will not display and the user cannot manage the widget.

Administrators who have access to Dashboard Permission Groups can manage these groups so that they can be managed in an access profile.

If a specific permission is not selected but is in a selected permission group, the group selection applies. An access profile's Dashboard Permissions is therefore the union of resources selected from groups and specific permissions.

For details on dashboards, see: [Automate Dashboards](#).

- **Type Specific Permissions**

These are typically available on the GUI when listing or showing the type.

---

**Note:**

- The available permissions can vary according to the selected type.
  - If the **Create** type specific permission is enabled for a model type, this also enables **Clone** of a model instance.
- 

Typical operations are listed below:

- **Create, Delete, Read, Update:** management operations on models.
- **Configuration Template, Field Display Policy:** create these for the model.
- **Export, Export Bulkload Template :** allow export formats of the model.
- **Bulk Update:** from a GUI list view, more than one item can be selected and updated.
- For system level administrators above provider level: **Purge** for device models. From a list or instance view, remove the local database instance but retain it on the device.

---

**Note:** This operation is only applicable in cases where the UC server is still online and available in the VOSS Automate system.

---

- For designers: **Migration:** a migration template can be obtained.
- For designers: **Tag** and **Tag Version:** a model instance can be tagged and a version provided.

- **Dependent Permissions**

Dependent permissions are permissions that apply to some API endpoints which maybe be granted by virtue of having another permission in the Access Profile.

The following dependent permissions apply:

- Permission to `/api/handle_oauth_webex/`  
Granted by the permission to the **Update** operation on `relation/SparkCustomer`

### Related Topics

- Introduction to Access Profiles in the Core Feature Guide

## 14.5. Credential Policy

### 14.5.1. Customized Credential Policy

A default credential policy called `HcsCredentialPolicy` ships with VOSS Automate. However, you can deploy a customized credential policy at a provider, reseller, or customer hierarchy node.

When you set a customized credential policy as the default credential policy at a hierarchy node, all users and admins at or below that hierarchy node are subject to the customized credential policy, except for any users or admins that are explicitly assigned a different credential policy.

### Related Topics

- [Credential Policies](#)

### Credential Policy Inheritance

Unless explicitly assigned a credential policy, users and admins are subject to the default credential policy set at a hierarchy node at or above their location. The default credential policy for the hierarchy node closest to the user or admin location is used. If no customized credential policies are deployed, all users and admins are subject to the `HcsCredentialPolicy` credential policy, which is the default credential policy at the `sys.hcs` level.

### Deploy a Customized Credential Policy

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the node where you want to deploy a customized credential policy.
3. Choose **Role Management > Credential Policy**.
4. Either clone the `HcsCredentialPolicy` credential policy, or add a new credential policy:
  - To clone the `HcsCredentialPolicy` policy, click **HcsCredentialPolicy**, then click **Action > Clone**.
  - To add a new credential policy, click **Add**. The credential policy settings default to the settings for `HcsCredentialPolicy`.
5. Provide a name for the credential policy.
6. Modify the credential policy settings as needed.

Field	Description
Idle Session Timeout	The number of minutes a user session can be idle before being automatically logged off. The minimum setting is 1 minute and the maximum is 525600 minutes (365 days). The default is 20 minutes.
Absolute Session Timeout	The number of consecutive minutes a user can be logged in, regardless of session activity, before being automatically logged off. A value of 0 disables absolute session timeout. The maximum is 525600 minutes (365 days). The default is 1440 minutes (24 hours).
Password Expires	The number of months that can elapse between password resets. The default is 6 months.
User Must Change Password on First Login	Select this check box to force users to change their password on initial login. Default = clear.
Lock Duration	The number of minutes a lock will be held when user is locked out. The default is 30 minutes.
Disable Failed Login Limiting per User	Select this check box to not limit the number of times a user can fail to log in before the account is locked. Default = clear
Failed Login Count per User	Selecting this check box will result in user account being disabled if failed login attempt reaches 'Failed Login Count per User' within 'Reset Failed Login Count per User (minutes)'. This field is clear by default.
Reset Failed Login Count per User	After this number of minutes from the last login attempt, the failed login count is reset to 0. The default is 5 minutes.
Disable Failed Login Limiting per Source	Clear this check box to limit the number of times any user from the same IP address can fail to log in before the account is locked. Note: On Provider HCFM and Provider Decoupled deployments, the default is to disable the limit. (checked) On Enterprise deployments, the default is to enable the limit. (unchecked) Do not enable source login rate limiting for a credential policy that will apply to Self Service users. A separate credential policy is recommended for administrators and users that do not use Self Service if source login rate limiting is required.
Failed Login Count per Source	If source login rate limiting is enabled, enter the number of times any user from the same IP address can fail to log in before the IP address is blocked. The default is 10 times.
Reset Failed Login Count per Source	If source login rate limiting is enabled, this value is the number of minutes from the last login attempt from the IP address after which the failed login count is reset to 0. The default is 10 minutes.

Field	Description
Number of Questions Asked During Self Service Password Reset	Enter the number of security questions users or admins must answer when resetting their own password with the <b>Forgot Password</b> link. The default is 3.
Password Reset Question Pool	Contains a list of possible security questions that users or admins must answer when resetting their own password with the <b>Forgot Password</b> link.
Password Reuse Time Limit	The number of days from the date the password was created that the password cannot be reused. The valid range is 0-365 days. The default is 15 days. Setting it to 0 disables the reuse time limit.
Minimum Password Length	The minimum length of a password in characters. The minimum allowed value is 8. The default is 8.
Enable Password Complexity Validation	Select this check box to enable the rule on how complex a password must be. The complexity rule requires a password to contain at least one of each of the following: <ul style="list-style-type: none"> <li>• Uppercase letter</li> <li>• Lowercase letter</li> <li>• Digit</li> <li>• Special character (see below)</li> </ul>
Inactive Days Before Disabling User Account	The number of days users or admins can go between logging in without having their account disabled. Setting it to 0 disables the inactive time limit. The default is 0.
Session Login Limit Per User	The number of concurrent login sessions a user may have. Setting it to 0 disables the session login limit. The default is 0. If the session limit value is set to 1 or more and the user exceeds the session limit when starting a new session, the oldest login session will be disconnected.
Number of Different Password Character	The minimum number of character changes (inserts, removals, or replacements) required between the old and new passwords.
Minimum Password Age	The number of days within which a user cannot change their password. A zero (0) value means that password age validation is disabled. The minimum value is 1 day and the maximum is 365 days.

Acceptable special characters are:

```
` ~ ! @ # $ % ^ & * ( ) - _ = + [ { ] } | \ \ : ; ' " , < . > / ?
```

**Note:** It is recommended that you make a credential policy only more restrictive than HcsCredentialPolicy in order to not have a policy that is too insecure.

7. Click **Save**.

**Note:** If a user is already logged in when the credential policy is changed, changes do not take effect

---

until the user logs out and logs in again.

---

8. Choose **Role Management > Default Credential Policy**.
9. Provide a name for the Default Credential Policy at this hierarchy node.
10. From the **Credential Policy** drop-down, choose the credential policy you just cloned or added.
11. Click **Save**.

Every user and administrator at or below the hierarchy node is now subject to the default credential policy, unless the user or administrator was explicitly assigned a different credential policy.

---

**Note:** Timeout limits will initiate the display of timeout limit notifications in the Admin Portal - see: [Timeout Limit Notifications](#).

---

### 14.5.2. Assign a Credential Policy to a User

This procedure assigns a credential policy.

Typically, a user inherits a credential policy from the nearest hierarchy node, at or above their location, wherever a default credential policy is defined. However, you can explicitly assign a credential policy to a user.

1. Log in as provider, reseller, or customer administrator.
2. Go to (default menu) **User Management > Users**.
3. Click the user that you want to assign a credential policy to.
4. On the **Account Information** tab, from the **Credential Policy** drop-down, choose a credential policy to assign.

The menu contains all the credential policies available at or above the user's node in the hierarchy.

6. Click **Save**.

---

**Note:** If a user is signed in when the credential policy is changed, changes are not applied until the user signs out and signs in again.

---

### 14.5.3. Assign a Credential Policy to an Administrator

This procedure assigns a credential policy to an administrator.

Typically, an administrator inherits a credential policy from the nearest hierarchy node at or above their location, wherever a default credential policy is defined. However, you can explicitly assign a credential policy to an administrator.

1. Log in as provider, reseller, or customer administrator.
2. Go to (default menu) **User Management > Admins**.
3. Click the administrator that you want to assign a credential policy to.



4. On the **Account Information** tab, from the **Credential Policy** drop-down, choose a credential policy to assign.

The menu contains all the credential policies available at or above the administrator's node in the hierarchy.

6. Click **Save**.

---

**Note:** If an administrator is already logged on when the credential policy is changed, changes do not take effect until the administrator logs out and logs on again.

---

## 14.6. Privacy Policy

### 14.6.1. Support for Privacy and Security Notices

VOSS Automate allows for the configuration of appropriate login security warnings as well as links to cookie and privacy policies for best practice and compliance with regulatory requirements such as General Data Protection Regulation (GDPR).

Support is available on the login screen as well as menus of both the administrator interface and the Self-service application.

- Pop-up login banner

A pop-up banner can be configured for the purpose of security notices or user agreements on the login page after users enter their credentials and when they click the **Login** button on either the administrator interface or Self-service application. Clicking either the **Agree** or **Cancel** buttons remove this pop-up banner.

For details on configuration, refer to [Login Banner](#).

- Privacy and Cookie Policy notices

When drafting cookie policy notices, VOSS Automate provides reference content - see: [VOSS Automate Cookie Policy](#)

- Login screens: As a part of Theme management, Privacy and Cookie Policy notices can be added on the login interface of both the administrator and Self-service login screens.

For configuration details, see:

Login Banner in the Core Feature Guide

The style of the banner can also be customized. Refer to "Theme Banner Customization" in the "Advanced Configuration Guide".

- Menu items: High level system administrators above the Provider level hierarchy can manage privacy policy references that are available on administrator and Self-service user menus.

For details, refer to [Privacy Policy Menu Items](#) and [Manage Privacy Policy Menu Items](#).

---

## 14.6.2. Privacy Policy Menu Items

In order to comply with General Data Protection Regulation (GDPR) requirements, VOSS Automate provides the means to manage privacy policy notices on the user interface.

By default, high level system administrators above the Provider level hierarchy can manage privacy policy references that are available on user menus. These administrators can provide the required access to the data/PrivacyPolicy data model and add menus to lower level administrators if required.

Privacy policy references can be set up for each hierarchy. If one is not added to a specific hierarchy, the one at the next higher hierarchy applies.

When a privacy policy applies to a user hierarchy:

- On the Admin Portal, a privacy policy menu item is added to the bottom of the user's menu. The title of the menu item is the name of the created policy.
- On the Self-service GUI (if available), a side button bar menu item is added. The title of the menu item is **Privacy Policy**.

When selecting the menu item, the link URL of the policy opens on a new browser tab.

---

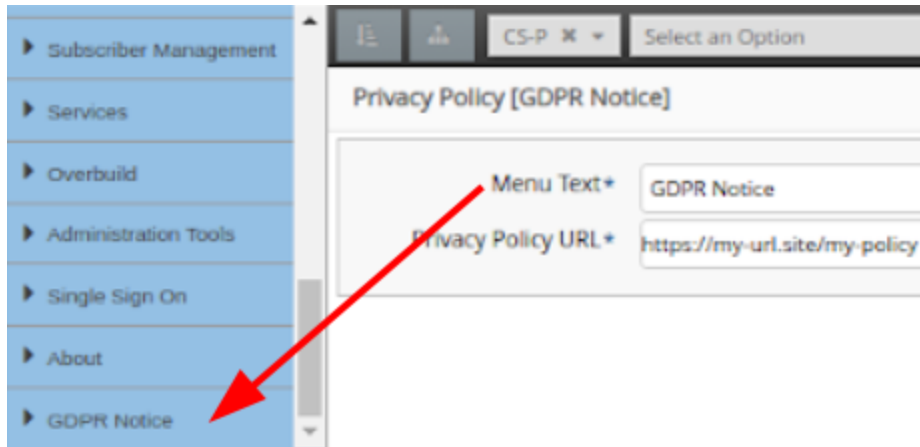
### Note:

- For the Admin Portal, the Privacy Policy menu item is not visible from a menu layout and cannot be managed from **Menu layouts**.
  - Login page privacy policy links are managed from **Themes**.
- 

## 14.6.3. Manage Privacy Policy Menu Items

1. Log in as an administrator with the required privacy policy management permissions and menu access.
2. Choose the menu item, for example by default, **Privacy Policy Configuration**. The list view shows privacy policy names and links at various hierarchies in the system. Privacy policies can then be added, modified and deleted.
3. To add a privacy policy, navigate to the hierarchy at which the privacy policy should be added and click **Add**.
4. Add a Name, Privacy Policy URL and click **Save**. Note that this name becomes the menu item name.

On the Admin Portal, a privacy policy menu item is added to the bottom of the user's menu - for users at the specified hierarchy or lower and without a privacy policy on their own hierarchy. On the Self-service GUI, a side button bar menu item is added.



#### 14.6.4. VOSS Automate Cookie Policy

When formulating a cookie policy, customers should include details on the use of cookies by VOSS Automate. The text below provides details on the use of cookies in VOSS Automate that can be included in the policy:

VOSS Automate uses cookies **for** the following purposes:

Personalisation - we use cookies to store information about your most recent settings, preferences **and** to personalize our website **for** you.

The cookies used **for** this purpose are:

```
hierarchyTreeSaveStateCookie
resourceTreeSaveSelectedCookie
resourceTreeSaveStateCookie
ace.settings
sso_login_url
```

Security - we use cookies **as** an element of the security measures used to protect user accounts, including preventing fraudulent use of login credentials, **and** to protect our website **and** services generally.

The cookies used **for** this purpose are:

\* Administrator login:

```
csrftoken
sessionid
```

\* Self-service login:

```
csrftoken
sessionid
session
rbacInfo
```

# 15. Customizations

## 15.1. Introduction to Customizations

The system allows a provider administrator (or higher) to customize the Admin Portal user interface.

This customization includes:

- Theme selection
- Menu Layout customization and associated Field Display Policies
- Dashboard customization
- Field Display Policies
- Configuration Templates

## 15.2. Global Settings

### 15.2.1. Overview

Administrators (Provider level and up) may configure global settings for customizations that apply at a specific hierarchy only or across all hierarchies in the system.

This topic describes the global settings, which you can access via (default menu) **Customizations > Global Settings**.

On each tabbed page in Global Settings, a read-only field below the choice drop-down displays the current setting for your system. Options are:

Inherit	The service is enabled/disabled based on the setting at the hierarchy above the current one.
Yes	The service is enabled at the current hierarchy.
No	The service is disabled at the current hierarchy.

To change inherited settings, see [Change Inherited Settings](#).

**You can select the following tabs on the Global Settings page:**

- Number Inventory
- Number Inventory Alerting

- Webex App
- Pexip Conference
- Email
- Phones
- Voicemail
- User
- Flow Through Provisioning
- Enabled Services

### **15.2.2. Number Inventory Tab**

The table describes the global settings for the Number Inventory:

Field	Description
Enforce HCS Dialplan Rules	When enabled, dial plan workflows enforce HCS Rules when provisioning Customers, Countries, Site and so on. Default = <b>Inherit</b> . If your deployment uses a custom or specific dial plan that does not conform to the HCS rules, this setting should be set to <b>No</b> (False).
Include the Number Inventory description in all number drop-downs	Defines whether descriptions for the numbers (which can be added when the number inventory is managed via the <b>Number Management</b> menu), display along with the numbers in the drop-down lists. For example, let's say you have a number and its description as follows: <i>1000 - CEO Internal</i> . When this setting is enabled (Yes), both the number (1000) and its description displays in the lists (when using features such as Quick Add Subscriber). The default is No.
Include the Number Inventory vendor in all number dropdowns	Defines whether vendor names for the numbers show in number dropdown as an option. For example, a number 982017206 (which is from Microsoft vendor) will display as 982017206 [Microsoft] in the drop-down list.
Include the Number Inventory type in all number dropdowns	Defines whether number types for the numbers show in number drop-down as an option. For example, a number 982017206 (which is from Microsoft vendor and is of type OperatorConnect will display as 982017206 [OperatorConnect] in the drop-down list.
Enable Number Inventory Cooling	Defines the availability of numbers in the system when a phone, subscriber, or service associated with the number is deleted, and the number is no longer associated with these entities. Options are: <ul style="list-style-type: none"> <li>• <b>Inherit:</b> When set to True, number inventory cooling is enabled or disabled based on the setting defined for number inventory cooling at a higher level in the hierarchy.</li> <li>• <b>Yes (True)</b> Enabled at the current hierarchy. Numbers associated with deleted entities are kept in a cooled state for a specified number of days (based on the value defined in the <b>Number Inventory Cooling Duration (Days)</b> field). Numbers in a cooled state are unavailable in the system until the cooling period end date is reached, unless they are manually released before the "end cooling period" end date.</li> <li>• <b>False (No)</b> Default. Number inventory cooling is disabled by default.</li> </ul>
Number Inventory Cooling Duration (Days)	When number inventory cooling is enabled (Yes/True), this field defines the period (number of days) the number is kept in a cooled state and unavailable for association with a phone user, or service. The default is 30 days.

## Related Topics

- Number Cooling in the Core Feature Guide
- Number Cooling Auto Expiry Schedule in the Advanced Configuration Guide

### 15.2.3. Number Inventory Alerting Tab

This tab configures the global settings for number inventory alerting, which defines how alerts may be raised once the number inventory is running low.

The table describes the settings on this tab:

Field	Description
Enable Alert on Available Numbers	By default, this setting is set to <b>Inherit</b> . However, it will not inherit the setting from higher up the tree unless it is explicitly set to <b>Yes</b> or <b>No</b> . <b>Inherit</b> in this instance just means it is <i>not configured</i> . Change to <b>Yes</b> to enable alerting.
Alert Aggregate Level	Choose a hierarchy level at which the <i>aggregate</i> of available numbers should be calculated (Provider, Reseller, Customer, Site), and displayed in the body of the alert. The shown data in the body for this hierarchy level is: <ul style="list-style-type: none"> <li>• Hierarchy node name</li> <li>• Hierarchy node type</li> <li>• Hierarchy full path</li> <li>• Total numbers available</li> <li>• Total numbers</li> <li>• Total percent available</li> </ul> Data is also included for lower hierarchies (as tables and in CSV format). For details, see the following topics: <ul style="list-style-type: none"> <li>• Email in the Core Feature Guide</li> <li>• Number Inventory Alerts in the Core Feature Guide</li> </ul>
Availability Threshold Percentage	Select or enter a percentage available of the total numbers at which point alerts will be raised. Sample percentages are available to choose from. If available numbers drop below this percentage, alerts will be raised.
Enable Email Group	Set to <b>Yes</b> to send email alert notifications to an email group. The email group needs to be available or should be set up.
Alert Email Group	If <b>Enable Email Group</b> is set to <b>Yes</b> , select the email group.
Ignore Hierarchies With No Numbers	If set to <b>Yes</b> , hierarchy levels with no numbers are excluded from reports.

**Note:** The email alert message also includes an attachment file `NumberThreshold.csv`, which contains the alert report in CSV format. See: [Email HTML Templates](#).

## Related Topics

- Email in the Core Feature Guide
- Number Inventory Alerts in the Core Feature Guide
- SNMP Traps: Number Inventory Alerting in the Platform Guide

### 15.2.4. Webex App Tab

This tab configures the global settings for Webex App.

The table describes the fields on this tab:

Field	Description
Retain a Webex App User when a Subscriber is deleted	Defines whether to delete Webex App user when a subscriber is deleted. Default is <b>No</b> .
Send notification when the Webex App Refresh Token expires	Defines whether a notification is sent when the Webex App refresh token expires for a specified customer. A SNMP trap and Webex App message is sent to recipients configured in the email group.
Webex App Refresh Token expires threshold (in seconds)	The max threshold (in seconds) for when to send a SNMP trap to the SNMP (if <b>Send SNMP trap message when the Webex App Refresh Token expires</b> is enabled). The default is 172800 seconds, which is two days.
Automatically apply default calling behavior on Webex App user data sync	Whether to apply default calling behavior (set up in Customer settings), to new Webex App users synced in to VOSS Automate. Default is <b>No</b> .
Generate and send Webex App User CSV file via Webex App message	Whether to generate a CSV file on create/update of Webex App user. Default is <b>No</b> . If enabled (Yes), the CSV file is sent via Webex App to a predefined list of recipients.
Email group containing recipients of the generated Webex App user CSV file	The group of recipients of the Webex App message with the generated CSV file. The email group is set up on the <b>Email Groups</b> menu.
Send manual Webex App Workspace configuration steps via Webex App message	Whether manual configuration steps (on Webex App Control Hub) are to be sent on create/update of a Webex App workspace. Default is <b>No</b> . If enabled, the steps are sent via a Webex App message.
Email group containing recipients of the manual Control Hub steps	Email group recipients of the Webex App message containing the manual configuration steps.
Quick Add Group for Hybrid Calling Workspace Unified CM users	The Quick Add Group to use when creating dummy CUCM users with line and device for Webex App workspace hybrid calling.



## Related Topics

- Quick Add Subscriber Group in the Core Feature Guide
- Email in the Core Feature Guide
- Email Groups in the Core Feature Guide
- Create Webex App Service in the Core Feature Guide

### 15.2.5. Pexip Conference

This tab configures the global settings for Pexip Conference.

The table describes the settings on this page:

Field	Description
Retain a Pexip Conference when a Subscriber is deleted	Defines whether the Pexip conference set up from the subscriber interface is to be removed when the subscriber is deleted. By default the setting is inherited from the hierarchy level directly above the current one.

### 15.2.6. Email Tab

This tab configures the global settings for Email.

The table describes the settings on this page:

Field	Description
Allow welcome email to be sent to user after Quick Add Subscriber	Defines whether an email is sent to a user when added via Quick Add Subscriber. The default is <b>No</b> . When set to <b>Yes</b> , and a SMTP server is set up (via the <b>Apps Management</b> menu), then selecting the option to send an email when using Quick Add Subscriber, a welcome email is sent to the new subscriber.

## Related Topics

- SMTP Server in the Core Feature Guide
- Email in the Core Feature Guide

### 15.2.7. Phones Tab

This tab configures the global settings of phones for a site.

---

**Note:** These settings only apply to phones within the same site; both the re-added phone and the existing phone must be on the same site.

---

The table describes the phone global settings on this tab:

Field	Description
Delete existing Unassigned Phone when re-adding an identical phone	<p>Defines whether to delete an existing, unassigned phone (a phone without an owner), when re-adding a phone with the same name and product type (duplicate phone).</p> <p>Default is <i>Inherit (No)</i>, inherited from the hierarchy above, which triggers a transaction failure if you try adding a duplicate phone, for example, in a QuickAddSubscriber bulk load or when updating a subscriber.</p> <p>When set to <i>Yes</i>, a system check verifies whether the phone exists and/or if it is already assigned (whether <code>ownerUserName</code> field is populated):</p> <ul style="list-style-type: none"> <li>• If the phone exists and is assigned to a different subscriber, the transaction fails.</li> <li>• If the phone exists and is unassigned, the existing phone is deleted, the phone is re-added, and is assigned to the subscriber you're adding or updating.</li> <li>• If the phone exists and is already assigned to the subscriber you're working with. The system performs an update.</li> </ul>
Retain Desk Phones when Subscriber is deleted	<p>Defines whether a subscriber's associated desk (hard) phones (phones prefixed with SEP or BAP) are deleted or retained when that subscriber is deleted.</p> <p>When set to <i>Yes</i>:</p> <ul style="list-style-type: none"> <li>• The deleted subscriber's hard phones are retained.</li> <li>• The deleted subscriber's soft phones (such as Jabber devices) are deleted.</li> <li>• An additional field displays (<b>Update the Retained Desk Phone with Configuration Template</b>), which allows you to define whether retained phones are updated via a CFT once the subscriber is deleted.</li> </ul> <p>Default is <i>Inherit (set to No)</i>.</p> <p>This setting defines hard phone delete/retain behavior for any method of deleting a subscriber, for example, delete subscriber via the Subscribers list view, or delete subscriber in LDAP import, purge or sync (where delete or purge mode is automatic).</p> <p>You can view the hard phones associated with the subscriber on the Phones tab in Subscriber settings.</p>
Update the Retained Desk Phone with Configuration Template	<p>This field displays only when <b>Retain Desk Phones when Subscriber is deleted</b> is set to <b>Yes (True)</b>.</p> <p>Defines whether to update retained hard phones via a configuration template (CFT) when the associated subscriber is deleted.</p> <p>This feature ships with a default CFT (<code>RemoveOwnerFromPhoneCFT</code>), which clears the phone's Owner User ID if the phone is retained when deleting the associated subscriber. You can choose a different CFT for the update step, if required.</p>

Field	Description
Include additional information in Phone dropdowns	Options are Yes, No, Inherit. Default is <i>Inherit</i> (inherited from the hierarchy above) Set to <i>Yes</i> to enable. You will need to save this update then refresh the tab to display an additional configuration field (Additional information in Phone dropdowns).
Additional information in Phone dropdowns	Options are Yes, No, Inherit. Default is <i>Inherit</i> . Additional information options are <i>Description</i> , <i>First Line</i> , and <i>Description + First Line</i> . The default, <i>Description</i> , means that the phone description (if defined) displays in the phone selection drop-downs on the Replace Phone configuration screen (Existing Phone tab, Device Name drop-down), and on the Quick Add Subscriber screen, allowing you to search by phone description when choosing a phone from the drop-down. In the same way, when the additional information option is set to either <i>First Line</i> or <i>Description + First Line</i> , you can search for or choose phones based on this criteria.

### Related Topics

- Replace Phone in the Core Feature Guide.
- Quick Add Subscriber for CUCM Users in the Core Feature Guide.
- Subscriber, Phones tab in the Core Feature Guide

## 15.2.8. Voicemail Tab

This tab configures the global settings for voicemail.

The table describes the settings on this tab:

Field	Description
Retain a (Cisco) Voicemail Account when a Subscriber is deleted.	Defines whether to retain a Cisco (CUCM) subscriber's voicemail account when the subscriber is deleted. Default is Yes (true). When set to Yes, the CUCM user's voicemail account is retained when the user is deleted and user sync is executed.

## 15.2.9. User Tab

This tab configures the global settings for users.

---

**Note:** When a user is either synced into or added manually on VOSS Automate, these settings apply by default. The settings can however be modified when adding a user from the **User Management** menu.

---

The table describes the settings on this tab:

Field	Description
User Default Auth Method	The default authentication method to use when a user is synced in or added manually. The default is <b>Local</b> (inherited).
Map UPN from CUCM User Identity	Maps the Microsoft Azure UserPrincipalName (UPN) attribute to CUCM userIdentity attribute - used in Cisco-Microsoft hybrid configurations where the same user ID is on every user account (MS Teams, CUCM, etc.). If enabled, the CUCM user's userIdentity attribute is used for the import of MS teams CsOnlineUser and MS 365 Msol user instances. The default is <b>No</b> (inherited).
Update Username during data-sync	Defines whether to update the existing VOSS username when a new associated user is imported via a sync.
Disallowed CUCM User Groups	Defines the user groups (one or more) that admins will not be allowed to assign to subscribers. This is to prevent subscribers being incorrectly assigned elevated permissions to system resources that are reserved for users in the groups you specify here. Fill out the user group names in a colon-separated format, for example, <i>Standard CUCM SuperUser:MyGroupName</i>

### Related Topics

- User Authentication Methods in the Core Feature Guide.

## 15.2.10. Flow Through Provisioning Tab

This tab defines global settings for sync with flow through provisioning.

The table describes the settings on this tab:

Field	Description
Enable Move & Flow Through Provisioning	Defines whether move and flow through provisioning is enabled. The default is No.
Enable Move & Provisioning after Add Sync	Defines whether move and flow through provisioning on add sync is enabled. The default is No.
Flow Through Provisioning Criteria	Defines the default flow through provisioning criteria applied to a user to create the subscriber at the site and to assign services.

---

## Related Topics

- Flow Through Provisioning in the Core Feature Guide.

### 15.2.11. Enabled Services Tab

This tab defines the global settings for enabling/disabling services for different vendors, such as Cisco or Microsoft. Options are Inherit, or Yes/No (True/False).

When provisioning services from two or more vendors, the global setting is the first of a number of system verification checks. For example, when the **Enable Cisco CUCM** global setting is set to **Yes** (enabled), the administrator can provision a subscriber with new CUCM services (such as a Cisco phone, Jabber, and extension mobility), only if the CUCM device check (server installed), entitlement profile check, and field display policy check all pass the verification check. In the same way, if for example, the **Enable Microsoft** global setting is set to **No** (disabled), and all other checks are set to enabled, existing Microsoft services can be viewed but new Microsoft services cannot be provisioned.

---

**Note:** By default, for new installs, the global setting for the following services are inherited from higher levels in the hierarchy (Inherit set to True/enabled):

- Cisco CUCM
- Cisco CUCX
- Cisco WebEx
- Cisco Webex App
- Cisco CCX

When upgrading to a version of the system that allows multi vendor and hybrid subscribers, the default setting for services other than these 5 services is *Inherit* (False).

To provision services to new subscribers (added after an upgrade), you will need to enable the vendor service in global settings.

---

The table describes services that can be enabled/disabled on this tab:

Setting	Description
Enable Cisco CUCM	Enables/disables Cisco CUCM services. The default is <i>Yes</i> . When set to <i>Yes</i> , allows an admin user to provision a subscriber with new CUCM services, such as a Cisco phone, Jabber, and Extension Mobility, provided the server is installed, and the entitlement profile and field display policy pass a verification check.
Enable Cisco CUCX	Enables Cisco CUCX (Unity) services. The default is <i>Yes</i> .
Enable Cisco WebEx	Enables/disables Cisco WebEx services. The default is <i>No</i> .
Enable Cisco Webex App (Teams)	Enables/disables Cisco WebEx App (Teams) services. The default is <i>No</i> .
Enable Cisco UCCX	Enables/disables Cisco UCCX (Contact Center Express) services. The default is <i>No</i> .
Enable Cisco Broadworks	Enables/disables Cisco Broadworks services. The default is <i>No</i> .
Enable Microsoft	When enabled, allows provisioning of Microsoft services. The default is <i>No</i> .
Enable Avaya	Enables/disables Avaya services. The default is <i>No</i> .
Enable Pexip	Enables/disables Pexip services. The default is <i>No</i> .
Enable Zoom	Enables/disables Zoom services. The default is <i>No</i> .
Enable Cisco/Microsoft Hybrid	Enables/disables Cisco/Microsoft hybrid services. The default is <i>No</i> . When enabled, VOSS Automate allows for provisioning users and services from both Cisco and Microsoft devices, and makes available an admin user parent menu called <b>Hybrid Cisco-Microsoft Management</b> , and associated access profiles. For details, see <i>Hybrid Cisco-Microsoft Management</i> in the Core Feature Guide.
Enable Avaya/Microsoft Hybrid	Enables/disables Avaya/Microsoft hybrid services. The default is <i>No</i> .
Enable Cisco Webex Contact Center	Enables/disables Cisco Webex Contact Center services. The default is <i>No</i> .
Enable Cisco UCCE	Enables/disables Cisco UCCE services. The default is <i>No</i> .
Enable VOSS Phones	Enables/disables VOSS phones services. The default is <i>No</i> .
Enable Session Border Controller	Enables/disables Session Border Controller services. The default is <i>No</i> .

## Related Topics

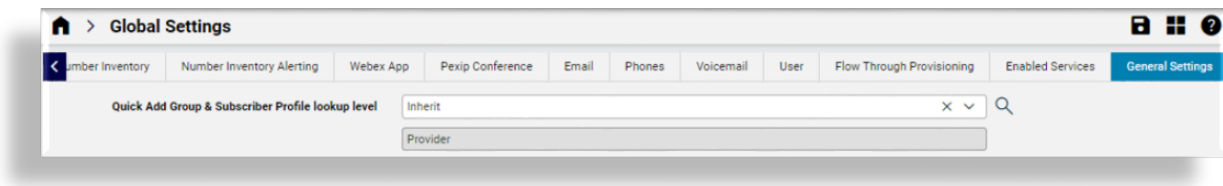
- Multi-vendor Subscribers in the Core Feature Guide
- Role-based Access for Multi-vendor Subscriber in the Core Feature Guide
- Configure Multi-vendor Subscribers in the Core Feature Guide
- Hybrid Cisco-Microsoft Management in the Core Feature Guide

### 15.2.12. General Settings Tab

This tab defines general global settings to manage system behavior.

The table describes services that can be enabled/disabled on this tab:

Setting	Description
Quick Add Group & Subscriber Profile lookup level	Specifies the hierarchy level up to which Quick Add Groups and subscriber profiles will be searched for. The default is Provider level. (sys and hcs levels are not available.) When a lookup level is set, selections of available QAGs and subscriber profiles will be restricted upwards to this lookup level. If you have hybrid customers (customers using both Cisco and Microsoft, for example), you can create hybrid-specific subscriber profiles for those hybrid customers, then set the lookup level for those customers to <i>Customer</i> level so that they will have available a hybrid subscriber profile in the drop-down at that customer hierarchy.



### 15.2.13. Change Inherited Settings

- For numeric inherited values, for example, for “Number Inventory Cooling Duration (Days)” or “Webex App Refresh Token expires threshold (in seconds)”, you can overwrite the word “Inherit” with the required value, for example, 45, and save your changes. If the inherited value is already overwritten, for example, the value is already 45, then overwrite this value with the new value.
- For inherited values that are Yes/No (True/False), select an alternative from the drop-down (either Yes, No, or Inherit). This may change the current value.

## 15.3. Subscriber Profiles

### 15.3.1. Overview

Subscriber profiles allow you to group a number of services and resources into a profile that you can assign to a subscriber via Quick Add Group (QAG) templates. The subscriber profile can then for example be added to the QAG along with other configuration settings.



Subscriber profiles are used in the Admin Portal.



Flow through provisioning uses the subscriber profiles to assign services to subscribers once they're synced in and moved to the sites. This is useful where you need to assign different sets of services to different categories of users, depending on their job role, for example IT or Sales.

**Important:** A *Default* subscriber profile is created at sys (System) level. Only a system level administrator may delete the system-level default profile. To add a new subscriber profile, it is recommended that you clone (create a copy) of an existing subscriber profile and create the new profile based on a valid (working) QAG.

---

Name *	<input type="text" value="Default"/>
Description	<input type="text" value="Default Subscriber Profile. This will not provision any services. Clone this profile to"/>
Entitlement Profile	<input type="text" value=""/> 
Quick Add Group *	<input type="text" value="Reference Quick Add Group"/> 
Cisco Voice	<input type="checkbox"/>
Cisco Extension Mobility	<input type="checkbox"/>
Cisco Voicemail	<input type="checkbox"/>
Webex Meetings	<input type="checkbox"/>
Webex App	<input type="checkbox"/>
Pexip Conferencing	<input type="checkbox"/>
Contact Center Express	<input type="checkbox"/>
Cisco Single Number Reach	<input type="checkbox"/>
Cisco Jabber	<input type="checkbox"/>
Microsoft Teams	<input type="checkbox"/>
Hybrid	<input type="checkbox"/>

## 15.3.2. Configure Subscriber Profiles

This procedure adds, edits, or deletes a subscriber profile.

1. Go to (default menus) **Customizations > Subscriber Profiles**.

---

**Note:** Alternative step: **Flow Through Provisioning Configuration > Subscriber Profiles**.

---

2. Choose an option:
  - To update an existing subscriber profile, click on a profile in the list view. Go to step 3.
  - To delete an existing subscriber profile, select the profile in the list view, and click **Delete**.
  - To add a new subscriber profile, click **Add**. Go to step 3.
3. To add or update a subscriber profile settings, configure fields on the form, then save your changes.  
The table describes options for configuring subscriber profiles:

Field	Description
Entitlement profile	Select an entitlement profile to define the resources and services that may be assigned to a subscriber.
Quick Add Group	The quick add group (QAG) defines the configuration templates to be used during service provisioning. QAGs are also used for Quick Add Subscriber (QAS) and Quick Subscriber (for Microsoft users). <sup>1</sup> Where the selected QAG contains details of MS Groups templates, flow-through provisioning will also assign or remove any MS licenses accordingly. <sup>2</sup>
Cisco Voice	Assigns voice services. When enabled, a desk phone is created. The phone template in the QAG defines the phone type.
Cisco Extension Mobility	The template in the QAG defines settings for extension mobility. The extension mobility template defines the device types available in the drop-down, and the selected device types define the available configuration settings. The default for <b>Line</b> is the first subscriber line. Subscriber details define the values in <b>Line Label</b> and <b>Line Display</b> . Only one device profile can be added for extension mobility in VOSS Automate. If a subscriber is associated with two or more extension mobility profiles on the Unified CM, and you sync with VOSS Automate, only the first extension mobility profile displays on the <b>Subscribers</b> list view in VOSS Automate.
Cisco Voicemail	Assigns voicemail service for the profile. When enabled, and the service is added, the subscriber can be added as a voicemail user.
Webex Meetings	Allows Webex service.

<sup>1</sup> The list of available Quick Add Groups are filtered by vendor (see [Quick Add Subscriber Groups Vendor Filtering](#)). The list of available Quick Add Groups (and subscriber profiles) are restricted to those available at a selected hierarchy, based on the option

Field	Description
Webex App	A Webex App user profile may be chosen for the profile. In this case, the user profile defines the Webex App service that will be provisioned. When Webex App is enabled for the subscriber profile, the subscriber can be added as a Webex App user when the service is added.
Contact Center Express	When enabled, an agent profile may be chosen for the profile. In this case, you also need to choose the device type to use as the agent's controlled device. When adding the service, the subscriber default extension displays, as well as (depending on the selected controlled device type - phone or extension mobility), the subscriber's phone or device profile.

Field	Description
Cisco Single Number Reach	Choose whether to include single number reach (SNR) service for the profile. Only one remote destination profile may be added for single number reach. If a mobile number has already been configured for a subscriber, it is used to pre-populate the <b>Mobile Number</b> field when adding SNR for that subscriber. You can enter a different mobile number for SNR, if required.
Cisco Jabber	Choose whether to include Jabber service, and one or more Jabber device types.
Microsoft Teams	Allows Microsoft services.
Hybrid	Allows Cisco and Microsoft services. Selecting this checkbox displays: <ul style="list-style-type: none"> <li>The <b>Hybrid Service</b> drop-down field to select a Service Type that is available from the list of Multi Vendor Service Definitions. This Service Type will then be applied when the Subscriber Profile is used.<sup>3</sup></li> <li>The <b>Class of Service</b> drop-down field is exposed. Default value is empty.</li> </ul>

**Note:** When both Microsoft Teams and Hybrid are selected in the Subscriber Profile, the Hybrid Quick Add Subscriber steps are skipped when adding a subscriber.

selected for **Quick Add Group & Subscriber Profile lookup level** in the General Settings of the Global Settings. See [Global Settings](#).

<sup>2</sup> See: [Licensing Users for MS Teams and Teams Phone by Group Membership](#)

<sup>3</sup> See: [Hybrid Service Definitions](#)

## Related Topics

- [Setting up Flow Through Provisioning](#)
- [Global Settings](#)
- [Licensing Users for MS Teams and Teams Phone by Group Membership](#)
- [Hybrid Service Definitions](#)

## 15.4. Model Filter Criteria

### 15.4.1. Overview

Model filter criteria defines how users (for example, Microsoft Active Directory or MS Entra MSOL user) are matched to corresponding data in VOSS Automate, to move users and related data to the correct system levels (Customer or Site) on import (in a sync or overbuild), based on one or attributes defined for the model type.

**Note:** Model filter criteria for LDAP sources is only compatible with Microsoft Active Directory (that is, Microsoft LDAP, not OpenLDAP).

Administrator users with access to the `data/ModelFilterCriteria` model can manage instances of this model so that these are available for selection in the Site Defaults Doc (SDD) of a site.

The SDD provides options to choose a predefined model filter criteria (depending on the user type). Options are:

- MS 365 User Model Filter Criteria
- Microsoft Active Directory (Microsoft LDAP) User Model Filter Criteria
- CUCM User Model Filter Criteria

### 15.4.2. Create Model Filter Criteria

#### Pre-requisites:

- To allow move to work using model filter criteria defined at the Site level, an admin user must enable the following global settings (on the **Flow Through Provisioning** tab), via (default menus) **Customizations > Global Settings**:
  - Enable Move & Flow Through Provisioning
  - Enable Move & Provisioning after Add Sync

#### Perform these steps:

1. Identify the source and target model and field that will be used in the filter.
2. Go to (default menu) **Customizations > Model Filter Criteria**.

**Note:** Alternative step: Go to (default menus) **Flow Through Provisioning Configuration > Model Filter Criteria**.

3. Click **Add** to add a new record, or clone an existing model filter criteria and update it to create a new model filter.
4. Provide a **Name**, **Description**, and **Usage** for the filter.

---

**Note:** The Model Filter Criteria with usage set to **Move User** is used to move the user. Model Filter Criteria with usage set to **Flow Through Provisioning** is used to provision the user.

The flow through provisioning usage does not move a user, and will run only if the user is at a site.

---

5. From the **Type** (model type) drop-down, select the source model, for example `device/msgraph/MsolUser` (MS Entra MSOL users) or `device/ldap/user` (Microsoft Active Directory users).

---

**Note:** The model type defines the available attributes you can use in the model filter criteria.

---

6. Click the Plus sign (+) in the **Criteria** group to add one or more criteria.

Each criteria is defined by the following:

Field	Description
Unary Operator	None, or NOT: to operate on the match <b>Condition</b> with the target value
Attribute	The field from the source model, for example <code>City</code> from <code>device/msgraph/MsolUser</code> .
Condition	Options are exact and non-exact types of contains and equals, as well as a regex search option.
Value	The target value that identifies the site in VOSS Automate. The value can also be a named macro, for example, <code>{{ macro.OVERBUILD_SITE_CITY_NAME }}</code> .
Conditional Operator	AND or OR: only needed and used to indicate the type of Boolean combination with the following criteria instance, if an additional instance is added.

7. Save the model filter criteria.

You will be able to choose this new model filter criteria in the site's SDD, and it will be, for example, applied in the Microsoft overbuild if **Include Site for Overbuild** and **Microsoft Users** is enabled.

When running the overbuild, the system loops through the site defaults to identify sites with **Include Site for Overbuild** enabled, and moves related user data to the site based on the chosen model filter criteria rule.

In this example, all `device/msgraph/MsolUser` instances synced in will be moved to the site matching `{{ macro.OVERBUILD_SITE_CITY_NAME }}` if their `City` value matches.

### 15.4.3. Microsoft Entra ID Groups in Model Filter Criteria

New model filter criteria functionality is available from release 21.4-PB3. For Model Filter Criteria of **Type** `device/msgraph/MsolUser`, the **Attribute** called `Groups.displayName` is available to create a filter that can be used to sync in and automatically onboard - move and provision users - based on their Microsoft Entra ID group membership.

**Important:** A number of caveats need to be considered when creating filters using `Groups.displayName`:

- The **Value** of the `Groups.displayName` attribute should be an exact *case-sensitive* match of the Microsoft Entra ID group name.

For example, a **Value** of `Northwood` will match `Northwood`, but will not match `northwood`, `Northwoodly`, `WestNorthwood` or `Westnorthwood`.

- The **Condition** should be `Equals Exactly`.
- Multiple conditions using the `Groups.displayName` attribute are supported, but require the use of **AND** as the **Conditional Operator**. All conditions in the filter should therefore be true for the filter to apply; in other words, the user needs to belong to *all* the groups matching the **Value** field.

Note that:

- If a *single* matching filter condition is added whereas a user belongs to more than one Microsoft Entra ID group, the user is matched if the filter matches.
- If an **OR** conditional operator is used, this will be interpreted as an **AND** operator.
- The `Groups.displayName` attribute cannot be combined with other attributes in a filter: other attributes will be ignored.
- Verify that these caveats are taken into consideration, since model filter criteria can be saved in the system without their consideration.

#### Related Topics

- Microsoft Overview in the Core Feature Guide
- Sync to Site with with Flow Through in the Core Feature Guide
- Flow Through Provisioning in the Core Feature Guide

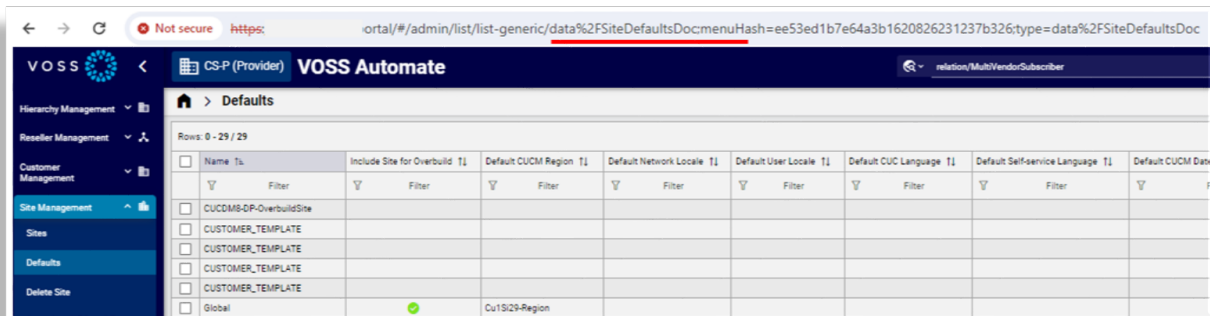
## 15.5. Field Display Policies

### 15.5.1. Overview

Field Display Policies (FDPs) define the layout and composition of fields, fieldsets, and groups on forms in the Automate Admin Portal GUI. To change these elements on the form, you can edit the FDP associated with the form, if allowed.

**Note:** FDPs are assigned to the model associated with a form or page in the GUI. FDPs can be added to Data models, Relations, and Views. For example, `data/SiteDefaultsDoc` is the model associated with the summary list view page and with the edit form for the site defaults.

If you want to change the layout of the form, you can edit the FDP for this model, if allowed. The layout of forms associated with some models cannot be modified via their FDP, for example, for *relation/LineRelation*, *relation/SubscriberPhone*, *tool/Transaction*, or *view/BulkAddUser*.



Via the FDP, you can define whether to group or disable fields, add online help text to a field, add a label to a field, or move a field up or down on the form.

You can apply one or more FDPs to a particular item type to present different views of the same form. You can apply a FDP for a menu layout and role so that users with this role are presented with a view of the form (defined by the FDP) for their user role when they log in. For example, a system may have users at Provider, Customer, and Site administration hierarchy levels - all of whom may access the same items, but perhaps some item fields need to be hidden for admin users at some levels. Therefore, you can create and apply a specific FDP to a menu layout designed for admin users at these levels.

You can clone an existing FDP to quickly create one, then modify the clone as required, and choose this new FDP for the model on a user's menu layout. In this way, the user's view of the GUI can be modified for their level of access to the model, from the menu.

**Note:** The list view column header will also show the field title from the FDP if the field belongs to the list of summary attributes.

### Field Display Policy Naming Convention

The name of a FDP must be unique at each hierarchy. You can however have FDPs with the same name at different hierarchies.

FDPs that have the name default will apply to their associated model, by default.

### Display Groups As Tabs or Panels

The **Field Display Policy** configuration screen provides a **Display As Groups** setting that allows you to define the default layout of some forms, as either tabs or panels.

<b>Tabs</b>	Each group of fields and/or fieldsets displays on a tab. The group title is the tab title.
<b>Panels</b>	Each group of fields and/or fieldsets displays as a panel in a 2-column list of panels on the GUI. The group name is the panel header.

**Note:** If no option is selected, the default is **Panels**, except for some models, which display groups as tabs

by default. On some forms, depending on your user type and the model where the FDP is applied, you can click a toolbar icon in the GUI (or select from the action overflow menu) to switch between a panel or tab layout. The layout you choose is preserved when you log out and log in again.

The image shows an example of a form where groups display as *Panels*:

The screenshot displays a user profile page for 'Aaron McDaniels' under the path 'Subscribers / Multi Vendor Subscribers'. The page is organized into a grid of panels:

- User Details:** Contains fields for User Name (aaron@vossdemo.onmicrosoft.com), First Name (Aaron), Last Name (McDaniels), Email Address (aaron@vossdemo.onmicrosoft.com), Entitlement Profile (dropdown), User Type (End User), and Located At (MHS (Customer)).
- Quick Actions:** Includes a Refresh button.
- Cisco Voicemail:** A panel with a blue plus sign (+) indicating it can be expanded.
- Cisco WebEx:** A panel with a blue plus sign (+) indicating it can be expanded.
- Cisco Webex App:** A panel with a blue plus sign (+) indicating it can be expanded.
- Cisco Contact Center:** A panel with a blue plus sign (+) indicating it can be expanded.
- Microsoft Teams:** Contains fields for Account Enabled (true), Feature Types (Teams,PhoneSystem), Line URI (\+13124448000), and Line URI Type (DirectRouting).
- Microsoft O365:** Contains a License Summary field with the value DEVELOPERPACK\_ES.

The Automate system default is *Panels*, except for the following models, which have as their default setting, *Tabs*:

- view/GlobalSettings
- data/SiteDefaultsDoc
- data/ucprep\_UC\_Profiles
- relation/DP\_REL
- data/HcsDpDialPlanSchemaDAT
- data/HcsDpDialPlanSchemaGroupDAT
- tool/BulkLoad
- tool/DataImport

The table lists models where the layout of elements of add and/or edit form types can't be modified via FDP. These form types also do not have the action element available on the GUI to switch the form view between tabs and panels.



Model Name	Form Type	Default
relation/LineRelation	edit	Panels
relation/MultiVendorSubscriber	edit	Panels
relation/PexipConference	add, edit	Panels
relation/SubscriberDeviceProfile	add, edit	Panels
relation/SubscriberPhone	edit	Panels
tool/Macro	add	
tool/Transaction	edit	
view/AddSubscriberFromProfile	add	
view/BulkAddUser	add	
view/HcsVersionVIEW	add	
view/MenuDiff	add	

### Related Topics

- Field Display Policy Input Reference in the Advanced Configuration Guide
- Introduction to the Admin Portal User Interface in the Core Feature Guide

## 15.5.2. Add and Edit Field Display Policies

This procedure adds and edits a field display policy (FDP).

1. Log in as Provider administrator or higher.
2. Choose the relevant hierarchy.
3. Go to (default menus) **Customizations > Field Display Policies** to open the list of existing FDPs.
4. **Do you want to ...**
  - **Edit an existing FDP?** Click on the relevant FDP in the list view to open the configuration form. Update the FDP as required, then save your changes.
  - **Add a new FDP?** Go to step 5.
5. To add a new FDP, from the list view, click the toolbar Plus icon (+) to open the configuration form for the new FDP you're adding.
6. Configure the FDP:
  - a. Fill out a name for the new FDP, and optionally, a description.
    - If the FDP name is default, it is applied by default to the target model type you choose on the form.
    - FDPs at the same hierarchy must have a unique name. FDPs at different hierarchies can share the same name.
  - b. Choose the target model type to associate with the FDP.

---

**Note:** The target model type defines the fields available for use in the FDP.

---

- c. At **Display Groups As**, choose how groups should display on forms. Options are Tabs or Panels.

---

**Note:** The default is **Panels**, except for a selection of models, where the default is **Tabs**. Within a tab or a panel, you can add a combination of fields and/or fieldsets (within one or more groups).

---

- d. Add groups, one or more, required:

At **Groups**, click the Plus icon (+), then configure the group.

---

**Note:** Groups that describe a collection of attributes display together on the GUI. All fields in the FDP must belong to a group.

At the form level, groups all display either in panels or tabs, depending on the option selected in **Display Groups As**, and provided the model allows the option you choose.

You can copy or re-order (move up or down) groups, fields, and fieldsets.

---

The screenshot shows a configuration form for a group. The fields are as follows:

- Name \***: AdminUser
- Description**: (empty)
- Target Model Type \***: relation/User
- Display Groups As**: (empty)
- Groups \***: A list containing:
  - User Details
  - Account Information
  - Provisioning Status
  - + Add item
- Fieldsets**: A list containing:
  - + Add item
- Field Overrides**: A list containing:
  - user\_type
  - auth\_method
  - UserProvisioningStatus.hide\_not\_provisioned
  - + Add item

The table describes the group configuration options:

Component	Description
Title	Mandatory. Fill out label text to display for the attribute on the new tab. If a group displays as a tab in the Admin Portal, the value defined for <b>Title</b> displays as the title of the tab.
Number of Columns	Fill out the number of columns for fields. The default is 1 (a single column). Fields in the <b>Selected</b> transfer box display in these columns.
Fields	Choose fields to add. Select then move fields from the <b>Available</b> field to the <b>Selected</b> field. The selected target model type defines the available fields. Use the <b>Move Up/Move Down</b> buttons to adjust the position of any field.

- e. Add fieldsets, if required. Click the Plus icon (+) at **Fieldsets**, then configure the fieldset.

**Note:** Fieldset options (fields in the Available transfer box) show all field choices for the selected target model type. Fieldset names are added as choices within any group added to the FDP, and the fields display as a group in fieldsets in the panels.

The **Name** field is the name of the fieldset. First create fieldset, then add it to a group.

The screenshot displays the 'Fieldsets' configuration interface. It features a sidebar with a plus icon for adding fieldsets. Two fieldset configurations are visible:

- Pattern Details:**
  - Name: Pattern Details
  - Number of Columns: (empty input)
  - Fields:
    - Available: HF, HF.cfb\_action, HF.cfna\_action, HF.name, HF.queue\_calls\_checkbox, HuntList, HuntList.LineGroup, HuntList.LineGroup.autoLogOffHunt, HuntList.LineGroup.distributionAlgorithm
    - Selected: pattern, description, routePartitionName
- Members Fieldset:**
  - Name: Members Fieldset
  - Number of Columns: (empty input)
  - Fields:
    - Available: HF, HF.cfb\_action, HF.cfna\_action, HF.name, HF.queue\_calls\_checkbox, HuntList, HuntList.LineGroup, HuntList.LineGroup.autoLogOffHunt, HuntList.LineGroup.distributionAlgorithm
    - Selected: HuntList.members, HuntList.members.member, HuntList.members.member.lineGroupName, HuntList.members.member.selectionOrder

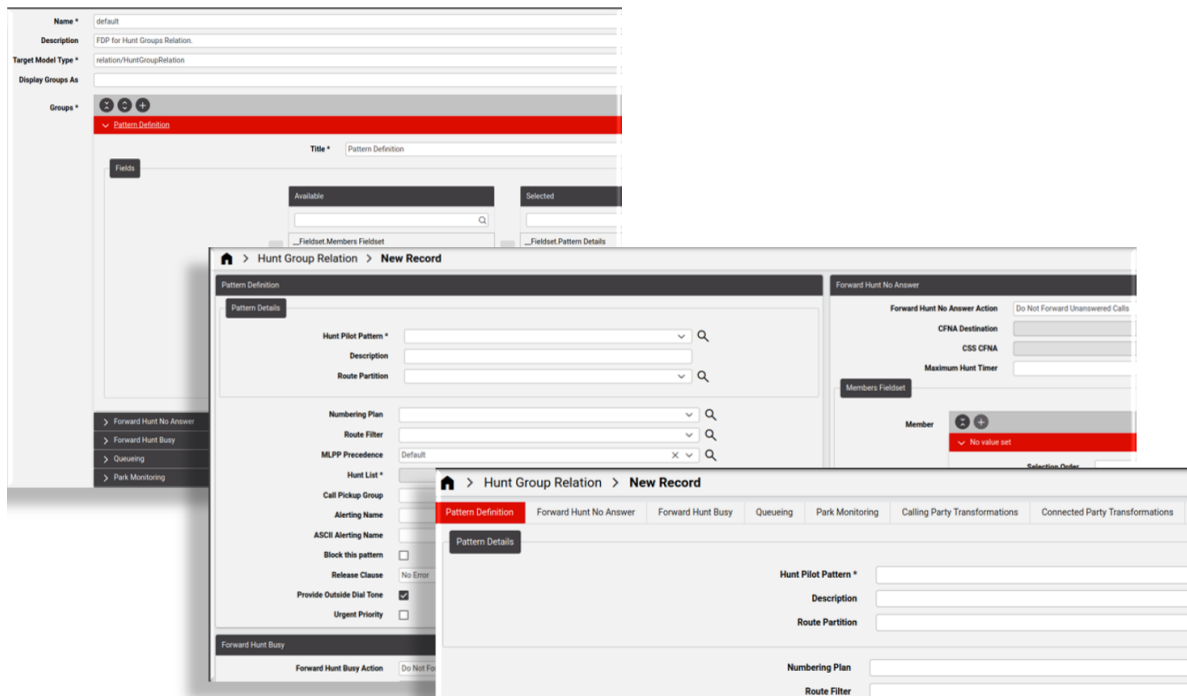
- f. Add field overrides, if required. Click the Plus icon (+) at **Field Overrides**, then configure the field override.

The table describes configuration options for field overrides:

Component	Description
Field	Name of the model field to override. Options include those added to the <b>Selected</b> field for groups.
Title	New title to display for the field. If the FDP is called <code>default</code> at a hierarchy, the list view column header also displays this title if the field belongs to the list of summary attributes.
Help Text	New help text to display for the field. Leave blank to use the model attribute description.
Disabled	Sets the field as <i>read-only</i> .
Input Type	Overrides the input type of the field. Select an option to choose how the input field displays, for example, radio button, grid, multi select.

## 7. Click **Save**.

Once saved, the FDP can be applied by selecting it in a menu layout available to a role.



### 15.5.3. Clone a Field Display Policy

This procedure creates a copy, or clone, of an existing field display policy (FDP) to create a new FDP, starting with the configuration of the FDP you're cloning.

1. Login as Provider administrator or higher.
2. Choose the hierarchy.
3. Go to (default menus) **Customizations > Field Display Policies** to view a summary list of existing field display policies (FDPs).
4. Click on the FDP you want to clone.
5. Choose **Actions > Clone**.
6. Update the necessary fields for the cloned FDP.
7. Click **Save**.

You can apply the cloned FDP by choosing it in a menu layout available to a role.

### 15.5.4. Rules for Creating Field Display Policies

When creating groups and selecting the field transfer boxes of a group, a number of rules apply.

**Note:** Regarding notation, if the fields belong to objects or arrays, the names in the transfer boxes are shown in dot notation. Refer to the target model type on-line help field reference to distinguish object types from array types.

To understand the rules, consider a selected Target Model Type with the fields as listed below. Where the name starts with "A", the field is an array and where it starts with an "O" it is an object. The values "x", "y", "z" are also objects. The field "F" is neither object or array.

- A, A.x, A.x.b, A.x.c, A.x.d, A.y.r, A.y.s, A.y.t
- F
- O, O.v, O.z, O.z.a, O.z.b, O.w.d

#### Inclusion Rules

The following inclusion rules apply:

- If a parent object or array field is included, the parent and all its children will be displayed in the GUI.  
Example: if O.z is selected, O.z is saved as the fields and the GUI will display O.z and also inner fields O.z.a and O.z.b.
- If a specific selection and order of child elements are required, select these child elements and order them.  
Example: if O.w.d, O.z.b, F are selected, these three fields are saved in that order in the FDP group fields and the GUI shows only the inner field O.w.d, followed by the inner field O.z.b and lastly the field F.

- Inclusion of child fields in a group without the inclusion of the parent fields will display these child fields at the root level of the form.  
Example: if O.w.d, O.z.b are selected, these fields are saved as is in the FDP group fields list and only the inner fields O.w.d and O.w.b are shown in the GUI.
- Array children fields without their parent fields will be ignored by the GUI. Therefore, if the child fields of an array field are selected, the parent field should also be selected.  
Example: if A.y.s, A.y.t are selected, A and A.y should be selected.
- Array fields may not be split into different groups.
- The parents of fields cannot be in one group and its children in another.  
Example: O.z cannot be in Group 1 if O.z.a, O.z.b and O.w.d are in Group 2.
- Fields of the same object and members of the same array type cannot belong to more than one group.  
Example:
  - If A.y.s is selected for Group 1, then A.y.t cannot be selected for Group 2.
  - If O.z.a is selected for Group 1, then O.z.b cannot be selected for Group 2
- You can split the first level children of object fields into different groups.  
Example:
  - O.v can be in Group 1 while O.z is in Group 2.
  - For second level children: O.z.a can be in Group 1 and O.w.d can be in Group 2.
- To hide a field do not move it to a Selected box.  
Example: To hide O.z.b, select O.z.a, O.w.d.

### 15.5.5. Ordering Fields in a Field Display Policy

You can move fields or fieldsets in a group (up or down on the form) by clicking the **Move Up / Move Down** buttons at the group level or in the transfer boxes.

Ordering child and parent fields depends on the presence of siblings, other parents, and children. If a child is selected in a group and not its parent, but a sibling of that parent is selected, then the sibling's order will affect the order of the fields.

The logic of order resolution starts from parents to children, according to the rules below.

For example, we select fields in this order in Group 1:

C.z, A.x.b, A.x.c, B, A.y, A.x, C, C.w

Result:

- Parent fields on their own are considered first, hence our initial order is B, C.
- However, parent A is not selected; only the children. We determine where A was mentioned. In this case the children of parent field A were mentioned before the parent fields B or C. Hence children of A will eventually be ordered before B and C.
- Next we consider the selected first level child fields: C.z, A.y, A.x, C.w. The order becomes: A.y, A.x, B, C, C.z, C.w
- We now move down the levels: A.x.b, A.x.c.

Thus the final display order will be:

A.y, A.x, A.x.b, A.x.c, B, C.z, C.w

Further examples below illustrate the presence of parents, siblings and children on the selected order.

- We add fields C.w, A, C, B, A.x, A.y.  
Result: The order is: A, A.x, A.y, C, C.w, B.
- We add fields A.x.b, A.x.c, A.y, A, B  
Result: The order is: A, A.x, A.x.b, A.x.c, A.y, B.

---

**Note:** Note that A.x was added and that A.y is placed after A.x, since the children were ordered before A.y while A.x was never selected.

---

## 15.6. Configuration Templates

### 15.6.1. Introduction to Configuration Templates

Configuration templates (CFTs) are used to define values for the attributes of any model.

Values can be fixed values, or existing macros visible from the hierarchy (for example, customer or site), where the CFT is applied.

CFTs allow you to define default values for items exposed in the Admin Portal (visible, hidden, or read-only). CFTs provide a way to map data from data input via the Admin Portal or device model events to other models or provisioning workflows in the system.

You may want to hide the attributes of a model while setting them to a specific fixed value (for example a hard-coded setting); or you may wish to derive the value based on a macro (for example, look up the value based on data in the system).

#### Examples

- A model with an attribute defined as a date string; a CFT for the attribute can be defined as a macro `{{fn.now \ "%Y-%m-%d\"}}` in order to set the current date stamp as the value, such as 2013-04-18. Designers can access reference material for details on macros.
- A model such as Quick Add Subscriber (QAS), which limits user input to a few fields while deriving the value of other hidden attributes from various CFTs that are each applied to different underlying models that make up a subscriber, such as voicemail account settings, conference account settings, phone, line, or device profile settings.

When adding or updating an instance of the model, the CFT enabled on the model is applied.

For array elements of data models, a list and a variable can be specified to be looped through so that a value is applied to each element in the model array.

You can create one or more CFTs for a model, and these can be used as needed. CFTs can also be applied to models in the design of, for example, provisioning workflows.

A menu layout that can be associated with a user role can also apply a CFT to a model that is selected as a menu item.

Provider administrators (and higher level admins) can quickly add a new CFT by opening a similar CFT (via, say, the Configuration Templates menu), then making a copy (clone) of it, and customizing the clone to create a new CFT.

Administrators at levels above the site admin can also customize these templates, including Field Display Policies (FDPs).

---

**Note:**

- When modifying CFTs in the Admin Portal, numerical values must be filled out using the `fn.as_int` function, for example:

```
{{ fn.as_int 14 }}
```

- In a multi-cluster environment, CFTs that result in device model drop-down lists in the Admin Portal may contain duplicates. Any duplicated item can be selected by the user.
- 

**Related Topics**

- Quick Add Subscriber in the Core Feature Guide
- Quick Add Subscriber Groups in the Core Feature Guide

## 15.6.2. Add a Configuration Template

This procedure clones and edits an existing configuration template (CFT) to create a new CFT.

**Perform these steps:**

1. Log in to the Admin Portal as Provider administrator or higher.
2. Go to **Customizations > Configuration Templates** to view the list of existing CFTs.
3. Click on a configuration template (CFT) you wish to clone, and view its details.
4. Click **Action > Clone**.
5. Edit the required generic fields, such as **Name**, **Description**, **Target Model Type**, and the fields specific to the selected model type. See [Configuration Template Field Reference](#)

---

**Note:** Some fields are populated based on specific conditions. For example, when creating a device instance CFT in a multi device or clustered environment, drop-down values in the CFT that originate from a device will be the values from *all* the devices in the cluster. For this reason, the list may include duplicates; in this case, you can choose any duplicate, if required.

---

6. Click **Save**.

The new, cloned CFT appears at the selected hierarchy level.



### 15.6.3. Configuration Template Field Reference

The table describes general fields on the Configuration Template editing screen:

**Note:** Fields specific to the CFT for the selected target model type are excluded.

Title	Field Name	Description
Name *	name	The name that is given to the Configuration Template.
Description	description	A description for the Configuration Template.
Foreach Elements	foreach.[n]	Iterates over the list returned by the macro and appends array elements to the specified field.
Property *	property	The field property to iterate over.
Macro List *	macro_list	The macro that produces the list to iterate over.
Context Variable *	context_var	The context variable that will contain the data from the iteration.
Schema Defaults	schema_defaults.[n]	Applicable only when the configuration template is used directly in API requests. This attribute contains a list of paths to the properties of the template section that must be used to enrich the default values of the schema. All paths specified must refer to array attributes.
Target Model Type *	target_model_type	The target model type and name that the Configuration Template applies to.
Merge Strategy	merge_strategy	Determines how this CFT will be merged into another CFT when it is being processed in a PWF. Default: additive.
Template *	template	The contents of the template, such as defaults and macros. The names shown in the template are determined by the attribute names of the Target Model Type.

### 15.6.4. Example: Add a CFT for a Cisco 6941 SCCP Phone

1. Choose the hierarchy where the CUCM you want to use exists.

**Note:** This step is required if the fields are to populate values because some of the values are derived from the actual device model through the API.

2. Click the **Default CUCM Phone Template**, and then click **Action > Clone**.

---

**Note:** Don't save your changes yet.

---

3. Change the template **Name** and **Description**.
4. Edit the template fields:
  - From the **Device Protocol** drop-down, choose **SCCP**.
  - From the **BAT Phone Template** drop-down, choose **Standard 6941 SCCP**.
  - From the **Device Security Profile** drop-down, choose **Cisco 6941 - Standard SCCP Non-Secure Profile**.
  - From the **Product** drop-down, choose **Cisco 6941**.
  - From the **BLF Presence Group** drop-down, choose **Standard Presence Group**.
  - In the remaining fields, use the cloned default values.

---

**Tip:** You can type in the values if you know them; else, choose values from the list.

---

5. Click **Save**.

## 15.7. Configuration Mapping for Phones, DeviceProfiles, and Lines

Configuration mapping is available for higher level administrators as a part of the overall configuration as well as for other purposes.

The table describes the purpose of configuration mapping:

Type	Purpose
For phones and device profiles	<ul style="list-style-type: none"> <li>Define the phones types available for selection.</li> <li>Define the configuration settings used when a specific phone type is selected.</li> <li>Allow multiple configurations, for example, different button templates for the same phone type.</li> <li>Provide business-friendly names for different phone type configurations, rather than CUCM-defined names. For example: “Executive Phone with 2 lines”.</li> <li>Make use of phone-type-agnostic configuration templates (CFTs), allowing for the management of fewer CFTs in the system rather than a CFT for each phone type.</li> </ul>
For lines, phones and device profiles	Define a set of feature templates for use by lower-level administrators, and customize the configuration of the applicable item. This allows you to have different versions of configuration, as required.
For soft phones (specifically)	Provide CFTs to manage the process of moving the soft phones of subscribers.




### 15.7.1. Phone Configuration Mapping

There may only be one phone configuration mapping at any hierarchy. This phone configuration mapping must be Default.

#### Mapping Profiles

The mapping profiles define the list of phone types that can be selected, and includes:

- Profile name
- Profile items: Phone type, Protocol, Button template, Security profile
- Base configuration template (CFT)

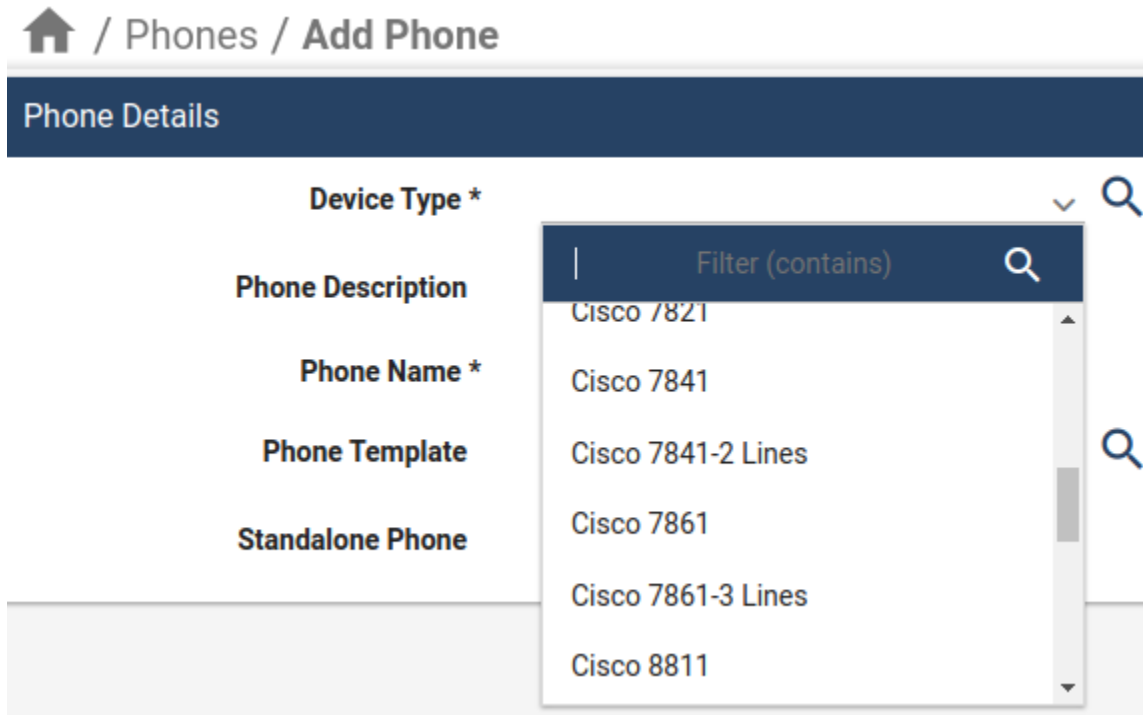
	Profile Name	Phone Type	Protocol	Button Template	Security Profile	Base Configuration Template	
☰	Cisco 7841	Cisco 7841	SIP	Standard 7841 SIP	Cisco 7841 - Standard SIP Non-Secure Profile	Basic Phone CFT	
☰	Cisco 7841-2 Lines	Cisco 7841	SIP	Standard 7841 SIP-2 Line	Cisco 7841 - Standard SIP Non-Secure Profile	Basic Phone CFT	 

The value in the **Profile Name** field is presented to the lower-level administrator user in **Phone** drop-downs in the Admin Portal.

For example, if the administrator selects “Cisco 7841”, then:

- The phone is provisioned as a “Cisco 7841” SIP device
- The phone will have a button template called *Standard 7841 SIP*

- The phone will have a security profile called *Cisco 7841 - Standard SIP Non-Secure Profile*
- The phone configuration will come from a basic CFT called *Basic Phone CFT*



**Note:** The *Base Configuration Template* and the *Feature Configuration Template* may also contain profile item fields such as **Phone Type** and **Protocol**. In this case, the order of precedence for the values is:

1. Feature Configuration Template
2. Base Configuration Template
3. Profile items

For example, a phone type specified in the **Phone Type** field under **Profiles** is superceded by the phone type specified in the *Base Configuration Template* or the *Feature Configuration Template*.

## Feature Templates

The **Feature Templates** section of the Phone and Device Profile configuration mapping allows a higher-level administrator to configure a list of *Feature Configuration Template* CFTs, providing different configurations to complete the setting of the phone, device profile or line.

The image shows the list of available Feature templates:

Feature Templates			
	Template Name	Feature Configuration Template	
☰	Default	Default Phone Feature CFT	⊕ 📄 🗑️
☰	CS-P Updated CFT	CS-P Phone Template BAP	📄 🗑️

The Feature templates are presented to the lower-level administrator as the list of templates (phone, device profile or line) that can be chosen when adding either a phone, extension mobility, or line. The *Feature* templates will contain the additional configuration settings that are applied on top of the settings mentioned above.

The screenshot shows a web interface for adding a phone. The breadcrumb navigation is 'Home / Phones / Add Phone'. Below this is a dark blue header with the text 'Phone Details'. The form contains several fields:

- Device Type \***: A dropdown menu with a search icon.
- Phone Description**: A text input field.
- Phone Name \***: A text input field.
- Phone Template**: A dropdown menu currently showing 'Default' with a search icon.
- Standalone Phone**: A checkbox.

The 'Phone Template' dropdown is open, showing a search bar with the text 'Filter (contains)' and a search icon. Below the search bar, two options are listed: 'CS-P Updated CFT' and 'Default', with 'Default' highlighted in blue.

### Macros for Phone Configuration Mapping

The table describes the available context macro variables when defining configuration templates for the phone mappings:

Macro	Description
{{ input.standalone }}	Flag whether it is a standalone phone or being associated with a subscriber.
{{ input.username }}	Username of the subscriber the phone is being associated with. Only when standalone is false.
{{ input.device_type }}	The user selected device type. This in fact is the phone mapping profile name.
{{ input.template_name }}	The user selected feature template.
{{ input.name }}	The user entered phone name.
{# input.lines #}	The user entered list of lines.
{{ input.lines.0.directory_number }}	The number of the first line.
{{ input.lines.0.template_name }}	The user selected line template.
{{ input.lines.0.label }}	The user entered line label.
{{ input.lines.0.display }}	The user entered line display.
{{ pwf.user }}	Object containing all UCM user settings of the associated subscriber. Only when standalone is false.

### 15.7.2. Device Profile Configuration Mapping

There may only be one device profile configuration mapping at any hierarchy, and the name of this mapping (at any hierarchy) must be Default.

The setup for device profile configuration mapping is identical to the phone configuration mapping. The phone type list and *Feature\** templates are presented to the administrator when adding an extension mobility service to a subscriber via the Subscriber Management page. See *Feature Templates* under [Phone Configuration Mapping](#).

Please enter details for the new Extension Mobility profile. ✕

<b>Name *</b>	Alicia.Coleman-UDP
<b>Device Type *</b>	Cisco 6921 <span style="float: right;">▼</span>
<b>Extension Mobility Profile Template</b>	Default <span style="float: right;">▼</span>
<b>Line Template</b>	Default <span style="float: right;">▼</span>
<b>Line *</b>	2006 (Alicia.Coleman Line) <span style="float: right;">▼</span>
<b>Line Label</b>	Coleman - 2006
<b>Line Display</b>	Alicia Coleman

Cancel
OK

### 15.7.3. Line Configuration Mapping

There may only be one line configuration mapping at any hierarchy, and this line configuration mapping (at any hierarchy) must be Default.

A list of line templates can be configured and these will be presented to the administrator when new lines are created, for example when adding a new phone.

#### Macros for Line Configuration Mapping

The table describes the available context macro variables when defining configuration templates for the line mappings:

Macro	Description
{{ input.userid }}	User ID for description.
{{ pwf.PassedLine.pattern }}	Line pattern description.
{{ input.firstName }}	User first name for Alerting name or ASCII Alerting name.
{{ input.lastName }}	User last name for Alerting name or ASCII Alerting name.
{{ input.Phone.0.lines.line.0.dirn.pattern }}	The destination.

The table describes the named macros that can be used when defining configuration templates for the line mappings. High-level administrators with access to data/Macro can inspect and evaluate these named macros to verify result values. For details on Configuration Template customizations, see the Advanced Configuration Guide.

- For callingSearchSpaceName

```

{{ macro.CUCM_LINE_callForwardAll_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardAlternateParty_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardBusy_callingSearchSpaceName-2 }}
{{ macro.CUCM_LINE_callForwardBusyInt_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardNoAnswer_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardNoAnswerInt_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardNoCoverage_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardNoCoverageInt_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardNotRegistered_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardOnFailure_callingSearchSpaceName }}
{{ macro.CUCM_LINE_callForwardOnFailure_callingSearchSpaceName }}

```

- For presenceGroupName

```

{{ macro.CUCM_LINE_presenceGroupName }}

```

- For routePartitionName

```

{{ macro.CUCM_LINE_routePartitionName }}

```

- For secondaryCallingSearchSpaceName

```

{{ macro.CUCM_LINE_callForwardAll_secondaryCallingSearchSpaceName }}

```

- For voiceMailProfileName

```

{{ macro.CUCM_LINE_vmprofile }}

```

Line Configuration Mapping [Default]
Save Delete Help Back Action

Name\*

+ Line Templates

	Template Name *	Configuration Template *
<span style="font-size: 1.2em;">+</span> <span style="font-size: 1.2em;">-</span> <span style="font-size: 1.2em;">o</span> <span style="font-size: 1.2em;">o</span>	<input type="text" value="Default"/>	<input type="text" value="Default CUCM Line Template"/>

## 15.8. Dropdown Filters

Administrators with access to the **Dropdown Filters** menu can manage the items available in dropdown lists on input forms. A filter would typically be used to define a shorter dropdown list.

Filters can be added, removed, modified and two existing filters can also be merged to define a new filter.

The Dropdown Filter list macro name that is generated starts with DDF\_\_ and is of the format (dots and slashes replaced by underscores):

```
DDF__<target model type> _<target model name>_<target field>
```



This is also the name shown in the **Dropdown Filters** list view at the hierarchy at which it was created.

### 15.8.1. Add a Dropdown Filter

1. Navigate to the required hierarchy.
2. Select the **Dropdown Filters** menu and click **Add**.
3. Choose **Create a Dropdown Filter** From the **Select a Dropdown Filter Action** dropdown list.
4. Choose the **Target Model** and **Target Field** names to which the filter is to be applied.

This is the dropdown field on an input form on the Admin Portal. Click **Help** on the input form to see the names.

5. Identify the associated **Model Type** and **Dropdown Field** of the **Dropdown Filter specifications**.

This can differ from the form names. Click **Help** on the input form to verify.

6. Set up the **Filter Fields**. Compare a **Filter Field** to a **Filter Field Value**:

- contained in or not contained in
- equal or not equal

Note that:

- The **Filter Field** can differ from the **Target Field**. In other words, the dropdown list can be filtered according to a filter applied to *another* field that belongs to the **Model Type**.
- The **Filter Field value** can also take the *name* of a named macro that resolves to a value, for example: `macro.SITENAME`.
- If the same **Filter Field** is used more than once, these filters will be merged, in other words, the *combined* filters on the field apply.

7. Add **Additional Parameters** to the filter:

- `direction:hierarchy` direction for search: `[up|down|local|parent|below|above]` (below and above exclude current hierarchy)
- `device:` device name
- `ndl:` network device list that the device belongs to
- `limit:` number of results
- `skip:` start number of results - can be used for paging
- `title:` character or regular expression: only return values matching its value

For details and examples, refer to the topics on macro syntax in the Advanced Configuration Guide.

8. Click **Save**. A dropdown filter is created.

This filter is a named list macro that will be added to the GUI Rule which is in place at the selected hierarchy for the **Target Field** on the Admin Portal input form of the selected **Target Model Name**.

When a created dropdown filter is opened, the macro is shown in the **Macro** field at the bottom of the form. Users who have menu access to the list of named macros can also see the dropdown filter macros by filtering the list by name starting with `DDF___`.

## 15.8.2. Example of a Dropdown Filter

Consider the filter:

- **Target Model Name:** relation/LineRelation
- **Target Field:** callForwardAll.callingSearchSpaceName
- **Model Type:** device/cucm/Css
- **Dropdown Field:** name
- **Filter Field:** name
- **Filter Condition:** Contains
- **Filter Field Value:** Cu2
- **Additional Parameter: Parameter Title:** Direction
- **Additional Parameter: Parameter value:** up

The list macro that is created applies to the GUI rule for the input field callForwardAll.callingSearchSpaceName of the input form for relation/LineRelation at the selected hierarchy. The list macro would then be:

```
{# device/cucm/Css | name /Cu2/i | direction: up #}
```

If you have access to the Macro Evaluator, you can test this macro. Also refer to the topic on Macro Syntax in the Advanced Configuration Guide for more details.

In the **Dropdown Filters** list view at the hierarchy, the **Filter Name** shows as:

```
DDF__relation_LineRelationTarget_callForwardAll_callingSearchSpaceName
```

## 15.8.3. Merged Dropdown Filters

Two existing dropdown filters can be merged to create a new dropdown filter. The merged filter is a dropdown list that uniquely combines the lists from the two dropdown filters.

## 15.8.4. Merge Dropdown Filters

1. Navigate to the required hierarchy.
2. Select the **Dropdown Filters** menu.
  - Check that the two dropdown filters that you want to merge are showing in the list view at the hierarchy. Otherwise, add the dropdown filters.
3. Choose **Merge Existing Dropdown Filters** from the **Select a Dropdown Filter Action** dropdown list.
4. Choose the **Target Model** and **Target Field** names to which the filter is to be applied.
5. Choose the two dropdown filters from the **Dropdown Filters to merge** form.
6. Click **Save**. A merged dropdown filter is created.

---

**Note:** Only two filters can be merged.

If you wish to merge more than two dropdown filters, first create a merged filter of each filter pair and select it to be merged.

---

When a created merged dropdown filter is opened, the macro is shown in the **Macro** field at the bottom of the form. The macro uses the `fn.list_extend_no_dup` macro function to uniquely merge the two dropdown filter lists. The macro syntax is of the format

```
{{ fn.list_extend_no_dup macro.DDF__<filter name 1>, macro.DDF__<filter name 2> }}
```

Refer to the topic on Macro Syntax and List Functions in the Advanced Configuration Guide for more details.

## 15.9. Line Delete Preferences

When deleting a phone, device profile, or remote destination profile from VOSS Automate, the line or lines (Cisco UCM lines) in use by the phones or devices are not automatically deleted.

Line Delete Preferences allow a Reseller (or higher) administrator to define whether the lines are deleted when deleting the phone or device, or updated (using values contained in a specified configuration template).

You can configure the following, via (default menus) **Customizations > Line Delete Preferences**):

- Allow deletion of a line
- Allow update of a line
- Configuration template to use for update (if enabled)

When:

- a phone, device profile or remote destination profile is deleted
- a line is deleted or changed from a phone, device profile or remote destination profile

then the following logic applies:

**Allow Line Deletion if unused**

- If the line is not shared with another phone or device, the line is deleted and the number inventory updated. See [Lines](#).
- If the line exists on another phone belonging to the same user as the deleted device, no action is taken.
- If the line is shared with an MGCP Gateway Endpoint, no action is taken.

**Allow Line Update after Device Deletion**

- If the line is not shared with another phone or device, the line is updated with the details from the selected configuration template.
- If the line is shared with another phone or device belonging to another user, the line is updated with the details from the selected configuration template specified in **Line Update Configuration Template name**.
- If the line is shared with another phone or device belonging to the same user, no update is performed.

---

**Note:** To determine the user associated with a phone, the owner ID must be set on the deleted phone.

---

**Affected Models**

- Model Type: device/cucm/Phone
  - Operation: Delete
  - Phase: Post Execution
  - Workflow: LineDeletion\_PhoneDataSync\_PWF
  - Synchronous: False
- Model Type: device/cucm/DeviceProfile
  - Operation: Delete
  - Phase: Post Execution
  - Workflow: LineDeletion\_PhoneDataSync\_PWF
  - Synchronous: False
- Model Type: device/cucm/RemoteDestinationProfile
  - Operation: Delete
  - Phase: Post Execution
  - Workflow: LineDeletion\_PhoneDataSync\_PWF
  - Synchronous: False

## 15.10. Email

### 15.10.1. Overview

Provider administrators can test email messages and manage email templates, if an email SMTP server is set up, and when emails are enabled via the Global Settings (Email tab). See: [Add a SMTP Server](#) and [Global Settings](#).

Email functionality is available for the following:

Component	Description
Quick Add Subscriber - Cisco (QAS)	Enable email functionality via Global Settings > Email tab, then select a checkbox in QAS to send a welcome email to new subscribers added via QAS.
Quick Subscriber - Microsoft	Enable email functionality via Global Settings > Email tab, then select a checkbox in Quick Subscriber to send a welcome email to new subscribers added via Quick Subscriber.
File Transfer Destinations	Configured by high level system administrators to transfer audit data for licensing. See the Licensing and Subscriber Data Export Guide.

#### Related Topics

- [Add a SMTP Server](#)
- [Global Settings](#)

### 15.10.2. Send Test Email

Via (default menus) **Customizations > Email > Send Test Email**, you can allow an email message to be sent to and from a specified email address, and select an email HTML template to test in the email body.

### 15.10.3. Email HTML Templates

You can view and work with email templates via (default menus) **Customizations > Email > Email HTML Templates**.

Email HTML templates contain placeholders for the email subject and body text, in HTML markup. The HTML markup can be modified as required (for example, by using an external WYSIWYG HTML editor).

## Default Email Templates

By default, the system provides the following email templates:

**Note:** When adding a HTML template from the list view, the **Name** can only be “Test Email Template”, “Quick Add Subscriber”, or “Number Inventory Alerting”.

Default email templates	Description
Test Email Template	This default template is read-only. You can't modify it or change its name. To use this template, you can clone it to your hierarchy and customize the clone.
Quick Add Subscriber	This default template is read-only. You can't modify it or change its name. To use this template, you can clone it to your hierarchy and customize the clone. You can use this template only if the setting is enabled via the Global Settings. Values from the Quick Add Subscriber input form can be used to populate the template by adding variables to the HTML template.
Number Inventory Alerting	This default template is read-only. You can't modify it or change its name. To use this template, you can clone it to your hierarchy and customize the clone. You can use this template only if the setting is enabled via the Global Settings. Values from Number Inventory Alert message can be used to populate the template by adding variables to the HTML template.

### Quick Add Subscriber Email Template Variables

Values from the Quick Add Subscriber input form can be used to populate the Quick Add Subscriber email template by adding variables to the HTML template.

The table describes the variables available for the **Cisco** Quick Add Subscriber email template:

Field name on input form	Variable available in HTML
Username:	{{ pwf.EMAIL.username }}
First name:	{{ pwf.EMAIL.firstname }}
Last name:	{{ pwf.EMAIL.lastname }}
One time password:	{{ pwf.EMAIL.password }}
One time PIN:	{{ pwf.EMAIL.pin }}
Access Code:	{{ pwf.EMAIL.phone_access_code }}
Email:	{{ pwf.EMAIL.email }}
Extension:	{{ pwf.EMAIL.extension_number }}
Mobile Number:	{{ pwf.EMAIL.mobile_number }}
Entitlement Profile:	{{ pwf.EMAIL.entitlement_profile }}
Phone Type:	{{ pwf.EMAIL.phone_type }}
Phone Names:	{{ pwf.EMAIL.phone_names }}
Jabber Device Names:	{{ pwf.EMAIL.jabber_names }}
Extension Mobility Name:	{{ pwf.EMAIL.extensionmobility_name }}

The table describes the default variables for the **Microsoft** Quick Subscriber email template:

Field name on input form	Variable available in HTML
Username:	{{ pwf.EMAIL.username }}
First name:	{{ pwf.EMAIL.first_name }}
Last name:	{{ pwf.EMAIL.last_name }}
One time password:	{{ pwf.EMAIL.password }}
Email:	{{ pwf.EMAIL.email }}
Extension:	{{ pwf.EMAIL.line_uri }}
Mobile Number:	{{ pwf.EMAIL.mobile_phone }}
Phone Number:	{{ pwf.EMAIL.phone_number }}

Example user details you can add to your QAS HTML template:

```
<p>Username: {{ pwf.EMAIL.username }}</p>
<p>First name: {{ pwf.EMAIL.firstname }}</p>
<p>Last name: {{ pwf.EMAIL.lastname }}</p>
```

## Number Inventory Alerting Email Template Variables

Values from the Number Inventory Alert message can be used to populate the Number Inventory Alerting email template by adding variables to the HTML template. The table describes the variables available for this template:

Name on alert message	Variable available in HTML
Threshold of available (%)	{{ pwf.INI_ALERT_THRESHOLD }}
Threshold reached (True/False)	{{ pwf.INI_ALERT_THRESHOLD_REACHED }}
Hierarchy node type	{{ pwf.INI_ALERT_HIERARCHY_NODE_TYPE }}
Hierarchy friendly name	{{ pwf.INI_ALERT_HIERARCHY_NAME }}
Hierarchy full path	{{ pwf.INI_ALERT_HIERARCHY }}
Total Numbers Available	{{ pwf.INI_ALERT_TOTAL_INI_AVAILABLE }}
Total Number count	{{ pwf.INI_ALERT_TOTAL_INI_COUNT }}
Total percent available	{{ pwf.INI_ALERT_TOTAL_PERCENT_AVAILABLE }}
Table of usage per site	{{ pwf.INI_ALERT_NODES_EXCEEDED_THRESHOLD_TABLE }}

### Example HTML

```
<h1>Number Inventory Threshold Report</h1>
<table border='1' style='border-collapse:collapse'>
<tr><td><b>Hierarchy node name</b></td><td><center>{{ pwf.INI_ALERT_HIERARCHY_NAME }}</
↵center></td></tr>
<tr><td><b>Hierarchy node type</b></td><td><center>{{ pwf.INI_ALERT_HIERARCHY_NODE_TYPE }
↵}</center></td></tr>
<tr><td><b>Hierarchy full path</b></td><td><center>{{ pwf.INI_ALERT_HIERARCHY }}</center>
↵</td></tr>
<tr><td><b>Total numbers available</b></td><td><center>{{ pwf.INI_ALERT_TOTAL_INI_
↵AVAILABLE }}</center></td></tr>
<tr><td><b>Total numbers</b></td><td><center>{{ pwf.INI_ALERT_TOTAL_INI_COUNT }}</center>
↵</td></tr>
<tr><td><b>Total percent available</b></td><td><center>{{ pwf.INI_ALERT_TOTAL_PERCENT_
↵AVAILABLE }}%</center></td></tr>
</table>
<p></p>
<p>{{ pwf.INI_ALERT_NODES_EXCEEDED_THRESHOLD_TABLE }}</p>
```

### Example message



info@voss-solutions.com  
to me ▾

📧 12:23

## Number Inventory Threshold Report

Hierarchy node name	CS-P
Hierarchy node type	Provider
Hierarchy full path	sys.hcs.CS-P
Total numbers available	1830
Total numbers	1982
Total percent available	92%

### List of hierarchy nodes with less than 15% of available numbers

Hierarchy node name	Hierarchy node type	Hierarchy full path	Total numbers available	Total numbers	Total percent available
Overton	Customer	sys.hcs.CS-P.CS-NB.Overton	2	25	8%

The email alert message also includes an attachment file called `NumberThreshold.csv` that contains the alert report in CSV format, for example:

```
Hierarchy Node Name,Hierarchy Node Type,% Available,Total Numbers Available,Total Numbers
CS-P,Provider,92,1830,1982
CS-NB,Reseller,92,1830,1982
AAAGlobal,Customer,91,1428,1557
Overton,Customer,8,2,25
LOC001,Site,74,284,382
LOC002,Site,83,20,24
LOC003,Site,90,46,51
```

### 15.10.4. Email Groups

The Email Groups input form is used to manage a group of email recipients.

Add a **Name** and **Description** to make this group and add a list of **Email Addresses**. This group can then be available for selection where Email Groups are selected.

See for example [Global Settings](#), for:

- Webex App email to specify recipients of generated CSV files.
- Number Inventory Alerting - email group to receive alerts.

### **Related Topics**

- *Add a SMTP Server*
- *Global Settings*

# 16. Flow Through Provisioning Configuration

## 16.1. Setting up Flow Through Provisioning

### 16.1.1. Overview

VOSS Automate's flow through provisioning feature allows auto-provisioning of users and services during user sync from devices.

---

**Note:**

- VOSS Automate v21.4-PB4 introduced sync with flow through provisioning for Cisco Webex.
  - VOSS Automate v21.2 introduced sync with flow through provisioning for Microsoft.
  - VOSS Automate v21.3 extends this functionality to several additional scenarios, including LDAP top down and LDAP/CUCM bottom up. While the legacy sync, move, and provisioning functionality remains available for compatibility purposes, the enhanced functionality introduced in this version is recommended.
  - Only *Add* is supported for syncs with flow through provisioning.
- 

#### Related Topics

- LDAP Integration in the Core Feature Guide
- Add CUCM Server in the Core Feature Guide
- CUCM Configuration in the Core Feature Guide
- Microsoft Overview in the Core Feature Guide
- Sync to Site with Flow Through in the Core Feature Guide
- Sync Webex App Users with Flow-through Provisioning in the Core Feature Guide
- Subscriber Profiles in the Core Feature Guide
- Model Filter Criteria in the Core Feature Guide
- Global Settings in the Core Feature Guide
- Site Defaults in the Core Feature Guide
- User Roles in the Core Feature Guide

This topic describes the steps for setting up your system to enable a seamless sync in of users to VOSS Automate from the hierarchy where the sync source device is set up (typically, Customer level), and the flow through provisioning of services to subscribers at your sites.

- To move users to sites, the flow through provisioning references move filter criteria, and attributes set up as [Model Filter Criteria](#) (such as a user's department, division or city address).

---

**Note:** The flow through provisioning uses the move filter criteria in the site defaults (SDD) to determine whether to move users to site. FTP will not run if the user is not moved to the site.

---

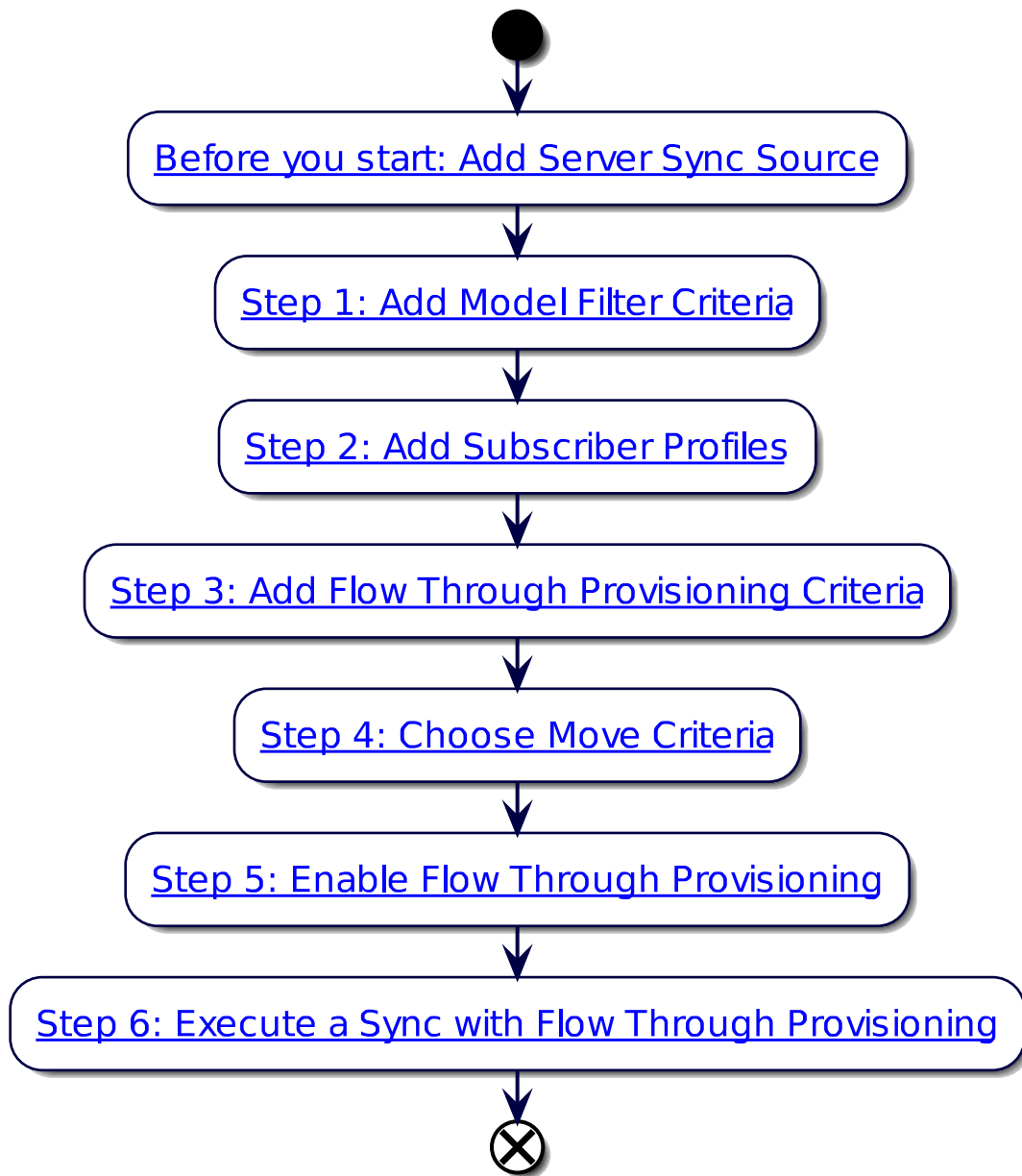
- To create a subscriber and provision resources and services, the flow through provisioning references subscriber profiles. See [Subscriber Profiles](#).

---

**Note:** Flow through provisioning (FTP) uses subscriber profiles for provisioning, so you will need a subscriber profile and Quick Add Group (QAG) with device configuration templates (CFTs) set up before using FTP.

---

- Each flow through provisioning criteria (one per customer) consists of one or more pairs of model filter criteria and a subscriber profile combinations.

**16.1.2. Flow Through Provisioning Workflow**

### 16.1.3. Before you Start: Add a Server as Sync Source

Users are imported from the server sync source to the Customer level in VOSS Automate. The flow through provisioning is generic functionality and supports a number of scenarios, including Microsoft, LDAP, CUCM, Cisco Webex and other models (depending on predefined model criteria).

**Note:** See the Core Feature Guide for details around adding and setting up a server for your flow through provisioning scenario. For example, see [Microsoft Quick Start Guide for VOSS Automate, Add and Configure an LDAP Server, CUCM Servers](#)

### 16.1.4. Step 1: Add Model Filter Criteria

Flow through provisioning references model filter criteria set up for each user type (for example, Microsoft, LDAP, or CUCM).

When setting up the model filter criteria, you will specify usage, either flow through provisioning, or move user:

- To move a user to the site on import, configure model filter criteria with **Move User** selected as the value for the **Usage** field.
- To provision a user once they're at the site, configure model filter criteria with **Flow Through Provisioning** selected as the value for the **Usage** field.

**Note:** The flow through provisioning process only runs if the user is at the site.

For details around adding the model filter criteria, see [Model Filter Criteria](#)

The screenshot shows the VOSS Automate interface for configuring a Model Filter Criteria. The breadcrumb path is: Home / Model Filter Criteria / MS user department is IT or SALES. The configuration fields are as follows:

- Name \***: MS user department is IT or SALES
- Description**: MS user department is IT or SALES
- Usage**: Flow Through Provisioning
- Type**: device/msgraph/MsolUser

The criteria section shows a single rule:

- Criteria**: Department is exactly IT OR
- Unary Operator**: (empty)
- Attribute \***: Department
- Condition \***: Equals Exactly
- Value \***: IT
- Conditional Operator**: OR

At the bottom, there is a link: > Department contains ignoreCase SALES

### 16.1.5. Step 2: Add Subscriber Profiles

Flow through provisioning uses the subscriber profile to determine the services to be assigned to a subscriber once they're moved to the site.

For details around adding subscriber profiles, see [Subscriber Profiles](#)

### 16.1.6. Step 3: Add Flow Through Provisioning Criteria

Flow through provisioning criteria is a type of model filter criteria used for provisioning. One named flow through provisioning criteria can be added at each Customer level.

Each flow through provisioning criteria is a collection of one or more pairs of model filter criteria and subscriber profile combinations. The flow through provisioning criteria defines how users are matched to both sites and subscriber profiles, allowing the tool to seamlessly move users to the sites (based on model filter criteria) and to create a subscriber and assign services from the subscriber profile.

Flow through provisioning uses the first match to execute the move and service assignment operation.

You can use a single flow through provisioning criteria to match any number of subscriber profiles for this customer and its sites. For example, if you have ten different subscriber profiles, you can add ten pairs of model filter criteria and subscriber profile combinations.

**Note:** Flow through provisioning criteria is configured via either of the following menu options (default menus):

- **Customizations > Flow Through Provisioning Criteria**
- **Flow Through Provisioning Configuration > Flow Through Provisioning Criteria.**

Before setting up the flow through provisioning criteria, configure the following:

- **Server sync source**
- [Model Filter Criteria](#)
- [Subscriber Profiles](#)

The screenshot displays the Voss Automate web interface. The left sidebar shows the navigation menu with 'Customizations' selected. The main content area is titled 'Flow Through Provisioning Criteria / Alterlake FTPC'. It shows a configuration form for a criterion named 'Alterlake FTPC'. The 'Criteria Order' section lists several criteria, each with a 'Model filter criteria' and a 'Subscriber Profile' dropdown. The first criterion is expanded, showing the filter criteria '[MS user department is Engineering], "device/msgraph/MsolUser", "hcs.CS-PCS-NB.RND.East.AlterLake"' and the subscriber profile 'MS with ES License and EV'. The second criterion is also expanded, showing the filter criteria '[MS user department is IT or SALES], "device/msgraph/MsolUser", "hcs.CS-PCS-NB.RND.East.AlterLake"' and the subscriber profile 'IT'. The third criterion is partially visible, showing the filter criteria '[MS user title is CEO], "device/msgraph/MsolUser", "hcs.CS-PCS-NB.RND.East.AlterLake"'.

### 16.1.7. Step 4: Choose Move Criteria

To allow users to be moved in a flow through provisioning, you need to choose move filter criteria for the user type (Microsoft, LDAP, and/or CUCM). The move filter criteria defines how the system moves users to the correct site once they're synced in; that is, it matches each user to the relevant site.

**Note:** The system uses the existence of the move filter criteria from the site defaults to determine if the user must be moved. Flow through provisioning will not work if a user is not moved to a site.

#### Prerequisites:

- Server sync source
- *Model Filter Criteria* (set Usage field to **Move User**)
- *Subscriber Profiles*
- Flow Through Provisioning Criteria

#### To choose move criteria ...

1. Go to (default menus) **Site Management > Defaults**.
2. Click on the relevant site.
3. On the **Move Filter Criteria** tab, choose the criteria for the user types you're importing (Microsoft, LDAP, and/or CUCM).
4. Save.

### 16.1.8. Step 5: Enable Flow Through Provisioning

Enabling your system for flow through provisioning in the Global Settings allows VOSS Automate to perform a seamless sync in, to move users to the correct site (based on move filter criteria) as subscribers (based on the model filter criteria), and to provision these subscribers with appropriate services (based on the subscriber profile).

#### Prerequisites:

- Server sync source
- *Model Filter Criteria*
- *Subscriber Profiles*
- Flow through provisioning criteria
- Move criteria selected



**To enable flow through provisioning ...**

1. Log in to the Admin Portal as Provider admin or higher.
2. Set the hierarchy to the level where the sync source device is installed. Typically, this is at the customer.
3. Go to (default menus) **Customizations > Global Settings**, and select the **Flow Through Provisioning** tab.

---

**Note:** Alternative menu: **Flow Through Provisioning Configuration > Global Settings**.

---

4. At **Enable Move & Flow Through Provisioning**, select **Yes**.
5. At **Enable Move & Provisioning after Add Sync**, select **Yes**.
6. At **Flow Through Provisioning Criteria**, choose the flow through provisioning criteria to use at the customer level (for all sites at the customer).
7. Save.

The screenshot shows the 'Global Settings' page with the 'Flow Through Provisioning' tab selected. The page has a navigation bar with tabs for 'Number Inventory', 'Number Inventory Alerting', 'Webex App', 'Pexip Conference', 'Email', 'Phones', 'User', 'Flow Through Provisioning', and 'Enabled Services'. The 'Flow Through Provisioning' tab is active. Below the navigation bar, there are three configuration sections:

- Enable Move & Flow Through Provisioning:** A dropdown menu set to 'Inherit' with a search icon and a 'No' button below it.
- Enable Move & Provisioning after Add Sync:** A dropdown menu set to 'Inherit' with a search icon and a 'No' button below it.
- Flow Through Provisioning Criteria:** A dropdown menu set to 'Inherit' with a search icon and an empty button below it.

### 16.1.9. Step 6: Sync with Flow Through Provisioning

This section describes the general workflow in a generic sync with flow through provisioning.

You can run the sync directly, or via a schedule.

Ensure you have the following set up before a sync:

- Server sync source
- *Model Filter Criteria*
- *Subscriber Profiles*
- Flow through provisioning criteria
- Move criteria selected

### Sync with Flow Through Provisioning Workflow Steps

The flow through provisioning workflow is executed per user and runs in parallel:

1. Imports user.
2. Creates a corresponding LDAP user (for LDAP scenario), and a local VOSS user.
3. Moves users to the sites (based on model filter criteria). If no criteria in place, user remains at Customer level.
4. Updates the user's role for the site.
5. Executes Add Subscriber from Profile to create the subscriber, and checks the flow through provisioning criteria to match it to a subscriber profile.
6. Provisions the subscribers with appropriate services, from the subscriber profile.
7. Sends a welcome email to subscribers if the following applies:
  - The global setting to allow an email message to be sent to a user is enabled. See the *Email Tab* topic at [Global Settings](#).
  - An SMTP server has been set up. See [Add a SMTP Server](#).
  - The subscriber user has an email address.

See also [Email HTML Templates](#).

You can monitor the progress of the transaction via the Transaction Log. When complete, verify the user's move and provisioning status:

1. Go to (default menus) **User Management > Users**, and in the list view, check that synced in users are at the correct sites.
2. On the Subscribers list view, check that subscribers exist at the sites, with relevant services.

# 17. Cisco Dial Plan Management

Cisco

## 17.1. Introduction to Cisco HCS Dial Plan

provider

### 17.1.1. Overview

VOSS Automate Provider solution supports Cisco HCS dial plan tools.

Custom (non-HCS) Cisco dial plans are also supported for Enterprise deployments. For details, see *Appendix: Optional Features* in this guide. The Cisco custom dial plan is independent of the hierarchy schema approach of the Cisco HCS dialplan. However, it can also be used in conjunction with schema-based dial plan management.

---

**Note:** For Microsoft dial plan, see *Microsoft Teams Dial Plan Management* in this guide.

---

#### Related Topics

- Dial Plan Schemas in the Provider HCS Dial Plan Management Guide
- Dial Plan Schema Groups in the Provider HCS Dial Plan Management Guide
- Associate Custom Dial Plan Schema Group in the Provider HCS Dial Plan Management Guide
- Emergency and CLI Settings in the Provider HCS Dial Plan Management Guide

### 17.1.2. Cisco HCS Dial Plan Example Workflow

This section provides a high level example workflow for a Cisco HCS dial plan.

**Note:** See also the Provider HCS Dial Plan Management Support Guide for additional details around using Cisco HCS dial plans in VOSS Automate.

1. Mandatory. Deploy country dials plans (for countries other than United States or United Kingdom).

**Note:** This task is mandatory when using country dial plans other than US or UK. For details, see the “Provider HCS Dial Plan Management Support Guide”.

2. Apply customer dial plan at customer.
3. Apply site dial plan at site.
4. Optional. Configure Class of Service (CoS) at site.
5. Add Directory Number Inventory at customer or site.
6. Optional. Configure E.164 Inventory at customer or site.
7. Optional. Configure E.164 Number to Directory Number associations at customer or site.
8. If not using Site Location Codes (that is, you have deployed a Type 4 Dial Plan), configure Directory Number Routing at site to enable intra- and inter-site calls.
9. Optional. Configure Short Codes at site.
10. Edit Site Defaults as follows:
  - a. On the **Device Defaults** tab, set the Default VOSS Automate Device CSS to an appropriate device Class of Service.
  - b. On the **Line Defaults** tab, set the Default CUCM Line CSS to an appropriate line Class of Service.
11. For offnet PSTN call configuration, see the “Provider HCS Dial Plan Management Support Guide”.
12. For Local Breakout (LBO) configuration, see “IOS Device Management”.
13. For user, phone, and line configuration, see “Subscriber Management”.

### 17.1.3. Cisco Shell Schema Groups

To deploy your own existing dial plan rather than one of Cisco’s out-of-the-box dial plans, use the shell schema group to enable core functionality without deploying a pre-configured VOSS Automate schema group.

The shell schema group provides a starting point for you to build your own dial plan. The shell schema group has no preset site default values other than Default Device Pool and Default CUCM Group. The shell schema group does not contain any default core schemas, features schemas, or country schemas. You can clone the shell schema group instance and tailor all other settings to your own specifications.

On the Custom Workflows tab, the shell schema group provides default workflows for the following registry events used to create customer inventories and associations:

- addDnInventory - allows you to create DN inventory without enforcing any rules or constraints on the DN numbers
- addE164Inventory - allows you to create E164 inventory without enforcing any rules or constraints on the E164 number other than enforcing the country code prefix for a given site
- associateE164ToDn - allows E164 to DN number association (N to N) on VOSS Automate without configuring anything on Cisco Unified CM
- unassociateE164ToDn - removes E164 to DN number association (N to N) from VOSS Automate without removing anything on Cisco Unified CM
- associateE164ToSingleDn - allows E164 to DN number association (N to 1) on VOSS Automate without configuring anything on Cisco Unified CM
- unassociateE164ToSingleDn - removes E164 to DN number association (N to 1) on VOSS Automate without removing anything on Cisco Unified CM

For more information on configuring schema groups and associating them with customers, refer to the Provider HCS Dial Plan Management Support Guide.

## 17.2. Dial Plan Roles and Privileges

### provider

Administrators can perform all tasks associated with their roles, as well as all dial plan tasks that are lower on the navigation hierarchy.

Hierarchy is shown from left (highest) to right (lowest) in the table below.

Depending on the role assigned, an administrator has the following Dial Plan privileges:

Tasks	HCS Admin	Provider / Reseller Admin	Customer Admin	Site Admin
Create a Customer Dial Plan	X (Customer level)	X (Customer level)	X (Customer level)	
Create a Site Dial Plan	X (Site level)	X (Site level)	X (Site level)	
Configure Class of Service	X (Site level)	X (Site level)	X (Site level)	
Configure Short Code	X (Site level)	X (Site level)	X (Site level)	X
Configure Directory Number Routing	X (Site level)	X (Site level)	X (Site level)	X
Add Directory Numbers	X (Customer level)	X (Customer level)	X	
View Directory Number Inventory	X (Site level)	X (Site level)	X (Site level)	
Configure SIP Route Patterns	X (Site level)	X (Site level)	X (Site level)	
Create Voice Mail Service	X (Provider/Reseller level)	X (Provider/Reseller level)		

continues on next page

Table 1 – continued from previous page

Tasks	HCS Admin	Provider / Re-seller Admin	Customer Admin	Site Admin
Associate Voice Mail Services to Customer	X (Customer level)	X (Customer level)		
Define a Voice Mail Pilot Number	X (Customer level)	X (Customer level)	X (Customer level)	
Associate Pilot Numbers to a Site	X (Site level)	X (Site level)	X (Site level)	
Configure SIP Trunks	X	X	X	
Reset SIP Trunks	X	X	X	
Restart SIP Trunks	X	X	X	
Configure Route Groups	X	X	X	
Configure Route Lists	X (Customer or Site level)	X (Customer or Site level)	X	
Configure Device Pools	X (Customer or Site level)	X (Customer or Site level)	X	
Provision Emergency Calls	X			
Create Schemas	X	X		
Modify Site Defaults	X (Site level)	X (Site level)	X (Site level)	
Assign Custom Schemas to Customers	X (Customer level)	X (Customer level)		
Configure Unified CM Groups	X (Customer or Site level)	X (Customer or Site level)	X (Customer or Site level)	
Configure Regions	X (Customer or Site level)	X (Customer or Site level)	X (Customer or Site level)	
Configure Route Patterns	X (Customer or Site level)	X (Customer or Site level)	X (Customer or Site level)	
Configure Route Partitions	X (Customer or Site level)	X (Customer or Site level)	X (Customer or Site level)	
Configure Calling Search Spaces	X (Customer or Site level)	X (Customer or Site level)	X (Customer or Site level)	
Configure Translation Patterns	X (Customer or Site level)	X (Customer or Site level)	X (Customer or Site level)	
Configure Calling Party Transformation Patterns	X (Customer or Site level)	X (Customer or Site level)	X (Customer or Site level)	
Configure Called Party Transformation Patterns	X (Customer or Site level)	X (Customer or Site level)	X (Customer or Site level)	

**See Also:**

- For more information on bulk loading, see the topics on Bulk Administration.

## 17.3. HCS Dial Plan Macros in VOSS Automate

Macros can be used in VOSS Automate to dynamically add site IDs, customer IDs, and other types of information when customizing dial plan schemas and Class of Service. Macros increase ease of use and reduce error.

Macros are evaluated within the context of a particular hierarchy node based on the scope specified in the schema group binding (for example, site, customer, provider).

The correct syntax for a macro is the word “macro” followed by a period (.), followed by the Named Macro as shown in the table that follows. Add double curly brackets ({{ }}) around the entire macro combination. For example, {{ macro.HcsDpCustomerName }} is the macro combination created using the first Named Macro in the table. Note that there are no spaces in a named macro.

This table provides a list of Named Macros currently available. This list will be expanded as new macros become available.

Named Macro	Description
HcsDpCustomerName	Name of the customer (as specified when you create your customer)
HcsDpCustomerId	Systemwide, unique internal customer ID generated when you create a customer
HcsDpSiteName	Name of the site (as specified when you create a site under a customer)
HcsDpSiteId	Systemwide, unique internal site ID generated when you create a site
HcsDpUniqueCustomer PrefixMCR	Default unique Cisco HCS customer prefix in the form 'Cu{{ macro.HcsDpCustomerId }}'
HcsDpUniqueSite PrefixMCR	Default unique HCS site prefix in the form 'Cu{{ macro.HcsDpCustomerId }}Si {{ macro.HcsDpSiteId }}'
HcsDpSiteCountryMCR	Returns the country associated with a specific site
HcsDpSiteCountryIso	Returns the ISO 3166-1 alpha-3 three-letter country code associated with the country that is associated with a specific site
HcsDpPstnBreakout	Returns the PSTN prefix digit for the country that is associated with a specific site
HcsDpSiteAreaCode InLocal-DialingMCR	Returns True if a specific site requires area code for local PSTN dialing
HcsDpSiteNatTrunk PrefixMCR	Return the national trunk prefix associated to a particular site
HcsDpDefaultSite Device-PoolMCR	Default Cisco HCS site device pool Cisco Unified Communications Manager element name
HcsDpDefaultSite LocationMCR	Default Cisco HCS site location Cisco Unified Communications Manager element name
HcsDpDefaultSite RegionMCR	Default Cisco HCS site region Cisco Unified Communications Manager element name

The following macros can be used to loop through the area codes specific for a particular site when adding translation patterns:

Named Macro	Description
HcsDpSiteAreaCodeMCR	Returns list of area codes associated with a specific site
HcsDpSiteAreaCodeItem_AreaCodeMCR	Return the area code attribute from the area code list item
HcsDpSiteAreaCodeItem_LocLenMCR	Return the local number length attribute from the area code list item

### Related Topics

- Macro Evaluate Function in the Advanced Configuration Guide
- Create an Evaluation Macro in the Advanced Configuration Guide
- Macro Evaluator in the Advanced Configuration Guide

## 17.4. Customer Dial Plan

provider

Cisco

### 17.4.1. Overview

For Cisco HCS dial plans, you must create a customer dial plan before you create the site dial plan. You can only add one dial plan per customer.

Cisco HCS dial plan schemas are configured such that the customer-level dial plan elements are not pushed to CUCM until the first site for the customer is deployed. Therefore, you won't see any dial plan elements provisioned on the CUCM until at least one site is deployed for the customer. See [Site Dial Plan](#).

Once you add a customer dial plan, the only change allowed is to enable CSS filtering.

### 17.4.2. Add a Cisco HCS Customer Dial Plan

This procedure adds a new Cisco HCS dial plan for a customer.

**Note:** The options you choose in this procedure define the type of Cisco HCS dial plan schema (Type 1 to 4) to be used.

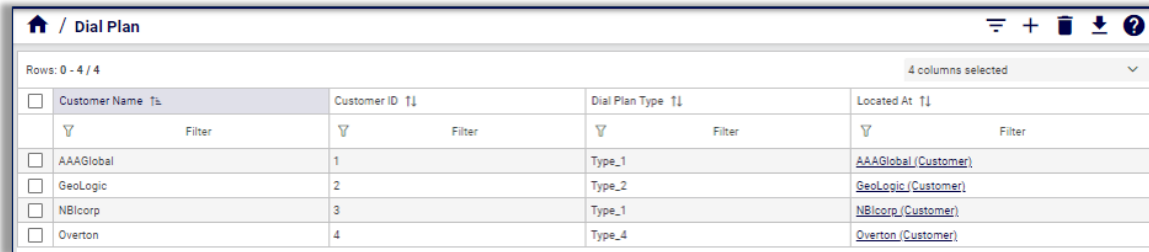
#### To add a new dial plan for a customer:

1. Log in to the VOSS Automate Admin portal as a Provider administrator or Customer administrator.



**Note:** For details around tasks that can be performed for each admin level, see *Dial Plan Roles and Privileges*.

- Go to (default menus) **Cisco Dial Plan Management > Customer > Dial Plan** to view existing dial plans in the list view.



The screenshot shows a web interface for managing dial plans. At the top, there is a breadcrumb path: Home / Dial Plan. Below this, there are icons for filtering, adding, deleting, and downloading. The main content is a table with the following columns: Customer Name, Customer ID, Dial Plan Type, and Located At. Each column has a search icon and a 'Filter' label. The table contains four rows of data, each with a checkbox in the first column.

<input type="checkbox"/>	Customer Name <small>Ts</small>	Customer ID <small>Tl</small>	Dial Plan Type <small>Tl</small>	Located At <small>Tl</small>
<input type="checkbox"/>	AAAGlobal	1	Type_1	<a href="#">AAAGlobal / Customer</a>
<input type="checkbox"/>	GeoLogic	2	Type_2	<a href="#">GeoLogic / Customer</a>
<input type="checkbox"/>	NBicorp	3	Type_1	<a href="#">NBicorp / Customer</a>
<input type="checkbox"/>	Overton	4	Type_4	<a href="#">Overton / Customer</a>

- Click the Plus icon (+) to add a new customer dial plan; then, select the customer.
- On the **Dial Plan / New Record** page, choose one of the options in the table to configure the new dial plan, depending on whether a site-location code is required for the customer:

Site-location code required?	<p>Select <b>Site-Location Code (SLC) based dial plan</b>, then:</p> <ul style="list-style-type: none"> <li>• Define whether to use an extension prefix. If yes, select <b>Use extension prefix</b>, then fill out the extension prefix.</li> <li>• Define whether to use an inter-site prefix for inter-site dialing. If yes, select <b>Inter-Site Prefix required for inter-site dialing</b>, then: <ul style="list-style-type: none"> <li>– Fill out the inter-site prefix (ISP). The ISP can be just one digit.</li> <li>– Define whether the ISP is included in the directory number. If yes, define whether the ISP is included in the Voice Mail ID.</li> </ul> </li> <li>• Define whether to enable CSS filtering. If yes, select <b>Enable CSS filtering</b>. When enabled, this setting filters the calling search spaces (CSS) available when configuring a subscriber, phone, or line, to Site level Class of Service (CoS) CSSs. By default, CSS filtering is disabled, which results in all available Cisco Unified Communications Manager (CUCM) CSSs being available when configuring a Subscriber, phone, or line.</li> </ul>
No site-location code required	<ul style="list-style-type: none"> <li>• Leave <b>Site-Location Code (SLC) based dial plan</b> unchecked.</li> <li>• Define whether to enable CSS filtering. If yes, select <b>Enable CSS filtering</b>. When enabled, this setting filters the calling search spaces (CSS) available when configuring a subscriber, phone, or line, to Site level Class of Service (CoS) CSSs. By default, CSS filtering is disabled, which results in all available Cisco Unified Communications Manager (CUCM) CSSs being available when configuring a Subscriber, phone, or line.</li> </ul>

**Note:** The value in the read-only **Customer ID** field is a unique, auto-generated number allocated to the customer. Customer ID is particularly useful in shared deployments (where a cluster may be shared across multiple customers) to correlate specific elements to a customer. The customer ID displays in CUCM as a prefix to elements (for example Cu2Si7 identifies Customer 2, Site 7).

5. Click **Save** to add the new customer dial plan.

For add, update, or delete, you can view transaction progress and details in the Transaction Logs.

---

**Note:** When adding lines (DNs) at the site level, you must define your DN's appropriately (that is, you are responsible for using ISP+SLC+EXT if you deploy a Type 2 dial plan). Otherwise your inter/intra site calls won't route. For details around defining directory numbers, see [Number Range Management](#).

---

## Related Topics

- Transaction Logging and Audit in the Core Feature Guide

## 17.5. Site Dial Plan

provider

Cisco

### 17.5.1. Overview

A site can be associated with only one dial plan.

A Cisco HCS site dial plan is not automatically created for a site when the site is created. Instead, once the first site is deployed for a specified customer, the customer-level dial plan elements are provisioned on Cisco Unified Communications Manager (CUCM), followed by the site-specific, Cisco HCS dial plan elements. Each subsequent site takes less time to create as they have only site-specific dial plan elements to provision.

For customers with two or more sites, the site dial plan must be applied to each site.

Only one site dial plan can be added at a time against a specific CUCM. Parallel transactions are disallowed. When adding a site dial plan, its transaction workflow acquires a lock that prevents a parallel transaction from adding another site dial plan from completing. The lock value is unique per CUCM.

If you try adding another site dial plan while a transaction is in progress for the first one you added, the transaction for the second dial plan starts and is in progress for 3 minutes, trying to acquire the lock. If it cannot acquire the lock, the second transaction fails with this message:

*Failed to Add Cisco HCS Site Dial Plan, a Site Dial Plan is currently being added for this Unified CM, please wait for that transaction to complete, or wait 15mins for the lock to auto expire in the case that a failed transaction did not release the lock automatically*

If the first transaction fails, the lock is set to auto-expire after 15 minutes.

### 17.5.2. Add a Cisco HCS Site Dial Plan

This procedure creates a Cisco HCS site dial plan and associates the dial plan with a site.

#### Pre-requisites:

- Create the customer dial plan. See [Customer Dial Plan](#)

You can only create a site dial plan once the customer dial plan exists because there are attributes defined in the customer dial plan that are required when the site dial plan is created.

**To add a site dial plan:**

1. Log in to the Automate Admin portal as a Provider administrator or Customer administrator.

---

**Note:** For details around tasks that can be performed for each admin level, see [Dial Plan Roles and Privileges](#).

---

2. Go to (default menus) **Cisco Dial Plan Management > Site > Dial Plan**, then view existing site dial plans in the list view.
3. Click the Plus icon (+) to add a new site dial plan; then, select the site.
4. On the **Dial Plan / New Record** page, configure the dial plan. The table describes the configuration options:

Field	Configuration
External Breakout Number	<p>Fill out the one digit external breakout number for the country associated with the site.</p> <p>The external breakout number is the PSTN prefix that is used when deploying a country dial plan. The default is 9. For Cisco HCS Type 1 to 4 dial plan schemas, country dial plans are deployed at the Customer level.</p> <p>The country dial plan is pushed to CUCM once the first site associated with a given country is deployed. For example, if a site is associated with the United States (USA), and it is the first site dial plan being created for the USA, the USA country dial plan is deployed as part of creating the site's dial plan.</p> <p>Automate supports only one external breakout number for each country. For example, all sites within the USA have the same external breakout as the first site within the USA.</p>
Use extension prefix	<p>Defines, for sites without Inter-Site Prefixes (ISPs), whether this dial plan uses the extension prefix from the customer dial plan. Displays only if your customer dial plan does NOT use ISPs, for example, HCS Type 3 dial plans (SLC, no ISP, DN=SLC+EXT). When enabled, this setting is applied ONLY if there is an extension prefix defined in the customer dial plan.</p>
Area Codes	<p>Click the Plus icon (+) to add valid local area codes for the site, if required.</p> <p>For each area code you add:</p> <ul style="list-style-type: none"> <li>• Fill out the area code.</li> <li>• Specify the length of the subscriber part of the PSTN number.</li> </ul> <hr/> <p><b>Note:</b> The area code is used to generate the PSTN local route patterns for the site. For example, in the USA, if area codes are added for Dallas, Texas, the area codes could be specified for local dialing as 214, 469, and 972, with a subscriber length of 7. The <b>Local Number Length</b> field defines the length for the subscriber section of the entire E.164 number.</p> <hr/>

Field	Configuration
Site Location Code	Displays only when the customer dial plan uses site location codes. Fill out the site location code (SLC). The maximum number of digits is 8. The SLC must be unique across sites for a customer.
Extension Length	Fill out the number of digits for the extension (between 1 and 30 digits).
Area Code Used for Local Dialing	Defines whether the area code is required for local dialing from this site.  <b>Note:</b> In the USA, this setting defines whether you use 7-digit or 10-digit local dialing.
Published number	Select from the available E.164 inventory numbers, or fill out a custom number.  <b>Note:</b> The site published number is the default E.164 mask when a line is associated to a phone at a particular site.

Field	Configuration
Emergency Call Back Number	Select from the available E.164 inventory numbers, or fill out a custom number.  <b>Note:</b> Site emergency call-back number is the calling number when initiating an outgoing emergency call. It can be used when you use Extension Mobility and make an emergency call from a site other than your own. It can be used when the emergency call goes out to the PSTN network, when the system includes the site emergency number so that the origin of the call is known. The system adds this calling party transformation to the DN2DDI4Emer-PT partition. The emergency call back number is not the number to dial for an emergency. Instead, it is the number used to identify the calling party for emergency calls originating from a particular site.
Use DDI for emergency calls	Define whether to use DDI for emergency calls when user is at home location.
Site ID	A read-only field that displays a unique, auto generated number for each customer site, which is prefixed to elements as an identifier (for example, Cu4Si2 indicates Customer 4, Site 2).

5. Click **Save**.

View transaction progress and details in the Transaction Logs.

The new site dial plan is added. The system takes a few minutes to provision the site dial plan, especially for the first site. The site information is loaded on CUCM, and is identifiable by its Customer ID, Site ID prefix.

## Related Topics

- Transaction Logging and Audit in the Core Feature Guide

### 17.5.3. Update a Cisco HCS Site Dial Plan

provider

Cisco

This procedure updates a Cisco HCS site dial plan.

1. Log in as the Provider, Reseller, or Customer administrator.
2. Set the hierarchy path to the site where you want to update the dial plan.
3. Go to (default menus) **Cisco Dial Plan Management > Site > Dial Plan**.
4. In the list view, click on the site dial plan where you want to make changes.
5. On the **Dial Plan** page, you can update the following:

Field	Description
Area Code	You can modify or delete existing area codes, or add new area codes.
Local Number Length	The length of a locally dialed number for the specified area code.
Area Code Used for Local Dialing	Defines whether the area code is included in locally dialed calls.
Published Number	The site published number is the default E.164 mask when a line is associated to a phone at a particular site.
Emergency Call Back Number	The site emergency call-back number is the calling number when initiating an outgoing emergency call.

6. Click **Save**.

View transaction progress and details in the Transaction Logs.

## Related Topics

- Transaction Logging and Audit in the Core Feature Guide

### 17.5.4. Area Code Changes in Cisco HCS Site Dial Plans

For the Cisco Type 1-4 dial plans, area code changes result in the affected local dialing translation patterns getting reapplied for the site:

When adding new area codes	New translation patterns are deployed to the site, based on the country dial plan schema associated with the site.
When deleting area codes	Related translation patterns are un-deployed from CUCM, based on the country dial plan schema associated with the site.
When modifying area codes	Related translation patterns are un-deployed from CUCM, and new translation patterns are deployed, based on the updated area codes.

For the Cisco Type 1-4 dial plan schema groups, area code changes generate LBO IOS area code events. If you change the area code for a site associated with one or more Local SIP Gateways, area code IOS commands are generated:

When adding an area code	The area code add IOS command is generated.
When deleting an area code	The area code delete IOS command is generated if no other sites associated with the same SIP Local Gateway are using the deleted area code. If another site still references the same gateway's area code, the delete area code IOS command is not generated. This prevents invalidating the other site's local dialing behavior.
When updating an area code	The area code delete and add IOS commands are generated as necessary, based on the added and deleted logic.

### 17.5.5. Published Number Changes in Cisco HCS Site Dial Plans

When changing an existing published number in a Cisco HCS site dial plan:

- The following site defaults are updated, if they were using the published number you changed:
  - Default CUCM Phone Line E164 Mask
  - Default CUCM Device Profile Line E164 Mask
  - Line E164 Mask
- Updates any phone line masks, device profiles, and remote destination profiles that were using the published number you changed.
- Automatically regenerates previously generated E164 IOS commands for a SIP Local Gateway associated with the site.

### 17.5.6. Emergency Call Back Number Changes in Cisco HCS Site Dial Plans

When updating a Cisco HCS site dial plan and you have a Type 1 - 4 dial plan configured, two calling party transformations are created automatically with the Emergency Call Back Number.

Changing the Emergency Call Back Number updates the calling party mask in these calling party transformation patterns if it used the previous Emergency Call Back Number:

- "{{ macro.HcsDpSiteId}}!"
- "{{ macro.HcsDpSiteId}}\+!"

If the calling party mask has been manually changed, the fields are untouched.

These calling party transformation patterns insert the Emergency Call Back Number as the caller ID for any emergency calls placed from phones within the site.

#### Next Steps

Apply any generated or regenerated IOS commands to your IOS gateway.

## 17.6. Class of Service (Site)

provider

### 17.6.1. Configure Class of Service for a Site

This procedure creates a new Calling Search Space (CSS) or edits an existing CSS that is tied to a site. The CSS can be used as a Class of Service (COS) for a device or line, or any of the other templates that rely on COS to filter different features.

1. Log in as provider, reseller, or customer administrator.
2. Select the relevant site.

---

**Note:** When adding CoS, ensure you select a valid site under the customer in the hierarchy. You can only add CoS at a site.

---

3. Go to (default menus) **Cisco Dial Plan Management > Site > Class of Service**.

---

**Note:** There is one default Internal Calling Line Identification Presentation (CLIP) CoS that appears in the list. The default CoS is provisioned automatically based on the criteria you selected when you added the site.

---

4. Choose an option:
  - To add a CoS, click **Add**.
  - To edit an existing CoS, click on the relevant CoS, make your changes, then save.



- To clone an existing CoS, click on the relevant CoS, then click **Action > Clone**.
5. Fill out a unique name for the CoS in the **Class of Service Name** field.

---

**Note:** Ensure the name is descriptive, using up to 50 alphanumeric characters, including spaces, period(s), hyphens (-), and underscore characters (\_). You can also use macros in Automate to create a CoS name. See the Automate documentation for a list of possible macros.

MMacros allow you to dynamically add site IDs, customer IDs, and other types of information to the CSS.

Example: Cu1-24HrsCLIP-PT-{{macro.HcsDpSiteName}}

The actual CSS that is sent to the CUCM (based on the macros entered) is mirrored in the **Actual Calling Search Space** field. For example, the macro example above changes to Cu1-24HrsCLIP-PT-SiteABC.

---

6. Optionally, at the **Description** field, fill out a description for the CoS.
7. Choose route partition members to include in the CoS. To do this:
  - a. Click the Plus icon (+) to add route partitions.
  - b. From the drop-down, select a route partition member.
  - c. Repeat this step until you have selected all the members you need for this CoS. If you want to remove any member from the CoS, click the Minus icon (-).
8. Click **Save** to add the new CoS. The new CoS will display in the summary list view, from where you can update it or delete it in future, if required.

When adding (including clone), updating, or deleting CoS, you can view transaction progress and details in the Transaction Logs.

### Related Topics

- Transaction Logging and Audit in the Core Feature Guide
- Class of Service in the Core Feature Guide

## 17.6.2. Clone a Class of Service for a Site

This procedure clones an existing Class of Service (CoS) to the same site hierarchy node, with a new name.

1. Log in as provider, reseller, customer, or site administrator.

---

**Note:** When cloning a CoS, ensure that you select a valid site under the customer in the hierarchy. Attempting to clone a CoS at any other node (at a customer or reseller for example), a system error reminds you that you must be at a site.

---

2. Go to (default menus) **Cisco Dial Plan Management > Site > Class of Service**.
3. Click on the Class of Service to be cloned.
4. Click **Action > Clone**.

5. Fill out a unique name for the Class of Service in the **Class of Service Name** field.

---

**Note:** Ensure the name is descriptive, using up to 50 alphanumeric characters, including spaces, period(s), hyphens (-), and underscore characters (\_).

---

6. Optionally, fill out a description.
7. Save the cloned CoS. This creates a new CoS.

When adding (including clone), updating, or deleting CoS, you can view transaction progress and details in the Transaction Logs.

---

**Note:** Save the cloned CoS to the same site hierarchy as the original CoS. You can't save the clone to a different site or to a different hierarchy.

The new CoS displays in the summary list view, from where it can be updated or deleted in future, if required.

---

## Related Topics

- Transaction Logging and Audit in the Core Feature Guide

## 17.7. Short Code

### 17.7.1. Overview

Short codes are used for abbreviated dialing to other extensions and services.

### 17.7.2. Configure Short Codes

This procedure configures short codes.

#### Prerequisites:

- The site dial plan must be added. See [Site Dial Plan](#)

#### Perform these steps:

1. Log in as provider, reseller, customer, or site administrator.

Warning:

When adding a short code, ensure that you select a valid site under your customer in the hierarchy node breadcrumb at the top of the view. Adding a short code at any other node in the hierarchy triggers a system error indicating that you must be at a site.

2. Choose **Cisco Dial Plan Management > Site > Short Code**, then click **Add** to add a short code.
3. Enter a short code in the **Short Code** field, using up to 16 characters with the following format:
  - The first character may be 0-9, or \*

- The last character may be 0-9, #, or the wildcard character X.
- All other characters may be 0-9, . (period), or the wildcard character X. Only one . (period) is allowed.

Example:

\*2.XXX

4. From the **Short Code Type** drop-down, choose one of:

Option	Description
Called Mask	The called mask maps to the Short Code. Valid entries include the digits 0 through 9; the international escape character + and the wildcard character X. For example, a called mask of 567XXX using Short Code *2.123 converts to 567123.
Directory Number	The directory number maps to the Short Code. Valid entries are digits 0 through 9.
Pre-dot with Called Prefix	The called prefix maps to the Short Code.

5. Enter the value for the Short Code Type in the **Value** field.
6. Select the **Use Originator's Calling Search Space** check box to indicate that the Short Code will use the originator's calling search space for routing a call rather than an explicit customer CSS.  

If the originating device is a phone, the originator's calling search space is a combination of the device calling search space configured on their phone and line calling search space configured on the originating line.
7. Click **Save** to add the Short Code that you defined. The new Short Code appears in the table of Short Codes and it can be edited or deleted as required.

## 17.8. Directory Number Routing

### 17.8.1. Overview

Directory number routing is a translation pattern that is put into the PreISR and ISR partitions to route intrasite and intersite calls to extensions (directory numbers). This is similar to the way site location codes (SLCs) are used as short codes for Type 1, 2, and 3 customer dial plans.

Typically, directory number routing is used for Type 4 (flat dial plans) so that from a customer and site perspective, you can see which patterns are directory numbers because there are no SLCs available.

## 17.8.2. Add a Directory Number Routing

This procedure adds a directory number routing.

1. Log in as provider, reseller, customer, or site administrator.

Warning:

When adding directory number routing, you must select a valid site under your customer in the hierarchy node breadcrumb at the top of the view. Adding a directory number routing at any other node in the hierarchy triggers a system error indicating that you must be at a site.

2. Go to (default menu) **Cisco Dial Plan Management > Site > Directory Number Routing**, then click **Add**.
3. In the **Directory Number Routing Prefix**, enter a prefix, using up to 30 characters (for example, *234*)
4. In the **Directory Number Mask Length** field, enter a DN mask length. For example, if you enter *4*, the Directory Number Routing would be *234XXXX*, where *XXXX* is the mask.
5. Click **Save**. The Directory Number Routing is added.

The new Directory Number Routing appears in the table and it can be edited or deleted as required.

## 18. MS Teams Dial Plan Management

Microsoft

### 18.1. Introduction to Microsoft Teams Dialplan Management

To view and update information related to Microsoft Teams dial plans, go to (default menu) **MS Teams Dial Plan Management**, and select the relevant menu:

- Tenant Dialplan
- SBC Gateways
- PSTN Usages
- Voice Routes
- Voice Routing Policies
- Voice Normalization Rules
- Translation Rules

VOSS Automate also allows you to predefine dial plan templates for Microsoft data models, and to push the dial plan, on-demand. For details, see [Microsoft Dial Plan Models](#)

#### Related Topics

- [Microsoft Dial Plan Models](#)
- Microsoft Overview in the Core Feature Guide
- Sync to Site with Flow Through in the Core Feature Guide
- Automate Configuration and Sync in the Core Feature Guide
- Configure Microsoft Tenant Dialplan in the Core Feature Guide
- Number Management Overview in the Core Feature Guide

## 18.2. Configure Microsoft Tenant Dialplan

This procedure displays and edits existing Microsoft Teams tenant dialplans and adds a new Microsoft Teams tenant dialplan.

**Note:** A default tenant dialplan can be chosen in the site defaults. When adding a subscriber via Quick Add Subscriber, the default tenant dialplan can be overwritten if you choose another option.

### Prerequisites:

- Add a Microsoft tenant

### Perform these steps:

1. Log in to the Admin Portal.
2. Go to (default menu) **MS Teams Dial Plan Management > Tenant Dialplan**.
3. View existing tenant dialplans.
4. Choose an option:
  - To edit an existing dialplan, click on a dialplan to open the editing screen. Make your changes, then save the dialplan.
  - To add a new dialplan, click the Plus icon (+) to open the New Record screen. Go to step 5.
5. On the **New Record** page, fill out details for the new Microsoft tenant dialplan:
  - In the **Name** field, fill out a unique name for the dialplan.
  - In the **Simple Name** field, fill out a unique display name for the dialplan.
  - In the **Description** field, describe the purpose and users of the dialplan.
  - In the **External Access Prefix** field, define a prefix used to identify external calls. To enable this prefix, select **Optimize Device Dialing**.
  - Select **Optimize Device Dialing** to enable the external access prefix.
  - At **Normalization Rules**, click the Plus icon (+) to add a normalization rule:
    - Provide a unique ID for the normalization rule, and a description.
    - Define the priority order of this rule, for phone numbers associated with two or more normalization rules.
    - In the **Pattern** field, provide a regular expression that a dialed number must match for the rule to be applied. The default is  $^{(d{11})}$ \$, which represents any set of numbers up to 11 digits.
    - In the **Translation** field, define a regular expression to apply to the number to convert it to E.164 format. The default is +\$1, which prefixes the number with a Plus (+).
    - Select **Is Internal Extension** if the number should be seen as internal when the rule is applied (set to True); else, clear the checkbox (False, default), so that the number is seen as external when the rule is applied.
    - To add additional normalization rules, click the Plus icon (+) and fill out values for the next normalization rule.
6. Click **Save** to create or update the tenant dialplan.

### Related Topics

- [Configure Microsoft Connection Parameters in the Core Feature Guide](#)
- [Introduction to Microsoft Teams Dialplan Management in the Core Feature Guide](#)
- [Microsoft Overview in the Core Feature Guide](#)
- [Sync to Site with Flow Through in the Core Feature Guide](#)
- [Configure VOSS Automate for Microsoft Services in the Core Feature Guide](#)

# 19. MS Teams Emergency Management

## 19.1. Introduction to Microsoft Teams Emergency Management

VOSS Automate allows you to configure and manage all elements of emergency call routing for Microsoft Teams, from within the VOSS Automate Admin Portal.

There are two approaches to emergency call routing in Microsoft Teams:

- Location-based routing
- Dynamic emergency routing

The option you choose depends on how your sites are set up, the specific requirements of your organization, and the elements related to each option, which may be grouped as follows:

Emergency Locations	This is a group of details in MS Teams that models the Dynamic Emergency Routing elements - the Civic Address and all the related Location Information Server (LIS) details - Location, Subnet, Port, Wireless Access Point, and Switch.
Emergency Location Networks	This is for the additional emergency options not related to the Location Information Server (LIS) elements - Network Sites and Network Subnets. This can, for instance, help model routing to local security desks rather than directly to emergency services. This basically relates Network Sites and Subnets elements. This feature provides a read-only view to allow you to see Network Sites and related Subnets in a single view - editing either element is done via the dedicated menu item.
Trusted IP Addresses	Dedicated menu items in the VOSS Automate GUI allow the addition of IP Addresses or subnets external to the enterprise network that are to be trusted by the MS Teams system for location based services.

In addition to the basic setup for emergency routing, VOSS Automate allows you to create emergency policies and to assign these to users. The following policies are supported:

- Emergency call routing policy - used with direct routing
- Emergency Calling policy - used with Operator Connect and Calling Plans

**Note:** See the MS Teams policy management and subscriber management sections in the Core feature guides for further details.



### Related Topics

- [MS Teams Emergency Locations](#)
- [MS Teams Emergency Location Networks](#)
- [Introduction to Microsoft Teams Policies](#)

## 19.2. MS Teams Emergency Locations

### 19.2.1. Overview

VOSS Automate provides the ability to support all the elements related to emergency calling setup in Microsoft Teams, including Dynamic Emergency, which allows for the management of Microsoft Teams emergency locations for emergency calling.

You can set up one or more emergency dispatch locations (for example, parts of a building), for your organization's physical location (civic address).

### Related Topics

- [Introduction to Microsoft Teams Emergency Management](#)
- [MS Teams Emergency Location Networks](#)

### 19.2.2. Configure MS Teams Emergency Locations

1. In the VOSS Automate Admin Portal, go to (default menus) **MS Teams Emergency Management > Teams Emergency Locations**.
2. Click on an item in the list to view or update its details.
3. To add an emergency location, click the toolbar Plus icon (+), and configure the new record:

Address tab	<p>On this tab, configure emergency location details.</p> <ul style="list-style-type: none"> <li>• When adding a physical civic address, a default emergency location is added (the <b>Is Default</b> setting on the <b>Locations</b> tab is enabled and read-only for the location).</li> <li>• You can expose additional civic address fields via the field display policy, if required.</li> </ul>
Locations tab	<p>Add associated locations. Verify requirements according to the selected <b>Country Or Region</b>. For example, if this is set to UK, then it is mandatory to provide <b>HouseNumber</b>.</p> <p>This tab allows you to add more granular, additional locations for an address, as needed. And for each location, you can add relevant data from the Location Information Server (LIS), to identify the location. For example, subnet, port, switch, and wireless access points (WAP).</p> <p>Some details to this tab are mandatory, while others are optional (you can create the base civic address then add locations later), if you don't create a location when adding, MS Teams automatically generates a read-only default location, which you will see when viewing the emergency location later in VOSS Automate. You can add relevant LIS information to that default location. However, you won't be able to update the description or ELIN (Emergency Location Identification Number).</p> <p>You can add additional locations as needed.</p> <p>You can't delete the default location from the list of locations associated with a physical civic address. The default is only removed when the physical civic address is deleted. You can add relevant LIS information to the default location as required, which is useful if you plan to have only a single location for the address.</p>

4. Save your changes.

## 19.3. MS Teams Emergency Location Networks

VOSS Automate provides a read-only overview of the elements related to Microsoft Teams emergency location networks for emergency calling, allowing you to view network sites and related subnets on a single page.

The table describes the elements that make up the emergency location networks:

Element	Description
Network Regions	Network regions can be used to logically group sites, for example, a campus, as required.
Network Sites	Network sites are location instances that group subnets and set emergency routing policies and behavior for those subnets. Network regions may align to VOSS sites, but this depends on your set up. Policies allow you to define where emergency calls are routing, for example, PSTN, or a local security desk.
Network Subnets	Network subnets are subnet instances tied to a network site. Devices and users in these subnets utilize the rules applied in the corresponding network site. Each emergency location network can have one or more subnets configured.

### View configured MS Teams emergency location networks

To view configured emergency location networks, go to (default menu) **MS Teams Emergency Management > Teams Emergency Location Networks**. This view also displays the policies associated with the networks (Emergency Calling Policy and Emergency Call Routing Policy).

### Configure MS Teams emergency location network elements

Higher level administrators can view and edit the individual elements of MS Teams emergency location networks (sites and subnets) directly from the device models, via the following (default) menu paths in the VOSS Automate GUI:

- To edit sites, go to **MS Teams Emergency Management > Network Site**.
- To edit network subnets, go to **MS Teams Emergency Management > Network Subnet**.

The subnet **Mask** is mandatory, and for IPv4 takes maskbits from 0 to 32 inclusive, while for IPv6 format, from 0 to 128 inclusive.

### Related Topics

- [Introduction to Microsoft Teams Emergency Management](#)
- [MS Teams Emergency Locations](#)

## 20. MS Teams Policies

### 20.1. Introduction to Microsoft Teams Policies

#### 20.1.1. Overview

Microsoft Teams policies are synced between Microsoft Teams and VOSS Automate, to the customer level. VOSS Automate provides an interface for managing Microsoft Teams policies at customer or site level. Updates in VOSS Automate are synced back to Microsoft Teams, and external changes are synced back to VOSS Automate.

You can view and choose default policies for sites in the site defaults via (default menus) **Site Management > Defaults** (and select the **MS Teams** tab).

Microsoft Teams policies are assigned automatically to subscribers via their user roles and profiles, and via quick add groups (QAG), as part of the initial sync and provisioning workflow.

Choosing a default policy for a site in the Site Defaults (SDD) automatically assigns the policy to subscribers at the site. When creating a subscriber via Quick Subscriber, the SDD is used, but you can also edit the configuration template for the Quick Add Group (QAG) to use a policy different to the SDD, or you can edit a subscriber directly to choose a different policy for that subscriber.

Policies are then also shown on for example the **Teams User (CSOL)** menu.

To manage Microsoft Teams policies, go to (default menu) **MS Teams Policies**; then, select the relevant menu, for example:

- Calling Policy
- Meeting Policy
- Messaging Policy
- Live Events Policy
- Call Park Policy
- App Permission Policy
- App Setup Policy
- Teams Policy
- Update Policy
- Emergency Calling Policy
- Enhanced Encryption Policy

- Voice Routing Policy
- Voicemail Policy
- Audio Conferencing Policy
- Call Hold Policy

---

**Note:**

- Some policies support full CRUD (create, update, delete) operations within VOSS Automate.
- 

### 20.1.2. Call Hold Policy (Microsoft Music on Hold)

To create or update a **Call Hold Policy** from the **MS Teams Policies** menu, an audio file (MP3, WAV, and WMA and file size less than 5 MB) upload is required. Use the **File Management** menu for this task.

Thereafter, the **Audio file** dropdown list will show the file and can be selected to create or manage the policy.

---

**Note:**

- The Call Hold Policy **Name** cannot be changed upon policy updates.
  - The **Audio file** names of imported Call Hold Policies are initially undetermined and are represented by a hash value. Subsequent syncs of the policy will resolve existing hash values to filenames.
- 

#### Related Topics

- Microsoft Subscribers in the Core Feature Guide
- Site Defaults in the Core Feature Guide
- Quick Add Subscriber Groups in the Core Feature Guide

# 21. Number Management

## 21.1. Number Management Overview

### 21.1.1. Overview

VOSS Automate provides support to consolidate and manage your full number inventory across your estate. It can support your environment across various dial plan designs and whether you are using E164 dial plans vs traditional internal numbers mapped to external numbers.

The platform provides two main inventory capabilities:

- Number Inventory - this is the main inventory in the system and contains all the numbers that are assigned to devices, users, and services. While it is called internal inventory, it can include extensions (in traditional dial plans or for internal only services) or full E164 numbers if those are assigned directly to users, devices, and services.
- E164 Inventory and Associations - the purpose of this inventory is to provide E164 numbers to map to the number inventory entries if they are *internal only* numbers as required for traditional internal- or external number dial plans. This is where internal numbers are assigned to devices and then mapped to external numbers for external access; and require the loading of appropriate transformations and other dial plan elements to operate.

The association workflow when mapping E164 numbers to number inventory instances work with dial plan schemas or your own dial plan (dial plan tools). If E164 numbers are assigned directly to users, devices and services, then these are added directly in the number inventory and this E164 inventory and associations functionality is not required (and often hidden in the menus).

Once the numbers are loaded in the system, then the inventory details are incorporated into various features throughout the system - providing options for users to select from as well as automatically tracking the status of the numbers. The system also includes the ability to reconcile (audit) the inventory against currently configured services in the event that changes are made outside the system - to ensure the inventory stays up to date. This further ensures accuracy and reduces errors in number selection as well as manual reconciliation - to keep an up-to-date view.

Many of the inventory capabilities in the system focus around the internal number inventory as these are the numbers assigned to users, devices, and services directly. See further details in the following sections.

## 21.1.2. AudioCodes Device Number Integration

VOSS Automate supports the integration of numbers used by AudioCodes devices into the Number Inventory. Once such devices are configured in VOSS Automate and data is synced, the Number Inventory displays these numbers as **Status** is *Used*, with the **Vendor** field set as *AudioCodes*. These numbers are therefore then not available to assign to subscribers during number management.

Workflows and data syncs are in place to ensure these numbers in the Number Inventory remain aligned with any changes in these devices.

see: [AudioCodes Devices](#)

### AudioCodes and Number Cooling

In the case of the removal (or delete) of a AudioCodes **RegisteredUsers** instance, the internal number is placed into a configurable cooling period, with **Status** as *Cooling*.

---

**Important:** For AudioCodes internal numbers, the cooling period (days) is configured by means of a named macro called: `audiocodes_cooling_duration` (default setting is 2 days) and *not* by the **Number Inventory Cooling Duration (Days)** value in Global Settings ([Global Settings](#)).

A high level administrator with access to the named macro instances can carry out this configuration if needed.

The reason for the alternative cooling setting is that AudioCodes devices can become offline but are not deleted. The default maximum offline duration is here set to 2 days.

In addition, if the device does then come back online within the days set in the macro, the internal number will be set back to:

- Status: *Used*
- Usage: *Device*
- Vendor: *AudioCodes*

---

When the line is in *Cooling*, the following internal number inventory fields are set:

- **Tag:** an information message of the number of days when the INI will reach the release date.
- **Release Date**

See: [Viewing Numbers](#).

When the **Release Date** has been reached, the INI is put back into the **Available** pool of INI's, as with standard cooling - see: [Number Cooling](#).

### AudioCodes and Audit Number Inventory

When the **Audit Number Inventory** is run, the **Status** and **Usage** of internal number inventory items that have the **Vendor** field set as *AudioCodes* are checked and verified to be:

- **Status:** Used
- **Usage:** Device

See:

- [Microsoft Teams Deployments](#)
- [Audit Number Inventory](#)

## 21.2. Internal Number Management

### 21.2.1. Number Management Overview

The chart provides an overview of the Number Management feature, highlighting internal number and external E164 number management and association.

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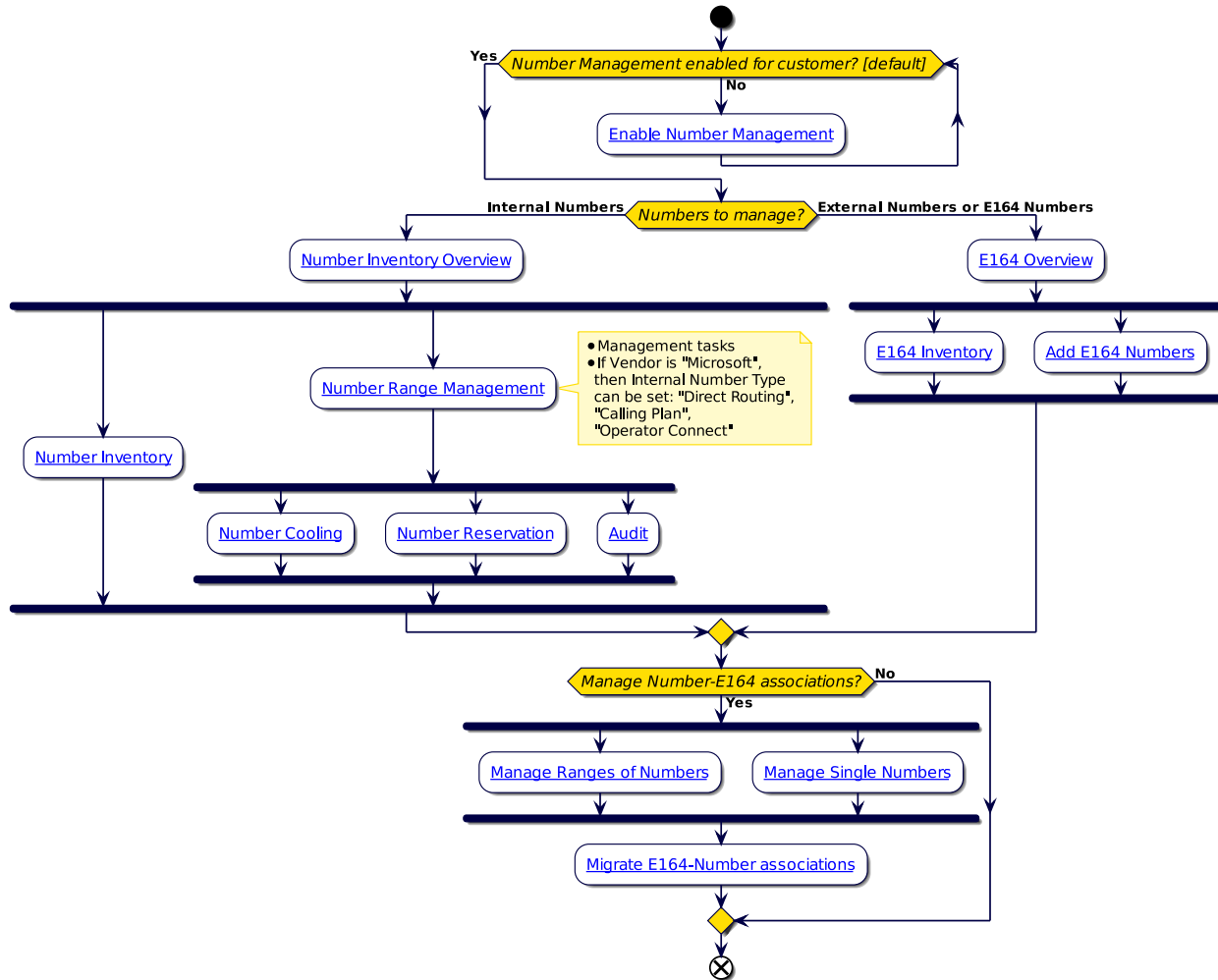
**Note:**

- If Number Management is not required, this can be disabled for a Customer by deselecting the **Disable Number Management** setting. See: [Customers](#).
  - The E164 Number Management is used only in a Cisco Unified Communications Manager (CUCM) environment, which has the concept of internal numbers and associated E164 Numbers. It is valid in Microsoft and in some Cisco deployments to add E164 numbers directly to the number inventory (and to completely ignore E164 Number Management).
-



## Related Topics

- [Number Cooling](#)
- [Number Reservation](#)



### 21.2.2. Number Inventory

#### Overview

The Automate number inventory allow you to view and manage the numbers used by users, devices, and services for the given hierarchy level. The number inventory includes a combination of data that is automatically managed by the system (such as usage), and other fields that are configurable and available to store any additional useful information you choose about the numbers (such as ranges, billing IDs, and circuit IDs), to complete your inventory view.

**Important:** Starting with Automate v21.4-PB4, the number format in the VOSS Automate Internal Number Inventory (INI) is with prefix: \+, including a leading slash \ when the INI is in E164 format.

Verify that entries in the **Internal Number** column of the Number Inventory - also Webex Calling numbers -

follow this format.

The inventory supports a range of capabilities outside the basic loading and tracking of inventory status. These include:

Functionality	Description
Number Reservation	Mark numbers reserved and include a note about why to hold numbers for specific purposes (e.g VIPs, specific services, etc).
Number Cooling	This provides the ability to automatically quarantine numbers for a period of time when unassigned from a user/device/service to prevent re-use for a period of time.
Number Audit	Checks the inventory against the currently configured devices and updates the inventory where needed to keep the inventory in sync for changes made outside the system.
Number Inventory Alerting	Configure alerts to be sent if a threshold is met (e.g less than 10% of numbers are available) to allow for proactive management of the inventory.

For more information around number inventory alerting, see [Number Inventory Alerting](#).

**Note:** Typically numbers are pushed to the UC applications when they are allocated/assigned to users/devices/services. While some available numbers may be in the UC apps for various reasons, the platform is not trying to maintain the available numbers in the underlying UC applications as it is only important when assigning the numbers to be used.

### Hierarchy Considerations

Numbers in the inventory should be assigned to the appropriate hierarchy in Automate based on where you need the numbers to be used.

The number inventory can exist at the same or higher hierarchy level to the users, services, and devices that will be assigned the numbers. So the hierarchy that the numbers are assigned to in the inventory will determine where they are visible for various MACD tasks, such as user on-boarding.

Consider the following when determining where to load the inventory numbers for different scenarios:

- Site level numbers - Are the numbers dedicated to a single site, for instance due to local trunks, area codes, or emergency routing? If so, then numbers should be at that site in Automate so that they can only be allocated to users/services at that site.
- Intermediate nodes - Is a number range shared across a few separate sites in a common region or city, or within a geography (such as a country)? In this case, an intermediate node could make sense to group the sites and the inventory can then sit at that intermediate node. This allows the numbers to be shared across all the sites under that intermediate node.
- No specific allocation required within an organization – then numbers can be at a common hierarchy node (such as a customer) and shared by all the sites. This could be the case if the customer or enterprise is within a single region with central breakout.
- If you are using dial plan schemas, then the rules for the dial plan may determine where numbers can reside. For instance, if it is a site-based dial plan (with site codes), then all numbers in the inventory

will need to reside at the site level.

- Workflows and features in the system generally will not move inventory numbers to the same hierarchy as the service they are assigned to. This is due to the fact that the inventory does not need to be at the same level, it can reside higher up the hierarchy. For instance, if the inventory number is at customer level and the user it is assigned to is at a site, the inventory number would not be automatically moved. An administrator will need to move the number to that site for instance, but only if they want it to reside at the same hierarchy.

Users, devices, and services that will consume numbers are typically at the site level in the system, so numbers should be at the same level (site), or above the site they reside in (Intermediate, Customer).

The approaches can also be mixed as needed if some numbers are site-specific while others are shared pools.

When adding one or more numbers into the inventory, choose which hierarchy level to add the numbers to and this will determine their visibility in the system. This should be considered when loading. It is important to consider how the inventory should be allocated when designing a hierarchy setup and ultimately how to build out the inventory.

### UC Vendor Guidelines for Numbers

Some behaviors and guidance are specific to UC vendors and how their numbers work.

### Cisco UCM/Dedicated Instance

There are a few considerations specific to the number inventory when used in a Cisco UCM/Webex Dedicated instance environment.

Vendor and Internal Number Type fields in the inventory:

- Vendor – this field will be blank or Cisco, depending on how the numbers are loaded
- Internal Number Type – this field is not used in UCM or Dedicated instance deployments

### Partition and Cluster

The Automate number inventory is not partition or cluster aware. If the same numbers are used multiple times but in different partitions, then these all map to the same number. This should be considered when thinking about the hierarchy level at which the number inventory exists.

Since the number inventory isn't cluster aware, if the same number exists on different clusters, this will map back to the same inventory value unless numbers are assigned to the site level.

### Cisco-Microsoft Hybrid Number Inventory

The notes in this section apply if you're using Automate's Cisco-Microsoft hybrid feature for integrated services:

A Cisco-Microsoft hybrid setup is an integration of Cisco and Microsoft capability, where Microsoft calls are routed via Cisco UCM.

In a hybrid setup, the Internal Number Inventory (INI) can be set up in 2 ways:

- E164 number based, for example:

- an INI entry 3334567 is mapped to an external number of +15553334567.
  - The number 3334567 is set up in Cisco (along with routing for the mapped external number).
  - The number +15553334567 is set up in Microsoft as the line.
  - The numbers 3334567 and +15553334567 should be seen as the *same* number from an INI tracking perspective.
- Internal number based (site code+extension or just extension)
    - an E164 number is generated by adding a prefix (+88800) to the internal number for setup in Microsoft.

---

**Note:** The named macro called *MultiVendorLine-InternalExt-E164Prefix* is used to store the prefix - currently set to *+88800*.

---

- For example, 3334567 is set up as an internal number for the user and no external number is mapped. The line is selected in the Hybrid setup. Then the prefix is added, so the number +1888003334567 is the number in MS Teams for that user.

---

**Important:** The numbers 3334567 and +888003334567 should be seen as the *same* number from an INI tracking perspective. The mapping is also reflected in the *Audit Number Inventory*. In this case, an update of the inventory takes place so that these are not counted as two separate numbers.

---

The table below summarizes the Number Inventory data for these cases:

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**Note:** **Extra2** and **Extra4** hold the service type and E164 number (includes generated) respectively.

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Scenario	Status	Vendor	E164 ber <sup>Page 774, 7</sup>	Num-	Usage	Extra2	Extra4
Cisco-MS-Hybrid	Used	Cisco, crossoft	Mi-	Exists	Device, User	Cisco-MS-Hybrid	<blank>
Cisco-MS-Hybrid <sup>8</sup>	Used	Cisco, crossoft	Mi-	<blank>	Device, User	Cisco-MS-Hybrid	+88800<INI>
Cisco-No-Services	Avail	<blank>	<blank>	<blank>	<blank>	<blank>	<blank>
Cisco-Only	Used	<blank>	Exists	Device	<blank>	<blank>	<blank>
MS-Only-Entvoice	Used	Microsoft	Exists	User	MS-Only-Entvoice	<blank>	<blank>
MS-Only-Entvoice	Used	Microsoft	<blank>	User	MS-Only-Entvoice	+88800<INI>	<blank>
MS-Only-Hybrid	Used	Microsoft	Exists	User	MS-Only-Hybrid	<blank>	<blank>
MS-Only-Hybrid	Used	Microsoft	<blank>	User	MS-Only-Hybrid	+88800<INI>	<blank>
MS-Only-No-Entvoice	Avail	<blank>	<blank>	<blank>	<blank>	<blank>	<blank>
No-Hybrid-Service	Avail	<blank>	<blank>	<blank>	<blank>	<blank>	<blank>

For details on the service type scenarios, see Multi Vendor Service Definitions in the Core Feature Guide.

## Footnote

### Details and Usage

Selecting a specific number from the **Number Inventory** list view, opens the details view for that number.

The **Number Details** tab shows read only details for the number, for example Internal Number, Status, Usage, as well as editable fields such as Tag, Description, Reservation Notes, etc. In the case of Cisco-Microsoft hybrid entries, the vendor added would be “Cisco, Microsoft”.

The **Usage** tab provides links to all instances where the number is used.

- In the case of Cisco-Microsoft hybrid usage, the last vendor added would be appended, as seen above in the “Device, User” instances.
- In the case of **Webex App Calling** usage, the link directs to the Webex App user.

See *Webex App* in the Core Feature Guide.

**Note:** If the same number is shared by multiple devices/services of the same type, using different partitions, only the first 10 instances are displayed.

<sup>7</sup> If assigned (and associated with Extra4 - prefix e.g. +88800)

<sup>8</sup> Generated TelURI will start with prefix e.g. +88800

## Related Topics

Webex App in the Core Feature Guide.

## Microsoft Teams Deployments

The use of the inventory and how it is maintained or managed can differ depending on the types of numbers in your environment. The following is some guidance and best practices to consider for the different number types. If you have a mix of number types, then consider the notes for different number types.

Vendor and Internal Number Type fields in the inventory:

Vendor	This field will typically be <code>Microsoft</code> . If they are not loaded with this value initially, the system updates the numbers as they are allocated to vendor <code>Microsoft</code> .
Internal Number Type	This field is used to reflect the type of number in the Microsoft environment, either <i>Direct Routing</i> , <i>Operator Connect</i> , or <i>Calling Plan</i> . This can be selected when loading the numbers and it is best to select the relevant values to ensure the best experience. In many circumstances, the system will also update the fields as relevant during audit or allocation of numbers if they are incorrect or left blank.

## General Notes

The hierarchy consideration is a key section in this chapter to read in planning for numbers in the inventory. Often the numbers are meant to be used in specific sites or regions only due to agreements or emergency services requirements. This is the business context which the Automate number inventory can provide when the numbers are loaded into the inventory at the appropriate hierarchy level. It is often found, after adding Automate to an existing environment, that we identify various numbers that have been incorrectly assigned previously and allow them to be corrected. Any numbers that were added to the Automate inventory through the sync/audit process will likely require moving to the correct hierarchy level. You can find more information related to the specific numbers types below.

This section covers specific logic related to creating and managing the inventory in relation to specific number types in the Microsoft environment. In Automate you can mix and match the types for different needs, so one or more of the sections may apply.

## Direct Routing

In this type of setup, you are getting ranges of numbers outside the Microsoft framework from one or more providers. For these number types, the Microsoft tenant only knows about the numbers that you have assigned to users/services. The tenant has no knowledge of the ranges or available/unused numbers.

So the VOSS number inventory capability can only auto-populate the inventory from a sync/audit with those used numbers discovered from the tenant. In this scenario, you will need to load the available numbers into the VOSS Automate number inventory to be managed and available for administrators to assign going forward.

Guidelines for this setup:

- You can preload the ranges of numbers you own ahead of any overbuild process that will sync/audit the inventory. In this case, the system will update the inventory as part of the sync/audit process to mark assigned numbers used. It will still add any used numbers it discovered from the tenant if there were any missed in the preload process.

- You can load the full ranges after the overbuild process – this will fill in the inventory around the used numbers that were discovered and auto created in the inventory from the tenant. You may need to move the created numbers to a different hierarchy level depending on your needs (intermediate node, moving to site/customer). When you load the ranges after the sync/overbuild, the system will fill in the gaps by adding numbers as available that are missing in the inventory while leaving the ones added via the sync/audit process alone.
- Any future ranges you add to the system beyond the initial overbuild will need to be added to VOSS Automate to be available for administrators to use.

### Operator Connect and Calling Plan numbers

In this type of setup, you are getting ranges facilitated by the Microsoft Teams framework. For these types of numbers, the Microsoft tenant is fully aware of the ranges of numbers available as they are populated into the system by Microsoft (Calling Plans) or the selected Provider (Operator Connect). So it is important to note the numbers can only actually be used (e.g assigned to a user) when the numbers are available in the Microsoft Tenant post ordering – from Microsoft (Calling Plan) or the selected Provider (Operator Connect). If you add them to the Automate inventory and try to allocate them before they are present in the tenant, you will get an error message about the numbers not existing in the tenant.

Currently, the data we receive from the Microsoft tenant about the numbers does not provide any information regarding how the numbers are to be used - e.g site specific, etc.

The hierarchy recommendations earlier in this chapter should be referenced and numbers should be loaded according to how the numbers are ordered and registered with Microsoft or the Provider (e.g site specific, global, etc).

The best practice recommendation to streamline the inventory management of these number types is:

- Number ranges are loaded into the Automate number inventory at the appropriate hierarchy *before* they're synced in from the Microsoft tenant
- This ensures that the numbers are at the correct hierarchy level and context in the system for use in the system - that users and services can only be assigned appropriate numbers.

---

**Important:** New Calling Plan numbers cannot be assigned to users unless an emergency location is set.

To set the emergency location for new Calling Plan numbers:

1. Navigate to the relevant customer or site hierarchy and select the **Subscriber Management > Advanced > Emergency Location Ops Tool** menu.
  2. On the Ops Tool form, verify that the **Number Type** is set to CallingPlan.
  3. Select an **Emergency Location** from the dropdown. Also ensure a temporary user is created at the location and has the Calling Plan assigned.
  4. Click **Save** to update the emergency location of the numbers at this hierarchy where this has not been set.
- 

- When the sync/audit process completes, the system updates those inventory entries with status, usage, type, etc., and won't move them.

Automate can generate inventory entries for numbers of these types. However, there are some considerations and for this reason it is recommended to preload the numbers for improved accuracy and ease of use.

The following are considerations of the generated inventory and potential actions if the sync/audit was run before you loaded your inventory:

- It will generate inventory entries for numbers assigned to users/services in the tenant only. We do this for assigned numbers to ensure they are at least captured and since they are assigned there is not a risk of being assigned incorrectly.
- Numbers that are not assigned will not be generated in the inventory. This is to avoid available numbers being created at the wrong place in the hierarchy and inadvertently being assigned to users in the wrong sites, etc.
- It will create the generated inventory entries at the same hierarchy level as the tenant details (typically customer). Typically, they are required at a different level in the hierarchy and they will need to be moved after this creation.
- The ranges will need to be loaded to create the available numbers in the range within the inventory so they are available to be assigned to users/services. You can just load the whole range and the system will fill in the blanks, creating inventory entries for missing numbers while leaving existing numbers (created by the sync) alone.

You can look at the number data provided by Microsoft for these number types by reviewing the `device/msteamsonline/Number` device model. Note - these model instances will always be at the same level as the tenant - they do not get moved around and are completely independent of the inventory entries for the numbers.

## Webex Calling

This section describes number inventory handling in a Webex Calling environment. Key considerations in a Webex Calling environment include:

- In a Webex Calling environment, resources all reside in locations including numbers regardless of the source (for example, CCP, non-integrated CCP, or Cisco).
- PSTN numbers must be loaded into Webex as available numbers before they can be used/assigned to users. This process can vary depending on how you're sourcing the numbers - for example, CCP, or Cisco Cloud. For this reason, the numbers are typically already in Webex - to pull into the Automate system and inventory.

From the **Number Range Management** menu at a site:

- For numbers and ranges of numbers, **Starting Extension** and **Ending Extension** number values must be prefixed with + and are then created and maintained in VOSS Automate with the prefix format \+. When adding numbers, this can also be seen in the **Transaction** detail.
- **Vendor** – this field will typically be `Webex Calling`. If they are not loaded with this value initially, the system will update the numbers as they are allocated to vendor `Webex Calling`.

---

**Note:** Numbers can be pushed to the Webex Control Hub when adding number ranges at site level with the Vendor set as `Webex Calling`.



- If the **Operation** is Add:

When *adding* numbers and selecting the **Vendor** as Webex Calling, a **Webex Control Hub** panel displays the options if:

1. The Webex App is configured at the customer hierarchy.  
See the Webex App chapter in the Core Feature Guide.
2. The available macro WebexCallingNumberMgmtEnabledSite has not been cloned to the site and set to value False. (If required, this task can be carried out if Webex Calling number management should be disabled for a site.)

The options are:

- **Push Numbers to Webex:** this allows for numbers to be added to the site in VOSS Automate and to the Webex Control Hub. (Refer to the Create Spark Number action in the **Transaction** list.)
- **Push as Active:** dependent on the option **Push Numbers to Webex** set to enabled.

If enabled and **Push Numbers to Webex** is enabled, numbers are added in VOSS Automate INI added as **Status** of **Available**, and on Webex Control Hub created as **Active**.

If disabled and **Push Numbers to Webex** is enabled, numbers are added in both VOSS Automate INI and the Webex Control Hub as **Inactive**.

Number extensions are added to the INI when a user is assigned a number and an extension is then added.

- If the **Operation** is Modify:

This operation can be used on selected numbers that are in **Status** of **Inactive** - to set them as:

- **Active** in the Webex Control Hub. Refer to the Activate Spark Number action in the **Transaction** list.
- Status is **Available** in the VOSS Automate INI.

- If the **Operation** is Delete:

Selected numbers are deleted from VOSS Automate INI and the Webex Control Hub. Refer to the Delete Spark Number action in the **Transaction** list.

- **Internal Number Type** – this field is used to reflect the type of number in the Webex environment. If you are adding or activating numbers via Number Range Management then the type is Phone Number. Any numbers marked as Extension have been synced in from the Webex Control Hub.

---

Since the numbers are known in the Webex environment, as well as the Locations for use, the VOSS Automate system will generate the inventory based on the data from Webex. This includes:

- The sync process handles the creation of inventory entries in the Automate platform as numbers are pulled in. You should ensure the sync process handles Locations in Webex prior handling numbers (out of the box syncs ensure this).
- During a site handling Webex Locations, if a corresponding Automate site does not exist, Automate will create a site.

See the [Webex Location Node Mapping](#) topic in the Core Feature Guide for more details on Site to Location mapping for Webex for more details on how they are aligned.

- When Webex numbers are synced into Automate, the prefix format \+ is used. Any inventory entries that don't exist are created in the Automate site corresponding to the Webex Location. This includes PSTN numbers and also internal-only extensions.
- The internal number in the Automate number inventory uses the PSTN number (if it has one); or it uses the extension number, if that is the only data available.
- For PSTN numbers, the extension (if there is one) is also captured in the number inventory record via the **Extension** field.
- Removal of numbers
- Typically, inventory audit functionality won't be required if good sync practices are followed, as the inventory changes are handled through the sync process.

### Number Reservation

Numbers can be reserved for future use. For example, for users who will soon be joining the company. When a number is reserved, it is unavailable and can't be allocated to a subscriber, phone, device, etc.

### Number Cooling

Numbers can be placed into a cooling period, either manually or automatically. When automated number cooling is enabled, numbers are placed into cooling for a predefined period when the subscriber or phone associated with the number is deleted.

---

**Note:** Automated number cooling is enabled and disabled in the [Global Settings](#). The default is disabled.

---

While the number is in its cooling period, it is unavailable and can't be allocated, for example, to a subscriber, phone, or device.

A number is released from cooling and is available for use when:

- The cooling period reaches its end date
- It is manually released from the cooling period

## Number Inventory entries - End-user Provisioning Tasks

The number inventory is integrated into various features in the system to:

1. Display options of numbers for selecting/assignment across the system. The numbers presented for selection follow rules specific to the feature in many cases, for instance can lines be shared or not, etc.
2. Manage the state of the numbers in the inventory via the workflows - marking the number used, available, and updating other managed fields depending on the MACD being performed. This includes any specific logic setup for the un-managed fields. See the section on flexibility for options to control the update that occurs.

### Related Topics

- [Number Status and Usage](#)
- [Number Cooling](#)
- [Number Reservation](#)
- [Number Inventory Alerting](#)
- AudioCodes Device Number Integration in the Core Feature Guide

### 21.2.3. Viewing Numbers

You can view the number inventory and details of individual numbers by going to the relevant menu item - default menu **Number Management > Number Inventory**. You can see an overall view of the inventory including search capabilities. To see the specific details for a number including full usage information, you can select a number from the list view. When viewing a number's details you will see:

- The **Number Details** tab showing read-only details for the number. See [Number Details](#).
- The **Usage** tab provides a dynamic view of all the service(s) that are assigned to that number. This includes links to easily navigate to the service instance for further details or to unassign the number if required.

---

**Note:** If the same number is shared by multiple devices/services of the same type, only the first 10 instances will be displayed.

---

Unlike other list views in the system, you cannot add or delete numbers from this inventory view. This needs to be done via the Number Range Management form - see [Number Range Management](#).

## Number Details

Column	Description
Internal number	Numbers created in the number inventory are in VOSS Automate only. These are not synced to Cisco Unified Communications Manager (CUCM / CallManager).
Status	Current status of the number. Options are: <ul style="list-style-type: none"> <li>• Available</li> <li>• Used-Utility</li> <li>• Used</li> <li>• Cooling</li> <li>• Reserved</li> </ul>
Vendor	Optional, typically used to designate vendor-specific information for a device in a multi vendor setup.
Usage	<b>Available</b> and <b>Usage</b> is empty when a number is first added to the number inventory.
E164Number	Displays E164 Associations (N to 1 DN), depending on the number of E164s associated and whether a primary E164 is set or not.
Release Date	Defines the date on which a number that is currently in <b>Status</b> : Cooling or Reserved will become available again.
Internal Number Type	Used in conjunction with the <b>Vendor</b> field. See the vendor specific section of Number Inventory topic for more details on usage in different vendor use cases.
Tag	A free text field, auto-populated when a new number or range of numbers is added. Used to identify or comment on a number or number range.
Description	Free text field, available to provide additional information for a given number or range of numbers.
Reservation notes	A free text field, typically used to provide more details about a status <b>Reserved</b> number.
Extra	<b>Extra1</b> to <b>Extra9</b> fields are free text fields that are available to provide additional information for a given number or range of numbers. Field Display Policies can be used to change the field names and also add tooltip help text to reflect how you want to use the fields.

## Managed and Non-managed Number Inventory Fields

Number Inventory data fields are of 2 types:

- Managed - managed by VOSS Automate
  - **Status** - managed automatically by the system
  - **Vendor** - can be set on loading the range; afterwards it is managed automatically.
  - **Usage** - managed automatically
  - **E164Number** - if the number has an E164 number associated in the system it is shown here (read only). If not using E164 number inventory, then not relevant and you can hide the field.

- **Release Date** - if the number is in Cooling, this is the date/time the number will become available - managed automatically. See number cooling for how to change the cooling status for a number.
- **Internal Number Type** - set when adding then managed automatically if relevant.
- Un-managed - not managed by the system include
  - **Tag** - free text and can be utilized as needed
  - **Description** - free text field that can be utilized as required for additional useful information
  - **Extra 1-9** - free text field that can be utilized as required for additional useful information

These additional useful information fields can be utilized to store any extra business information you require to store in the inventory with the numbers. This can be static data defined when the numbers are loaded or updated or it can be dynamically updated as the system manages the numbers (allocated to a user, unassigned, etc). For instance, the system provides some out-of-the-box options for description to utilize, or if you want to set a value in **Extra1** when events happen in the system.

See Number Inventory Flexibility and Description Customization in the Advanced Configuration Guide on how to utilize this capability.

If you are using any of the fields to store additional information, you can re-label the fields and include relevant help text for tool tips to be meaningful for administrators according to the data you are storing (e.g Billing ID if using a field for that) by means of a Field Display Policy for the `relation/NumberInventory` model.

For more details on the automated logic for managing status and usage, see [Number Status and Usage](#).

### Modify an individual number

While viewing a number's details, you can also modify settings on that individual number by selecting it. (To modify a range of numbers, see: [Number Range Management](#).)

- To reserve a number, click **Reserve Number** on the button bar of the number instance form.
- Edit free text fields, for example: **Tag**, **Description**, **Reservation notes**, **E164Number** (if applicable), and **Extra1** to **Extra9**.

Click **Save**.

### Related Topics

- [Number Range Management](#)
- [Number Reservation](#)
- [Number Status and Usage](#)
- [Number Cooling](#)

## 21.2.4. Number Status and Usage

### Overview

Values in the **Status** and **Usage** columns in the Number Inventory allow administrators to understand how numbers are used at a specific hierarchy level.

---

**Note:** To access the Number Inventory, go to (default menus) **Number Management > Number Inventory**.

---

The table describes values in the **Status** and **Usage** columns in the Number Inventory:

Number Use	Device	Status	Usage	Vendor <sup>Page 784, 1</sup>
Not used by anything	-	Available	blank	blank
Phone Line <sup>2</sup>	device/cucm/Phone (line instance)	Used	Device	blank
Device Profile Line	device/cucm/DeviceProfile (line instance)	Used	Device	blank
Remote Destination Profile Line	device/cucm/RemoteDestinationProfile (line instance)	Used	Device	blank
Hunt Pilot <sup>2</sup>	device/cucm/HuntPilot	Used-Utility	Hunt_Pilot	blank
Pickup Group Pilot	device/cucm/CallPickupGroup	Used-Utility	Pickup_Group_Pilot	blank
System Call Handler	device/cuc/Callhandler (System only)	Used-Utility	Call_Handler_Pilot	blank
Voicemail Pilot	device/cucm/VoicemailPilot	Used-Utility	Voicemail_Pilot	blank
Meet Me	device/cucm/MeetMe	Used-Utility	Meet_Me	blank
CTI Route Point	device/cucm/CtiRoutePoint	Used-Utility	CTI_RoutePoint	blank
Call Park	device/cucm/CallPark	Used-Utility	Call_Park	blank
Directed Call Park	device/cucm/DirectedCallPark	Used-Utility	Directed_Call_Park	blank
VOSS Phone	data/PRS_MultiVendorPhone_DATA	Used-Utility	VOSS_Phone	phoneVendor
MS Teams Line URI	device/msteamsonline/CsOnlineUser (LineURI)	Used	User	Microsoft
Webex User	device/spark/Number	Used	User	Webex Calling
Number inactive		Inactive <sup>3</sup>	blank	Webex Calling
AudioCodes devices	device/audiocodes	Used	Device	AudioCodes <sup>4</sup>
Not used by anything		Available	blank	blank, Microsoft, Webex Calling

<sup>1</sup> Default vendor value is blank (for Cisco).

<sup>2</sup> If a number is used by both a Phone and Hunt Pilot then the **Usage** column will display both usage values, i.e. Device, Hunt\_Pilot. This could be the case if you change the Partition and enter the DN manually so that they share the same DN.

However, the **Status** column will display only *one* status: the status triggered by the most recent transaction. The Status would change from Used to Used-Utility if you added the Hunt Pilot last. If it was already a Hunt Pilot and then you added it to a Phone, then Status would change from Used-Utility to Used.

Numbers can also be shared between Call Handlers and one or more device types. Status depends on whether Call Handler or devices were added first to the number. Usage will typically be Call\_Handler\_Pilot, Device.

<sup>3</sup> Status is Inactive by adding a number in Number Range Management, where **Vendor** is Webex Calling and **Push as Active** is *unchecked* on the **Webex Control Hub** frame on the input form.

Modifying the number in a range by setting the status as Available will activate it in the Webex Control Hub and update its status.

<sup>4</sup> For AudioCodes, see the AudioCodes topic in the Core Feature Guide.

Number Use	Device	Status	Usage	Vendor <sup>1</sup>
Number in cooling <sup>5</sup>		Cooling	-	blank, Microsoft, Webex Calling
Number reserved <sup>6</sup>		Reserved	-	blank, Microsoft, Webex Calling
Webex Calling ownerType is unset	device/spark/Number	Available	-	Webex Calling
Webex Calling ownerType is PEOPLE	device/spark/Number	Used	User	Webex Calling
Webex Calling ownerType is <i>not</i> unset or PEOPLE	device/spark/Number	Used-Utility	Matches the ownerType: Device (for PLACE), Auto_Attendant, Call_Queue, Group_Paging, Hunt_Pilot, Voice-mail_Pilot, Broadworks_Anywhere, Contact_Center_Link, Route_List, Voice-mail_Group	Webex Calling

For further details on Vendor and Internal Number Type fields – see [UC Vendor Guidelines for Numbers](#).

### Related Topics

For details on call handlers and shared numbers, see Auto-Attendant Call Handler in the Core Feature Guide.

## 21.2.5. Number Range Management

### Overview

Automate's number range management feature allows you to add and manage a range of internal numbers, at a customer, at a site, or at an intermediate node.

**Note:** An internal number range created at an intermediate node is also available at the sites below this intermediate node.

<sup>5</sup> If a number is currently in **Cooling**, the release date indicates when the number will come out of cooling.

<sup>6</sup> If a number is currently **Reserved**, you can enter an optional **Tag** to identify the user for which the number is reserved. An optional **Reservation notes** field is also available to allow you to enter additional information regarding the reserved number.



You can add an internal number range that includes existing numbers, but in this case, it is not possible to modify the existing numbers. New, unused numbers are added only to complete the range. This means that the number range will display as complete, with unused numbers displaying along with numbers imported from CUCM.

---

**Note:** Using bulk loader sheet or API, you can create the number inventory at the customer hierarchy only. The **Details** column of sub-transactions shows whether the number already exists or if it is creating a new number. If any numbers exist in the range, the sub-transaction fails and the parent transaction shows the status Success with Async Failures.

---

While you can delete a number range, only numbers in this range with a status of *Available* can be deleted. Numbers in the range with the following statuses are ignored and can't be deleted unless their status changes to *Available*:

- Used
- Used-Utility
- Reserved
- Cooling

Numbers with status *Available* and *Reserved* can be modified manually once they're added.

Numbers can be added, edited, or deleted. When modifying a number, you can only edit the free text fields. The usage and availability property for each number is associated with a line or taken into use by a service.

The number inventory isn't partition-aware so if the same directory number is used on a cluster but in different partitions, Automate updates the inventory when any of these instances are changed. For example, if there's a number, *1111*, in the *Cluster X* partition, and a number, *1111*, in the *Cluster Y* partition, this number is marked as *Used*. If either of these instances are deleted, Automate checks whether other instances of this line exists (based on the number only, not partition) before it clears the *Used* flag. If other instances exist, the number status remains as *Used*.

## Related Topics

- For details around managing number ranges specific to the UC vendors you're using, see [UC Vendor Guidelines for Numbers](#)

## Manage Numbers and Number Ranges

This procedure adds, updates, and deletes numbers and number ranges.

1. In the Admin Portal, go to (default menus) **Number Management > Number Range Management**.
2. Select the relevant hierarchy, customer or site.
3. On the **Number Range Management** page, optionally, choose a target site.

---

**Note:** Target site may be auto-populated as a read-only field if you've chosen to open this page from the site hierarchy. If you've opened this page from the customer hierarchy, you may need to select a target site (mandatory in some dial plans, such as site code based dial plan).

---

4. At **Operation**, choose an option:
  - **Add or Modify?**

- By default, **Status** is set to *Available*.
  - When changing status to *Reserved*, optionally, fill out a value for **Reservation duration (days)**, for example, *30*. At the end of this period, status returns to *Available*. If no value is specified the numbers are reserved indefinitely.
- **Delete?**
    - Only the following fields are now available: Target Site, Starting Extension, Ending Extension
    - When deleting a number range, you won't be able to mark lines as either **Available** or **Reserved** (these options won't display on the form).
    - If a number in a deleted number range was set at *Used*, it won't be deleted.
5. Fill out a starting and ending extension.

---

**Note:** The maximum allowed range is 1000 for a single action. The starting extension should always be smaller than the ending extension.

If you're adding or deleting a single number, the starting and ending extension number will be the same. If numbers in the range already exist, they won't be affected - only non-existing numbers will be added.

---

6. At **Vendor**, select the relevant vendor for the number range (Cisco, Microsoft, Cisco/Microsoft, or Webex Calling).
7. Based on the vendor you chose, select an appropriate option at **Internal Number Type** (direct routing, calling plan, or operator connect).

---

**Note:** For more information for your use case, see [UC Vendor Guidelines for Numbers](#)

---

8. Optionally, fill out values for the additional free text fields, for example **Tag**, **Description**, **Reservation notes**, **E164Number** (if applicable), and **Extra1** to **Extra9**.
9. Save your changes.

---

**Note:** Numbers at a specific hierarchy can be viewed on the **Number Inventory** list view (via default menu **Number Management > Number Inventory**). See [Viewing Numbers](#).

When a line is added and selected from the drop-down list of available numbers, it has a status of **Used**. If the line is used by a device or service that does not allow a shared line (for example, a Hunt Pilot), it has a status of **Used-Utility**. See [Number Status and Usage](#).

Internal numbers are available when adding subscribers.

---

## Related Topics

- [UC Vendor Guidelines for Numbers](#)
- [Number Status and Usage](#)
- [Viewing Numbers](#)
- Number Reservation

## Modify a Number in the Number Inventory

This procedure modifies an individual number via the Number Inventory list view.

1. In the Admin Portal, go to (default menus) **Number Management > Number Inventory**.
2. Click on the relevant number in the list to view its detailed management page.
3. Choose an available edit option:
  - To reserve the number, click the vertical ellipsis toolbar button to display the overflow menu, then select **Reserve Number**. Transaction is scheduled for processing. When done, the status of the number changes to *Reserved*.
  - To select the internal number type, select an option at **Internal Number Type**, either Direct Routing, Calling Plan, or Operator Connect.
  - Edit free text fields, such as Tag, Description, Reservation notes, E164Number (if applicable), and Extra1 to Extra9.
4. Save your changes.

### Related Topics

- [Viewing Numbers](#)

### Number Range Management Extra1 to Extra9 Fields

When editing numbers in the Number Inventory or when adding or updating number ranges in the Number Range Management page, you can modify values in additional fields called **Extra1** to **Extra9**.

- When the status of a number changes, for example, from *Used* to *Available* - this may occur when an associated device is unassociated with the line - then any values originally in any of the **Extra1** to **Extra9** fields, remain unchanged by default.
- A default custom Configuration Template (CFT), `IniUpdateCustomCFT`, which applies to `data/InternalNumberInventory`, can be cloned to the user hierarchy and then to modify the custom persistence of extra field values.

For more information around CFT cloning and custom configuration, see the [Advanced Configuration Guide](#).

---

**Important:** Any changes to this custom CFT *only* apply to updates in workflows resulting in number status changes - manual updates are *not* affected.

---

The following default values in this CFT can be modified according to your needs:

```
"description": "{{ pwf.ini_dat_before.description }}",
"extra1": "{{ pwf.ini_dat_before.extra1 }}",
"extra2": "{{ pwf.ini_dat_before.extra2 }}",
"extra3": "{{ pwf.ini_dat_before.extra3 }}",
"extra4": "{{ pwf.ini_dat_before.extra4 }}",
"extra5": "{{ pwf.ini_dat_before.extra5 }}",
"extra6": "{{ pwf.ini_dat_before.extra6 }}",
```

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```
"extra7": "{{ pwf.ini_dat_before.extra7 }}",
"extra8": "{{ pwf.ini_dat_before.extra8 }}",
"extra9": "{{ pwf.ini_dat_before.extra9 }}",
"tag": "{{ pwf.ini_dat_before.tag }}"
```

The default macros for each extra field can thus be replaced inside the cloned CFT with custom text and macros as needed. Use the macro `{{ macro.CLEAR }}` if it is necessary to clear a field.

- The **Description** field is *always* cleared when the status of the number changes to **Available**, regardless of CFT value. For other number status changes, the CFT value will apply.

There is full customization functionality of the **Description** field available to allow values in accordance with VOSS Automate feature usage.

For details, see the \*Number Inventory Flexibility and Description Customization\* topic in the Advanced Configuration Guide.

- This CFT can't be used to modify any other VOSS managed fields in `data/InternalNumberInventory`.

## 21.2.6. Number Cooling

### Overview

Number cooling allows for the automatic aging of numbers after service delete to prevent immediate reuse of a number. For example, if a user leaves the company, the phone number that was in use can be placed into a cooling period for a pre-configured number of days to prevent a new user from receiving unwanted calls on that number. This feature can be enabled per hierarchy level.

---

**Note:** Number cooling is enabled and configured in Global Settings.

---

During the cooling period, the number can't be reused until either the cooling period has elapsed, or until a Provider administrator has manually removed the number from the cooling period. Once a number is removed from the cooling period, it is reintroduced into the pool of available numbers for allocation to a subscriber, phone, device, etc.

A number cooling auto expiry schedule runs daily. This schedule polls the cooling **Release Date** field on the number inventory list view to determine which numbers have completed their cooling period. These numbers are then returned to the list of available numbers at the specific hierarchy level. For more details refer to "Number Cooling Auto Expiry Schedule" in the *Advanced Feature Guide*.

The **Cooling & Reservation** form (default menu **Number Management > Cooling & Reservation**) allows a Provider administrator to manually add numbers to a cooling period (which removes these numbers from the list of available numbers), or to manually remove numbers from a cooling period (which returns these numbers to the list of available numbers).

 [Enable Cooling](#)

 [Manage Cooling](#)

## Related Topics

- [Number Inventory](#)
- [Audit Number Inventory](#)
- Number Cooling Auto Expiry Schedule in the Advanced Configuration Guide
- Global Settings in the Core Feature Guide

## Apply Cooling

1. Navigate to the required hierarchy level (Provider, Customer or Site) from which you want to add numbers to a cooling period.
2. Go to (default menus) **Number Management > Cooling & Reservation**.
3. On the **Cooling & Reservation** page, choose **Apply cooling** from the **Select action** drop-down.
4. Enter an optional cooling duration in days (max = 999) to apply to the selected numbers. This setting overrides the value set in their global settings. If this field is left blank, then the cooling duration set in [Global Settings](#) for each number will apply.
5. Set **Filters** to determine which numbers will be included in the **Available** box in the **Select Numbers** area, these include:
  - **Include available numbers**
  - **Include cooling numbers**
  - **Contains**. Used to further refine the numbers displayed in the **Available** box.
  - **Show numbers at/below hierarchy**. Allows you to select a lower hierarchy level than the one selected on the hierarchy breadcrumb.
6. Select one or more numbers in the **Available** box and click **Select** to move them to the **Selected** box.

---

**Note:** The **Available** field won't display used numbers; that is, it only display unused and available numbers.

---

7. Click **Save**. The selected number(s) are placed into a **Cooling** status, and are no longer available for use until they reach either the **Release Date** or until they are manually removed from cooling.

## Remove from Cooling

1. Navigate to the required hierarchy level (Provider, Customer or Site) from which you want to remove numbers from a cooling period, i.e. add them back into the list of available numbers.
2. Go to (default menus) **Number Management > Cooling & Reservation**.
3. On the **Cooling & Reservation** form, choose **Remove from cooling** from the **Select action** drop-down.
4. Set **Filters** to determine which numbers will be included in the **Available** box in the **Select Numbers** area, these include:
  - **Include cooling numbers**
  - **Expires from cooling within (days)**.

- **Contains.** Used to further refine the numbers displayed in the *Available* box.
  - **Show numbers at/below hierarchy.** Allows you to select a lower hierarchy level than the one selected on the hierarchy breadcrumb.
5. Select one or more numbers in the **Available** box and click **Select** to move them to the **Selected** box.
  6. Click **Save**. The selected number(s) are removed from the cooling period and are available for allocation to a subscriber or phone, etc.

### 21.2.7. Number Reservation

#### Overview

Number reservation allows numbers to be reserved for future use. Reserved numbers cannot be allocated to a device or line.

The **Cooling & Reservation** list view (default menu **Number Management > Cooling & Reservation**) allows a Provider administrator to manually reserve numbers at the selected hierarchy (Provider, Customer or Site) for a specified number of days. While a number is within the **Reservation duration (days)** period, it is unavailable and cannot be used by a device or line.

If the **Reservation duration (days)** period is left blank, the numbers remain in the **Reserved** status. Currently reserved numbers can be unreserved manually, thereby *adding them back* to the list of available numbers.



Manage Cooling

#### Related Topics

- [Number Inventory](#)
- [Audit Number Inventory](#)
- [Number Cooling](#)

#### Reserve Numbers

1. In the Admin Portal, choose the relevant hierarchy level (Provider, Customer or Site) where you want to reserve numbers.
2. Go to (default menus) **Number Management > Cooling & Reservation**.
3. On the **Cooling & Reservation** page, at the **Select action** drop-down, select **Reserve**.
4. At **Reservation duration (days)**, define the number days to reserve the number/s.
5. Enter **Reservation Notes** for the reserved numbers to describe why the numbers are being reserved. This is displayed in the **Reservation notes** field on the **Number Inventory** list.
6. At **Filters**, define filters to determine which numbers will be included in the **Available** box in the **Select Numbers** area. Options are:
  - Include available numbers
  - Include reserved numbers
  - Contains. Filter criteria to further refine the numbers displayed in the *Available* box.

- Show numbers at/below hierarchy. Allows you to select a lower hierarchy level than the one selected on the hierarchy breadcrumb.
7. Select one or more numbers in the **Available** box and click **Select** to move them to the **Selected** box.
  8. Click **Save**.

The selected number(s) are placed into a **Reserved** status, and are no longer available for allocation to a subscriber or phone, etc.

---

**Note:** Individual numbers can also be reserved directly from the **Number Inventory** list view (default menu **Number Management > Number Inventory**) by clicking on the required number on the list view and then selecting **Reserve Number** on the button bar.

---

### Unreserve Numbers

1. In the Admin Portal, choose the relevant hierarchy level (Provider, Customer or Site) where you want to remove numbers from reservation (unreserve) to add them back into the list of available numbers.
2. Go to (default menus) **Number Management > Cooling & Reservation**.
3. On the **Cooling & Reservation** page, choose **Unreserve** from the **Select action** drop-down.
4. Set **Filters** to determine which numbers will be included in the **Available** box in the **Select Numbers** area. Options are:
  - Include reserved numbers
  - Contains. Additional criteria to further refine the numbers displayed in the *Available* box.
  - Show numbers at/below hierarchy. Allows you to select a lower hierarchy level than the one selected on the hierarchy breadcrumb.
5. Select one or more numbers in the **Available** box and click **Select** to move them to the **Selected** box.
6. Click **Save**.

The selected number(s) are removed from the **Reserved** status, and are available for allocation to a subscriber or phone, etc.

### 21.2.8. Audit Number Inventory

#### Note:

- For vendor-specific audit details, refer to [UC Vendor Guidelines for Numbers](#).
- You cannot run **Audit Number Inventory** if number management has been disabled for the customer (see [Create and Modify a Customer](#)).

This feature performs an audit of the number inventory and makes sure that the **Status** and **Usage** of each number aligns to the devices or services configured with these matching numbers. See [Number Status and Usage](#) for more details about these values.

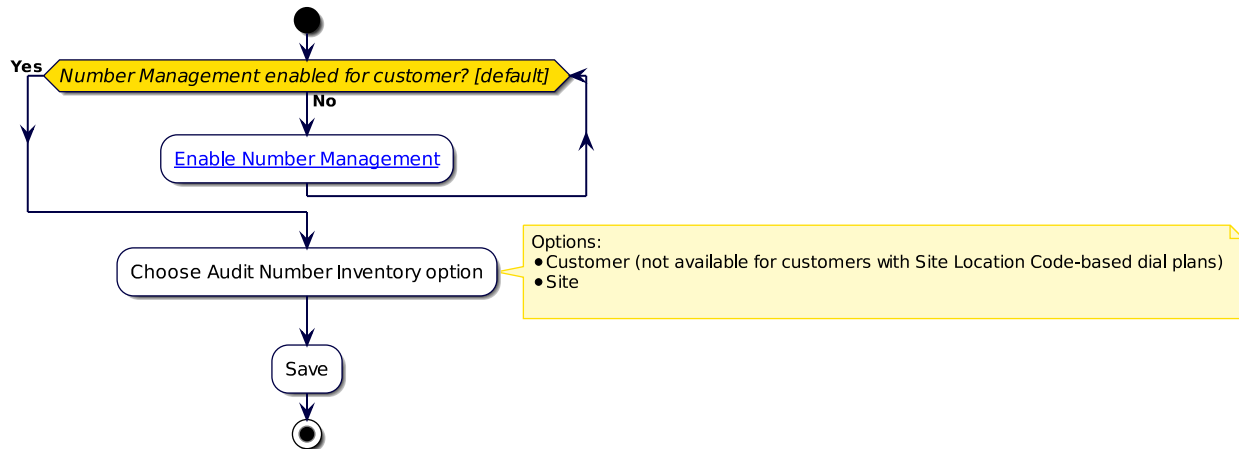
For Microsoft environments, available numbers are added (else updated if present) to the inventory, with:

- status: Available

- vendor: Microsoft
- number type: Operator Connect or Calling Plan

For more details, see: [Microsoft Teams Deployments](#)

The audit will create new numbers for devices or services that don't already exist, as well as update existing number entries to make sure the **Status** and **Usage** fields reflect the correct information at the time the audit is run. Number entries **will not be deleted**.



Specify where you want to run and create a new number inventory:

- **Customer**

- Running the number inventory audit at **Customer** level will add directory numbers at Customer level for services which exist at Site or Customer, **provided there is not** already a directory number for that service at Site level. If there are already directory numbers at the Site level then those will also get updated.

This is a mixed mode of audit, which audits directory numbers at both Customer and Site level. For example, if directory numbers only exist at Customer level, then the audit will only add and update directory numbers that exist at the Customer. If there are directory numbers at Site level, the audit will still add new directory numbers at the Customer level, but will also update the existing directory numbers at Site level.

- **Site**

- Running the number inventory audit at **Site** level will add directory numbers at site level, and update any existing directory numbers at site level only. No Customer level directory numbers will be audited and no directory numbers will be added to Customer level for Customer level services.
- You can choose to audit either *All* the Sites for the Customer or selected Sites.

For sites using Site Location Code-based dial plans, number inventories can be created only at the site hierarchy, the customer hierarchy will not be available.

From the **Number Inventory** form (default menu **Number Management > Number Inventory**), you can see a list of internal numbers and move, delete, and export them as desired.



### Common Errors and Caveats

- Error: Duplicate device profiles (same profile name) in different clusters.  
Resolution: Ensure device profiles are not duplicated across the sites.
- Error: Duplicate phones (same MAC) in different clusters.  
Resolution: Ensure phones are not duplicated across the clusters
- Error: Same internal number in one or more clusters.  
Resolution: Ensure internal numbers (even in different partitions) are not duplicated across clusters.
- Numbers that are in a Cooling or Reserved state will not be audited.

### Run Audit Number Inventory

---

**Note:** You can only run **Audit Number Inventory** from a customer hierarchy. If you try to run it from a hierarchy that is not of type Customer, you will be prompted to choose a valid customer hierarchy.

---

1. Log in to VOSS Automate as provider or reseller administrator.
2. Open the **Audit Number Inventory** form (default menu **Number Management > Audit Number Inventory**).
3. Browse to the customer hierarchy at which you want to run **Audit Number Inventory**.
4. Choose either **Customer** or **Site** from the **Is Number Inventory deployed at Customer or Site Level ?** drop-down.
5. If you chose **Customer**, click **Save** to run **Audit Number Inventory** at all sites that are located under the selected customer.
6. If you chose **Site**, choose either **All** from the **Would you like to audit all sites or a subset of sites ?** to run **Audit Number Inventory** at all the sites under the selected customer, *or* choose **Specific** and specify the sites on which you want to run **Audit Number Inventory** (200 maximum).
7. Click **Save**. The number inventory is updated at the hierarchy you specified and below.

### 21.2.9. Number Inventory Alerting

Alerts can be configured to be sent if a specific internal number inventory threshold is reached - for example, if less than 10% of numbers are available. This alert then allows for proactive management of the inventory.

Optionally, you can enable email so that a summary of the inventory status is emailed each day when the schedule runs.

There are two key hierarchy elements to the setup:

- Hierarchy the alerting is enabled for - since this is managed through Global Settings, it can be enabled at the required hierarchy level(s) based on your needs and it will be enabled for all hierarchy levels below that. For instance, if you wanted this enabled for all sites, you could enable it at say the customer level. All the sites would then be enabled. Alternatively, if you only wanted this enabled for some sites, you can enable the global setting at those sites only.

- It also includes the concept of an aggregation level - this determines how the calculation for available percentage is executed. For instance, if you set aggregation to the customer level, determining if the threshold is exceeded is determined by looking at all the inventories at the customer and below. However, if you set it to site, then the threshold calculation is run for each site and the alert will indicate any site(s) that exceed the threshold.

Therefore, you can determine the best setup based on your specific needs and how you are using the inventory. If you generally use a more a site-based inventory (due to geographical numbers, local breakout, etc) then site aggregation is likely your best option. On the other hand, if your setup is more of a shared number pool environment, then customer level is likely a better aggregation choice.

Use cases would be:

- An administrator wishes to determine if any *sites* within the organization are running low on numbers. Each site has their own dedicated pool of numbers. So the administrator configures alerting at the Customer level with an **Alert Aggregate Level** of "Site" in the **Global Settings**.
- An administrator has a single pool of numbers, shared across locations in the organization. So the administrator configures an **Alert Aggregate Level** of "Customer".

In the event that a Provider would want to monitor any customer that is running low on numbers, they would configure the alert at Provider level and set the **Alert Aggregate Level** to "Customer".

Number Inventory Alerting Configuration:

1. Enable (set **Enable Alert on Available Numbers** to **Yes**) and configure Number Inventory Alerting (set values for options below) on the **Global Settings** menu.

See: the Number Inventory Alerting Tab section under Global Settings in the Core Feature Guide.

Options are available here to:

- Choose a hierarchy level at which the *aggregate* of available numbers should be calculated.
- Select or enter a percentage available of the total numbers at which point alerts will be raised.
- Enable an Email Group to be notified and select it.

The Email content template can be configured.

See Number Inventory Alerting Email Template Variables section under Email Setup in the Core Feature Guide.

- Ignore Hierarchies with no numbers.

2. If alerts have been enabled, a schedule called `InternalNumberInventoryAlert` is also created that by default runs daily at the time `00:00:00` and raises an alert if the availability threshold in the global settings is exceeded. This scheduled time can be modified - see the topic *Create or Update a Schedule* in the Core Feature Guide.

3. Alert messages are also raised and are visible from **Messages** on the top toolbar, or from **Administration Tools > Alerts**.

See Number Inventory Alerts under Alert Types and Alert Field Reference in the Core Feature Guide.

## 21.3. E164 Number Management

### 21.3.1. Introduction to E164 Inventory Management

E164 inventory management uses translation patterns in VOSS Automate to provide a Direct Dial-In (DDI)/Direct Inward Dialing (DID) mapping to internal numbers.

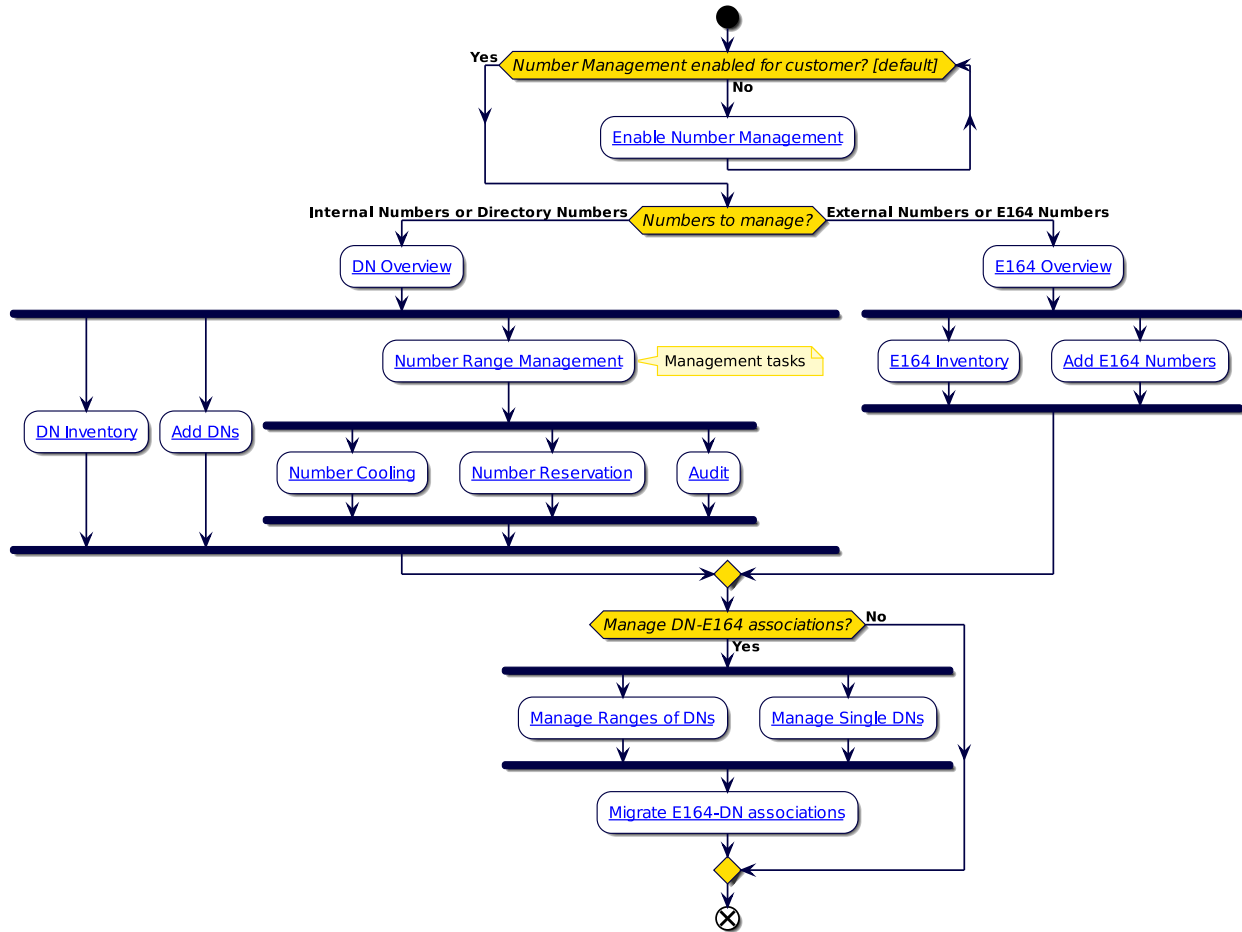
DDI-to-DN mapping allows you to route incoming PSTN calls to the appropriate internal number.

Managing the E164 inventory involves:

- Viewing, adding, or deleting E164 number inventory
- Associating a range of E164 numbers to a range of internal numbers
- Viewing an associated range of E164 numbers to a range of internal numbers
- Disassociating a range of E164 numbers from a range of internal numbers
- Associating a range or set of E164 numbers to a single internal number
- Disassociating a range or set of E164 numbers from a single internal number
- Viewing single internal number associations

The E164 inventory is available in the drop-down menus for Site Published Number and Emergency Number when creating a Site Dial Plan.

- Note: Underlined flowchart titles refer to topic headings in this guide.



### 21.3.2. E164 Numbers in the Number Inventory

**Note:** In VOSS Automate, an ‘\*’ can appear before a directory number in a Type 4 dial plan.

The **E164Number** column and value displays E164 Associations (N to 1 DN), depending on the number of E164s associated and whether a primary E164 is set or not.

Examples of E164 format:

Note that the first example is for E164 Associations (N to N DN):

- \+27726043938  
No primary is set. The first number associated is displayed. Only one number is associated.
- \+27726043938 (P)  
The displayed number is primary. Only one number is associated.
- \+27726043938 (P) [+8]  
The displayed number is primary. Eight (8) more numbers have been associated in addition to the displayed number.
- \+27726043938 [+8]

No primary is set. The first number associated is displayed. Eight (8) more numbers have been associated in addition to the displayed number.

This type of number cannot be reached from an outside line. Typically, a number with the ‘\*’ prefix is not called from another line (user), but is tied to a service feature such as call pickup, hunt groups, or contact center.

---

**Note:** Adding a new number to the number inventory on VOSS Automate does not add a number on Cisco Unified Communications Manager (CUCM / CallManager) until it is associated to a line.

---

### 21.3.3. Add an Inventory of E164 Numbers

This procedure defines an inventory of E164 numbers available to users at a customer hierarchy *only*.

---

**Important:** Each addition to the E164 inventory must contain a unique set of numbers. That is, you can't assign the same number more than once (globally).

---

1. Go to (default menus) **Number Management > Add E164 Inventory**.
2. Choose the relevant hierarchy.
3. Fill out and select relevant values on the **Add E164 Inventory** page:

Fields	Description
Site	For a site-specific E164 inventory, select the customer site. For a customer-wide E164 inventory, leave this field blank.
Country*	Mandatory. Select the country associated with the E164 inventory. If you chose a site in the previous field, this field is automatically populated with the country associated with the site.
Country Code	Read-only field. The country code for the selected country. Refer to this read-only field when specifying the <b>Starting Number</b> and <b>Ending Number</b> fields, which must contain a valid country code.
Starting Number*	Mandatory. Enter the starting number of the range of E164 numbers. The field is populated with '+' followed by the country code for the selected country. Append the rest of the starting number after the country code.
Ending Number	Optional. Enter the ending number of the range of E164 numbers. The format is the same as the <b>Starting Number</b> . If not provided, the single E164 Number specified in the <b>Starting Number</b> is added. If provided, the range of E164 Numbers is added: <b>Starting Number, Ending Number</b> , inclusive. A maximum of 1000 numbers can be added at a time.
Number Type	Number type, e.g. geo, non geo, etc. Informational only. The field may be hidden.

3. Click **Save**.

### 21.3.4. View an E164 Inventory and Delete E164 Numbers

#### View E164 Number Inventory

To view an E164 inventory, go to (default menus) **Number Management > E164 Inventory**.

This page presents the list of E164 numbers (the inventory) at the customer or site (depending on the hierarchy you're at). At higher levels of the hierarchy, for example, Provider, the **Located At** column shows whether the number is at a customer or site. Click on the link for the customer or site to view the numbers in the inventory at that customer or site.

To view (read-only) details for an E164 number, click on the number in the list.

The list view on the **E164 Inventory** page provides the following information:

Column	Description
E164 Number	The individual E164 number in the inventory.
Country	The country associated with the E164 number.
Associated Flag	Indicates the E164 number has been associated with a Directory Number
Located At	Indicates the hierarchy of the site the E164 number was created for.

#### Delete E164 Numbers from the Inventory

This procedure deletes one or more E164 numbers from an E164 inventory.

---

**Note:** You can't delete E164 numbers that are associated with an internal number.

---

1. Log in as provider, reseller, or customer administrator.
2. Go to (default menus) **Number Management > E164 Inventory**.
3. In the **E164 Inventory** list view:
  - To delete one number, click the number, then click **Delete**.
  - To delete multiple E164 numbers, select the check box next to each number you want to delete, then click **Delete**.

---

**Note:** Use column filtering, or click on the **Located At** column to narrow and refine the list of items to select for a batch delete.

---

4. Click **Yes** in the confirmation window.

### 21.3.5. E164 Associations ( N to N DN )

#### Overview

This topic describes managing a range of internal numbers (Directory Numbers, or DNs) associated with a range of E164 numbers.

#### View E164 Associations (N to N DN)

To view the ranges of E164 numbers that are associated with a range of internal numbers (Directory Numbers, or DNs):

1. In the Admin Portal, go to (default menus) **Number Management > E164 Associations (N to N DN)** to open the **E164 Associations ( N to N DN )** list view.
2. View E164 associations (N to N DN) in the list.

---

**Note:** You can filter the list and change the hierarchy by selecting a link in the **Located At** column.

---

The table describes column data in the **E164 Associations ( N to N DN )** list view:

Column	Description
E164 Number	The starting E164 number in the range.
DN Number	The starting internal number in the range.
Range	One of the following: <ul style="list-style-type: none"> <li>• 1 - To indicate that one E164 number and internal number are associated.</li> <li>• 10 - To indicate that a range of ten numbers including the starting E164 and starting internal number are associated.</li> <li>• 100 - To indicate that a range of 100 numbers including the starting E164 and starting internal number are associated.</li> <li>• 1000 - To indicate that a range of 1000 numbers including the starting E164 and starting internal number are associated.</li> </ul>
Located At	Indicates the hierarchy of the site where the E164 number range and internal number range association was created.

#### Add an E164 Association (N to N DN)

This procedure associates a range of E164 numbers to a range of internal numbers, at a site.

#### Note:

- You can also perform the association in ranges of 10, 100, and 1000, on a one-to-one basis. These associations create Direct Dial Inward (DDI) associations so that incoming PSTN numbers are routed to internal numbers.
- Only internal numbers or E164 numbers that are not currently associated, are available for association.
- In VOSS Automate, the HcsSipLocalGwAddE164AssociationEVT event related to SIP Local Gateway is generated

1. In the Admin Portal, go to (default menus) **Number Management > E164 Associations (N to N DN)** to open the list view.
2. Set the hierarchy to the relevant customer.
3. In the **E164 Associations ( N to N DN )** list view, click the Plus icon (+) to add a new record. Choose a site.
4. Configure E164 Association ( N to N DN ). The table describes configuration options:

Field	Description
Range	<p>Mandatory. Choose the range before choosing other settings on this page. Defines the range value for the E164 to DN association. Options are: 1, 10, 100, or 1000</p> <p>The range value you select maps to the mask value when the association translation pattern is created. For example, when 10 is selected, all E164 numbers and directory numbers that end in 0 are listed. The mask affects all digits 0 to 9, so you can't start the mask on a non zero number. Likewise, when 100 is selected, the E.164 number and DN end in two zeros. This pattern results in a mask of XX.</p> <ul style="list-style-type: none"> <li>• 1 - To list all E164 numbers and internal numbers</li> <li>• 10 - To list all E164 numbers and internal numbers that end in one zero (0)</li> <li>• 100 - To list all E164 numbers and internal numbers that end in two zeros (00)</li> <li>• 1000 - To list all E164 numbers and internal numbers that end in three zeros (000)</li> </ul>
E164 Number	<p>Mandatory. Choose the starting number of the range of E164 numbers.</p> <ul style="list-style-type: none"> <li>• If the association is performed at customer level, the drop-down only shows E164 numbers that were added at customer level.</li> <li>• If the association is performed at site level, the drop-down contains E164 numbers that were added at either customer or site level provided the country matches the site's country.</li> </ul>



Field	Description
DN Number	<p>Mandatory. Choose the starting internal number.</p> <ul style="list-style-type: none"> <li>• If the association is performed at customer level, the drop-down only shows internal numbers that were added at customer level.</li> <li>• If the association is performed at site level, the drop-down shows internal numbers that were added at either customer or site level.</li> <li>• You cannot associate internal numbers that begin with the prefix '*' (asterisk) or '#' (hash).</li> </ul>
Dial Plan Model Selection	<p>This field displays only when the <b>Enforce HCS Dialplan Rules</b> setting in the <b>Global Settings</b> is set to <i>False</i></p> <p>Defines the translation pattern template configured in the dial plan modeling tool. The values for the pattern, transform mask, and associated range masking are hard coded in the workflow. +1555 111 5555 (Range 10) = +1555 111 555X</p> <p>Other values, such as partition and CSS) come from this template.</p> <p>The translation pattern must have its description set to display in this drop-down.</p>

#### 4. Save your changes.

You can view transaction progress and details in the Transaction Logs.

#### Note:

- When listing the Number Inventory and displaying an internal number, the E164 Number format is as listed in *E164 Numbers in the Number Inventory*.
- A translation pattern (which is the mapping between the E164 range and internal number range) is created on the CUCM. This translation pattern is used to route inbound PSTN calls to their associated internal numbers.
- If the association is performed at a Site, the translation pattern is only added to the CUCM referenced by the site's network device list (NDL).
- If the association is performed at Customer level, the translation pattern is added to all the customer's CUCMs.
- If the Site has one or more SIP Local Gateways associated with it, the HcsSipLocalGwAddE164AssociationEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event for each SIP Local Gateway.

#### Related Topics

- Transaction Logging and Audit in the Core Feature Guide

### Delete an E164 Association (N to N DN)

This procedure deletes one or more E164 (N to N DN) associations to disassociate a range of E164 numbers from a range of internal numbers.

**Note:** In VOSS Automate, the HcsSipLocalGwDelE164AssociationEVT event related to SIP Local Gateway is generated as a result.

1. Go to (default menu) **Number Management > E164 Associations (N to N DN)** to open the **E164 Associations ( N to N DN )** list.
2. Change your hierarchy, if required.
3. View E164 Associations (N to N DN) in the list, which displays the following information:

Column	Description
E164 Number	The starting E164 number in the range.
DN Number	The starting DN number in the range.
Range	<ul style="list-style-type: none"> <li>• 1 - Indicates that one E164 number and internal number are associated</li> <li>• 10 - Indicates that a range of ten numbers including the starting E164 and starting internal number are associated</li> <li>• 100 - Indicates that a range of 100 numbers including the starting E164 and starting internal number are associated</li> <li>• 1000 - Indicates that a range of 1000 numbers including the starting E164 and starting internal numbers are associated</li> </ul>
Located At	Indicates the hierarchy of the site where the E164 number range and internal number range association was created.

4. Choose an option:
  - To disassociate multiple ranges, select the check boxes in the far left column of the table for the ranges you want to disassociate.
  - To disassociate one range, click its row in the table. The details about the association appear.
5. Click **Delete**, then click **Yes** to confirm the disassociation.

**Note:**

- The translation pattern mapping between the E164 range and internal number range is deleted from CUCM.  
The E164 number association with the internal number is removed on the Number Inventory list view display and in any **Lines** drop-down list and **Lines** displays.
- If the site has one or more SIP Local Gateways associated with it, the HcsSipLocalGwDelE164AssociationEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event for each SIP Local Gateway.

### 21.3.6. E164 Associations ( N to 1 DN )

#### Overview

This topic describes managing single internal numbers associated with a range of E164 numbers.

#### View E164 Associations (N to 1 DN)

This procedure displays sets of E164 numbers associated with a single internal number (directory number, or DN).

1. Go to (default menus) **Number Management > E164 Associations (N to 1 DN)**.
2. On the **E164 Associations ( N to 1 DN )** list, view E164 Associations (N to 1 DN).

---

**Note:** You can filter the list and change the hierarchy by selecting a link in the **Located At** column.

---

The table describes column data in the E164 Associations (N to 1 DN) list view:

Column	Description
DN Number	The associated internal number (directory number).
Located At	The hierarchy of the site where the E164 number range and internal number association was created.

3. Click on a directory number in the list to view its details.

The page displays read-only details about the E164 Association (N to 1 DN) configuration (the sets of E164 numbers that are associated with the internal number):

DN Number	The number you're viewing.
Primary E164	Displays the E164 number associated to the internal number in the Number Inventory. Other E164s are indicated as [x] showing that there are more associated E164s to this internal number but their details are only available when opening the relevant Number Inventory.

#### Add E164 Association (N to 1 DN)

This procedure associates multiple E164 numbers (a set of E164 number) to a single internal number, at a site. For example, you could associate a set of E164 numbers for the sales department with an attendant's internal number.

---

**Note:** You can also perform association in ranges of 10, 100, and 1000, on a one-to-one basis. These associations create Direct Dial Inward (DDI) associations so that incoming PSTN numbers are routed to internal numbers.

You can optionally specify a primary E164 number to associate with the internal number. This is useful when performing an internal number to E164 translation (for example, when provisioning translation rules for LBO gateways) and the internal number is associated to more than one E164 presentation.

You can only associate internal numbers or E164 numbers that are not currently associated.

---

**Prerequisites:**

- Enable number management for the customer.

**Perform these steps:**

1. Go to (default menu) **Number Management > E164 Associations (N to 1 DN)** to open the list view.
2. Choose the site (if required).
3. In the **E164 Associations ( N to 1 DN )** list view, click the Plus icon (+) to add a new record.
4. Configure E164 Association ( N to 1 DN ). The table describes configuration options:

Field	Description
DN Number	<p>Choose an internal number.</p> <ul style="list-style-type: none"> <li>• If the association is performed at Customer level, the drop-down only shows internal numbers that were added at Customer level.</li> <li>• If the association is performed at Site level, the drop-down shows internal numbers added at either Customer or Site.</li> <li>• You can't associate internal numbers that begin with the prefix '*' (asterisk) or '#' (hash).</li> </ul>
E164 Ranges	<p>Click the Plus icon (+) to add one or more sets of E164 numbers. These E164 numbers do not need to be contiguous. For each E164 number you add, choose an E164 range and the E164 number, as follows:</p> <ul style="list-style-type: none"> <li>• E164 Range Choose an E164 range, either 1, 10, 100, or 1000. The range value you choose maps to the mask value when the association translation pattern is created. For example, choose 10 to list all E164 numbers and internal numbers ending in 0. The mask affects all digits 0 to 9, so you can't start the mask on a non-zero number. When 100 is chosen the E164 number and internal number end in two zeros, resulting in a pattern with a mask of XX. <ul style="list-style-type: none"> <li>– 1 - to list all E164 numbers</li> <li>– 10 - to list all E164 numbers ending in one zero (0)</li> <li>– 100 - to list all E164 numbers ending in two zeros (00)</li> <li>– 1000 - to list all E164 numbers that end in three zeros (000)</li> </ul> </li> </ul> <p>This field is mandatory and affects what appears in the E164 Number field.</p>
E164 Number	<p>Mandatory. Choose the starting number of E164 numbers.</p> <ul style="list-style-type: none"> <li>• If the association is performed at customer level, the drop-down only shows E164 numbers that were added at customer level.</li> <li>• If the association is performed at site level, the drop-down contains E164 numbers that were added at either customer or site level provided the country matches the site's country.</li> </ul>
Primary E164	<p>Optional. Fill out the primary E164 number to associate with the internal number. Ensure the E164 number you enter starts with \+ and falls within the range you specified in in <b>E164 Range</b></p>
Dial Plan Model Selection	<p>This field displays only when the <b>Enforce HCS Dialplan Rules</b> setting in the <b>Global Settings</b> is set to <i>False</i> Defines the translation pattern template configured in the dial plan modeling tool. The values for the pattern, transform mask, and associated range masking are hard coded in the workflow. +1555 111 5555 (Range 10) = +1555 111 555X Other values, such as partition and CSS) come from this template. The translation pattern must have its description set to display in this drop-down.</p>

#### 5. Save your changes.

View transaction progress and details in the Transaction Logs.

#### Note:

- When listing the number inventory and displaying an internal number, the E164 number format is

as listed in *E164 Numbers in the Number Inventory*.

- One or more translation patterns are created on the CUCM. The translation patterns are the mappings between the set of E164 numbers and the single internal number, and are used to route inbound PSTN calls to their proper internal numbers.

When you associate a set of E164 numbers to a single internal number, multiple translation patterns are created (each DN-to-E164 range association results in a translation pattern being created on the CUCM).

- If the association is performed at Site level, the translation pattern is only added to the CUCM referenced by the site's network device list (NDL).
- If the association is performed at Customer level, the translation pattern is added to all of the CUCMs that exist for the customer.
- If the site is associated with one or more SIP Local Gateways, the `HcsSipLocalGwAddMultiE164AssociationEVT` event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event for each SIP Local Gateway.

## Related Topics

- Transaction Logging and Audit in the Core Feature Guide

## Delete an E164 Associations (N to 1 DN) Association

This procedure disassociates a set of E164 numbers from an internal number.

### Note:

- When disassociating a set of E164 numbers from an internal number, multiple translation patterns are deleted. For each association you delete, a translation pattern is deleted from the CUCM.  
In VOSS Automate, the `HcsSipLocalGwDelMultiE164AssociationEVT` event related to SIP Local Gateway is generated as a result.
- If the Local Gateway is set up to override the Voice Translation limit and the **Enable Command Builder** setting is enabled, disassociation will fail if it exceeds the default Voice Translation limit. In this case, first disable the **Enable Command Builder** setting.

1. Go to (default menu) **Number Management > E164 Associations (N to 1 DN)**.
2. Change the hierarchy, if required.
3. In the **E164 Associations ( N to 1 DN )** list, view the following details:

Column	Description
DN Number	The internal number.
Located At	The hierarchy of the site where the E164 number range and internal number range association was created.

4. Choose an option:

- To disassociate multiple associations, click the check box in the far left column of the table, next to the numbers you want to disassociate.
  - To disassociate one association, click its row in the table. The details about the association appear.
5. Click **Delete**, then click **Yes** to confirm the disassociation.

**Note:**

- The translation pattern mapping between the E164 set and the internal number is deleted from the CUCM.

The E164 number association with the internal number is removed from the **Number Inventory** list view, and from any **Lines** drop-downs and **Lines** displays.

- If the site is associated with one or more SIP Local Gateways, the HcsSipLocalGwDelMultiE164AssociationEVT event is generated. If enabled, the IOS Command Builder generates the default IOS commands associated with the event for each SIP Local Gateway.

**Related Topics**

- Transaction Logging and Audit in the Core Feature Guide

**21.3.7. Migrate Translation Patterns for E164 to Internal Number Associations**

This procedure migrates existing translation patterns for E164 to internal number associations, if you manually configured translation patterns in the E164 lookup partition to associate E164 numbers to internal numbers for Direct Dial Inward (DDI) routing.

**Note:** It is recommended that you migrate your existing translation patterns to use E164-to-Internal Number (DN) association.

Perform this procedure only once. If you did this migrate when upgrading to VOSS Automate, there is no need to migrate again when upgrading to a later VOSS Automate release.

**To migrate translation patterns:**

1. Log in as provider, reseller, or customer administrator.
2. Add the appropriate E164 number inventory. See [Add an Inventory of E164 Numbers](#).
3. View the E164 number inventory. See [View an E164 Inventory and Delete E164 Numbers](#).
4. To verify that the selected directory number (DN) inventory is available for association, go to (default menus) **Number Management > Number Inventory**.
5. Remove the translation patterns you added previously, via (default menus) **Device Management > CUCM > Translation Patterns**.
6. Create the appropriate E164-to-DN associations, via (default menus) **Number Management > E164 Associations (N to N DN)**. See [E164 Associations \(N to N DN\)](#). These associations restore the appropriate translation patterns in the E164 Lookup partition for the selected customer.

7. View the new translation pattern, via (default menus) **Device Management > CUCM > Translation Patterns**.

#### Related Topics

- [CUCM Translation Patterns in the Core Feature Guide](#).



## 22. Unity SIP Integration

### 22.1. Overview

#### 22.1.1. Introduction to Unity SIP Integration

The Unity SIP Integration tooling provisions complete SIP integration between redundantly deployed Cisco Call Managers (CUCM) and Cisco Unity Connection (CUC) servers. This integration tooling can be used to define the primary only integration that the legacy Voicemail Service provides.

The integration tooling provides a repeatable process to manage the integration of CUCM and CUC, while also providing the ability to:

- Define the dial plan used for integration so that the administrator deploying the integration does not need to have dial plan knowledge.
- Override the dial plan input mechanism mentioned above for advanced deployment.
- Deploy CUCM and CUC SIP integration in full redundancy supporting optional tenants.

---

**Important:** Contact your dedicated VOSS support representative for details on how to set up and configure the Unity SIP Integration feature.

---

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**Note:** If this feature is not exposed in the Admin Portal menu layout, refer to “Unity SIP Integration - Menu Layout Changes and Access Profile Changes”.

---

#### Unity SIP Integration Scope

The Unity SIP Integration tooling provides support for:

- Dual trunks to Unity publisher/subscriber
- Multiple SIP server destinations to CUCMs (SIP redundancy)
- Specifically defined number of Unity port build per Unity node
- Dynamic creation of CUCM route list/route group or the ability to update if they already exist
- Creation of Unity tenants for shared architectural deployments
- Creation of Unity integration utilizing tenants
- Support for multi-cluster deployments

## 22.2. Administration GUI Menus

### 22.2.1. Configure the Unity SIP Integration Menu Layout

1. Login as an administrator with sufficient rights to change menu layouts.
2. Click **Role Based Access > Menu Layouts**.
3. Select the required menu.
4. Configure the menu layout as shown below under **Unity SIP Integration**.
5. Click **Save**.

Title	Type	Href	Display As
<b>Unity SIP Integration</b>			List
Integrate Unity-CallManager		/api/view/GlobalSIPVMIntegration/add	Form
Remove Integrate Unity-Call Manager		/api/view/GlobalSIPVMIntegrationDelete/add	Form
Dial Plan Profile	data/GlobalSIPVMDPPProfile		List
Integration Log	data/GlobalSIPVMLog		List
Unity Tenant Management			List
• Unity Tenant Add		/api/view/UnityTenantAdd/add	Form
• Unity Tenant Delete		/api/view/UnityTenantDelete/add	Form

See also **Unity SIP Integration Menu Layout** illustration:

Title	Type	Href	Field Display Policy	Configuration Template	Display As	Filter Options	Menu Items
Integrate Unity-CallManag		/api/view/GlobalSIPVMInte			Form	More...	More...
Remove Integrate Unity-Ci		/api/view/GlobalSIPVMInte			Form	More...	More...
Dial Plan Profile	data/GlobalSIPVMDPPri				List	More...	More...
Integration Log	data/GlobalSIPVMLog				List	More...	More...
Unity Tenant Management					List	More...	Less...

Title	Type	Href	Field Display Policy	Configuration Template	Display As	Filter Options
Unity Tenant Add		/api/View/UnityTenantAdd/ad			Form	More...
Unity Tenant Delete		/api/View/UnityTenantDelete/			Form	More...

### 22.2.2. Access Profile Changes

1. Login as an administrator with sufficient rights to change access profiles.
2. Click **Role Based Access > Access Profiles**.
3. Select the required administrator name, for example ProviderAdminAP.
4. Configure the provider access profiles as shown in step 5.
5. Under **Type Specific Permissions** add the following new **Permitted Type** entries and **Permitted Operations**:
  - Permitted Type: view/UnityTenantAdd
  - Permitted Operations: Create
  - Permitted Type: view/UnityTenantDelete
  - Permitted Operations: Create
  - Permitted Type: view/GlobalSIPVMIntegration
  - Permitted Operations: Create, Field Display Policy, Read, Tag
  - Permitted Type: view/GlobalSIPVMIntegrationDelete
  - Permitted Operations: Create
  - Permitted Type: data/GlobalSIPVMDPPProfile
  - Permitted Operations: Create, Delete, Read, Tag, Update
  - Permitted Type: data/GlobalSIPVMLog
  - Permitted Operations: Read, Tag
6. Click **Save**.

### 22.2.3. Unity SIP Integration

The Unity SIP Integration feature can be used in place of your existing voicemail service. A list of menu items is available to carry out the Unity SIP Integration tasks. Unity SIP Integration provides SIP integration for both CUCM and CUC.

A typical workflow would be that one or more integration dial plan profiles are set up for use, and then a SIP Unity Integration is pushed to CUCM and CUC.

Menu Name	Description and Notes
Integrate Unity-CallManager	The main tool used to push integration between CUCM and CUC.
Remove Integrate Unity- Call-Manager	This allows you to remove the complete integration out of the target CUCM and CUC.
Dial Plan Profile	This allows an advanced administrator to define all of the dial plan elements that make up the CUC integration, for example device pools, route group, route list, CSSs, and so on.
Integration Log	This log is populated with information about when the integration was pushed, as well as other details, so that it can be pulled back out again.
Unity Tenant Management	A “tenant” is basically a small voicemail setup for a sub-company within your larger Connection server. In other words if you had companies sharing a single connection server for voicemail services, you can set each one up as a separate “tenant” in your install which effectively isolates them from one another. Note that a Unity server containing user data without tenants cannot have tenants added after the fact.
Unity Tenant Add	This allows you to add a unity tenant to the Unity server.
Unity Tenant Delete	This allows you to remove a unity tenant from the Unity server.

### 22.2.4. Integrate Unity-Call Manager

This option allows you to create a SIP Integration between Cisco Unified Call Manager (CUCM) and Cisco Unity Connection (CUC).

#### Base

**Note:** Prior to completing this form, the **Provisioning Target Call Manager**, the **Provisioning Target Unity**, and the **Voicemail Service Dial Plan Profile** must be set. Based on these selections, other key values are auto populated on the form.

Complete, at minimum, the mandatory fields (red border):

#### UC Publisher Application Selection

- **Provisioning Target Call Manager** - Choose from the drop-down list.
- **Provisioning Target Unity** - Choose from the drop-down list.

## Deployment Options

- **Voicemail Service Dial Plan Profile** - Choose from the drop-down list.
- **Dial Plan Advanced Mode** - Select this check box to unlock the fields for dial plan elements. You then have the ability to update those values 'live'.

Clear the check box to return the dial plan elements to the default voicemail dial plan profile values. This check box can be hidden from lower level administrators.

- **Provision CUCM-Unity in Redundant Mode** - Clear this check box for the feature to function in single mode, that is to operate in a similar way to the original voicemail service (Publisher only and no Subscriber trunk).

Select this check box to provision in redundant mode. In this mode, you can configure ports on both the Publisher and Subscriber Unity nodes, as well as build a trunk to both Publisher and Subscriber.

- **Unity Tenant(s) Present** - If the selected 'Provisioning Target Unity' server (see under **UC Publisher Application Selection** above) has tenants on it, this check box is automatically selected.

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- **SIP Profile** - To assign the configured settings in this SIP profile to the associated device.
- **SIP Trunk Security Profile** - To assign a single security profile to multiple SIP trunks in order to apply the configured settings to the SIP trunks.

These fields are auto populated based on the **Voicemail Service Dial Plan Profile** chosen under **Deployment Options**.

## Unity Port Group

Complete, at minimum, the mandatory fields (red border):

- **Phone System** - Choose from the drop-down. The phone system settings identify the phone system with which Unity Connection integrates and regulate certain phone system features (integration configuration settings are located in the port groups that belong to the phone system.)
- **SIP Server Authentication Username** - Enter the user name that Unity Connection uses to authenticate with the SIP server (SIP integrations only).
- **SIP Server Authentication Password** - Enter the password that Unity Connection uses to authenticate with the SIP server (SIP integrations only).
- **Repeat SIP Server Authentication Password** - Repeat the SIP Server Authentication Password entered above.
- **SIP Security Profile (IP Port)** - Select the SIP security profile that Unity Connection uses. Default setting = 5060.
- **Primary CUCM IPv4 Address or Host Name** - Enter the IP address (or host name) of the PIMG/TIMG unit that the port group connects to.
- **Redundant SIP Servers**
  - **Call Manager Server IP or Host Name** -

## Unity Ports

Complete, at minimum, the mandatory fields (red border):

- **Publisher Server**

This field is auto populated based on the **Provisioning Target Unity** chosen under **Deployment Options**.

- **Publisher Port Count** -

- **Subscriber Server** -

- **Subscriber Port Count** -

## CUCM Voicemail Pilot

Complete, at minimum, the mandatory fields (red border):

- **Pilot Number** - Enter a number to identify the voicemail pilot number.

- **Calling Search Space** - Enter an appropriate calling search space. A calling search space comprises a collection of partitions that are searched for numbers that are called from this pilot number.

This field is auto populated based on the **Voicemail Service Dial Plan Profile** chosen under **Deployment Options**.

- **Default Voice Mail Pilot for the System** - Select this check box if you want to replace the current default pilot number, and make this pilot number the default Voice Mail Pilot for the system.

## CUCM Voicemail Profile

Complete the following fields as required:

- **Name** - Enter a name to identify the voicemail profile.

- **Description** - Enter the description of the profile. The description can include up to 50 characters in any language, but it cannot include double-quotes (“”), percentage sign (%), ampersand (&), back-slash (\), angle brackets (<>), dollar sign (\$), single-quote('), open parenthesis ([), close parenthesis (]), slash (/), colon (:), semi-colon (;), equal sign (=), at sign (@), tilde (~), brackets ({ }), or apostrophe (').

- **Pilot** - Choose the appropriate voicemail pilot number that is defined in the Voice Mail Pilot Configuration or Use **Default**. This field is auto populated based on the **Pilot Number** entered under **CUCM Voicemail Pilot**.

- **Voice Mail Box Mask** - Specify the mask that is used to format the voice mail box number for auto-registered phones. When a call is forwarded to a voice-messaging system from a directory line on an auto-registered phone, CUCM applies this mask to the number that is configured in the Voice Mail Box field for that directory line.

- **Make this the default Voice Mail Profile for the System** - Select this check box to replace your current default profile, and make this the default profile name.

## CUCM Route List

Complete the following fields as required:

- **Name** - Enter a name for this route list. The name can comprise up to 50 alphanumeric characters and can contain any combination of spaces, periods (.), hyphens (-), and underscore characters (\_). Ensure that each route list name is unique to the route plan.

This field is auto populated based on the **Voicemail Service Dial Plan Profile** chosen under **Deployment Options**.

- **Run On All Active Unified CM Nodes** - Select this check box to enable the active route list to run on every node.
- **Call Manager Group** - Choose a CUCM group. The route list registers with the first CUCM in the group, which is its primary Cisco Unified CM.

This field is auto populated based on the **Voicemail Service Dial Plan Profile** chosen under **Deployment Options**.

## CUCM Route Group

Complete the following fields as required:

- **Name** - Enter a name for this route group. The name can comprise up to 50 alphanumeric characters and can contain any combination of spaces, periods (.), hyphens (-), and underscore characters (\_). Ensure that each route group name is unique to the route plan.

This field is auto populated based on the **Voicemail Service Dial Plan Profile** chosen under **Deployment Options**.

- **Distribution Algorithm** - Choose a distribution algorithm from the drop-down:
  - **Top Down** - If you choose this distribution algorithm, CUCM distributes a call to idle or available members starting from the first idle or available member of a route group to the last idle or available member.
  - **Circular** - If you choose this distribution algorithm, CUCM distributes a call to idle or available members starting from the (n+1)th member of a route group, where the nth member is the member to which CUCM most recently extended a call. If the nth member is the last member of a route group, CUCM distributes a call starting from the top of the route group.

Default = Circular.

## CUCM to CUC Publisher SIP Trunk

Complete, at minimum, the mandatory fields (red border):

- **Device Name** - Enter a device name.
- **Trunk Device Pool** - This field is auto populated based on the **Voicemail Service Dial Plan Profile** chosen under **Deployment Options**.
- **Destination IP Address** - Choose from the drop-down list.

### CUCM to CUC Subscriber SIP Trunk

This tab is only visible if the **Provision CUCM-Unity in Redundant Mode** check box on the **Base** tab is selected.

Complete, at minimum, the mandatory fields (red border):

- **Device Name** - Enter a unique device name.
- **Trunk Device Pool** - This field is auto populated based on the **Voicemail Service Dial Plan Profile** chosen under **Deployment Options**.
- **Destination IP Address** - Choose from the drop-down list.

#### 22.2.5. Dial Plan Profile

This allows an advanced administrator to define all of the dial plan elements that make up the CUC integration.

Mandatory fields include; SIP Profile, SIP Trunk Security Profile, Device Pool, Route Group, Route List, SIP Trunk Inbound CSS, Call Manager Group and Voicemail Pilot CSS.

This form can be filled with static (exact) values if you want to deploy these same values over and over at Store level. This option is typically not used and is displayed for illustrative purposes only.

At the Provider hierarchy, macros are used to make the profile portable across several customers. For example, if you had two or three different versions of dial plans, then you would have two or three versions of this profile. The lower level administrators could then apply the profiles as required.

---

**Note:** You can only add a SIP integration once a Dial Plan Profile has been configured.

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#### 22.2.6. Remove Integrate Unity-CallManager

This tool (**Unity SIP Integration > Remove Integrate Unity-CallManager**) takes the complete selected SIP integration back out of the Cisco Unified Call Manager (CUCM) and Cisco Unity Connection (CUC).

From the **Integration Label** drop-down, choose the integration that you want to remove and click **Save**.

#### 22.2.7. Unity Tenant Management

Unity Tenant Management assists in creating groups of objects in Unity Connection that provide a basic “tenant services” application. In short it allows you to create a tenant, which includes numerous interrelated database objects in Connection that work together to provide basic directory segmentation features to allow for isolated groups of users and handlers within your Connection server.

You can add or delete unity tenants.



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## Add a Unity Tenant

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**Note:** The description, alias and SMTP Domain name must all be unique among tenants in your system.

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1. Choose **Unity Tenant Management > Unity Tenant Add** to open the **Unity Tenant Add** form.
2. Complete, at minimum, the following mandatory fields:
  - **Target Unity Server** - .
  - **Unity Tenant Name (Alias)** - The alias is used as a prefix for all objects created in the tenant - used to make sure all objects in Connection are uniquely named.
  - **SMTP Domain** - a unique SMTP Domain name.
  - **Tenant Description** - .
3. Click **Save**.

## Delete a Unity Tenant

---

**Note:** When deleting a tenant, ALL OBJECTS associated with that tenant are deleted as well. This means all users, call handlers, interviewers, schedules, COS etc. are deleted. There is NO UNDO for this. Make sure you really want to remove a tenant and all its objects before doing so.

---

1. Choose **Unity Tenant Management > Unity Tenant Delete** to open the **Unity Tenant Delete** form.
2. From the **Unity Tenant Name (Alias)** drop-down, choose the tenant to delete.
3. Click **Save** to remove the tenant.

### 22.2.8. Integration Log

This tool (**Unity SIP Integration > Integration Log**) will be populated with all the details relevant to the SIP Integration.

This includes when the integration was pushed, and other details so that the integration can be pushed back out again if required.

## 23. Cisco Subscriber Management

### 23.1. Quick Add Subscriber (Cisco)

Cisco

#### 23.1.1. Overview

Quick Add Subscriber (QAS) for Cisco Unified Communications Manager (CUCM) provides a single page where you can add a CUCM user as a subscriber with a line, and a voicemail and Webex account, and provision the subscriber with services such as voice, extension mobility, single number reach (SNR), and conferencing and collaboration services.

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**Important:** QAS is a simple, generic method for provisioning subscribers that applies single values from configuration templates (via Quick Add Groups), and the site defaults.

For more complex provisioning requirements, such as adding route partitions or multiple values for other service fields (such as two or more lines), use VOSS Automate's advanced subscriber management functionality (default menus: Subscriber Management > Subscriber), or bulk loaders. For example, you could use QAS to add subscribers with only the first line on phones, then use advanced subscriber management to add the second line to the phone.

For details around how QAS handles the application of a Line configuration template associated with a selected Quick Add Group (QAG) when adding or updating a subscriber, see [Shared Lines](#).

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#### Supported User Types

QAS for CUCM users supports several user types, including:

- LDAP users
- CUCM-integrated users
- LDAP-integrated users on CUCM
- Manually created users

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**Note:** If the default Self-service Language is set on the site default docs (SDD), users are assigned the corresponding Self-service language.

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## Related Topics

- [Provisioning Subscribers with Cisco Webex](#)
- [Quick Add Subscriber Device Pool](#)
- [Quick Add Subscriber Class of Service](#)
- [Provision the Voice Service](#)
- [Quick Add Subscriber Groups Default Model](#)
- [Configuration Templates](#)
- [Expose Device Pools and Class of Service in Quick Add Subscriber](#)
- [Add Webex App Service using Quick Add Subscriber](#)
- [Provision the Extension Mobility Service](#)
- [Provision the Voicemail Service](#)
- [Provision the Pexip Conference Service](#)
- [Provision the Jabber or Dual Mode Device Service](#)
- [Provision a Contact Center Agent](#)
- [Enable Self Provisioning](#)
- [Global Settings in the Core Feature Guide.](#)
- [Introduction to Entitlement in the Core Feature Guide](#)

### 23.1.2. Configure Quick Add Subscriber

To create or configure users, to enable users with services, or to associate users with devices, configure the following items on the system:

Configuration	Description
1. Configure servers	<p>Configure the following servers in VOSS Automate:</p> <ul style="list-style-type: none"> <li>• Cisco Unified Communications Manager (CUCM) server Adding a CUCM server allows the following: <ul style="list-style-type: none"> <li>– Syncing of manually provisioned users or LDAP-integrated users in CUCM to VOSS Automate</li> <li>– Syncing in of users phones, directory numbers, extension mobility profiles in CUCM to VOSS Automate</li> <li>– Creation of subscribers (push users to CUCM)</li> <li>– Pushing of users' associated phones, directory numbers, and extension mobility profiles, to CUCM.</li> </ul> </li> <li>• LDAP server Required only if you want to configure LDAP-synced users in VOSS Automate, else, optional.</li> <li>• Cisco Unity Connection (CUC) server Required only if you want to add CUC voicemail users that are configured in VOSS Automate.</li> </ul>
2. Configure dial plans	Provider deployment only. Configure a dial plan at both the customer and site hierarchies.
3. Configure voicemail service	Deploy voicemail service with a pilot number created and associated to a site in VOSS Automate (via <b>Services &gt; Voicemail</b> ). This step is required to create a "Default CUC Subscriber Template" (via <b>Site Defaults &gt; CUC Defaults</b> ). The template is required to create CUC voicemail users.
4. Configure Webex service	Configure a Webex Server in VOSS Automate to deploy any Webex users provisioned through QAS. Set a password for Webex users in the Site Defaults.

### 23.1.3. Enabling Services in Quick Add Subscriber

When adding a subscriber via Quick Add Subscriber (QAS), you can enable user services, such as voicemail, extension mobility, single number reach, conferencing (meetings), and collaboration (messaging) services (such as Webex App).

The QAS page displays services included in a selected entitlement profile (if entitlement profiles are used). For example, if the entitlement profile excludes voice services, the checkboxes for Voice, Jabber, and Self Service ID won't appear on the page. The selected entitlement profile also filters options available in the **Phone Type** drop-down (showing only devices enabled in the entitlement profile).

**Note:** It is possible to use QAS to add a subscriber without an entitlement profile. For example, entitlement profiles may not exist on the deployment, or they may not be associated with the subscriber. In this case, a

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phone type, for example, may still be associated with the subscriber via the Quick Add Group (QAG).

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For the Voicemail service:

- Configuration settings are only available if the site's SDD has a default value on the CUC Defaults tab for the Default CUC Subscriber Template.

The default value (`voicemailusertemplate`) should already exist on the CUCM and is automatically populated on an HCS system when a voicemail pilot is created.

- A CUC device must be configured at the related Network Device List (NDL), at site level.
- If the selected QAG specifies any CFT entries for UserPin or UserPassword, these are applied. Otherwise, the values from the User Template defined on CUC apply. For default CFTs, see: [Quick Add Subscriber Groups Default Model](#).

While the Admin Portal hides configuration settings for unavailable services, API and bulk load operations have provisioning workflow checks that check for the presence of the Default CUC User Template in the SDD and a configured Webex server in the NDL, before the selected services can be added.

A CUCM (call manager) must be configured at the subscriber's hierarchy. If this does not exist, the QAS bulk load transactions and API calls display the following warning: *No Call Manager has been configured*

#### 23.1.4. Add a User via Quick Add Subscriber

This procedure adds a CUCM user via Quick Add Subscriber (QAS).

##### Before you start

- To choose phones by their description or description and line, configure the Phones tab in the Global Settings for displaying additional information.
- The default user template (`voicemailusertemplate`) must exist on CUCM. You can update the default by editing the default CUC User Template value in the SDD.
- Configure Quick Add Groups. See [Quick Add \(Subscriber\) Groups](#)

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**Note:** For details around how QAS handles the application of a Line configuration template associated with a selected Quick Add Group (QAG) when adding or updating a subscriber, see [Shared Lines](#).

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- If required, expose device pools and Class of Service (CoS) in QAS. See [Expose Device Pools and Class of Service in Quick Add Subscriber](#)
- Ensure the site defaults are correctly configured.

---

## To add a user in QAS

1. In the Admin Portal, go to (default menus) **Subscriber Management > Quick Add Subscriber**.

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**Note:**

- You can switch between a tab or panel layout on this form.
  - You'll configure details for the user on the **Users** tab/panel. On this tab/panel, LDAP-synced or LDAP-integrated at CUCM user fields are read-only.
  - The **Existing Services** tab/panel displays devices and services associated with the user you choose. If the user has existing dual mode devices, the **Phones** field includes details for mobile identity, remote destination, and CTIRD remote destination.
  - Fields that display on the **Existing Services** tab/panel are associated with services that are enabled/disabled at the customer level via the Global Settings.
- 

2. On the **User Details** tab/panel, configure the following:

- Select the username.
  - If the username you require doesn't exist at the current site, select **Include users at higher hierarchy** to add users above the current site.
- 

**Note:**

- You can only edit existing CUCM users via QAS if these users exist at site level.
  - The field associated with this checkbox (`lookUpForUser`), is hidden by default. You can expose it via a custom field display policy. This setting is also available for bulk load sheets and API calls.
- 

- To prevent adding users that don't exist on CUCM, select **Fail Transaction if user not found**.
- 

**Note:** The field associated with this checkbox (`failIfNotFound`) is hidden by default. You can expose it via a custom field display policy.

By default, the transaction won't fail. This option is used when users have not been synced from LDAP to CUCM. This setting is also available for bulk load sheets and API calls.

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- Fill out a first name and a last name (mandatory).
- 

**Note:** First name is mandatory only if you're provisioning the user with a Webex account. You can set only one Webex account per user. The first name and last name is auto-populated as a display name on the Webex user record. The display name is used when making Webex calls.

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- Fill out an email address, if required.
  - To send the user a welcome email, select **Send welcome email**.
- 

**Note:** This checkbox displays only once you add an email address, provided you have the following enabled and configured:

- SMTP server must be set up ([Add a SMTP Server](#))

- 
- In the Global Settings (Email tab), enable (for the relevant hierarchy) **Allow email to be sent to user after Quick Add Subscriber**. See [Global Settings](#)

A welcome email is sent to the subscriber email address using the configured “Quick Add Subscriber” HTML email template that applies to the hierarchy. See [Email](#).

---

- Fill out a password and PIN.
  - Choose an entitlement profile, if one exists, to associate with the subscriber you’re adding.
  - Choose a Quick Add Group (QAG).
- 

**Note:**

- You can configure Quick Add Subscriber Groups via the Quick Add Subscriber Groups menu, or use the default group.
  - The list of available Quick Add Groups are filtered by vendor (see [Quick Add Subscriber Groups Vendor Filtering](#)), and are restricted to those available at a selected hierarchy, based on the option selected for **Quick Add Group & Subscriber Profile lookup level** in the General Settings of the Global Settings. See [Global Settings](#).
- 

- Choose a device pool.
  - Click the Plus (+) icon at **Lines** to add directory numbers (one or more). Alternatively, select **Use next available line** to automatically populate the **Directory Number** field with the next available line. The default for **Use next available line** is False (disabled).
- 

**Note:** You can create a directory number in CUCM in two ways:

- Create a voicemail line in QAS
- Create a line in QAS

When creating a voicemail or voicemail line using QAS, the **Directory Number Used** field is set to “true” in the directory number inventory (**Subscriber Management > Directory Number Inventory**).

A directory number created without any device associations (for example, a voicemail line), is tagged under **Subscriber Management > Lines** as ‘DN created without device from QAS.’

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- Select relevant services:

Service	Description
Voice	<p>Provisions the voice service. Since you can create multiple devices for a user, this checkbox is always available. Selecting the Voice service displays these additional fields:</p> <ul style="list-style-type: none"> <li>– <b>Phone Type</b> (Lists phone types allowed by the entitlement profile, if one exists, else, phone type is retrieved from the QAG)</li> <li>– <b>Phone Protocol</b></li> <li>– <b>Phone Button Template</b> (You can override the default phone button template value by entering a custom value in this field. However, the new value is only applied on the CUCM if allowed for the phone type.)</li> <li>– <b>Phone Security Profile</b></li> <li>– <b>Phones</b> Add one or more phones. You can associate a line with multiple phones, and you can associate a phone with multiple lines. The <b>Phone Name</b> drop-down lists available phones at the user's site, based on the phone type specified in the SDD for this site, in the associated QAG at the customer level, or synced from CUCM. To add a new phone, you can enter a valid name in the <b>Phone Name</b> field. The phone name must consist of a prefix, for instance <i>SEP</i>, followed by a MAC address (12 hexadecimal characters). The transaction will fail if you enter the phone name incorrectly (for example, too few or too many characters).</li> </ul> <p>Choosing alternative options in these fields overrides values set up in the Quick Add Group (QAG), configuration template (CFT), site defaults document (SDD), or any other backend (read-only) CFTs. If the QAG does not specify a phone template, or if the specified phone template has blank values for the phone fields, the phone field values are pulled from the SDD. To avoid conflicting QAS settings, it is recommended that you configure settings on the QAS form in the following order:</p> <ol style="list-style-type: none"> <li>1. Entitlement Profile (only if these exist on the deployment, and are associated with the subscriber)</li> <li>2. Quick Add Group</li> <li>3. Voice (then choose phone type, phone protocol, phone button template, and phone security profile)</li> </ol>
Extension Mobility	Provisions extension mobility. Only one extension mobility profile per user, so the checkbox displays only until you create an extension mobility profile.
Voicemail	Provisions voicemail service.



Service	Description
Single Number Reach	Provisions single number reach (SNR) service, and allows you to specify the SNR mobile number. If a mobile number is already configured for a subscriber, it is used to pre-populate the Mobile Number field when adding SNR for that subscriber. You can enter a different mobile number for SNR, if required. SNR mobile numbers are formatted with a Plus (+) and the number, for example <i>+99218732876</i> . SNR mobile numbers cannot include include spaces, dashes, or other special characters. The SNR mobile number can be the same as the user's number that displays via (default menus) <b>User Management &gt; Users</b> .
Jabber / Dual-Mode Device	Provisions Jabber / Dual-mode device service, and allows you to add Jabber and Dual-Mode devices. You can associate multiple Jabber and Dual Mode devices to a user. Jabber and Dual Mode devices get the first line assigned to them (specified in QAS).
Enable self-provisioning	Defines whether to enable self-provisioning for this user, and allows you to choose the relevant self-provisioning user profile. When enabled, phone lines are added using the Universal Line Template (ULT) referenced in the selected self-provisioning user profile. When adding a user with lines but no devices, or when adding a user with devices and lines, enabling self-provisioning here automatically sets the <i>CUCM User Primary Extension</i> to the QAS line pattern and ULT route partition. The available self-provisioning user profiles are those found in (default menus) <b>User Management &gt; Self Provisioning &gt; User Profile</b> (and can be seen in the site defaults for the site). You can change this default, if required.

### 3. Save your changes to create the subscriber.

- If you've provisioned SNR (single number reach), verify, on the **Existing Services** tab/panel, that the **Single Number Reach** field displays the SNR profile name, which is the user name, followed by *"-RDP"*. For example: *jsmith-RDP*.
- If you wish to update a subscriber or their associated services (after adding the subscriber via QAS), this is done from the relevant service menu items.
- For self-provisioned phones to show as being associated with a subscriber, perform a CUCM data sync after setting up a self-provisioned phone.

#### 23.1.5. Add Webex App Service using Quick Add Subscriber

**Note:** When using QuickSubscriber to provision WebexApp services, the SiteDefaultsDoc - **User Defaults** tab values should be set to either:

- **Webex App - Use Organization's Domain** = True

or

- **Webex App - UC Manager Profile** = <Selected UC Profile>

Selecting the **Webex App** checkbox on the QAS page displays the **Webex Teams User Template** drop-down, where you can select a **Webex Teams User Template** to apply to the user.

- Choosing a template from the drop-down overrides the default user template referenced in the Quick Add User Group (QAG) associated with the user.
- If you don't select a **Webex Teams User Template** from the drop-down, the **Webex App User Template** referenced in the associated QAG is applied.

If you want customized values, clone the **Webex Teams User Template (Customizations > Configuration Templates)** and edit as required. The Webex Teams User Template for CUCM Calling provides for a **Settings** group of controls for the specification of Calling Behavior and provisioning of Jabber devices if relevant to the calling behavior.

### 23.1.6. Add a Contact Center Agent using Quick Add Subscriber

- *Contact Center*

You can use Quick Add Subscriber to create a Contact Center (UCCX) agent.

The **Contact Center Agent** check box becomes visible if:

- The associated Entitlement Profile has Contact Center enabled
- A Contact Center Server is available at the hierarchy - *Configure Cisco Unified Contact Center Express (UCCX) Server*
- The selected user is not already associated with an Agent

If the check box is selected:

- A **Contact Center Agent Profile** drop-down list is available to select an agent profile.

---

**Note:** The **Contact Center Agent Profile** needs to be created before adding the Contact Center Agent from the Quick Add Subscriber feature.

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The agent profile will determine the team, resource group and skills assigned to the newly created agent. See: *Agent Profiles*.

- The **Agent Extension** can be selected.

The extension will be a list of specified Lines, in other words, the administrator must specify the Line to be created or reused before selecting the **Contact Center** check box.

- The **Agent Device Type** can be selected: either Extension Mobility or Phone:
  - If Extension Mobility is selected, the **Extension Mobility** check box is automatically enabled.
  - If Phone is selected, the administrator must first enable **Voice** and specify a Phone to be created or reused before selecting the **Contact Center** check box.

An IPCC extension is automatically managed for the CUCM user associated with the Contact Center agent.

### 23.1.7. Quick Add Subscriber Device Pool

When adding a subscriber via Quick Add Subscriber (QAS), you can associate a device pool to the subscriber's newly associated devices or services (other than the device pool provided in the Site Defaults Doc or referenced configuration template in the Quick Add Group).

A device pool contains system, device, and location-related information, and is mandatory when adding a subscriber using QAS.

A device pool can be referenced by:

- Site Defaults Doc (SDD)
- Reference Configuration Template (CFT) referenced in the Quick Add Subscriber Group (QAG)
- Admin Portal (if exposed)

#### Device pool and Site Defaults Doc

The device pool referenced in the SDD ensures that a subscriber's devices are always associated to a device pool. If there is no device pool referenced in either the QAG or Admin Portal drop-down (see below) the value defaults to the SDD.

#### Device pool and Quick Add Subscriber Group (QAG)

The device pool referenced by a Configuration Template (CFT) in the QAG takes precedence over the device pool referenced in either the SDD or the Admin Portal drop-down (if exposed). See Quick Add Subscriber Groups for details.

#### Device pool and Admin Portal

An administrator can expose a **Device Pool** drop-down on the QAS page on the Admin Portal by editing or cloning the Field Display Policy. See [Expose Device Pools and Class of Service in Quick Add Subscriber](#). The **Device Pool** drop-down allows an administrator to overwrite the value in the SDD by selecting a custom device pool from the drop-down list. The options available in the list are the site-level device pools if they are available, otherwise it displays all device pools available at customer level (NDLR aware).

---

**Note:** When exposing the **Device Pool** drop-down, the administrator **must** remove the value in the **Device Pool** field of the CFT referenced in the QAG, that is, the field must be blank. This is done to ensure that the value in the CFT does not overwrite the custom value in the drop-down.

The CFTs and their target models for which the device pool name can be made blank to allow the Portal to drive the device pool selection include:

- Phone templates (device/cucm/Phone)
  - Jabber device templates (device/cucm/Phone)
  - Remote Destination Profile templates (device/cucm/RemoteDestinationProfile)
-

### 23.1.8. Quick Add Subscriber Class of Service

With Quick Add Subscriber (QAS), you can associate Calling Search Space (CSS) values to a subscriber's newly associated lines, devices, or services (other than the CSS's provided in the Site Defaults Doc or referenced configuration template in the Quick Add Group), by selecting a Class of Service (CoS).

A Class of Service (CoS) allows you to specify a Calling Search Space (CSS) for devices and lines. A CSS is mandatory for lines and devices when adding a subscriber using QAS.

A CSS can be referenced by:

- Site Defaults Doc (SDD)
- Reference Configuration Template (CFT) referenced in the Quick Add Subscriber Group (QAG)
- Admin Portal, via the Class of Service field (if exposed)

#### Class of Service and Site Defaults Doc

The Calling Search Space values referenced in the SDD ensure that a Subscriber's lines and devices always have a Calling Search Space associated to it. If there are no Calling Search Space values referenced in either the QAG or via the Class of Service field in the Admin Portal drop-down (see below) the value defaults to the SDD.

#### Class of Service and Quick Add Subscriber Group (QAG)

The Calling Search Space values referenced by a Configuration Template (CFT) in the QAG take precedence over the Calling Search Space values referenced in either the SDD or the Class of Service via the Admin Portal drop-down (if exposed). See Quick Add Subscriber Groups for details.

#### Class of Service and Admin Portal

An administrator can expose a **Class of Service** drop-down on the QAS page on the Admin Portal by editing or cloning the Field Display Policy. See [Expose Device Pools and Class of Service in Quick Add Subscriber](#). The **Class of Service** drop-down allows an administrator to overwrite the Calling Search Space values in the SDD by selecting a custom Class of Service from the drop-down list. The Class of Service, in turn, contains a custom Calling Search Space for lines and devices, respectively. The options available in the list are the customer-level Class of Service instances, as created by the relevant administrator.

---

**Note:** When exposing the **Class of Service** drop-down, the administrator **must** remove the values in the Calling Search Space fields of the CFT's referenced in the QAG, that is, the field must be blank. This ensures that the value in the CFT does not overwrite the custom Calling Search Space value as defined in the selected Class of Service.

The CFTs and their target models for which the Calling Search Space name can be made blank to allow the Portal to drive the Calling Search Space values include:

- Line templates (device/cucm/Line)
- Phone templates (device/cucm/Phone)
- Jabber device templates (device/cucm/Phone)
- Remote Destination Profile templates (device/cucm/RemoteDestinationProfile)

### 23.1.9. Expose Device Pools and Class of Service in Quick Add Subscriber

This procedure exposes the **Device Pools** field and **Class of Service (CoS)** field on the Quick Add Subscriber (QAS) form, at a specified hierarchy.

#### Pre-requisites:

- You must be logged on as an administrator with access to Field Display Policies (FDP)

#### Perform these steps:

- In the Admin Portal, go to (default menus) **Customizations > Field Display Policies**.
- Filter the **Target Model Type** on **view/QuickSubscriber**.
- Choose an option, depending on the hierarchy where the **Device Pools** or **Class of Service** fields should be exposed in Quick Add Subscriber:
  - The FDP exists at the correct hierarchy? Click on the FDP to open it.
  - The FDP does not exist at the required hierarchy? Clone one of the FDPs at a hierarchy above the required hierarchy.
- Open the FDP to edit it, and go to the first group's **Available** list in the **Fields** block.
- Select **device\_pool** or **class\_of\_service**, then click the **Move** icon to move the **device\_pool** or **class\_of\_service** from the **Available** list to the **Selected** list.
- Use the **Move up** and **Move down** icons to move the label to the desired position relative the the other field labels.
- Ensure that the cloned FDP name is "default", then click **Save**.
- If you're at the hierarchy where the cloned FDP is created or at a lower hierarchy, go to (default menus) **Subscriber Management > Quick Add Subscriber**, where you will see the relevant field exposed (either **Device Pools** or **Class of Service**).

## 23.2. Add Subscriber from Profile

Microsoft

Cisco

This procedure adds a subscriber from a subscriber profile.

- In the Admin Portal, go to (default menus) **Subscriber Management > Add Subscriber from Profile**.

---

**Note:** In a single vendor or multi vendor environment, you can also locate this menu via (default menus) the Multi Vendor Subscribers edit form, or search for **Add Subscriber from Profile** in the Admin Portal search bar.

---

- Choose the site to open the **Add Subscriber from Profile** page.

---

**Note:** This page has two tabs/panels, **Subscriber Details** and **Existing Services**. Click the toolbar **Switch to Tab/Panel** layout to toggle between a tab and panel layout.

The **Existing Services** tab is read-only and populates based on the username you choose.

---

---

### 3. On the **Subscriber Details** tab/panel:

- Select the username (mandatory).

Fields on the **Existing Services** tab/panel updates to display a read-only view of the selected user's existing services. If the user has existing dual mode devices, this includes the name and destination for mobile identity, remote destination, and CTIRD remote destination.

Fields on the **Subscriber Details** tab/panel updates with the user's details, including name and contact details, and current settings.

- Select the subscriber profile to use for configuring the subscriber.

---

**Note:** The option you choose filters the existing services relevant to the profile. Subscriber profiles available in the drop-down depend on the user type and environment, and are generated by the system based on the username you choose. For example, let's say you're onboarding an unlicensed user from Microsoft Azure, where Microsoft Teams is not yet provisioned, then, when selecting the user, the system lists the relevant subscriber profiles for adding and provisioning the subscriber.

Depending on the selected subscriber profile, new services may be automatically provisioned, for example, a line, a phone, an extension mobility profile, a Jabber device, and Webex Calling. If this is the case, read-only fields display with the details for the new services that will be provisioned for the subscriber via the profile, once you save.

- 
- Fill out the subscriber's details. You can update their first name, last name (mandatory), email address, mobile number.

Password and PIN fields become available once the subscriber profile is selected, as follows:

- For an LDAP user: only the PIN field will be available
- For a CUCM-LDAP user: only the PIN field will be available
- For a Microsoft user: PIN and password fields will *not* be available
- For a Webex user: PIN and password fields will be available
- For a Local/CUCM-local/None-existing user: PIN and password fields will be available

---

**Note:**

- The corresponding CUCM, CUC, and Webex user password will be set with this password.
- The corresponding CUCM and CUC user PIN will be set with this PIN.

- 
- At **Use generated phone name**, if the selected subscriber profile has voice service enabled, define whether to have the system generate a random phone name.
  - At **Use next available line**, define whether to use the next available line from the inventory.

### 9. Save your changes.

## Related Topics

- [Subscriber Profiles](#)
- [Multi Vendor Subscribers](#)

## 23.3. Cisco Subscribers

### 23.3.1. Overview

This topic describes the subscriber management functionality for Cisco subscribers.

From 21.4-PB5, Automate ships with two management page layout options for Cisco subscribers in the Automate Admin Portal, each with their own look and feel, and with different levels of detail included on the forms. These layouts are accessible via two *Subscriber* menus in the **Cisco Subscriber Management** menu group:

- [Cisco Subscribers Menu](#)
- [Cisco Advanced Subscriber Menu](#)

The table describes the models associated with each of these layouts:

Model	Menu	Description
relation/ CiscoSubscriber	Cisco Advanced Subscriber	This page layout will be familiar to users of the Classic Admin GUI and who wish to retain the look and feel of a Cisco, single vendor view of the page when upgrading to Automate 24.1.
relation/Subscriber	Cisco Subscribers	Provides a user-friendly panel layout, with features such as quick actions, and graphical icons for phones and services.

**Important:** The two menu/layout option is available in the Automate Admin Portal. The Classic Admin GUI is deprecated from v24.1.

Customers upgrading to Automate 24.1 and who wish to retain the familiar look and feel of the Cisco Subscriber layout of the Classic Admin GUI may want to use the `relation/Subscriber` model for their Cisco subscribers. See [Cisco Advanced Subscriber Menu](#).

You can view, add, update, or delete subscribers via the list views and subscriber management pages for either of these menus. It is recommended that you choose one or the other of these page layouts to use in your environment.

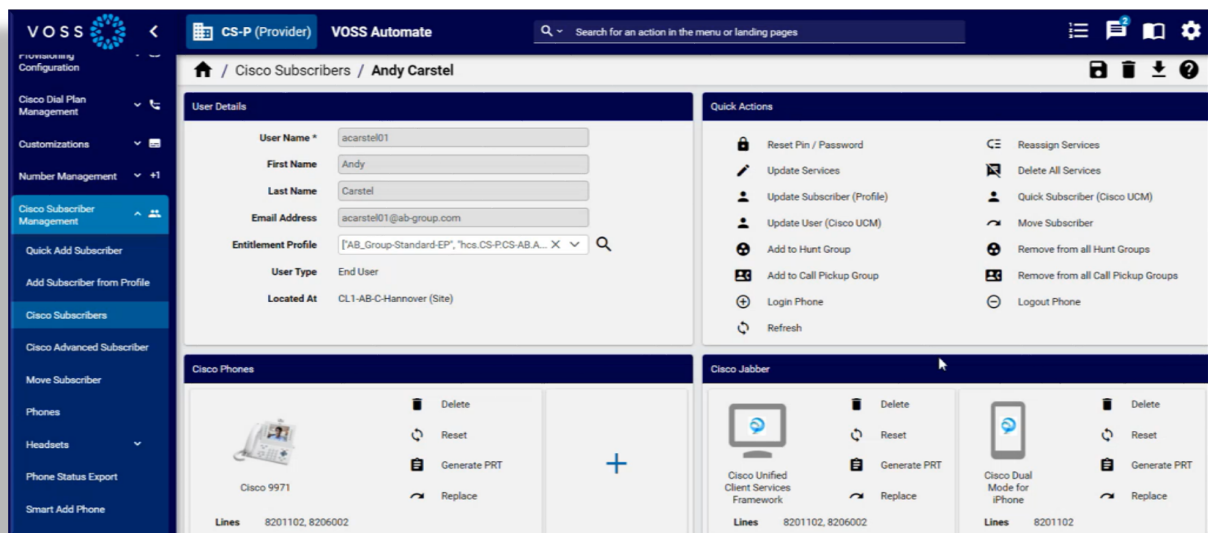
## Related Topics

- Multi Vendor Subscribers in the Core Feature Guide
- *Conventions Used in this Guide*

### 23.3.2. Cisco Subscribers Menu

The Cisco Subscribers menu uses the `relation/Subscribers` model in the Admin Portal, and is accessible, by default, via **Cisco Subscriber Management > Cisco Subscribers**. This menu uses a multi vendor subscriber field display policy. Viewing a subscriber via this model provides a user-friendly panel layout, and features such as quick actions, and graphical icons for phones and services.

The image shows the look and feel of the management page layout of a subscriber accessed via the Cisco Subscribers menu in the Admin Portal:



### 23.3.3. Cisco Advanced Subscriber Menu

The Cisco Advanced Subscribers menu is associated with the `relation/CiscoSubscriber` model in the Admin Portal. Viewing a subscriber via the list view for this menu provides a Cisco-centric subscriber management page layout that may be preferred by users familiar with the older, Automate Classic Admin GUI in a Cisco-only (single vendor) environment.

You can view this page as a tab or panel layout (and switch between these layouts via the **Switch to Panel/Tab Layout** toolbar icon).

This menu and model must be set up using a custom menu path associated with `relation/CiscoSubscriber`.



## Cisco Advanced Subscriber Panel Layout

The image shows the look and feel of the management page layout of a subscriber accessed via the Cisco Advanced Subscribers menu in the Admin Portal, using a panel layout:

The screenshot shows the Cisco Advanced Subscriber management page for user JohnD003. The page is divided into two main panels: 'User' and 'Phones'.

**User Panel:**

- Userid \*: JohnD003
- First Name: John003
- Display Name: (empty)
- Last Name \*: Doe003
- Middle Name: (empty)
- PIN: (empty)  Show
- Password: (empty)  Show
- Title: (empty)
- Pager Number: (empty)
- Mobile Number: (empty)
- Telephone Number: (empty)
- Home Number: (empty)
- Manager: (empty)
- Email Address: johndoe003@aaaglobal.com
- Department: (empty)
- Entitlement Profile: (empty)  Show
- Digest Credentials: (empty)  Show
- Directory URI: (empty)
- BLF Presence Group \*: Standard Presence group  Show
- Enable Mobility:

**Phones Panel:**

- Phones: (empty)
- SEP112233551000 Cisco 6901
- + Add Item

## Cisco Advanced Subscriber Tab Layout

The image shows the look and feel of the management page layout of a subscriber accessed via the Cisco Advanced Subscribers menu in the Admin Portal, using a tab layout:

The screenshot shows the Cisco Advanced Subscriber management page for user adervers01. The page is divided into two main sections: 'User' and 'Phones'.

**User Panel:**

- Userid \*: adervers01
- First Name: Andy
- Last Name \*: Dervers
- Middle Name: (empty)
- PIN: (empty)  Show
- Title: VIP\_Worker
- Pager Number: (empty)
- Mobile Number: +33777197002
- Telephone Number: +33251197002
- Home Number: (empty)
- Manager: (empty)
- Email Address: adervers01@ab-group.com
- Department: Engineering
- Entitlement Profile: [AB\_Group-Standard-EP\*, Tics-CS-PCS-AB\_AB\_Group]  Show
- Digest Credentials: (empty)  Show
- Directory URI: adervers01@ab-group.com
- BLF Presence Group \*: Standard Presence group  Show
- Enable Mobility:
- Enable EMCC:

**Phones Panel:**

- Phones: (empty)

### 23.3.4. Configuring Subscriber Menu Items

This procedure configures menu layouts and dashboards for the menu items **Cisco Subscribers** and **Cisco Advanced Subscriber**.

**Note:** The Automate Admin Portal allows you to choose between `relation/CiscoSubscriber` and `relation/Subscriber`. It is recommended that you choose one or the other of these page layouts to use in your environment.

Users with an access profile with permissions on `relation/Subscribers` will automatically have the same permissions on the customized relation, `relation/CiscoSubscriber`.

1. Log in to the Automate Admin Portal as an admin with permissions to customize menu layouts, then go to (default menus) **Role Management > Menu Layouts**, or use the toolbar **Search** bar to search for the **Menu Layouts** page.
2. In the list view, click on a menu layout to edit it.

**Note:** The menu items are accessible to reseller admin and operator, provider admin and operator, enhanced provider admin, multi vendor provider admin.

3. Expand the menu items at **Cisco Subscriber Management**.
4. Configure the **Cisco Subscribers** menu item:
  - Model type is `relation/Subscriber`.
  - The default field display policy is `MultiVendorFDP`.
  - This menu item uses the `Subscriber_Menu_CFT` configuration template (one option only).
5. Configure the **Cisco Advanced Subscriber** menu item:
  - Choose `relation/CiscoSubscriber` (a customized relation specifically designed to provide the alternative layout).
  - The default field display policy is `SubscriberAdvancedDefault`.
  - Choose a configuration template.
6. Configure a dashboard for the admin you're working with.
  - Go to **Role Management > Dashboards**.

You can:

- Add links for the dashboard, if required, to point to either `relation/Subscriber` or `relation/CiscoSubscriber`, depending on the menu you're using.

Choose whether to set up the links you're configuring as the default model type (`relation/Subscriber` or `relation/CiscoSubscriber`)

**Note:** When performing a global search for a subscriber, or when opening a subscriber via the line search, the page layout that opens is the one marked as the dashboard default.

- Add counters to the dashboard, if required. And if required, add filters to the counters.

**Note:** You can use a different FDP or configuration template for the counters on the dashboard.

### 23.3.5. View Subscribers

In the Admin Portal, you can view a summary list of Cisco subscribers (at the current hierarchy and down), which includes details of each subscriber's currently provisioned services, grouped by vendor.

Username	First Name	Last Name	Email	User Type	Entitlement Profile	Primary Extension	Phones	Services	Location
afurman	Anthony	Furman	afurman@abogroup.com	End User	Flex Pro 1	1002	[Phone Icon]	[Headset Icon]	LOC001 (Site)
afurman2		Furman 2		End User		1111	[Phone Icon]	[Headset Icon]	LOC001 (Site)
amoore	Andy	Moore	amoore@abogroup.com	End User	Flex Pro 1	2031	[Phone Icon]	[Headset Icon]	LOC001 (Site)
mfrankln	Harry	Frankln	mfrankln@abogroup.com	End User	Flex Pro 2	2012	[Phone Icon]	[Headset Icon]	LOC001 (Site)
jsmith	John	Smith	jsmith@abogroup.com	End User	Flex Pro 1		[Phone Icon]	[Headset Icon]	LOC001 (Site)
mlawson	Michael	Dawson	mike.dawson@abogroup.com	End User	Flex Pro 1		[Phone Icon]	[Headset Icon]	LOC001 (Site)
mgray	Mary	Gray	mgray@abogroup.com	End User	Flex Pro 1		[Phone Icon]	[Headset Icon]	LOC001 (Site)
test_user	test	user		End User	Flex Pro 1		[Phone Icon]	[Headset Icon]	LOC001 (Site)

To view the Cisco subscriber list view in the Admin Portal, either of the following options, depending on your setup:

Environment	Steps
Single vendor environment (Cisco)	Either of the following: <ul style="list-style-type: none"> <li>Go to (default menus) <b>Cisco Subscriber Management &gt; Cisco Subscribers.</b></li> <li>Go to (default menus) <b>Cisco Subscriber Management &gt; Cisco Advanced Subscriber</b></li> </ul>
Multi vendor environment (which includes includes Cisco subscribers)	Go to (default menus) <b>User Management &gt; User Services &gt; Multi Vendor Subscribers</b>

The table describes columns in the Subscribers summary list - you can click on a subscriber in the list view to open its management page:

**Note:** The list view is the same for both the *Cisco Subscribers* menu and the *Cisco Advanced Subscriber* menu.

Column	Description
Username	The username associated with the subscriber.
First Name / Last Name	First name and last name of the subscriber.
Email	Subscriber's email address.
User Type	The type of user, either Admin, End User, or End User + Admin (associated with their user role).
Sync type	How the user is synced in to VOSS Automate, for example, CUCM, LDAP, Local (the source application of user data). <ul style="list-style-type: none"> <li>Local - user was manually created in VOSS Automate (not synced from LDAP or CUCM)</li> <li>CUCM - user exists on both VOSS Automate and CUCM (not synced from LDAP); user may have been created first on VOSS Automate (top-down) or created on CUCM and synced in to VOSS Automate (bottom-up).</li> </ul> As for User <sup>1</sup>
Entitlement Profile	The name of the entitlement profile associated with the subscriber.
Primary Extension	The subscriber's primary extension number, as selected from the Pattern drop-down list when adding the subscriber. For Multi Vendor only, the line extension used as the primary line (a pre-allocated administrator line, and associated E164 number).
Phones	Displays all phones associated with the subscriber at the current hierarchy and below.
Services	Displays all services associated with the subscriber, one or more of the following: <ul style="list-style-type: none"> <li>Extension Mobility - link to the subscriber's extension mobility profiles on CUCM (one or more)</li> <li>Voicemail - link to voicemail number allocated to the subscriber (in a multi vendor environment, the subscriber's provisioned voicemail services are listed by vendor).</li> <li>Single Number Reach - link to the remote destination number configured for the subscriber</li> <li>Voice - link (for multi vendor subscribers only) to the subscriber's provisioned phones</li> <li>Conferencing - the subscriber's conferencing services (for example, Webex App, MS Teams, Pexip, Zoom)</li> <li>Headset - the subscriber's headset, typically connected to a phone associated to a user.</li> </ul>
Located At	Displays an abbreviated version of the hierarchy showing the lowest point in the hierarchy. The hierarchy type is shown in brackets. When filtering on this column, only use text outside of brackets in the criteria. For example, "SiteName (Site)", where (Site)= the hierarchy node type, only use the "SiteName" portion in the filter criteria.

**Note:** Other subscriber details that may be available in the list view or when adding or viewing a subscriber:

- Role - Subscriber role, typically a Self-service user role.

<sup>1</sup> **Sync Source:** see: [User Sync Source](#).

- Auth Method - as for User<sup>2</sup>
- Collaboration - multi vendor subscribers only; the subscriber's messaging services, for example, WebEx, MS Teams, Zoom
- Webex App - whether the subscriber is enabled for Webex App
- Contact Center - if enabled, the contact center agent's Team and extension, if the subscriber is an agent
- Device - IP address or hostname

### 23.3.6. Add a Subscriber

This procedure adds a Cisco (CUCM) subscriber in VOSS Automate.

**Note:** If *Enable CSS filtering* is enabled at the customer dial plan, available calling search spaces includes only those marked as a Class of Service in (default menus) **Dial Plan Management > Site > Class of Service** at the particular site. If another CSS is required, you can add custom CSSs in a CSS field if you know the exact syntax.

If *Enable CSS filtering* is disabled, the list of available calling search spaces includes all CSSs that are configured on VOSS Automate.<sup>3</sup>

1. Log in to the Admin Portal as Customer admin or Site admin.

**Note:** Only a subset of the fields described in this procedure are visible for Site admins.

2. Go to (default menus) **Subscriber Management > Cisco Subscribers** or **Subscriber Management > Cisco Advanced Subscriber**.
3. If you're logged in as Customer admin, choose the site where you want to add the subscriber.
4. On the **Subscribers** list view, click the Plus (+) icon.
5. Configure subscriber details on the form:
  - User
  - Phones
  - Extension Mobility
  - Single Number Reach
  - Voicemail
  - Webex
  - Webex App
  - Pexip Conference
  - Contact Center

<sup>2</sup> **Auth Method:** see: [User Authentication Methods](#).

<sup>3</sup> This only applies to the VOSS Automate *Provider* deployment.

6. Click **Save**.

Repeat this procedure to add another subscriber.

### User Component

The **User** component defines the user details of a VOSS Automate subscriber you're adding or updating.

Note the following:

- Only alphanumeric characters are allowed.
- For Cisco users, available entitlement profiles are imported from CUCM.
- When choosing an existing device (phone) to associate with a user and then saving the form, the **Phones** component is populated with the phone details.
- When adding a LDAP user as a subscriber, **Password** fields are hidden, and **Enable Mobility** is enabled by default, when any of the following is included or added:
  - A remote destination phone
  - Mobile identity for a phone
  - Remote destination profile (RDP)

If subscriber self-provisioning is set up (allowing subscribers to add their own smart devices, such as company or personal phones), and **Enable Mobility** is disabled (checkbox cleared), then the setting is enabled when subscribers add a company or personal phone via the Self-service interface.

To enable Extend and Connect in VOSS Automate:

1. On the **Users** component, select the **Enable Mobility** checkbox.
  2. Add the following three groups of users:
    - a. Standard CCM End Users
    - b. Standard CTI Enabled
    - c. Standard CCM Admin User
- For subscribers entitled to Webex App, you can add a standalone Webex Apps user by completing the following minimum fields on the User component, then go directly to the Webex App component: **Userid, Last Name, Email Address**
  - To provide access to EMCC (only customers configured for EMCC), select **Enable EMCC**.
  - The group you choose in **BLF Presence Group** (configured in Cisco Unified Administration), specifies destinations the subscriber can monitor.

---

**Note:** BLF Presence Group authorization works with BLF Presence Groups to allow or block presence requests between groups. The **Busy Lamp Field** default is set according to the selected number and specifies the Standard Presence Group that is configured with installation.

---

- For Primary Extension, the pattern you choose specifies the lines available to the subscriber. Your choice displays in the **Primary Line** column on the **Subscribers** list view.
- Subscriber Language and Role is set up in the Site Defaults of the subscriber's site hierarchy. If this is not specified, hierarchy defaults apply.

## Phones Component

On the **Phones** component you can add or update a subscriber's phone.

### To add a phone:

1. On the **Phones** component, click **Add**.
2. Provide a device name, description, product type, device protocol, phone button template, and device security profile.

---

**Note:** Values for the following fields are dynamic, and change based on options selected in associated fields.

- Product Type
- Device Protocol
- Phone Button Template
- Device Security Profile

For example, when adding a device name with the product prefix and MAC address, a 79XX-type phone has device name 'SEP' prefixed, while ATA-type phones have 'ATA' prefixed to the MAC address. Field validation and tooltips provide guidance when you select the product type.

Note that the device names for hard phones have prefix SEP or BAP, depending on device type.

The phone type must support the protocol, or it defaults to the protocol option set up in the site defaults. Some phone types support multiple protocols (for example, Cisco 7960 with SCCP and SIP), and some phone types support only one protocol (for example, Cisco 9971 with only SIP). See [Site Defaults](#)

---

3. Click **Save**.

Consider the following when adding a phone:

- You can override the **Phone Button Template** value. Either choose another option, or type in a custom value. The value is applied on Unified CM if the Unified CM allows it for the phone type.
- Modify phone-specific settings, such as **DND Option**, **Do Not Disturb**, and **Hot Line Device**.

---

**Note:** Available phone settings depend on the selected product type (phone type), the device protocol (for example, SIP or SCCP), and the Field Display Policy (FDP) applied by the administrator.

---

- You can choose a Mobile User ID Name from the drop-down list when a Dual-Mode Phone for Android or iPhones is selected. This associates the selected user to the Mobile Identity feature on this phone and must match the Userid added on the **User** component.
- Advanced settings fields are updated automatically for the phone based on the phone type. The phone is automatically associated to the user and is then displayed as an associated device for the subscriber after you save.

When associating a phone that is also associated with another user, the Owner User ID defaults to the first user.

- Line assignments are added in the **Line** section:
  - The **Pattern** field only shows lines with status *Available* or *Used*.
  - Pattern options in **Route Partition Name** are based on the selected partition selected. You can type in a custom pattern value.

- **Enduser** - identifies the user for Presence; you can add a new User ID

---

**Note:** VOSS Automate adds the user first and then adds the User ID.

---

- Speed dial information is added in the **Speeddial** section. Available options depend on the selected Phone Button Template.
- Busy lamp field information is added to the **Busy Lamp Field** section. Options include:
  - Position
  - Label
  - Blf Destination
- Add busy lamp field directed details in the **Blf Directed Call Park** section. Values depend on the values on a valid Directed Call Park on Unified CM.
- Specify add on modules (if any) in **Add On Module**. The phone type must support the model you choose. Leave **Load Name** blank, unless you want to overwrite the default.
- Add a valid IP phone service subscription to the phone, in the **Services** section:
  - Choose the IP phone service from the **Service Name** field.

---

**Note:** Subscribing a phone or a device profile to a service auto-populates the **URL** field in **Services**. To populate this field, when a service is added or updated the system retrieves the URL and a custom parameter (if any) from `device/cucm/IpPhoneService`.

---

- To add the service to the device, add a number as the Uri button index to the **Uri Button Index** field. If you don't add a number, only the service is added.
- In the **Mobile Identity** section, configure mobile identity details when selecting a Dual-Mode Phone.
  - These fields are auto-populated from the **Device Name** field: **Name**, and **Dual-Mode Device**.
  - Choose a mobility profile.
  - Mandatory. Specify a value for **Destination Number**. This option determines the destination number that is dialed when a call is made to the dual-mode phone.
- In the **Remote Destination** section, to configure your remote destinations when a Dual Mode Phone or Cisco Spark Remote Device is selected as the **Product**.

---

**Note:**

- Remote destinations represent the mobile (or other) phones that are able to accept transfer from the desktop phone and can be used to initiate calls. Set the Pattern for the Line Association to the Route Partition name. If you enter more than one Pattern and the new Pattern is not on the system, enter the Route Partition Name manually. The **Owner User Id** and **Dual Mode Device Name** fields are auto populated.
  - When a CTI Remote Device is selected as the **Product**, a **CTI Remote Destination** section replaces **Remote Destination**. This allows you to configure your remote destinations specifically for a CTI Remote Device. The **Owner User Id** and **CTI Remote Device** fields are auto populated.
- 

- In the **Vendor Config** section, view and edit the configuration settings for each device. Available configuration settings depend on each product type chosen. Update the settings as required.



**Note:**

- The administrator password from the `AdminLoginDetails` in CUCM is not stored in VOSS Automate. Data in Automate obtained from CUCM.
  - VOSS Automate cannot disable the `Override Enterprise/Common Phone Profile Settings` setting once this check box is enabled in the CUCM GUI. This setting may be disabled on CUCM (if required).
- 

**Related Topics**

- [Site Defaults](#)
- Global Settings in the Core Feature Guide

**Headset Component**

The headset can be connected to a device associated with a subscriber, so that the **Connected Device Name** reflects this device. The available headset details are:

- **Headset Serial Number**
- **Headset Model**
- **Connected Device Name**
- **Connected Device Model**
- **Headset Connection Status:** for example “Connected”.

**Extension Mobility Component**

The **Extension Mobility** component configures a subscriber’s extension mobility settings.

Consider the following:

- Only one EM Profile can be added for extension mobility in VOSS Automate. If a subscriber is associated with more than one EM profile on the Unified CM, and you sync with VOSS Automate, both will be displayed:
  - on the subscriber’s EM component (this component)
  - on the **Extension Mobility** list view (see [Add an Extension Mobility Profile](#)).
- Values for the following fields are dynamic, based on selections in associated fields:
  - Product
  - Protocol
  - Phone Button Template

---

**Note:** For details of configuration options on this component, see the descriptions for the **Phones** component. The exception is remote destination information, which is not relevant for extension mobility.

---

- Ensure that you associate the extension mobility profile and target phone for login with the extension mobility service.
- If the Enable Extension Mobility Cross Cluster (EMCC) feature is enabled on the **User** component, you must choose a CSS for this device from the **Extension Mobility Cross Cluster CSS** drop-down. The selected CSS is used as the device CSS that gets assigned to the phone when the user logs in to this remote phone. New CSS's or existing CSS's can be added or modified in Unified CM. Refer to the Cisco Unified Communications Manager Features and Services Guide for more details if required.

See also [Add an Extension Mobility Profile](#) to add or edit an extension mobility profile, and associate it to one or more subscriber.

### Single Number Reach Component

On the **Single Number Reach** component, note that you cannot add more than one Remote Destination Profile for Single Number Reach. However, you can add more than one Remote Destination Rdp.

To enable Extend and Connect in VOSS Automate, first complete the following task:

1. Select the **Enable Extend and Connect** check box.
2. Select the CTI remote device that you created from the **CTI Remote Device Name** drop-down list.

### Voicemail Component

The **Voicemail** component configures the subscriber's voice mail service, provided a valid Cisco Unity Connection server is available.

When configuring voicemail:

- PIN and Password can be left blank. In this case, the default credential policy on the Cisco Unity Connection is used.
- If the user on Cisco Unity Connection is LDAP integrated, the **Password** field is visible but should be ignored.
- The **Voicemail Line** drop-down list only shows lines with status 'Available' or 'Used' that are not already configured for Voicemail.

---

**Note:** The Cisco Unity Connection (CUC) server uses this line as a caller ID, so you should set it to the subscriber's default line.

---

- When adding Voicemail for a subscriber, all **Call Forward To Voicemail** check boxes, except **Call Forward All**, are enabled on the chosen Line, and the Voicemail Profile setting will be set based on the Site Default Doc setting "Default CUCM Line Voicemail Profile" (**Site Management > Defaults > Line Defaults**).

### WebEx Component

The **WebEx** component configures the subscriber's Webex details, if a valid server is available. The mandatory fields on this component are populated with the values entered on the **User** component.

---

**Note:** Any updates on the **User** component do not update these values; values are populated only during the Add workflow.

---

### Webex App Component

The **Webex App** component adds a Webex App User and enables a subscriber's services and roles.

Consider the following:

- Webex App is only available when:
  - A Webex App Service has been created at the required customer level (see [Add Cisco Webex Service](#))
  - Webex App is enabled in the Entitlement Profile associated with the Subscriber.
- The following fields are read only and cannot be edited:
  - **Login Enabled**
  - **Invite Pending**
  - **On-Prem UCM Calling Service** (managed automatically by the VOSS Webex driver)
- **Assigned Licenses** can be selected from the available licenses on the Webex App service.
- Once you have successfully added the subscriber as a Webex App user, the Webex App column displays status *Enabled* for this subscriber.
- The Subscriber e-mail address is required to enable Webex App for the Subscriber.

### Pexip Conference Component

The **Pexip Conference** component adds and configures the subscriber's Pexip services.

Consider the following:

- The **Pexip Conference** component is only available if a Pexip Conference service has been configured at the required hierarchy (via the Quick Add Subscriber Group).
- Conferencing must be enabled in the entitlement profile associated with the subscriber.
- Once a subscriber is successfully added as a conferencing user, you can view the service as an enabled service in the **Conferencing** column on the **Subscribers** list.

## Contact Center Component

On the **Contact Center** component you can add, remove, or update CCX agent capabilities for a subscriber.

See also: [Contact Center](#)

The **Contact Center** component displays only if these conditions are met:

- CCX device has been added and is available to the hierarchy.
- Contact Center Service is configured and available to the hierarchy.
- Contact Center is enabled in the entitlement profile associated with the subscriber.

For the agent:

- Since CCX restricts the use of special characters, these are restricted in the **Alias**.
- **Team**, **Resource Group** and **Skill** names need to be set up or synced from the CCX device before they can be assigned.
- **Automatic Available** is enabled by default.
- An IPCC extension is automatically managed for the Unified CM user associated with the Contact Center Agent.
- You may change the agent's **Controlled Device** to one that is already associated with the subscriber.

### 23.3.7. Update a Subscriber

This procedure modifies settings for one or more subscribers.

1. Log in as a Customer or Site administrator.

---

**Note:** Only a subset of fields described in this procedure are visible to Site admins.

---

2. Choose the relevant site.
3. Open the Subscriber summary list page:
  - In a single vendor environment, go to (default menus) **Subscriber Management > Cisco Subscribers** or **Subscriber Management > Cisco Advanced Subscriber**.
  - In a multi vendor environment, go to (default menus), **User Management > User Services > Multi Vendor Subscribers**
4. Click on the relevant subscriber to open the Subscriber settings.
5. Make the changes you require. For details, see [Add a Subscriber](#).

---

**Note:**

- You can add one or more phones.
- If Extension Mobility is associated with more than one subscriber, it will not be removed when removing it from one subscriber.
- Phone line settings can be edited directly on the Subscriber page.

Expanding the Line section of a Phone or Extension Mobility Profile displays a link directly to the line editing form. Once you've saved your changes, the Subscriber edit page re-opens.

If your menu layout has more than one entry for `relation/LineRelation` and associated Field Display Policy, the link for the line edit applies to the first one found (searching from top to bottom) in your menu layout (if available).

---

6. Save your changes.

---

**Note:**

- Filtering on the following columns on the Subscribers list view is described in more detail below:
    - Located At  
Displays an abbreviated version of the hierarchy showing the lowest point in the hierarchy. The hierarchy type is shown in brackets. When filtering on this column, do not use text included inside the brackets in the filtering criteria. For example: "SiteName (Site)", where (Site) = the hierarchy node type, only search using the "SiteName" portion of the field.
    - Device  
Allows you to filter on IP Address or Host Name.
    - Phone  
When filtering on this column, results include all phones at the current hierarchy, and below, regardless of the Phone column in which they reside.
  - On saving a Subscriber, workflows will execute which will synchronise the subscriber with its associated application: LDAP(top-down), Webex, UCCX, etc.
- 

### 23.3.8. Deleting Subscribers

#### Overview

Subscribers are deleted via (default menus) **Subscriber Management > Cisco Subscribers** or **Subscriber Management > Cisco Advanced Subscriber..**

The system performs various actions when deleting a subscriber via Subscriber Management. These actions depend on the user type and the subscriber's device associations.

## Subscriber types

User types	Description
Non-LDAP synced users	<ul style="list-style-type: none"> <li>• Users created in VOSS Automate and pushed to CUCM</li> <li>• Users provisioned in CUCM and synced in to VOSS Automate</li> </ul>
LDAP Integrated at VOSS Automate Users	<ul style="list-style-type: none"> <li>• Users that are LDAP integrated at CUCM and synced in to VOSS Automate</li> </ul>
LDAP synchronized users	<ul style="list-style-type: none"> <li>• Users directly synced from an LDAP server to VOSS Automate.</li> </ul>

## Subscriber associations

Subscribers can have no device associations, or they can be associated with devices such as the following:

- Phones
- Extension mobility
- Single Number Reach (SNR)
- Voicemail
- WebEx

## VOSS Automate actions when deleting a subscriber

The system performs these tasks when deleting a subscriber via **Subscriber Management > Subscribers**, depending on the user type and whether the subscriber has associated devices:

User Type	With Devices	Without Devices
Non-LDAP Synchronized Users LDAP Integrated at Cisco Unified CM Users	Deletes all devices: <ul style="list-style-type: none"> <li>Phones: device/cucm/Phone</li> <li>Single Number Reach: device/cucm/RemoteDestinationProfile</li> <li>Extension Mobility: device/cucm/DeviceProfile</li> <li>Voicemail: device/cuc/User</li> <li>WebEx: device/WebEx/User</li> </ul> Deletes the Provisioning Status.	Deletes the Provisioning Status.
LDAP Synchronized Users	Deletes all devices: <ul style="list-style-type: none"> <li>Phones: device/cucm/Phone</li> <li>Single Number Reach: device/cucm/RemoteDestinationProfile</li> <li>Extension Mobility: device/cucm/DeviceProfile</li> <li>Voicemail: device/cuc/User</li> <li>WebEx: device/webex/User</li> </ul> Deletes the user from Cisco Unified CM: device/cucm/User Removes the Cisco Unity Call Manager from the Provisioning Status.	Deletes the user from Cisco Unified CM: device/cucm/User Removes the Cisco Unity Call Manager from the Provisioning Status.

**Important:** You can configure VOSS Automate to retain desk phones (hard phones, prefixed SEP or BAP) associated with a subscriber you're deleting, and to update these phones via a configuration template (CFT) once the subscriber is deleted. To do this, go to (default menus) **Customizations > Global Settings**, and on the **Phones** tab, set **Retain Desk Phones when Subscriber is deleted** to **Yes**, then select an option for applying a CFT to update the retained phone/s.

You can also configure that Webex accounts and Voicemail accounts associated with deleted CUCM subscribers will be retained (or removed) in the LDAP user sync that handles deleted CUCM subscribers. This is done via **Customizations > Global Settings > Webex App** tab or **Voicemail** tab, as applicable).

## Related Topics

- Global Settings in the Core Feature Guide
- Subscriber, Phones tab in the Core Feature Guide

## Delete a Subscriber

This procedure deletes and unprovisions a subscriber.

1. Log in to the Admin Portal as a Customer admin or Site admin.

---

**Note:** Only a subset of fields described in this procedure are visible to Site admins.

---

2. Choose the relevant site.

3. Go to (default menus) **Subscriber Management > Cisco Subscribers** or **Subscriber Management > Cisco Advanced Subscriber**.
4. Select the checkbox for each subscriber you want to remove; then click **Delete**.
5. Click **Yes** to confirm.

The deleted subscriber is removed from the list. All elements associated with the subscriber are removed, except lines.

---

**Note:**

- If you have the global setting for phones configured to retain the subscriber's hard phones, then only the soft phones are removed. See *Global Settings* in the Core Feature Guides (Phones tab).
  - For scenarios that include an LDAP-integrated CUCM, users are deleted from the LDAP directory and not from the VOSS Automate system. Set up a data sync to synchronize the removal of the user.
- 

## 23.4. Move Subscriber

### 23.4.1. Overview

A Customer administrator (or higher) can move a subscriber from:

- Provider level to a Site (if you're logged in as a Provider administrator)
- Customer level to a Site
- One Site to a another Site, under the same Customer
- One Site to another Site, for example, on a different CUCM cluster and CUCxn cluster.

**When moving a subscriber:**

- The subscriber, phones, device profiles, SNR, voicemail, and VOSS Automate data are processed in the move.
- The subscriber is updated with a new primary extension, where appropriate.
- The following existing services (associated with this subscriber) are moved along with this subscriber:
  - Phones (and associated lines)
  - Devices
  - Device profiles
  - Single number reach
  - Voicemail
  - Webex
  - Webex App
  - Contact center
- When moving between sites on the same CUCM cluster, subscriber data is moved to the new hierarchy and updated as described above. It is assumed that the CUCxn, if used will remain.



- When moving between different CUCM clusters, the move data is re-provisioned on the new cluster and deleted on the original cluster, except for the CUCM subscriber. When the CUCM subscriber is local, the old subscriber is removed.

---

**Important:** When moving a subscriber across clusters, while the subscriber retains their remote destination information, their time of day information (ToD) and related time schedules and time periods data associated with the remote destination profile must be recreated at the target hierarchy.

---

- For an LDAP user, the VOSS Automate subscriber is purged.  
The user is removed from the `device/cucm/User` model of the source CUCM in VOSS Automate.  
The home cluster flag is maintained such that it is only set to True on the CUCM cluster hosting the subscriber, even if the subscriber exists on other CUCM clusters.
- When moving between clusters, the CUCxn server can be retained. In this case, the model instances are moved.  
If the CUCxn server changes, a new CUCxn subscriber is created against a chosen subscriber template. This will not copy custom settings for the CUCxn subscriber or any recorded prompts and messages.
- The first line on all devices must be common prior to the move. Replacing lines creates the same line layout on all devices.
- When moving cross cluster, the CUCM cluster is changed. The CUCxn cluster may be retained or changed, based on the new site ND. If the CUCxn cluster is changed, only basic voicemail is created - user customized configuration, as well as prompts and messages are not moved to the new CUCxn cluster.
- CUCxn cluster moves are only supported where the CUCM cluster changes.

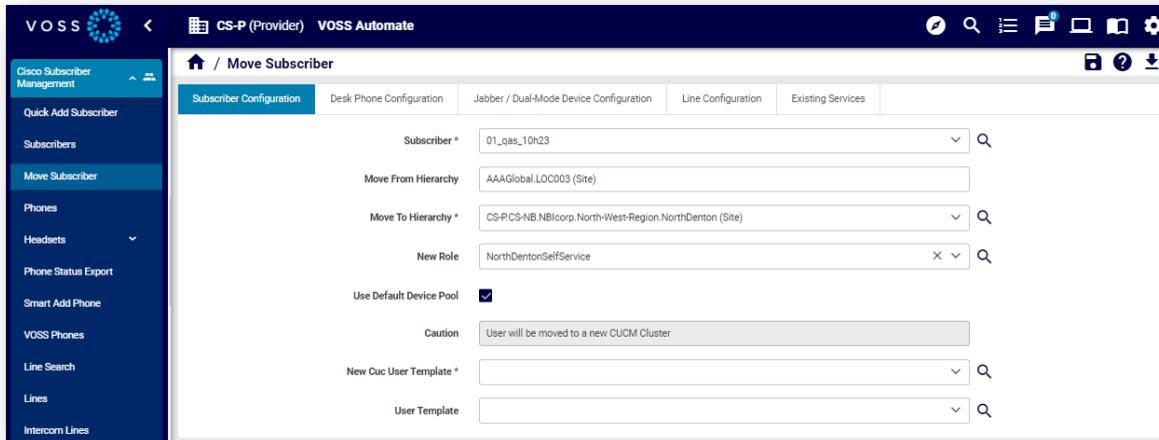
### 23.4.2. Move Subscriber Configuration

You can move subscribers via (default menus) **Subscriber Management > Move Subscriber**, then configure options on the following tabs:

- *Subscriber Configuration Tab*
- *Desk Phone Configuration Tab*
- *Jabber/Dual-Mode Device Configuration Tab*
- *Line Configuration Tab*
- *Existing Services Tab*

#### Subscriber Configuration Tab

On this tab you choose the subscriber you're moving and their target hierarchy.



The table describes configuration options on the Subscriber Configuration tab:

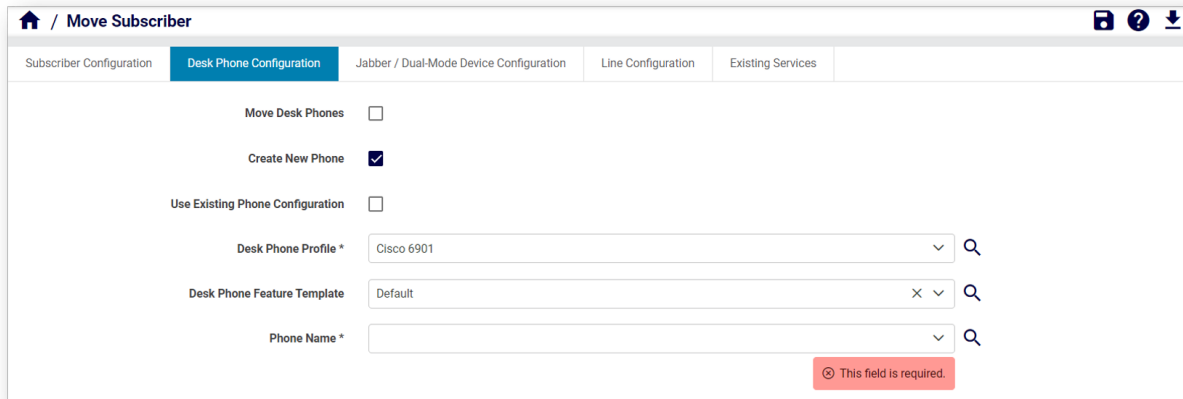
Field	Description
Subscriber	The subscriber you're moving.
Move from Hierarchy	Auto-populated, based on the subscriber you choose. The hierarchy the subscriber is moving from.
Move to Hierarchy	Mandatory. Choose a target hierarchy for the move.
New Role	Optional. Choose the subscriber's role at the target hierarchy. The list of available roles will include those where the <b>Hierarchies Allowed</b> list of the role contains the target hierarchy selected in the <b>New Role</b> list. <sup>1</sup>
Use Default Device Pool	Choose whether to use the default device pool (the site default at the target hierarchy).
Device Pool	Displays only when <b>Use Default Device Pool</b> is not selected. Allows you to choose a device pool at the target hierarchy, if you're not using the default.
Caution	Read only warning field, for example, to alert you when you're moving a subscriber to a new CUCM cluster.
New CUC User Template	Mandatory when moving a subscriber to a different CUCM cluster.
User Template	Optional template (MoveUpdateUserCustom_CFT) for custom subscriber updates on CUCM. You can clone and customize this template, if required. Available user templates are listed on the Configuration Templates page at (default menus) <b>Customizations &gt; Configuration Templates</b> .

<sup>1</sup> See: [Add and Edit Roles](#).

## Desk Phone Configuration Tab

This tab configures the desk phones of the subscriber you're moving.

**Note:** By default, existing desk phones are moved with the subscriber. However, desk phones can either remain at the old site or move with the subscriber. Existing softphone devices, such as Jabber or Dual Mode devices, are always moved.



The screenshot shows the 'Move Subscriber' interface with the 'Desk Phone Configuration' tab selected. The interface includes a navigation bar with tabs for 'Subscriber Configuration', 'Desk Phone Configuration', 'Jabber / Dual-Mode Device Configuration', 'Line Configuration', and 'Existing Services'. The main content area contains the following configuration options:

- Move Desk Phones:**
- Create New Phone:**
- Use Existing Phone Configuration:**
- Desk Phone Profile \*:** A dropdown menu with 'Cisco 6901' selected and a search icon.
- Desk Phone Feature Template:** A dropdown menu with 'Default' selected, a clear button (X), and a search icon.
- Phone Name \*:** An empty text input field with a search icon.

A red error message at the bottom right of the form states: "This field is required." This message is associated with the 'Phone Name' field.

The table describes configuration options on the Desk Phone Configuration tab:

Field	Description
Move Desk Phones	<p>Enabled by default. Defines whether to move the subscriber's (SEP prefix) desk phones to the target hierarchy. Phones that aren't moved remain at the origin hierarchy.</p> <p>When unchecked (disabled), the moved subscriber is disassociated from their existing desk phones.</p> <p>Existing (non-SEP prefix) softphone devices (such as Jabber or Dual Mode devices) are always moved, but can be configured via the Jabber/Dual Mode configuration templates. See <i>Jabber/Dual-Mode Device Configuration</i>.</p>
Create New Phone	<p>Choose this option to create new phones for the subscriber at the target hierarchy. When enabled, configure the following fields on this tab:</p> <ul style="list-style-type: none"> <li>• Use existing phone configuration (yes/no)</li> <li>• Desk phone profile</li> <li>• Desk phone feature template</li> <li>• Phone name</li> </ul>
Use Existing Phone Configuration	<p>Displays when <b>Create New Phone</b> is enabled.</p> <p>Defines whether to use the existing phone configuration as a template to create the new phone. When enabled, configure the following fields on the tab:</p> <ul style="list-style-type: none"> <li>• Phone configuration source</li> <li>• Phone name</li> </ul> <p>Profile settings can be updated on the new phone.</p>
Phone Configuration Source	<p>Displays only when <b>Use Existing Phone Configuration</b> is enabled.</p> <p>Choose from a list of the subscriber's existing phones to create the new phone using the configuration of the existing phone.</p>
Desk Phone Profile	<p>Displays when <b>Create New Phone</b> is enabled and <b>Use Existing Phone Configuration</b> is disabled.</p> <p>From the drop-down, choose the profile for the new phone (and its associated configuration, which is based on the phone configuration mapping at the target hierarchy). If you change the target hierarchy after selecting an option as the desk phone profile, you'll need to choose another option from the refreshed choices in this drop-down.</p>
Desk Phone Feature Template	<p>Displays when <b>Create New Phone</b> is enabled and <b>Use Existing Phone Configuration</b> is disabled.</p> <p>Optional configuration template. Choose a template from the the first Phone Mapping Configuration found up the hierarchy tree.</p> <p>The Move Subscriber process applies the newly created phone with the desk phone profile and then on top of it the details from the chosen desk phone feature template.</p>
Phone Name	<p>Displays when <b>Create New Phone</b> is enabled.</p> <p>Choose a phone name from the drop-down, which displays options from the <b>Phone Configuration Mapping</b> page (<b>Customizations &gt; Phone Configuration Mapping</b>).</p> <p>Default phone configuration mappings are available per hierarchy and are used at the selected hierarchy and below. See "Configuration Mapping Files" in the Core Feature Guide for details.</p>

## Jabber/Dual-Mode Device Configuration Tab

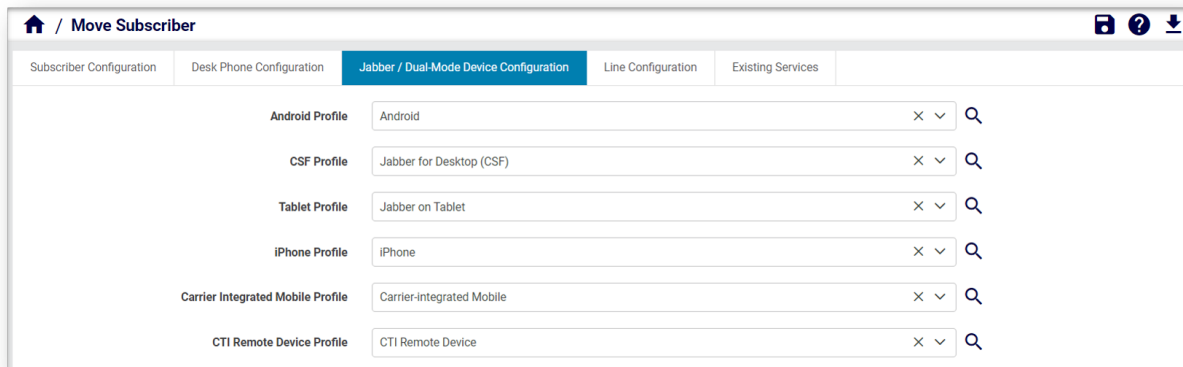
This tab configures Jabber and dual mode devices that are, by default, moved with the subscriber.

The device configuration is derived from the device profile selected in the associated **Profile** drop-down (i.e. Android, CSF, Tablet, iPhone, Carrier Integrated Mobile and CTI Remote Device).

The default device profiles are found on the **Phone Mapping [Default]** page (default menus: **Customizations > Phone Configuration Mapping**).

You can clone and save a profile if required, and customize the relevant settings, for example, **Basic Phone CFT**, in order to apply different settings to the device.

See “Configuration Mapping Files” in the Core Feature Guide for more details.



## Line Configuration Tab

This tab configures options for moving lines and/or creating lines when moving a subscriber.

When moving a subscriber, the system performs a validation check to ensure that the first line across all devices is common.

All new lines created (or existing lines moved) in the move, are assigned to SNR. For example, if a subscriber with three lines and a Phone, SoftPhone, DeviceProfile, and SNR is moved, all these services will be associated with the three lines. The only exception to this is for Voicemail, where the first line is always selected as the Voicemail line.

At the target hierarchy, the line label updates to FirstName, LastName, and extension.

**Note:** When moving a subscriber with first name or last name containing non-ASCII characters, and the subscriber has a phone, extension mobility (device profile), and remote destination profile, each with associated lines, VOSS Automate configuration templates (CFTs) convert the non-ASCII characters to ASCII. This allows the subscriber to move with all services and lines re-associated as configured.

## Creating Lines

When moving a subscriber to another CUCM cluster, you must create new lines (in this case, the option to move lines is hidden).

When creating a new line:

- Choose the default CSS (at the target hierarchy); else, select a line CSS and a Call Forward CSS for the new line. A configuration template `MoveUpdateLineCustom_CFT` is available to make custom line updates
- Choose a line template for the new line. One line template may apply to all lines.

## Moving Lines

**Important:** Lines are exposed and supported by VOSS Automate (if the required conditions already specified in this doc are met).

- Lines can only be moved to the destination hierarchy if your system is using a type 4 dial plan, and only if the move is on the same cluster.

To enable moving of lines to the destination hierarchy, the `UserMove_AllowLineMove_MCR` macro must be cloned to the applicable hierarchy level and the value set to `{{ fn.true }}`.

Ensure that the customer dial plan supports moving of lines between sites before attempting to move the line.

- Lines can't be moved between sites if the customer dial plan at the target site uses SLC-based dial plans (types 1, 2, and 3).

**Note:** To allow moving of a subscriber with their device profile and line:

- The customer dial plan of the target site must not be SLC-based; that is, the following setting must be disabled in the target site's customer dial plan: *Site-Location Code (SLC) based dial plan*

You can view the customer dial plan configuration via (default menus) **Cisco Dial Plan Management > Customer > Dial Plan**.

Additionally, the global setting, *Enforce HCS Dialplan Rules*, must be disabled for the target site. You can view this setting via (default menus) **Customizations > Global Settings** and select the **Number Inventory** tab.

### Existing Services Tab

This read-only tab displays the existing services of a subscriber you're moving, including, for dual-mode devices, the name and destination for mobile identity, remote destination, and CTI remote device with remote destination.

**Move Cisco Subscriber**

Subscriber Configuration | Desk Phone Configuration | Jabber / Dual-Mode Device Configuration | Line Configuration | **Existing Services**

<b>Phones</b>	SEP997108201102 (Cisco 9971 SIP) Line 1: 8201102 Cu1-DirNum-PT Line 2: 8206002 Cu1-DirNum-PT TCTACARSTEL01 (Cisco Dual Mode for iPhone SIP) Line 1: 8201102 Cu1-DirNum-PT Mobile Identity: MIDTCTACARSTEL01 +497774371102 SEP884499338822 (Cisco 7945 SCCP) Line 1: 8207508 Cu1-DirNum-PT
<b>Extension Mobility</b>	
<b>Single Number Reach</b>	
<b>Voicemail</b>	
<b>Webex Meetings</b>	
<b>Webex App</b>	
<b>Pexip Conferencing</b>	
<b>Contact Center</b>	Team: Resource Group: IPCC Extension:

## 23.5. Phones

### 23.5.1. Overview

This topic describes how to manage Cisco Phones in the VOSS Automate Admin portal.

## 23.5.2. View Phones

This procedure displays existing phones.

1. Log in to the Admin Portal as a Provider, Customer, or Site admin.

**Note:** Only a subset of fields are available to Site admins.

2. Go to (default menus) **Subscriber Management > Phones** to open the **Phones** page summary list view.
4. View the list of existing phones.

Device Name	Description	Product	Registration Status	IP Address	Owner User ID	Phone Button Template	Softkey Template	Device Pool Name	Location	Located At	Device
AN112233445566	AN112233445566	Analog Phone	None	None		Standard Analog		OB-POOL-001	OB-LOC-001	Outlets/Star	Dedicated CUCM: 10.120.9.245
AN112233447788	AN112233447788	Analog Phone	None	None		Standard Analog		Default	Hub_None	Outlets/Star	Dedicated CUCM: 10.120.9.245
ATA000000001122	Phone Template for Cisco ATA 187	Cisco ATA 187	None	None		Standard ATA 187 SIP		Default	Hub_None	LOC002/Star	Dedicated CUCM: 192.168.100.1
ATA112233330000	Phone Template for Cisco ATA 187	Cisco ATA 187	None	None	JohnD015	Standard ATA 187 SIP		Default	Hub_None	LOC001/Star	Dedicated CUCM: 192.168.100.1
BAT000177700001		Cisco 8861	None	None		Standard 8861 SIP	Standard User	Cut/SI-DevicePool	Cut/SI-Location	LOC001/Star	Dedicated CUCM: 192.168.100.1
BAT032983000735		Cisco 7821	None	None	JXB4471	Standard 7821 SIP	Standard User	Cut/SI-DevicePool	Cut/SI-Location	LOC004/Star	Dedicated CUCM: 192.168.100.1
BAT032983000736		Cisco 7821	None	None	JXB4471	Standard 7821 SIP	Standard User	Cut/SI-DevicePool	Cut/SI-Location	LOC004/Star	Dedicated CUCM: 192.168.100.1

**Note:** An administrator with the required access profile can click **Fetch real-time phone status** on the toolbar to fetch the CUCM phone IP address and status *directly* from the CUCM. Data is fetched in real-time and displays read-only values in the following columns:

- **Registration Status** column (for example, “None”, “UnRegistered with CUCM-11-5-IP2”, “Registered with CUCM-11-5-IP2”)
- **IP Address** column

Fetch data is not cached or stored in the database, and cannot be exported or filtered. Real-time data displays the latest data for the *current* list of phones on the Admin Portal. Prior to fetching real-time status updates, existing column values display cached values from the RIS data collector (if enabled).

The **Activate Phone Status Service** setting is enabled by default and can be managed by system level administrators. See the Advanced Configuration Guide for details.

If the **Registration Status** and **IP Address** columns are not visible at a hierarchy level, run the following command from the CLI:

```
voss migrate_summary_attributes device/cucm/Phone
```

## 23.5.3. Add a Phone

This procedure adds a new Cisco phone via the Phones page.

**Note:** It is recommended that you use Smart Add phone to add standalone phones (not associated to any subscriber) and use Quick Add Subscriber to add phones to subscribers. See [Smart Add Phone](#) and [Quick Add Subscriber \(Cisco\)](#).



## Before you start

Before adding phones in VOSS Automate, you will need to add and configure the following items on CUCM, and then import these items into VOSS Automate:

- Softkey templates (Softkey templates can be set up on CUCM or in VOSS Automate)
- Phone button templates
- Service parameters and enterprise parameters for subscriber services
- Custom SIP profiles
- Service profiles for Jabber
- Phone services

## To add a phone (CUCM users):

1. Log in to the Admin Portal as a Provider, Customer, or Site admin.

---

**Note:** Only a subset of fields are available to Site admins.

---

2. Go to (default menus) **Subscriber Management > Phones** to open the **Phones** list view.
3. Click the toolbar **Plus (+)** icon, then choose the hierarchy where you want to add the phone.
4. On the **Phones > New Record** page, fill out details for the phone you're adding:

The screenshot shows the 'New Record' page in the VOSS Automate interface. The page is titled 'AAAGlobal : LOC001 (Site) VOSS Automate' and has a search bar for 'Model instance filter'. The breadcrumb navigation is 'Phones > New Record'. The page contains a form with the following fields:

- Device Name \*
- Description
- Product \* (Cisco 9971)
- Device Protocol \* (SIP)
- Phone Button Template (Standard 9971 SIP)
- Device Security Profile (Cisco 9971 - Standard SIP Non-Secure Profile)
- Softkey Template (Standard User)
- Calling Search Space (Cu1S1-USADP-Emer-CSS)
- Device Pool Name \* (Cu1S1-DevicePool)
- Location \* (Cu1S1-Location)
- BLF Presence Group (Standard Presence group)
- SIP Profile \* (Standard SIP Profile)
- Digest User
- Device Mobility Mode \* (Default)
- AAR Group
- AAR Calling Search Space
- Rerouting Calling Search Space
- SUBSCRIBE Calling Search Space (Cu1S1-InternalOnly-CSS)

- In the **Phone** panel/tab:
  - Fill out the device name, including a prefix, for example, *SEP0C0011010003*, choose the product, for example, *Cisco 8865*, and (optionally), fill out a description.

---

**Note:** If you don't see the phone or endpoint you want, you'll need to install a COP file for the endpoint you want, in CUCM. Install the COP file only once for the CUCM instance where

the endpoint is added. In VOSS Automate you will need to import the phone button template from CUCM.

When adding a device name, add a prefix, such as SEP, before the mac address. For example, if the mac address is 000000000AB1, the device name must be SEP000000000AB1.

- Choose a device protocol.

---

**Note:** The phone type you're adding must support the protocol you wish to use. A default protocol can be defined in the site defaults (**Device Defaults** tab). Some phone types support multiple protocols (for example, Cisco 7960 with SCCP and SIP), and some phone types support only one protocol (for example, Cisco 9971 with only SIP). If the phone type you're adding does not support a selected protocol, the protocol defaults to the one set up in the site defaults. You can choose or update the protocol (if allowed by the phone type), when adding a phone, when adding a subscriber, or when adding a phone to an existing subscriber.

---

- Choose a phone button template for automatic configuration of settings, and a device pool name.
- If this is a standalone phone, leave **Owner User ID** blank, else, choose a subscriber to associate with this phone.

---

**Note:** If you're adding the phone at a site, the subscriber (Owner User ID) may exist at a higher level in the hierarchy, such as customer level.

---

- In the **Lines** panel, click the Plus (+) icon to add a line, then configure line settings:
  - Choose a line template.
  - Choose an inventory filter.
  - Choose a directory number (mandatory).
  - Specify a label for the line.
  - Specify a display.

5. Click **Save** to add the phone.

#### 23.5.4. Update a Phone

This procedure updates an existing phone.

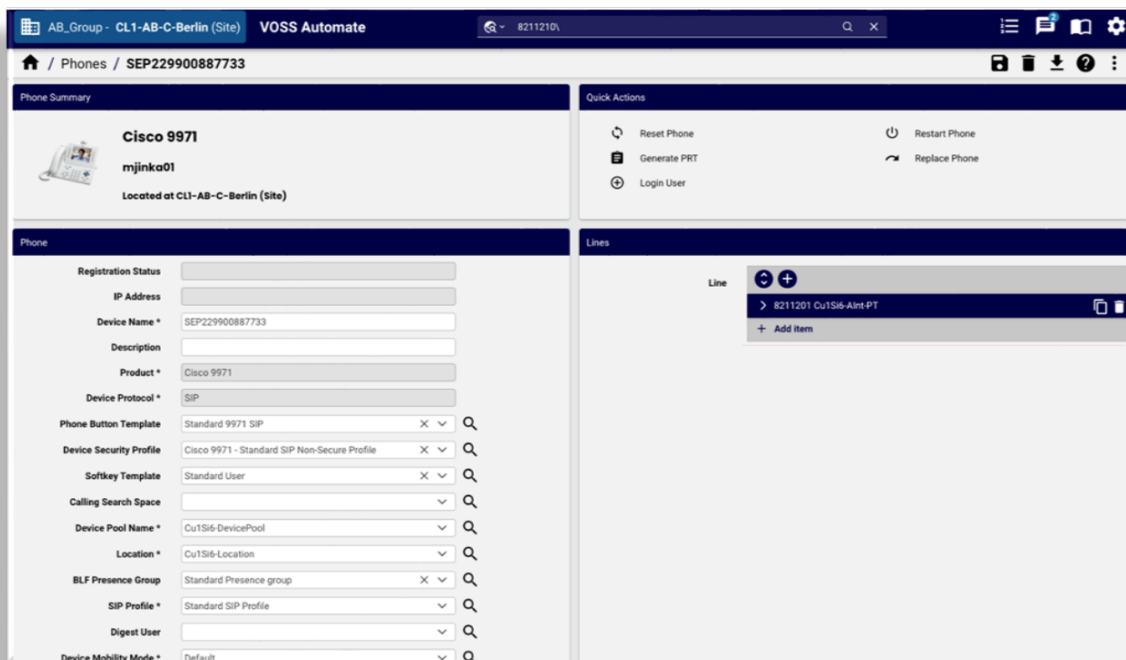
1. Log in to the Admin Portal as a Provider, Customer, or Site admin.

---

**Note:** Only a subset of fields are available to Site admins.

---

2. Go to (default menus) **Subscriber Management > Phones** to open the **Phones** page summary list view.
3. Click on the phone you wish to update to open its settings.



4. View existing settings, and update as required. Note the following:

**Note:**

- Displayed fields are based on the device type and device protocol (for example, SIP or SCCP).
- The supported features available for each phone type are retrieved from the related CUCM.

Setting	Description
Quick Actions	<p>Provides quick access to one or more predefined actions, such as restart, reset, or replace phone, or generate PRT.</p> <p>You can add also access some of these actions via the overflow toolbar menu (vertical ellipsis).</p>
Phone	<ul style="list-style-type: none"> <li>• Default values are applied for some fields (such as Device Protocol, BAT Phone Template, and Device Security Profile), based on the device (product) type.</li> <li>• <b>Vendor Config</b> settings are related to the phone type.</li> <li>• To override the default <b>Phone Button Template</b>, either choose another template, or enter a custom value. The new value is applied on the CUCM if it allows that phone type. If you don't see a template that you're looking for in the drop-down (for example, for <b>Phone Button Template</b>, <b>Device Security Profile</b> or <b>SIP Profile</b>), edit the template on CUCM, and then sync the template into VOSS Automate to have it appear in the drop-down.</li> <li>• It is possible to choose an Owner User ID at a higher hierarchy, for example, if the phone is at the site, you can choose an Owner User ID at the customer level and save your changes.</li> </ul>
Lines	<p>This panel displays all lines associated with the device and allows you to associate additional lines.</p> <p>When adding a line, the system checks that a line exists, and if it doesn't exist, the line is added.</p> <p>If Number Inventory is enabled, you can select a number from the list of available numbers.</p> <ol style="list-style-type: none"> <li>1. Choose a directory number from the <b>Pattern</b> drop-down</li> <li>2. At <b>Monitoring CSS Name</b>, set the Monitoring Calling Search Space as the CSS that is configured in the Calling Search Space field on the <b>Lines</b> page.</li> <li>3. At the <b>Busy Trigger</b> field, enter a busy trigger value, for example, <b>1</b>.</li> <li>4. At the <b>Max Num Calls</b> field, enter the maximum number of calls value, for example, <b>2</b>.</li> </ol>
Speed Dials	<p>On this panel you can configure speed dials for the device. Available speed dials depend on the device's <b>Phone Button Template</b>. The order in which Speed Dial entries are added matches the slots that are available on CUCM.</p>
Services	<p>On this panel you can set up IP Phone services. Once you choose the IP phone service, the system retrieves the URL and a custom parameter (if any, for example, ext1 and ext2) from device/cucm/lpPhoneService, and populates the URL field.</p>
Busy Lamp Fields	<p>In this panel you can configure busy lamps for the device. Available busy lamp fields depend on the device's <b>Phone Button Template</b>.</p>

Setting	Description
Blf Directed Call Parks	This panel allows you to configure Busy Lamp Field directed call parks for the device. Available BLF-directed call parks depend on the device's <b>Phone Button Template</b> . Create BLF-directed call parks in <b>Call Routing &gt; Directed Call Parks</b> on CUCM before configuring them in this panel. The available BLF-directed call parks match those created for each specific Route Partition Name.
Dual Mode Settings	These settings display only for phones that support Dual Mode, and allow you to configure mobile identity and remote destinations.
Certificate Authority Functions	The settings on this panel are only relevant to a Dual Mode Phone, Spark Remote Device, or CTI Remote Device, and allows you to enter the relevant Mobile Identity and Remote Destination (or CTI Remote Destination) parameters for the device. These parameters include Name, Destination Number, Owner User ID, Dual Mode Device Name (or CTI Remote Device), and Answer Too Soon and Too Late Timers. The date-time value must be added manually as: CCYY:MM:DD:HH:MM

**Note:**

- For more information about Certificate Authority Functions, see [Certificate Authority Functions](#).
- When updating the phone, the phone and user remote destination are updated.
- Where a phone activation code has expired and needs to be generated, the user's dummy phone must be deleted and a new dummy phone re-added, following activation steps: [Phone Onboarding with Cisco Activation Codes](#).
- For phones supporting the activation codes and the MRA feature will have the `allowMraMode` and `mraServiceDomain` fields available provided a sync has been run that updates the phone types in VOSS with the supported feature set.
- If you need to enable Extend and Connect in VOSS Automate, perform these steps while creating a CTI Remote Device:
  1. Fill out the **Device Name**. For example, CTIRD<USERID>.
  2. Choose the product as **CTI Remote Device**.
  3. Choose the **Owner User ID** from the drop-down.
  4. Choose the **SUBSCRIBE Calling Search Space** name from the drop-down.
  5. Choose the **Rerouting Calling Search Space** name from the drop-down.

### 23.5.5. Delete a Phone

This procedure deletes one or more phones or phone settings.

1. Log in as a Customer or Site administrator.

---

**Note:** If you're logged in as the Customer admin for a specific site, all fields described in this procedure are available to you. If you're logged in as the Site admin, only a subset of fields are available to you.

---

2. Choose a site.
3. Go to (default menus) **Subscriber Management > Phones**.
4. Choose one of the following methods to delete phones or phone settings:
  - Choose an individual phone to be deleted by selecting its check box in the far left column, then clicking **Delete**. From the popup window, click **Yes** to confirm the deleted phone.
  - Delete multiple phones at once by selecting the relevant check boxes, then clicking **Delete**. From the popup window, click **Yes** to confirm the deleted phones.
  - Remove phone settings as required by removing them from the relevant tab of a selected phone. Click **Save**.

---

**Note:** Deleting a phone removes the remote destination first so that the VOSS Automate cache remains in sync with CUCM.

Lines are not affected when a phone is deleted.

---

### 23.5.6. Certificate Authority Functions

This table provides details on the available fields for Certificate Authority Functions when adding or configuring phones.

Title	Description
Certificate Status	Shows the current security certificate status of the phone. The field is read-only.
Certificate Operation *	<p>From the drop-down list box, choose one of the following options:</p> <p>No Pending Operation: Displays when no certificate operation is occurring (default setting).</p> <p>Install/Upgrade: Installs a new or upgrades an existing locally significant certificate in the phone.</p> <p>Delete: Deletes the locally significant certificate that exists in the phone.</p> <p>Troubleshoot: Retrieves the locally significant certificate (LSC) or the manufacture installed certificate (MIC), so you can view the certificate credentials in the CAPF trace file. If both certificate types exist in the phone, Cisco Unified CM creates two trace files, one for each certificate type. By choosing the Troubleshooting option, you can verify that an LSC or MIC exists in the phone. For more information on CAPF operations, see the Cisco Unified Communications Manager Security Guide.</p> <p>Default: No Pending Operation</p>
Authentication Mode	<p>This field allows you to choose the authentication method that the phone uses during the CAPF certificate operation. From the drop-down list box, choose one of the following options:</p> <p>By Authentication String: Installs/upgrades, deletes, or troubleshoots a locally significant certificate only when the user enters the CAPF authentication string on the phone.</p> <p>By Null String: Installs/upgrades, deletes, or troubleshoots a locally significant certificate without user intervention. This option provides no security; Cisco strongly recommends that you choose this option only for closed, secure environments.</p> <p>By Existing Certificate (Precedence to LSC): Installs/upgrades, deletes, or troubleshoots a locally significant certificate if a manufacture-installed certificate (MIC) or locally significant certificate (LSC) exists in the phone. If a LSC exists in the phone, authentication occurs via the LSC, regardless whether a MIC exists in the phone. If a MIC and LSC exist in the phone, authentication occurs via the LSC. If a LSC does not exist in the phone, but a MIC does exist, authentication occurs via the MIC. Before you choose this option, verify that a certificate exists in the phone. If you choose this option and no certificate exists in the phone, the operation fails. At any time, the phone uses only one certificate to authenticate to CAPF even though a MIC and LSC can exist in the phone at the same time. If the primary certificate, which takes precedence, becomes compromised for any reason, or, if you want to authenticate via the other certificate, you must update the authentication mode.</p> <p>By Existing Certificate (Precedence to MIC): Installs, upgrades, deletes, or troubleshoots a locally significant certificate if a LSC or MIC exists in the phone. If a MIC exists in the phone, authentication occurs via the MIC, regardless whether a LSC exists in the phone. If a LSC exists in the phone, but a MIC does not exist, authentication occurs via the LSC. Before you choose this option, verify that a certificate exists in the phone. If you choose this option and no certificate exists in the phone, the operation fails. Note The CAPF settings that are configured in the Phone Security Profile window interact with the CAPF parameters that are configured in the Phone Configuration window.</p> <p>Default: By Null String</p>

Title	Description
Authentication String	If you chose the By Authentication String option in the Authentication Mode drop-down list box, this field applies. Manually enter a string or generate a string by clicking the Generate String button. Ensure that the string contains 4 to 10 digits. To install, upgrade, delete, or troubleshoot a locally significant certificate, the phone user or administrator must enter the authentication string on the phone.
Authentication Server	Enter the URL that the phone uses to validate requests that are made to the phone web server. If you do not provide an authentication URL, the advanced features on the Cisco Unified IP Phone that require authentication will not function. By default, this URL accesses a CUCM Self Care Portal window that was configured during installation. Leave this field blank to accept the default setting.
Key Order	keyOrder can be updated only if certificateOperation field is Install/Upgrade,Delete or Troubleshoot. Default: RSA Only
Key Size (Bits)	For this setting that is used for CAPF, choose the key size for the certificate from the drop-down list box. The default setting equals 1024. Other options include 512 and 2048. If you choose a higher key size than the default setting, the phones take longer to generate the entropy that is required to generate the keys. Key generation, which is set at low priority, allows the phone to function while the action occurs. Depending on the phone model, you may notice that key generation takes up to 30 or more minutes to complete. Note The CAPF settings that are configured in the Phone Security Profile window interact with the CAPF parameters that are configured in the Phone Configuration window. Default: 1024
EC Key Size (Bits)	ecKeySize can be updated only if certificateOperation field is Install/Upgrade,Delete or Troubleshoot. Default: 384
Operation Completes By	The completion deadline for the operation (CCYY:MM:DD:HH:MM)

### 23.5.7. View and Update Phone Vendor Config Settings

The **Vendor Config** settings will display if the Field Display Policy (FDP) allows it.

You can access the vendor configuration settings for a phone as follows:

1. In the Admin Portal, go to (default menus) **Subscriber Management > Phones**.
2. On the **Phones** list view, click on a phone to open its settings.
3. On the **Phones** page, locate and then click on **Vendor Config** to open the configuration screen:

Enable or disable settings, as required. Ensure you're setting values correctly for Bulk Loaders, the API, or in custom Configuration Templates, where values must be defined as key-value pairs:

- On CUCM, in some cases the value 0 is "Enabled" and in other cases 0 is "Disabled".
- It is recommended that settings on CUCM are configured manually on a sample phone to the value you want, before exporting the phone. Then use the example settings as the basis for your Bulk Loaders, API, or custom Configuration Templates.
- The required value may change depending on the setting being applied, for example:

To *enable* the "Web Access" for a phone, configure the following:



- Key: `webAccess`
- Value: `0`

To *disable* “Web Access” for a phone, configure the following:

- Key: `webAccess`
- Value: `1`

To *enable* “Settings Access”, configure the following:

- Key: `settingsAccess`
- Value: `1`

To *disable* “Settings Access”, configure the following:

- Key: `settingsAccess`
- Value: `0`

### 23.5.8. Generate Problem Reporting Tool (PRT)

Individual phones can have the Problem Reporting Tool (PRT) triggered to generate PRT log collection on the phone and upload it to the log server configured on the Unified CM in the “Customer support upload URL” parameter at the Enterprise, Profile, or Device level.

1. Select the phone from the **Phones** list view (default menu **Subscriber Management > Phones**):
2. Click the **Generate PRT Phone** action to generate PRT log collection.

### 23.5.9. Sync in Phone Updates from CUCM

After you make changes to any phone model specific data in CUCM, for example by loading a new BAT file, editing phone button templates, security profiles, and so on, then in order to utilize that data in VOSS Automate, you need to do a sync of the CUCM.

Include the following models in the data sync (depending on what you changed):

Models	Notes
<code>device/cucm/PhoneType</code>	Should always be included. This includes the expansion models as well as the phone types.
<code>device/cucm/PhoneButtonTemplate</code>	Include if button templates were changed.
<code>device/cucm/PhoneSecurityProfile</code>	Include if phone security profiles were modified

Perform a full sync or full import to make the changes available in VOSS Automate. However, between full syncs, it is best practice to create a sync setup with a model type list that includes the above model types. This allows you to run an ad-hoc sync with a very limited scope as needed - if changes are made in the CUCM that require a sync.

If adding new phone types to the system, you may also need to edit your device groups and entitlement profiles (if used) to have them show as options to the correct users.

### 23.5.10. Phone Onboarding with Cisco Activation Codes

VOSS Automate supports the Cisco Unified CM (CUCM) capability for device onboarding using Activation Codes. This provides a simplified method to register a new phone in the system. This is supported from CUCM version 12.5 and later.

This feature allows administrators to create phones without MAC addresses and then share automatically generated activation codes with end users via Self-service or email. The end user can then enter the activation code into the physical device to initiate auto registration.

Once the phone has been activated and registered, the correct phone association takes place in VOSS Automate.

For more information on the detailed functionality of the Cisco Activation Code Device Onboarding capability, including supported devices, refer to the Cisco documentation.

The setup of the feature has been incorporated into our various Subscriber/Phone Management capabilities:

- Phones
- Subscribers
- Quick Add Subscriber
- Smart Add Phone

---

**Note:**

- The selected phone type must also be included in the Subscriber's entitlement profile.
  - When a device is added which supports Activation Codes and the option is chosen, CUCM may be slow to respond with relevant Activation Code. In this instance, VOSS Automate will retry fetching the activation code 3 times with a 2 second wait in between. Once the activation code has been received, the retries will stop.
- 

#### Phone Setup and Onboarding Workflow

The high-level setup steps in VOSS Automate for phone onboarding with Cisco Activation Codes are as follows:

1. Initial setup - enabling Phone types for activation code.
2. Per Subscriber/Device - setup of the phone details and generation of the activation code.
3. Provide the activation code to the user for use to onboard the device.

#### Complete the initial setup and enable the phone type(s) for activation code use

1. Login as Customer administrator or higher.
2. Navigate to the hierarchy level of the cluster(s) you want to enable.
3. Enable activation code based registration for a target phone type:
  - a. Go to (default menus) **Apps Management > CUCM > Device Defaults**.
  - b. Click the **Model**, e.g. Cisco 7821 on which you want to enable the phone registration activation code feature. Note the device column in the list view to ensure it is the device type on the right UCM cluster.

- c. Select the **Prefer Act Code Over Auto Reg** check box.
- d. Click **Save**.

### Complete the per Subscriber/Device setup to prepare the phone for onboarding:

1. Once enabled, you can add the phone, using any of the prescribed Subscriber Management methods (see above), making sure to select the **Use Activation Code Onboarding** check box. This will remove the device name as a BATXXXXXXXXXXXX device name will be generated when adding the phone.
2. Once the phone is successfully added, an activation code is generated and displayed along with the code expiry time on the relevant **Phones** form (**Subscriber Management > Phones**).

---

**Note:** The phone activation code must be used to register the phone before the specified expiry date.

---

3. The activation code is available in the end user's Self-service if the device was associated to a user. Alternatively email the activation code to the end user.
4. The end user registers the phone by entering the activation code into the physical device.
5. To see the list of phones that have been setup for activation codes but not yet activated, you can filter the phones list view for device names starting with, BAT, as once they register they have the appropriate device name prefix (e.g. SEP).

## 23.6. Headsets

### 23.6.1. Overview

VOSS Automate supports Cisco headset management for Unified CM (Call Manager, or CUCM) version 12.5 SU3 onwards. See: [Headset Enablement](#). Third-party headset management may also be supported, depending on the headset type and Unified CM version.

Headset metrics are pulled from Unified CM and displayed on an easy to understand, read-only form in an inventory in VOSS Automate.

Headset data can be used for:

- Inventory tracking of assets and usage
- Integration into VOSS Insights for compliance checks, for example, headset firmware versions, correct headsets, etc.

Subscriber or phone headset data can be viewed in VOSS Automate.

Headset templates are also listed and custom templates can be added as required.

## 23.6.2. Headset Inventory

**Note:** Headset details on Unified CM are updated dynamically, for example when a headset is either connected or disconnected from a phone connected to the Unified CM.

To ensure regular headset status updates in VOSS Automate, we recommend that you create a custom data sync and schedule it to run on a daily basis or more frequently if required. See also:

- [Create a Custom Data Sync](#)
- [Add or Update a Schedule](#)

The **Headset Inventory** list view and instance form (default menu **Subscriber Management > Headset Inventory**) will display the latest headset data after you have executed a sync.

There are two ways a headset can be associated with a user:

- a. When connecting the headset to a phone that is associated to a user
- b. When a user logs in to the headset. This method is typically used in an extension mobility environment (on Unified CM version 12.5 SU3). The headset is paired to a phone, which automatically logs the user in to the phone.

As soon as a Cisco USB Headset gets connected to, or disconnected from a phone on the Unified CM, the phone automatically provides details about the headset to the Unified CM.

VOSS Automate pulls this information from Unified CM, and displays it on the **Headset Inventory** form, allowing you to view and track headsets across clusters, providing headset details such as Headset Serial Number, Vendor, Model, Owner, Connected Device Owner, Connection Type, Connected Device Name, and so on.

- **Headset Last Change:** The date and time is the last connected time if a headset is disconnected.
- **Located At:** Derived from the location of the phone to which the headset is connected.

**Note:** For non-Cisco headsets, the Device Name is used as the Serial Number. Using the same non-Cisco headset in multiple phones creates duplicate headset records.

## 23.6.3. Headset Templates

The headset template allows you to associate User Profiles. The **Headset Templates** list (default menu **Subscriber Management > Headset Templates**) shows the following types of headset templates:

- **Standard Default Headset Configuration Template - System default template.** This template contains the headset settings supported by the latest headset firmware installed on your system for all your headset model series. You cannot edit the default settings though you can change the profile configuration setting.
- **System Generated Custom Headset Template -** This template has the headset configuration settings that were manually uploaded to the Unified CM server.
- **Custom Headset Configuration Template -** create customized headset templates as per your deployment needs:
  - a. Clone an existing template.

- b. Rename the template.
- c. Change the configuration as required.
- d. Save it to the desired hierarchy level.

See also [Create a Clone](#).

## Headset Configuration Settings

Field	Description
Name*	Enter a unique name to identify the headset template.
Description	Enter a description that identifies use of the template.
Associated User Profiles	<p>To associate a User Profile to this template, click '+' and select the profile from the drop-down, which displays all User Profiles that are available to use with this headset</p> <hr/> <p><b>Note:</b> By default, all User Profiles are assigned to the Standard Default Headset Configuration Template. To associate a User Profile to a different template, create the new template and assign the User Profile to the new template.</p> <hr/>
Model Specific Settings	
Models	E.g. 521, 522, 531, 532
Model Series	E.g 500
Model Firmware	<p>Select the required firmware version:</p> <ul style="list-style-type: none"> <li>• Remain on current version - choose this option if you want the headset to remain on the existing firmware version, i.e. the headset firmware version is not upgraded to the latest firmware version on the system.</li> <li>• Latest - choose this option if you want to upgrade the headset firmware version to the latest firmware version on the system.</li> </ul>
Firmware parameters	<p>Parameters as set on Unified CM:</p> <ul style="list-style-type: none"> <li>• Name: e.g. SpeakerVolume</li> <li>• Value: integer, e.g. 5</li> <li>• Access: e.g. User</li> <li>• Usage ID: e.g. 32</li> </ul> <p>One or more parameters can be set.</p>

## 23.7. Phone Status Export

### 23.7.1. Overview

The Phone Status Export tool allows you to export the status of Unified CM phones based on selected filters. The exported phone status report can be opened from the **File Management** form and downloaded as a .csv file. The .csv file can be opened as a spreadsheet in Microsoft Excel, where each phone status that matches the configured filters will appear as an individual line.

### 23.7.2. Create and View a Phone Status Report

1. Browse to the required hierarchy where you want to create the phone status report.

---

**Note:** When running the tool from a hierarchy higher than Customer, a Call Manager filter is mandatory.

---

2. From the **Phone Status Export** form (default menu **Subscriber Management > Status Export**):
  - a. Enter the **File name prefix**.
  - b. In the **Filters** section, define the required filters, namely the mandatory Status and Call Manager (Customer hierarchy only) fields as well as the optional **Device Name**, **Directory Number** and **IP Address** fields, noting the following:
    - Status of **None** = all phones that **do not** have a registration status on the API will appear in the phone status report.
    - Status of **Any** = all phones will appear in the phone status report regardless of the phone registration status.
    - **Device Name**, **Directory Number** and **IP Address** fields: only phones that match these filters are displayed in the phone status report. For example if you enter 'BAT' in the **Device Name** field, then only phones with a device name prefix starting with 'BAT' will appear in the report. The filter on **Device Name** text is case insensitive, for example, 'bat' in the filter will match 'BAT'.
3. Click **Save**. Once complete, the phone status report is saved under **File Management**.
4. Select the required phone status report (file-name-prefixXXXX.csv) from the **File Management** form (default menu **Administration Tools > File Management**) and click **Export** (JSON format).
5. From the resultant .zip file, open the .csv file in Microsoft Excel.

The first column on the report reflects the Phone hierarchy, and subsequent columns provide the (Phone) Name, Status, and information such as: cm\_node, ip\_address, DirNumber, DeviceClass, Model, Product, and so on (depending on the selected filters).

## 23.8. Smart Add Phone

### 23.8.1. Overview

The Smart Add Phone feature provides an easy way to add a phone *only to a site hierarchy node* by selecting the Phone Template that matches the required Phone Product. This selected Phone Template then also adds associated default attribute values. Optionally, you can also choose to add one or more lines and a non-default Phone Button Template for the phone.

When a phone is added using the Smart Add Phone feature, the phone details that were added by the phone template can be seen and modified if needed by selecting the phone from **Subscriber Management > Phones**.

If you need a customized Phone Template, the default template can be cloned, renamed and modified from **Customizations > Configuration Templates**. This customization is then available in the **Phone Template** drop-down of the Smart Add Phone feature.

The line defaults are obtained from the Site Defaults doc for the site. The Default CUCM Line Partition must be set as the partition for the site.

---

**Note:** A cloned, custom phone template requires further customization in order to customize the line settings when it is used with the Smart Add Phone feature. For details, refer to the topic on Custom Line Settings for Smart Add Phone Configuration Template in the Advanced Configuration Guide.

---

### 23.8.2. Add a Phone Using Smart Add Phone

The Smart Add Phone feature is *only available at a site hierarchy node*.

1. Log in as an administrator.
2. Go to (default menus) **Subscriber Management > Smart Add Phone**.
3. Choose the site where you want to add the phone.
4. Choose the **Phone Template** value that matches the phone to add. The Phone Product and Protocol values are input automatically and become read-only.
5. Optionally, choose a non-default **Phone Button Template** value for the phone, if one is available.  
You can override the default **Phone Button Template** value by entering a custom value in the **Phone Button Template** field. The entered value will be applied on Unified CM if the Unified CM allows it for that phone type.
6. Complete the device name. Based on the selected phone template, the **Device Name** prefix is added for the phone.
7. Optionally, add one or more lines to associate to the phone. The **INI Enabled** field shows if the Internal Number Inventory is enabled for the site or not and the **Default Line Partition** field indicates which default line partition has been set in the Site Defaults doc.

The Lines input is enabled if the default Route Partition value for the site has been set in the site's Site Defaults Doc.

- If the **INI Enabled** is **YES**, then choose a number from the drop-down list of numbers from the Internal Number Inventory. Numbers that are marked as used, are also shown. Lines that are selected, have additional properties set according to the Site Defaults Doc for the site.
- If the **INI Enabled** field is **NO**, then the list of numbers are those Directory Numbers on Unified CM with the Route Partition matching the site. You can choose a number from the drop-down or add a custom number that is not in the drop-down list, in other words, you can type in a number. Lines that are added have additional properties set according to the Site Defaults Doc for the site.

8. Click **Save**.

9. Go to (default menus) **Subscriber Management > Phones** to view and modify the phone that is added using the Smart Add Phone feature.

Added lines are shown on the **Lines** tab of the **Phones** page. The line labels have the format: `<firstName> <lastName> <number>`, or a part of this format if `<firstName>` or `<lastName>` are not input.

## 23.9. Line Search

The **Line Search** utility enables you to quickly search for all devices and services associated with a selected line.

A **Search Line** drop down of lines is the list of available lines on the Internal Number Inventory (INI) at a selected customer hierarchy and downwards, with used lines indicated as (used). The E164 number associated with the INI is also shown if available.

The devices and services included in the line search are:

- Phones
- Users
- Hunt Groups
- Call Pickup Group
- Device Profile
- Remote Destination Profile
- Voice Mail account

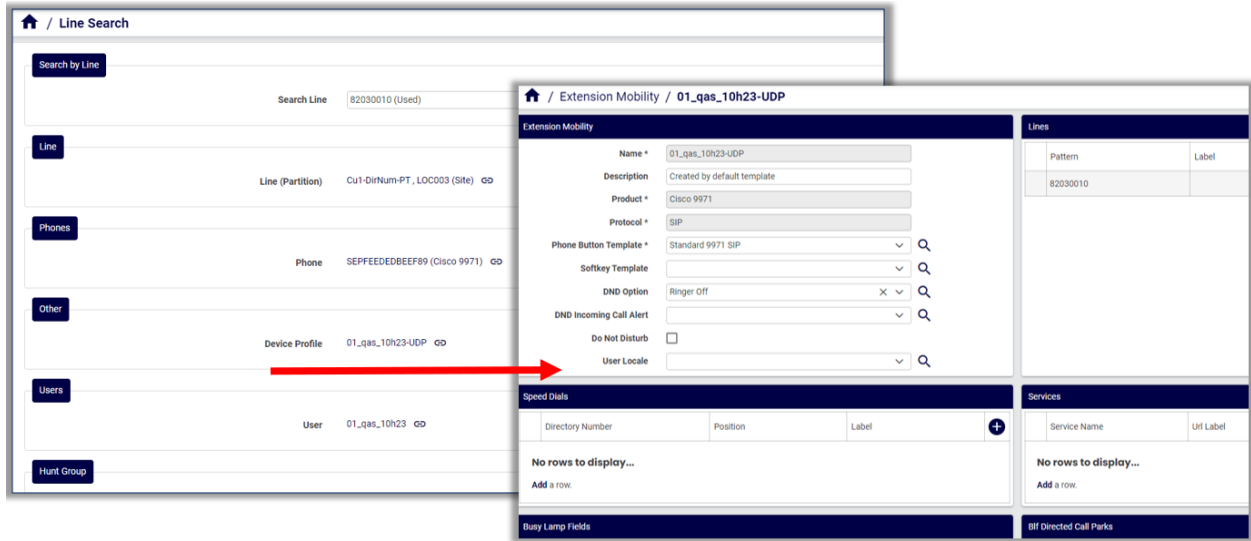
Search results are displayed as a list of grouped identifiers with links that allow you to directly navigate to the individual service or device details, for example, for lines with extension mobility, clicking on the **Device Profile** link opens the **Extension Mobility** management page.

---

**Note:** If the same number is shared by multiple devices/services of the same type, using different partitions, only the first 10 instances will be displayed.

---





## 23.10. Lines

### 23.10.1. Overview

In VOSS Automate you can view, add, edit, and delete the lines (directory numbers) and line configuration of Cisco subscribers.

The screenshot shows the 'Lines' page in the VOSS Automate interface. It features a table with 10 columns: Directory Number, Description, Alerting Name, Route Partition, Calling Search Space, Call Pickup Group, Default Activated Device Name, Usage, and Location. The table contains several rows of data, including directory numbers like 00001, 00002, 00003, 119999, 30953001, 30953002, and 55001001. The interface also includes a sidebar with navigation options like 'Quick Add Subscriber', 'Add Subscriber from Profile', 'Subscribers', 'Move Subscriber', 'Phones', 'Headsets', and 'Phone Status Expert'.

### 23.10.2. Shared Lines

A Cisco Unified Communications Manager (CUCM) line is uniquely defined by the pattern (number) and route partition combination.

Lines with the same pattern but different route partitions are defined as two separate lines, not duplicate lines. A shared line therefore indicates that the same line pattern/route partition combination (not just the pattern) is associated with multiple services.

Shared	Associated with more two or more services.
Not shared	Associated with zero or one service.

The table describes the current services that are used to determine the “shared” status of a line:

CUCM	<ul style="list-style-type: none"> <li>• Devices (phones)</li> <li>• Extension mobility (device profiles)</li> <li>• Single number reach (remote destination profiles)</li> <li>• Hunt lists (hunt pilots)</li> <li>• Call pickup groups</li> <li>• Analog gateways</li> </ul>
Cisco Unity Connection (CUC)	Call handlers

### Assigning Existing, Associated Line (Shared/Not Shared) in QAS

In Quick Add Subscriber (QAS), to update an existing, associated line for a new or existing subscriber, the Line configuration template (CFT) related to the selected Quick Add Group (QAG) must be configured to do so.

The table describes the conditions under which QAS updates a line via an applied QAG Line CFT:

Line is NOT updated via the QAG Line CFT	For existing lines that <i>are</i> associated with multiple services, the line is in a “shared” state, and is NOT updated via the applied QAG Line CFT. If the QAS workflow evaluates the line as “shared”, it skips CFT updates of the line.
Line IS updated via QAG Line CFT	For existing lines that <i>are not</i> associated with any services or are associated with only one service, the line is not in a “shared” state and IS updated via the applied QAG Line CFT.

### 23.10.3. View and Manage Lines

This procedure displays all lines in the list view, exports, moves, or deletes lines, and updates line configuration.

#### Note:

- When CSS filtering is enabled at the customer dial plan, the only calling search spaces (CSS) available are those marked *Class of Service* (see the settings for the site, via the default menus, **Dial Plan Management > Site > Class of Service**). If another CSS is required, you can add custom CSSs in a CSS field if you know the exact syntax.

When CSS filtering is disabled, the available calling search spaces (CSS) are CSSs configured on CUCM.

- For additional details around line configuration parameters, such as partitions and CSS, see the “Provider HCS Dial Plan Management Support Guide”.
- You may, for example, wish to add additional directory URIs and directory URI partitions. Manual configuration must first be done on the CUCM before URIs will function.
- Not all line settings are configured on the **Lines** page. Some line settings, for example, device-specific settings (such as caller ID display, line label, E.164 mask, and associated end user), are configured via (default menus) **Subscriber Management > Phones**.

**Prerequisites:**

- Your system administrator must enable the *number inventory* functionality for your system to allow you to add lines.

If *number inventory* functionality is disabled, you can only select lines from a drop-down of available numbers.

**To view and manage lines:**

1. Log in the VOSS Automate Admin portal.

---

**Note:** If you're logged in as the Customer admin for a specific site, all fields described in this procedure are visible. If you're logged in as Site admin, only a subset of these fields may display.

---

2. Go to (default menus) **Subscriber Management > Lines** to open the **Lines** list view.

---

**Note:** The default configuration template sets the value in the **Usage** column of the list view. For *Intercom DN* and *Intercom Translation* patterns the usage tag value must be specified explicitly as *Device Intercom* and *Translation Intercom* respectively. For all other patterns, such as *Device*, this is a read-only tag.

---

3. View summary details for lines that exist in your system.

4. Choose an option:

- **Move one or more lines?** Select the relevant lines, then click the **Move** icon, and select the target hierarchy (customer or site).
- **Delete one or more lines?** Select the relevant lines, then click the **Delete** icon. Once the delete transaction completes, the line disappears from the list view.

---

**Note:** If lines are deleted while the numbers are in a Cooling or Reserved state, these numbers only become available once the release date is reached.

---

- **Export one or more lines?** Select the relevant lines, then click the toolbar **Export** icon.
- **Edit a line?** Click on the relevant line in the list view to open its configuration page, make the changes you require, and save.

Home / Lines / 00002

**Basic Information**

Directory Number \* 00002

Urgent Priority

Route Partition Cu1S11-Feature-PT

Description DN created with Smart Add Phone

Alerting Name

ASCII Alerting Name

Allow Control of Device from CTI

Calling Search Space Cu1S11-Internal/Only-CSS

Call Pickup Group

**Advanced Information**

External Call Control Profile

Voice Mail Profile Cu1-VMS-AAA/Global-89990999

BLF Presence Group Standard Presence group

User Hold MOH Audio Source

Network Hold MOH Audio Source

Auto Answer Auto Answer Off

Reject Anonymous Calls

**Enterprise Alternate Number**

Enterprise Number Mask

Enterprise Alternate Number Local Route Partition

Enterprise Alternate Number Route Partition

Enterprise Alternate Number is Urgent

Advertise Enterprise Alternate Number Globally

**+E.164 Alternate Number**

+E.164 Number Mask

+E.164 Alternate Number Local Route Partition

+E.164 Alternate Number Route Partition

+E.164 Alternate Number is Urgent

+E.164 Alternate Number

**Common Line Settings**

Hold Reversion Ring Duration (seconds)

Hold Reversion Notification Interval (seconds)

Party Entrance Tone Default

**Line Usage**

- **Add a line?** Click the toolbar Plus icon (+), choose the target site, then fill out the line configuration in the fields on this page. The table describes the type of details required:

Fieldset	Description
Basic Information	<p>Configures basic line settings, such as the directory number (mandatory), a route partition, calling search space, and the call pickup group to which the line belongs.</p> <hr/> <p><b>Note:</b> The <b>Directory Number</b> field is either a drop-down list, or a free text field, or a drop-down containing only the available directory numbers (depending on whether the <i>number inventory</i> feature is enabled or disabled). Only the actual Directory Number is mandatory.</p> <hr/>
Advanced Information	Configures profiles, groups, and other advanced settings for the line, for example, music on hold (MOH) audio source, and voice mail profiles.
Shared Devices	Displays any phones, device profiles, or remote destination profiles associated with a particular line.
Common Line Settings	Configures hold reversion ring duration, hold reversion notification interval, and party entrance tone.
AAR Settings	Defines whether automated alternate routing (AAR) voicemail is enabled, and configures the AAR destination mark, AAR group, and whether to retain the destination in the call forwarding history.
Park Monitoring	Defines whether the line is enabled for external and internal voice mail, configures external and/or internal destinations, internal and/or external calling search space (CSS), and reversion timer.
Call Forwarding	Configures all call forwarding settings for this line.
Line Usage	Details for devices and subscribers where the line is used. Includes links to the subscriber, profile, or phones where the line is used.

#### 5. Save your changes.

All new and updated lines and their settings also reflect in CUCM. You can verify the configuration via (default menus) **Administration Tools > Transaction**.

## 23.11. Intercom Lines

### 23.11.1. Overview

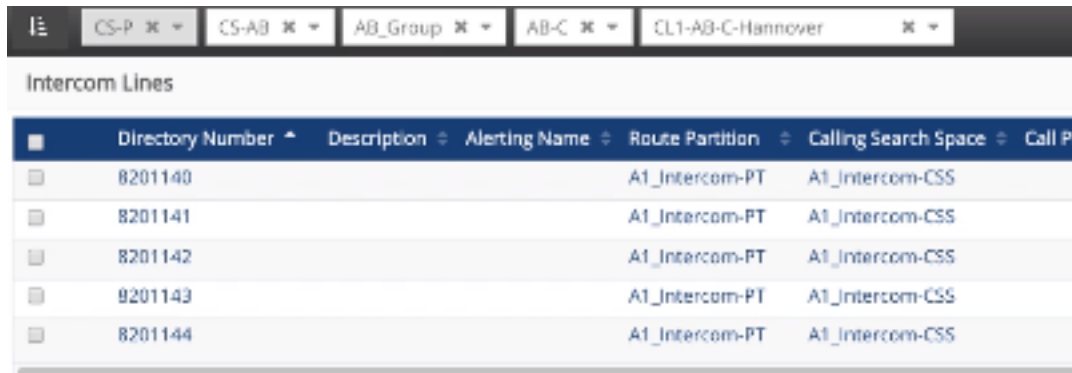
The Intercom Lines feature allow you to manage Intercom lines at a site level independently of the management of lines at a site.

Intercom lines are associated from phones or subscribers - they can then be set up and then associated to phones and subscriber phones simply by first selecting the Intercom Route Partition.

## 23.11.2. Managing Intercom Lines

When Intercom lines are set up, administrators can navigate to a site and access the **Intercom Lines** menu under the **Subscriber Management** menu for the site.

On the Intercom Lines page you can view a list of Intercom lines, and add, delete or modify Intercom lines.

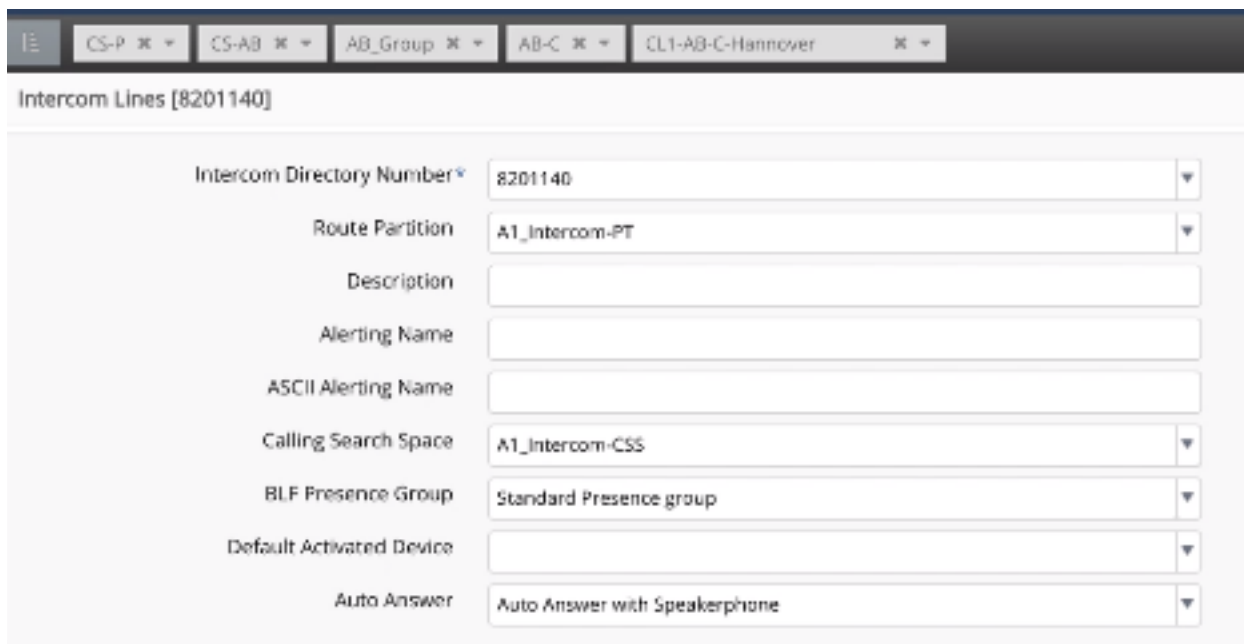


The screenshot shows a web interface with a breadcrumb trail: CS-P > CS-AB > AB\_Group > AB-C > CL1-AB-C-Hannover. Below the breadcrumb is the heading "Intercom Lines". A table lists five intercom lines with columns for Directory Number, Description, Alerting Name, Route Partition, Calling Search Space, and Call Plan.

Directory Number	Description	Alerting Name	Route Partition	Calling Search Space	Call Plan
8201140			A1_Intercom-PT	A1_Intercom-CSS	
8201141			A1_Intercom-PT	A1_Intercom-CSS	
8201142			A1_Intercom-PT	A1_Intercom-CSS	
8201143			A1_Intercom-PT	A1_Intercom-CSS	
8201144			A1_Intercom-PT	A1_Intercom-CSS	

The Intercom lines configuration screen is simpler than the Lines configuration page, and shows only relevant fields.

**Note:** Intercom lines should not be managed from the **Lines** menu.



The screenshot shows the configuration page for Intercom Line [8201140]. The breadcrumb trail is: CS-P > CS-AB > AB\_Group > AB-C > CL1-AB-C-Hannover. The form contains the following fields:

- Intercom Directory Number\*: 8201140
- Route Partition: A1\_Intercom-PT
- Description: (empty)
- Alerting Name: (empty)
- ASCII Alerting Name: (empty)
- Calling Search Space: A1\_Intercom-CSS
- BLF Presence Group: Standard Presence group
- Default Activated Device: (empty)
- Auto Answer: Auto Answer with Speakerphone

When adding or modifying Intercom lines:

- The **Route Partition** drop-down only shows Intercom partitions.
- The **Calling Search Space** drop-down only shows Intercom calling search spaces.
- For **Default Activated Device**, select the supported device from the drop-down list.

- The **Auto Answer** drop-down only shows supported options.
- If the **Description** field is left blank, it takes a default value “Intercom Line”.

### 23.11.3. Associating Intercom Lines to Phones

1. Log in to the Admin Portal.
2. Choose the relevant site.
3. Go to (default menus) **Subscriber Management > Phones**.
4. On the **Phones** configuration page, select the **Lines** tab.
5. To associate Intercom lines, first specify an Intercom partition for the **Route Partition Name**.

On the **Line** page, view supported Intercom lines fields to be configured.

The screenshot shows the 'Phones' configuration page with the 'Lines' tab selected. A 'Line' configuration window is open, displaying a list of intercom lines. The 'Pattern\*' field is empty. The 'Route Partition Name' field is set to '8201140 %494074371140'. The 'E164Mask' field is set to '8201142 %494074371142'. The 'Label' field is set to '8201143 %494074371143'. The 'Display' field is empty. The 'Display Ascii' field is empty. The 'Speed Dial' field is empty.

Field	Value
Pattern*	
Route Partition Name	8201140 %494074371140
E164Mask	8201142 %494074371142
Label	8201143 %494074371143
Display	
Display Ascii	
Speed Dial	

- The **Pattern** drop-down *only* shows existing Intercom lines. No new lines can be added.
- Intercom and non-Intercom lines can both be associated to a single phone.
- Associated Intercom lines will also show as “used” in the list view of the **Directory Number Inventory** menu under **Dial Plan Management** and its **Description** in the list will also show as “Intercom Line”.
- Deleting the phone on the **Phones** list view will then also show the Intercom line as not in use.

### 23.11.4. Intercom Lines in Subscriber Management

1. Log in to the Admin Portal.
2. Choose the relevant site.
3. Go to (default menus) **Subscriber Management > Subscribers**.
4. When adding a phone to a subscriber, to associate an Intercom line to the phone on the **Phones** tab, also first specify an Intercom partition for the **Route Partition Name**.

View supported Intercom line fields to be configured.

- The **Pattern** drop-down *only* shows existing Intercom lines, including those in use.
- No new lines can be added as a part of Subscriber management - they are added on the **Intercom Lines** menu.
- Associated Intercom lines will also show as “used” in the list view of the **Directory Number Inventory** menu under **Dial Plan Management** and its **Description** in the list will also show as “Intercom Line”.
- Deleting the phone on the **Phones** list view will then also show the Intercom line as not in use.

## 23.12. Agent Lines

### 23.12.1. Add an Agent Line (Phone or Device Profile)

#### Prerequisites:

In order to have an application user available, add a Contact Center server and service:

1. Under **Services > Contact Center > Servers** (default): add a server.  
Two SIP Trunks are needed, a CVP and CUBEE on the server.
2. Under **Services > Contact Center > Service** (default): add a service using the above server. This step will create the application users needed when adding an Agent Line.

#### Perform these steps:

1. In the Admin Portal, go to (default menus) **Subscriber Management > Agent Lines**.
2. On the **Agent Lines** form, click **Add** to add a new agent line.
3. Complete the mandatory fields, consider the following:
  - Device Type\*
    - Phone, or
    - Device Profile (Extension Mobility)
  - Profile User\* (Device Profile device types only)  
Drop-down displays only users who have an extension mobility profile.
4. Click **Save** to add the agent line.



## 23.13. Voicemail

### 23.13.1. Overview

VOSS Automate allows admin users to add, update, or delete Cisco Unity Connection (CUC) voicemail accounts (voicemail users), and their associated voicemail services, via (default menus) **Subscriber Management > Voicemail**.

---

**Note:** Optionally (depending on your deployment), VOSS Automate supports a Unity SIP integration feature that can be used in place of your existing voicemail service. See [Introduction to Unity SIP Integration](#)

---

The screenshot displays the configuration page for a voicemail system. The main sections are:

- CUC Account:** Fields for Voicemail Account Name, First Name, Last Name, Email Address, Voicemail Number, Time Zone, Language, and Language That Callers Hear.
- Alternate Extensions:** A table with columns for Number, Phone Type, Name, and Partition Name. It currently shows 'No rows to display...'.
- Message Actions:** Dropdown menus for Voicemail, Email, Fax, and Receipt, all set to 'Accept the Message'. A field for Relay Address is also present.
- Credentials:** Fields for PIN and Credentials, with checkboxes for 'Locked by Administrator', 'Call Change', 'PIN must Change', 'Does not Expire', and 'PIN Locked'.
- Notification Devices:** Multiple tables for different device types:
  - SMTP:** Table with columns for Display Name, Active, To (Email), From (Phone Number), and Message to Send (Text).
  - Phone:** Table with columns for Name, Active, and To (Phone Number).
  - Pager:** Table with columns for Name, Active, and To (Phone Number).
  - IM:** Table with columns for Name, Active, To, From, and Send (Text).
  - HTML:** Table with columns for Name, Active, To (Email), Call Back Number, and Notification Template.
- Caller Input:** A table with columns for Object ID, Call Handler, Touchtone Key, Ignore Additional Input (Locked), Action, Extension or URI, Description, Transfer Type, Rings to Wait for, Target Handler, Object ID, and Target Conversation.

**Important:** Users and associated services added through VOSS Automate are also added to Cisco Unity Connection (CUC) voicemail system.

If a user identifier is updated on the CUC integrated LDAP server, the alias update on the CUC server is deferred to the next LDAP-CUC sync. The alias change is then synced in to VOSS Automate in the VOSS Automate-CUC sync that follows the LDAP-CUC sync. The updated alias displays in the CUC Account

---

settings, in the **Voicemail Account Name** field.

---

### Related Topics

- Call Handler (Auto Attendant) in the Core Feature Guide

## 23.13.2. Unified Messaging Account

Unified Messaging (Single Inbox) is a Cisco Unity Connection (CUC) service that enables users to have a single inbox in their e-mail client that is used for their e-mail as well as their Voicemail.

---

### Note:

- VOSS Automate only supports either the Exchange or Office 365 Unified Messaging Service, Meeting-Place is **not** supported.
  - Only **one** Unified Messaging Account (Single Inbox) per Subscriber can be added by VOSS Automate. However, if an existing Cisco Unity Connection subscriber is imported into VOSS Automate already has more than one account, then all associated services are imported, and will be available in VOSS Automate.
  - Administrators must manually sync VOSS Automate with Cisco Unity Connection to obtain the required Unified Messaging Services. A manual sync must also be done whenever changes are made to the Cisco Unity Connection server.
  - VOSS Automate does not automatically integrate Cisco Unity Connection Servers with Microsoft Exchange, the details for that process can be found here: [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/11x/unified\\_messaging/b\\_11xcucumgx.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/11x/unified_messaging/b_11xcucumgx.html)
- 

The following CUC settings, set to 'True' (On), are included in Unified Messaging:

- EmailAddressUseCorp - Use Corporate Email Address
- EnableMailboxSynchCapability - Synchronize Connection and Exchange Mailboxes (Single Inbox)

The following two models were added to the Model Type List **CUCXN Overbuild Resources** for Unified Messaging:

- device/cuc/ExternalService
- device/cuc/ExternalServiceAccount (the actual Cisco Unity Connection User's model which contains their Unified Messaging Account)

VOSS Automate also added a new Model Type list **CUCXN Unified Messaging Services**, and added the same two Models: device/cuc/ExternalService and device/cuc/ExternalServiceAccount

### 23.13.3. Add, Edit, or Delete a Voicemail Account

#### Prerequisites:

- The admin adding the voicemail account must be at the relevant Provider, Customer, or Site level.
- A CUC Server (VM Server) must already be provisioned at the Provider or Customer level.
- A Network Device List (NDL) and NDLR points must exist.

#### Perform these steps:

1. In the VOSS Admin Portal, go to (default menus) **Subscriber Management > Voicemail**.
2. From the summary list view, choose an option:

- **Edit an existing voicemail account**

To edit an existing voicemail account, click on an account in the list, make your changes, and save.

---

**Note:** Edits may involve updating options configured when adding the account, or to add new voicemail services, for example, to add additional alternate extensions and/or notification devices.

---

- **Delete an existing voicemail account**

To delete an existing voicemail account, select the relevant account in the list, or click on it to open its configuration screens, then click the **Delete** button.

---

**Note:** When deleting a voicemail account:

- All elements associated with the voicemail account are deleted.
  - Modular Delete workflows can be carried out as a part of a Modify workflow.
  - When deleting a voicemail account at the Site level, the related CUCM Line's Park Monitoring and CFWD settings are disabled accordingly.
  - When deleting a voicemail account at the Customer level (that is, recently synced from CUC but not yet moved to Site level), the related CUCM Line's Park Monitoring and CFWD settings *are not disabled*.
- 

- **Add a new voicemail account**

To add a new voicemail account, click the Plus (+) icon, then choose a site from the hierarchy picker. Go to the next step to configure the new voicemail account.

3. At **CUC Account**, configure CUC account details, such as voicemail account name (the subscriber), voicemail number, and the language the caller hears. For details, see [Unified Messaging Account](#)

---

#### Note:

- If a user identifier is updated on the CUC integrated LDAP server, the alias update on the CUC server is deferred to the next LDAP-CUC sync. The alias change is then synced in to VOSS Automate in the VOSS Automate-CUC sync that follows the LDAP-CUC sync. The updated alias displays in the CUC Account settings, in the **Voicemail Account Name** field.
- The **Voicemail Number** drop-down only shows numbers associated to the selected subscriber (chosen for voicemail account name).
- Email address is auto-populated when selecting an existing subscriber.

- Click the Plus icon (+) at **Unified Messaging Account** to add a unified messaging service. See [Unified Messaging Account](#). Once saved, the summary header is the user's email address. It is only possible to add one CUC messaging account per subscriber in VOSS Automate.

To change from one Unified Messaging Account type to another, delete the existing entry and click **Save**. Then add the new Unified Messaging Account type in the **Unified Messaging Service** field.

4. At **Alternate Extensions**, add alternate extensions available to the CUC voicemail user, if applicable.
  - Click the Plus icon (+) at **Alternate Extensions**.
  - Enter the number, choose a phone type and partition name, and specify a name for the alternate extension.

---

**Note:** Once you've saved these changes you can log in to Cisco Unity Connection, choose the user you updated, and go to **Edit > Alternate Extensions** to view the alternate extension configured in VOSS Automate.

5. From **Alternate Extension** choose the Partition from the drop-down and click **Save**.
6. At **Message Actions**, define how incoming voicemail, email, fax, and receipt messages are handled. If the selected message action involves relaying the message, enter a valid email address in the **Relay Address** field.

---

**Note:** You can accept the default message actions and update them later.

7. At **Credentials**, configure a password and PIN.

---

**Note:** The admin user configuring the account can lock these credentials or require the user to change the credentials on first login. The CUC user password template and CUC user PIN template in the user's Quick Add Group (QAG) are applied. See [Quick Add Subscriber Groups Default Model](#).

8. At **Notification Devices** tab, add devices used to notify this CUC user of voicemails sent to them.

---

**Note:**

- While the system automatically provisions default notification devices, you can add additional devices when adding a voicemail account.
- SMS notification is only available if an SMPP Provider has been added on the relevant Voicemail server.

9. At **Caller Input**, click on the required key (\*, #, or 0 to 9), then select an action from the drop-down to associate caller input keys to specific actions (to configure default caller input keys). See [Caller Input Tab](#).

---

**Note:**

- The **Caller Input** settings display only once the CUC account (including voicemail account name) has been created and saved.

- Additional fields are exposed when choosing certain options. For example, when you choose the **User with Mailbox** call action, the **User with Mailbox** and **Transfer / Greeting** fields are exposed.

10. Save your changes to add or update this voicemail account.

**Note:** Once you've added a voicemail service to a subscriber, the lines used by any devices associated with the subscriber are updated to reflect the proper call forward and voicemail profile settings to enable the following buttons: **Call Forwarding to Voicemail** and **Voicemail**.

## 23.14. Extension Mobility

### 23.14.1. Overview

Extension mobility (EM) profiles (also known as roaming profiles), allow users to log onto a phone in another location and the phone automatically adopts the profile for that user.

An EM profile is required for users who move between locations on a regular basis, or for users in an organization or location, who have been assigned an extension mobility profile rather than a permanent phone.

VOSS Automate provides three ways to create, manage, and associate extension mobility profiles:

- Add an EM profile to a subscriber when adding a subscriber in a standard add process (see [Cisco Subscribers](#))
- Add a subscriber using Quick Add Subscriber, and choose an EM profile
- Add a standalone EM profile (see [Add an Extension Mobility Profile](#))

### 23.14.2. Add an Extension Mobility Profile

Standalone extension mobility (EM) profiles allow administrators to create and manage all EM profiles at the specified organization level.

- Add or update a subscriber's extension mobility (EM) profile via **Subscriber Management > Subscribers**. From the list view, open a subscriber, and select the **Extension Mobility** tab. See [Add a Subscriber](#).
- Add or update a standalone EM profile via (default menus) **Subscriber Management > Extension Mobility**. From the list view, choose an EM profile to open its configuration screen, and select the **Extension Mobility** tab.

When adding or editing EM profiles, you can personalize the profile for each user.

The table describes common rules for adding an extension mobility (EM) profile:

Extension Mobility tab	Name must be unique. The name cannot be the same as a device name on Unified CM since both are device types. This field is read-only when editing an EM profile.
Lines tab	<ul style="list-style-type: none"> <li>• Extension mobility (EM) can be associated to multiple subscribers. If the <b>Show Numbers belonging to this Subscriber</b> option is chosen as the <b>Inventory Filter</b>, only the directory numbers associated to the first subscriber on the <b>Subscribers</b> tab are displayed.</li> <li>• Line settings can only be changed for the original line, not the clones.</li> <li>• All line settings changed for a line automatically apply for the clones of that line (if any).</li> </ul>
Speed Dials tab	Allows you to manage the speed dial numbers associated with the EM profile.
Services tab	Extension mobility (EM) profiles can be subscribed, unsubscribed, and re-subscribed to IP Phone Services such as Intercom Calls, Login/Logout, or SingleWire. Once you choose the IP phone service, the system retrieves the URL and a custom parameter (if any, for example, Ext1 and Ext2) from device/cucm/IpPhoneService and populates the <b>URL</b> field.
Subscribers tab	Allows you to associate the EM profile to one or more subscribers. You can also disassociate an EM profile from a subscriber by clearing the name from the <b>Username</b> drop-down, and saving the change. The <b>Subscriber</b> link on an existing EM profile links to the associated subscriber's <b>Extension Mobility</b> form (default menu <b>Subscriber Management &gt; Subscribers</b> ).

### 23.14.3. Delete an Extension Mobility Profile

You can delete a standalone extension mobility (EM) profile via the list view (default menus, **Subscriber Management > Extension Mobility**).

When deleting an EM profile, the following elements are automatically removed/cleared:

- Speed dials
- Busy lamp fields
- Service URL's
- IP phone service subscriptions

## 23.15. Single Number Reach

### 23.15.1. Overview

Single number reach (SNR) is the remote destination number configured for a subscriber.

**Note:** While you can add one or more Remote Destination Profiles (RDP) to a subscriber, only one RDP may be added to a subscriber's SNR service.

### 23.15.2. View and Manage Single Number Reach

This procedure displays, moves, exports, and updates existing single number reach (SNR) remote destination profiles (RDPs), and adds new RDPs for SNR. For example, you can configure ring schedules, choose a mobility profile and a single number reach voicemail policy, or set up *answer too soon* / *answer too late* timers.

#### Pre-requisites:

- The subscriber must have been assigned a remote destination profile (RDP) and an entitlement profile that allows SNR.

#### To view, add, or update a subscriber's SNR:

- In the VOSS Automate Admin Portal, go to (default menu) **Subscriber Management > Single Number Reach** to open the **Single Number Reach** list view.

**Note:** You can also view a multi vendor subscriber's SNR details (line and mobile number) via (default menus) **User Management > User Services > Multi Vendor Subscribers**, then click the Edit icon (wrench) to update their SNR settings, or click the Delete icon to remove their SNR. See [Multi Vendor Subscribers](#).

Profile Name	Description	User ID	Device Pool	Calling Search Space	Rerouting Calling Search Space	Located At	Device
user	Filter	Filter	Filter	Filter	Filter	Filter	
user0001001-RDP		user0001001	Cu1S11-DevicePool	Cu1S11-InternalOnly-CSS	Cu1S11-InternalOnly-CSS	LOC001_Site	Dedicated CUCM, 192.168.100.15, 8443, hcs-CS-P-CS-NB-AAAG
user0002001-RDP		user0002001	Cu1S11-DevicePool	Cu1S11-InternalOnly-CSS	Cu1S11-InternalOnly-CSS	LOC001_Site	Dedicated CUCM, 192.168.100.15, 8443, hcs-CS-P-CS-NB-AAAG

- View existing single number reach (SNR) profiles.
- Choose an option:



- **Delete** - to delete one or more single number reach (SNR) instances, select the relevant SNR instances, then click **Delete**.
- **Move** - to move one or more single number reach (SNR) instances, select the relevant SNR instances, then click **Move**. Choose the target hierarchy.
- **Export** - to export one or more single number reach (SNR) instances, select the relevant SNR instances, then click **Export**.
- **Edit** - to edit a single number reach (SNR) instance, click on the relevant instance to open its configuration page. Update the instance, then click **Save**.
- **Add** - to add a single number reach (SNR) instance, click the Plus icon (+) to add a new record, then fill out configuration details, and click **Save**.

The screenshot shows the configuration page for a Single Number Reach instance. The breadcrumb is "/ Single Number Reach / user00021001". The fields are as follows:

- User ID: user00021001
- Profile Name: user00021001-RDP
- Description: (empty)
- Device Pool: Cu1S11-DevicePool
- Calling Search Space: Cu1S11-InternalOnly-CSS
- Rerouting Calling Search Space: Cu1S11-InternalOnly-CSS
- Privacy: Default
- Dnd Status:
- User Locale: English United States
- Network Locale: (empty)
- Lines: A list with one entry: 82010001 Cu1S11-Feature-PT
- Remote Destinations: A list with one entry: 9191982010001 9191982010001-RD

- Mandatory. Choose a user ID where you want to assign the SNR profile.

---

**Note:** The subscriber must have **Enable Mobility** enabled. You can verify via, default menus, **Subscriber Management > Subscribers**, click on the subscriber, and select the **User** tab.

---

- Mandatory. At **Profile Name**, fill out a remote destination profile (RDP) name, which must be their user name, followed by "-RDP". For example: *jsmith-RDP*.

---

**Note:** You can use a maximum of 50 characters in the RDP name. Valid characters include letters, numbers, dashes, dots (periods), spaces, and underscores.

---

- Optional. Fill out a description for the RDP name.
- Optional. Choose the relevant device pool.

---

**Note:** The device pool defines sets of common characteristics for devices, such as region, date/time group, softkey template, and MLPP information.

---

- Optional, if relevant to your scenario. At **Calling Search Space**, choose the Calling Search Space (CSS) to be used for routing mobile voice access or enterprise feature access calls.

---

**Note:** Calling Search Space (CSS) is relevant here only when you're routing calls from the remote destination, which specifies the outbound call leg to the dialed number for Mobile Voice Access and Enterprise Feature Access calls.

---

- Optional, if relevant to your scenario. At **Rerouting Calling Search Space**, choose a calling search space to be used to route Cisco Unified Mobility calls.

---

**Note:** Ensure that the gateway configured for routing mobile calls is assigned to the partition that belongs to the Rerouting Calling Search Space.

Cisco Unified Communications Manager (CUCM) determines how to route calls based on the remote destination number and the Rerouting Calling Search Space.

The Rerouting Calling Search Space setting applies only when you are routing calls to the remote destination or mobility identity, which specifies the outbound call leg toward the remote destination or mobility identity when a call comes in to the user enterprise number. Cisco Unified Mobility calls do not get routed to the dual-mode mobility identity number that corresponds to the dual-mode mobile phone number if the device associates with the enterprise WLAN and registers with CUCM.

Cisco Unified Mobility calls get routed to the dual-mode mobility identity number only when the device is outside the enterprise.

---

- Mandatory. At **Privacy**, select the relevant privacy option for the RDP. Options are Off, On, Default.

---

**Note:** When selecting *Default* (the default value), the setting matches the value of the Privacy Setting service parameter. If you change and save the value for **Privacy**, you must return to the Remote Destination Profile Configuration window for a remote destination profile that specifies *Default* and save your changes.

You can't transfer a call from a cell phone to a desk phone if the value for **Privacy** is *On*, and "Enforce Privacy Setting on Held Calls" is *True*.

---

- Select **Dnd Status** to enable *Do not disturb* on the phone, else, leave this checkbox clear.
- At **User Locale**, choose the locale associated with the phone user interface.

---

**Note:** User locale defines phone details that supports users, such as language and font, on phone models that support localization. When selecting a locale other than English, ensure the locale installer is installed. Refer to the Cisco Unified Communications Manager documentation for locale installation.

---

- At **Network Locale**, choose the location of the network.
- At **Lines**, click the Plus icon (+) to add lines (one or more).

Lines	
82012000 Cu1Si1-Feature-PT	
Inventory Filter	Default
Pattern *	82012000 (Used)
Route Partition Name	Cu1Si1-Feature-PT
Position	1
E164Mask	
Label	
Display	
Display Ascii	
Recording Media Source	Gateway Preferred
Enduser	+

**Note:** Lines you add are listed by their unique ID.

The table describes the line configuration settings:

Inventory filter	Options are: <ul style="list-style-type: none"><li>* Default (default)</li><li>* Show Unused Numbers (Site Only)</li><li>* Show Unused Numbers</li><li>* Show Unused Numbers with Associated E164's ((Site Only)</li><li>* Show Unused Numbers with Associated E164's</li><li>* Show Used Numbers (Site Only)</li><li>* Show Used Numbers</li><li>* Show Numbers belonging to this Subscriber</li></ul>
Pattern	Mandatory.
Route partition name	Mandatory.
Position	Integer.
E164 Mask	String.
Label	String.
Display	String.
Display Ascii	String.
Recording media source	Options are: <ul style="list-style-type: none"><li>* Gateway Preferred (default)</li><li>* Phone Preference</li></ul>
Enduser	Add associated end users, one or more, and select their user ID.

– At **Remote Destinations**, click the Plus icon (+) to add remote destinations (one or more) associated with the profile.

The table describes the remote destination settings:

Setting	Description
Name	Fill out a name to identify the remote destination or mobile identity.
Destination Number	Mandatory. The PSTN telephone number for the destination, including the area code.
Mobile Smart Client Name	Not relevant for dualmode phones.
Delay Before Ringing Timer	Mandatory. Default is 4,000 milliseconds. Enter the time that elapses before the mobile phone rings when a call is extended to the remote destination. Range: 0 - 30,000 milliseconds. Note that when using a hunt group, lines ring only for a short period of time. You may need to manipulate the <i>Delay Before Ringing Timer</i> setting and make it zero to allow a remote destination call to be established, ring, and answer, before the hunt list timer expires and pulls the call back.
Answer Too Soon Timer	Mandatory. Default is 1,500 milliseconds. Enter the minimum time, in milliseconds, that CUCM requires the mobile phone to ring before answering the call. This setting accounts for situations where the mobile phone is switched off or is not reachable, in which case the network may immediately divert the call to the mobile phone voice mail. If the mobile phone is answered before this timer expires, Cisco Unified Communications Manager pulls the call back. Range: 0 - 10,000 milliseconds Default: Default: 1500

Setting	Description
Answer Too Late Timer	Mandatory. Default is 19,000 milliseconds Enter the maximum time, in milliseconds, that Cisco Unified Communications Manager allows for the mobile phone to answer. Range: 0 and 10,000 - 300,000 milliseconds If the value is set to zero, the timer is not started.
Mobility Profile	The mobility profile you want to use for this remote destination.
Enable Unified Mobility	

Enable Mobile Connect	Defines whether to allow an incoming call to ring your desk phone and remote destination at the same time. Default is True
Mobile Phone	Defines whether to have calls that the desk phone answers to be sent to a mobile phone as the remote destination. Set to True to ensure that, if Send Call to Mobile Phone is specified (by using the Mobility softkey for remote destination pickup), the call is extended to this remote destination. Not relevant for dual-mode phones that are running SIP nor to dual-mode phones that are running SCCP, such as the Nokia S
Line Association	The line association for this remote destination. The line to be associated must already be added to the remote destination profile. All directory numbers specified must already exist in the database For each line you add, choose the Pattern (a directory number, which is already associated to RDP), Route Partition Name.
Single Number Reach Voicemail Policy	Choose a policy to define how mobile device users answer calls that terminate on a remote destination (RD). Users have a voice mail box for their mobility if the RD call reaches an external voice mail system. Options are: <ul style="list-style-type: none"> <li>* Use System Default (default)</li> <li>* Timer Control</li> <li>* User Control Note</li> </ul> User Control works only when <i>Enable Enterprise Feature Access</i> is set to True.
Enable Extend and Connect	Disable if you wish to delete Extend and Connect

## Dial Via Office Reverse Voicemail

Define how dual mode device users answer Dial-via-Office Reverse (DVO-R) calls that terminate on the Mobile Identity (MI). Allows users with a single voicemail box for their mobility, if the RD call reaches an external voice mail system. Options are:

- \* Use System Default (default)
- \* Timer Control
- \* User Control

## Client Services Framework or CTI Remote Device

ctiRemoteDeviceName tag will be used to associate either CTI Remote Device or a Cisco Spark Remote Device with a Remote Destination.

## Ring Schedule

Manage ring schedules (maximum of 7 members in the schedule) for single number reach, to define working days and hours, for one or more days of the week. These fields display only when the CUCM server version is v11.5 and up. Only ring schedules added via the Admin Portal can be managed in the Admin Portal. Ring schedules added via Self-service can only be managed in Self-service.

The screenshot displays the configuration page for Single Number Reach for user JohnD000. The page is organized into several sections:

- Answer Too Soon Timer \***: 1500
- Answer Too Late Timer \***: 19000
- Mobility Profile**: (Dropdown menu)
- Enable Unified Mobility**:
- Enable Mobile Connect**:
- Mobile Phone**:
- Line Association**: 82012000 Cu1-DirNum-PT
- Single Number Reach Voicemail Policy**: Use System Default
- Enable Extend And Connect**:
- Dial Via Office Reverse Voicemail**: Use System Default
- Client Services Framework or CTI Remote Device**: (Dropdown menu)
- Ring Schedule**:
  - Tue : 09:00 - 12:00
  - Mon : 00:30 - 01:00
  - Thu : 00:30 - 07:30 (Selected)

The selected ring schedule (Thu : 00:30 - 07:30) is expanded to show the following details:

- Day**: Thu
- Start Time**: 00:30
- End Time**: 07:30

## 23.16. Add Device to User

This procedure associates an existing phone or device profile to an existing user.

1. Log in to the Admin Portal, then go to (default menus) **Subscriber Management > Add Device to User**.
2. At the **Username** drop-down, choose a user.
3. At **Device Type**, choose device (association type), either **Phone** or **Device Profile**.
4. At **Device Name**, choose an option from the drop-down. Options depend on the device type you selected.

---

**Note:** Phones and device profiles available in the drop-down are only those that are currently unassociated (phones that don't have an owner, or un-managed device profiles).

---

5. Click **Save**.

The device is added to the user as a controlled device and the device itself is updated with the owner ID and line owner, as applicable.

## 23.17. Move Phones

provider

### 23.17.1. Overview

You can move phones between sites only if they are not assigned to users.

Moving a phone between sites handles the situation where a phone is either physically moved or logically assigned to a different site.

If a phone is assigned in the Associated Devices list of a CUCM user, the phone is moved during a user move. See [Move Users](#)

#### Restrictions that apply when moving phones

You can only move phones when the following conditions are met:

- The phone you wish to move must not be assigned to a subscriber
- Phones can only be moved from one site to another site:
  - Phones can't be moved from a customer to a customer.
  - Source and target site must reference the same NDL
  - Source and target site must have the same type of dial plan
  - Source and target site must have the same country

When moving a phone with an intercom line, the line is not moved or updated.



### 23.17.2. Move a Phone

This procedure moves one or more phones.

1. Log in as a provider, reseller, or customer administrator.
2. Set the hierarchy path to the customer whose phones you are moving.
3. Go to (default menus) **Subscriber Management > Move Phones**.

---

**Note:** Alternative step: Go to (default menus) **Overbuild > Move Phones**. The procedure is the same regardless of the menu path you use to access the **Move Phones** page.

---

4. At **Action**, choose an option:
  - Move phones by name (bulk move):
    - Choose the source hierarchy (site from where you're moving the phones).
    - Choose the target hierarchy (site).
    - If you're moving all phones, select **Move All Phones**. Alternatively, select the phones to move.
 

Click the Plus icon (+) at **Phones**, then choose a phone. You can type the first part of a phone name to filter the list. Repeat this step to choose additional phones to move.
    - Click **Save** to move the phones.
  - Move phone by name (move one phone):
    - Choose the phone.
    - Choose the target site.
    - Click **Save** to move the phone.
5. To verify that the phone or phones were moved to the correct target site, go to (default menus) Choose **Subscriber Management > Phones**.

## 23.18. Moving Phones from Site to Site

### provider

As an administrator, you can move phones from one site to another. Certain conditions must be met for a site-to-site move to succeed.

When you move a phone between sites, VOSS Automate checks the following conditions:

- The source and target sites must reference the same NDL.
- The source and target sites must have the same country configured.
- The source and target sites must have the same type of site dial plan deployed.
- The phones are assigned to subscribers or not
- The phones are under same customer or not
- The phones are moving between sites or not

**Note:** Quick Add Subscriber with phone/line/EM/SNR/voicemail can be added to site and moved across the sites within the same country.

---

### Models and Relations Moved (SLC)

For moves between sites with SLC type dial plans:

- device/cucm/Phone (includes device/cucm/Line)
- 

**Note:**

- Lines are disassociated from the phone
  - Warnings are logged for any Lines associated with the phone
- 

### Models and Relations Moved (Non-SLC)

For moves between sites with non-SLC type dial plans:

- device/cucm/Phone
  - device/cucm/Line
  - device/cucm/InternalNumberInventory
- 

**Note:** Warnings are logged for any Lines associated with:

- an E164 Inventory
  - a Call Pickup Group
  - a Hunt Group
  - a Remote Destination
- 

### Moving Phones Between Non-SLC Sites with a DNR Configured

For moves between non-SLC sites with directory number routing (DNR) configured at *either* site, a warning appears stating that any lines associated to the phone being moved may not work correctly unless you take one of the recommended actions provided. See the Advanced Configuration Guide to perform the first recommended action.

---

**Note:**

- To see warning messages navigate to **Overbuild > Log Messages > Phone Move Logs**
  - Movement of phones from Non-SLC to Non-dial plan site will not dissociate the lines, but movement from SLC to Non-dial plan site will dissociate the lines.
- 

To support the Overbuild Tool for Managed Services, the certain fields are updated in the Phone and Line devices to the target site's default settings.

Within device/cucm/Phone, the following models and fields are updated:

- Phone
    - Device Pool Name
    - Location Name
-

---

Within device/cucm/Line, the following models and fields are updated:

- Line
- Call Forward All
  - Calling Search Space
  - Route Partition Name
  - Share Line AppearanceCssName

## 23.19. Replace Phone

---

**Note:** This software release currently only fully supports the replacement of an existing desk phone type with any other desk phone type.

---

### 23.19.1. Overview

You will need to replace a phone when choosing a new phone for a user or when a phone type is no longer supported.

The feature provides an easy way to replace an existing (old) phone with a different phone model, while retaining as much of the old phone's configuration as possible.

Phone replace does the following:

- Copies the old configuration
- Deletes the old phone
- Adds the replacement (new) phone along with the old configuration
- Updates user information to reflect the change in the controlled devices

---

**Note:**

- Speed dial, Busy Lamp Field (BLF), Blf Directed Call Park, and Services settings are *not* copied from the old phone configuration. Configure these settings manually on the appropriate tab on the replacement phone **Phones** screen if required. See "Configure Phones".
  - If the new phone has attributes that weren't present on the old phone, you must manually set the required values if the default values are not appropriate. Alternatively, you can select an optional configuration template, which will override the configuration copied from the old phone as well as any manual settings.
- 

If you need a customized Phone Template, a default template can be cloned, renamed, and modified via (default menus) **Customizations > Configuration Templates**. The new customized template is then available in the **Phone Button Template** drop-down of the Replace Phone feature.

The Replace Phone Template Variable template is available to allow for the option of manual input of the following fields:

- phoneTemplateName
- product

- protocol
- securityProfileName

---

**Note:** When using this template, *only* these fields are configured by the template.

---

See “Configuration Templates” for more details if required.

## 23.19.2. Replace a Phone

To replace a phone:

1. Log in as Site administrator or higher.
2. Go to (default menus) **Subscriber Management > Replace Phone**.
3. Choose the relevant site (where you want to replace a phone).

---

**Note:** You can only replace a phone at the Site level.

---

4. On the **Existing Phone** tab:
  - a. At **Device Name**, select the phone you wish to replace.

---

**Note:**

- Other fields on this form are read-only.
  - When choosing a phone name, you can configure (via the **Phones** tab in the **Global Settings**), how phone names display in this field. For example, the drop-down may list phones by their description only (default) or by first line only, or by description plus first line. At this drop-down, you can search for the phone using relevant criteria, for example, first letters of a description or line numbers (depending on the Global Setting for phone display).
- 

5. On the **Replacement Phone** tab:
  - a. Enter the **Device Name** of the replacement phone (mandatory).
  - b. Optionally, choose a **Phone Template** for the replacement phone.

---

**Note:** Values in the phone configuration template you choose will override attributes copied from the original phone, and any additional, manually applied settings in the rest of the fields on this tab.

---

- c. Choose the **Product** (phone model) of the replacement phone (mandatory).

---

**Note:** If the existing phone was associated with an entitlement profile, the replacement **Product** drop-down only displays phone types that are allowed by the entitlement profile.

---

- d. Choose the **Device Protocol** (mandatory).
- e. Choose a **Phone Button Template** value for the replacement phone, if one is available (optional).

- f. Choose the **Security Profile** for the replacement phone (mandatory).
  - g. Enter a **Description** for the phone (optional).
5. Click **Save**. View transaction progress and details in the Transaction Logs. See Transaction Logging topic.

### Related Topics

- Global Settings in the Core Feature Guide.
- Transaction Logging and Audit in the Core Feature Guide.

## 23.20. Reset-Restart Site Phones

This feature allows an administrator to reset or restart all phones at a specified site.

### Note:

- This feature only works for devices that are registered with Unified CM.
- For phones sharing a line or within a device pool, these can all respectively be reset from the shared line or device pool. In other words, administrators who have been configured with access to the models `device/cucm/Line` and `device/cucm/DevicePool` in their MenuLayout, as well as to the `reset` action of these models in their Access Profile, can then carry out this task.

1. Browse to the required site at which you want to reset or restart phones.
2. Open the **Reset-Restart Site Phones** form (default menu **Subscriber Management > Reset-Restart Site Phones**) and from the **Action to Take** drop-down select either:
  - Reset All Phones. To shut down devices and bring them back up.
  - Restart All Phones. To restart devices without shutting them down.
3. Click **Save**.

Individual phones can also be reset or restarted by clicking on the phone on the **Phones** list view (default menu **Subscriber Management > Phones**):

- Click the **Restart Phone** button to restart a device without shutting it down.
- Click the **Reset Phone** button to shut down a device and bring it back up.

## 23.21. EM Login/Logout

VOSS Automate allows a site administrator (or higher) to log a user in to or out from one or more phones configured for extension mobility (EM) at the Customer or Site hierarchy level.

**Note:** For the feature to work, the phone must be enabled for Extension Mobility **and** the user must have Extension Mobility (Device Profile).

### 23.21.1. Login User

Log a user in to a phone taking note of the following:

- The **User Name** drop-down (mandatory) contains only users who have Extension Mobility (Device Profile).
- The **Device Profile Name** drop-down is auto populated with the user's first Extension Mobility (Device Profile). If the user has more than one Extension Mobility (Device Profile), choose the profile to use from the drop-down.
- The **Phone Name** drop-down (mandatory) contains only phones that are enabled for Extension Mobility.
- A **Login Duration (in minutes)** of '0' (default setting) indicates that the user will remain logged in to the phone indefinitely. Enter, for example 180, if you want to log out the user from the phone after three hours.
- The **Status** field indicates either the currently logged in user or 'No User Logged In'.
- If you try to log a user into a phone that already has a logged in user, the **Force Login** check box is displayed. Select this check box and click **Save** to simultaneously log out the existing user and log in the new user.

### 23.21.2. Logout User

To log a user out from a phone:

1. Choose the **Phone Name** from which you want to log out the user and click **Save**.
2. The **Status** field displays either the currently logged in user or 'No User Logged In'.

### 23.21.3. Logout User from Phones

1. From the **User Name** drop-down (mandatory), choose the user you want to log out from a phone.
2. Move the phone/s from the 'Available' area to the 'Selected' area and click **Save**.

## 23.22. VOSS Phones

From the **Subscriber Management > VOSS Phones** menu item (default), phones are associated with the VOSS Phone Server (see: [VOSS Phone Server Overview](#) and [Managing VOSS Phone Servers](#))

- **Vendor:** all vendors configured in the library of phone types are offered. See also: [Adding Phone Types](#).
- **Model:** the phone model is selected. See also: [Adding Phone Types](#).
- **Number of Lines:** available number is chosen.

These parameters are used to determine the template to use when creating the phone configuration file on the TFTP server.

- **Phone MAC Address:** required, with no vendor prefix as would be used with CUCM. E.g use 123412341234, not SEP123412341234.

- **Group:** is selected. This represents the SIP realm to use for registration. Typically there will be a single realm or group for a customer, although more advanced configuration is possible and may be added to the Phone Server.
- **Line:** each line has the following parameters:
  - **Number:** The directory number from number inventory. Numbers can exist on Phone server phones or CUCM phones, but not both.
  - **Display Name:** The display name for presentation when making a call
  - **Busy trigger:** As per CUCM phones
  - **Max Calls:** As per CUCM phones
  - **Class of service:** This is the class of server as created by the CUCM dialplan. CoS is enforced on CUCM when using HCS mode.

## 23.23. Quick Add (Subscriber) Groups

### 23.23.1. Overview

A Quick Add Group (QAG), also called *Quick Add Subscriber Group*, is a collection of configuration templates (CFTs) that configure the subscriber features.

---

**Note:** A Quick Add Group is mandatory when adding a subscriber using Quick Add Subscriber.

---

Quick Add Groups allow administrators to group feature and configuration templates for use with Quick Add Subscriber and Add Subscriber. This grouping helps to quickly and easily configure subscribers.

#### Related Topics

- Configuration Templates in the Core Feature Guide
- Create a Configuration Template in the Advanced Configuration Guide
- Quick Add Group Customization in the Advanced Configuration Guide

### 23.23.2. Using CFTs and Quick Add Groups to Add Subscribers

#### Example 1 - Two user groups with different phones and services

In this example we're adding a group of 100 back office users, and a group of 50 sales users. Each group will be assigned a specific phone type, and either has or does not have specific services:

User group?	Using which phones?	And which services?
Back office users	All using 7965 phone with SCCP protocol	No services
Sales users	All using 8865 phone with SCCP protocol	Single number reach service (SNR)

To configure the *Example 1* scenario:

1. Create two configuration templates (CFTs):
  - For the back office users, create a CFT for the 7965 phone, with no services.
  - For the sales users, create a CFT for the 8865 phone, with SNR service
2. Create two Quick Add Groups:
  - For the back office users, create a QAG that references the CFT you created for the back office users.
  - For the sales users, create a QAG that references the CFT you created for the sales users.

### Example 2 - Users with phone type 6911 and SCCP protocol

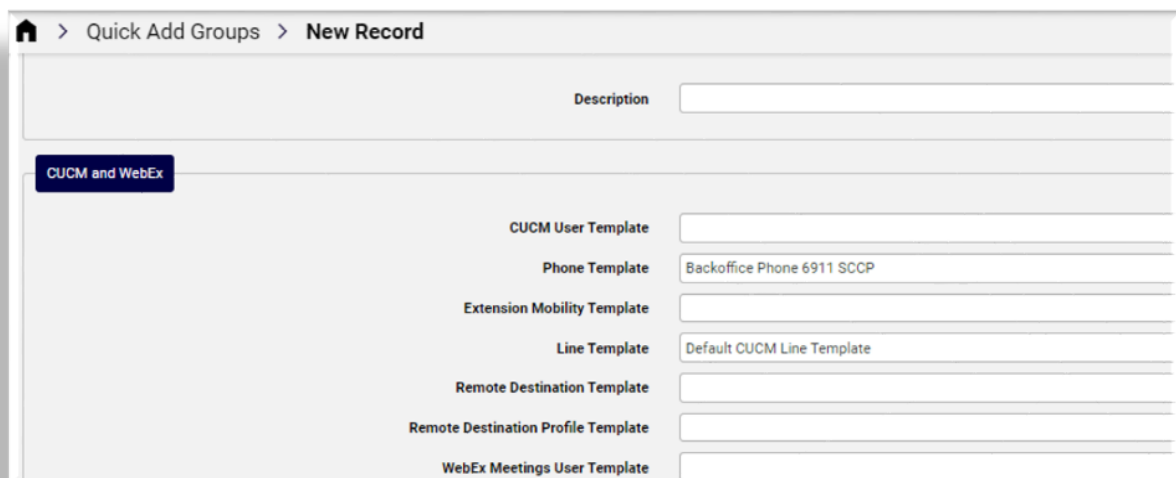
In this example we're adding back office users with a 6911 phone type using SCCP protocol and a voice account.

User group?	Using which phones?	And which services?
Back office users	Phone type 6911 using SCCP protocol	Voice account

To configure the *Example 2* scenario, add the Quick Add Group, and choose these configuration templates from the CUCM and Webex template group on the form:

- **Phone Template** - select the **Backoffice Phone 6911 SCCP** CFT from the drop-down of available CFTs
- **Line Template** - select the **Default CUCM Line Template** CFT from the drop-down of available CFTs (this CFT associates a line with the phone)

**Note:** You can also use customized CFTs to assign to a Quick Add Subscriber Group. The custom CFT can be at the same level in the hierarchy as the Quick Add Group, or higher.





### 23.23.3. Quick Add Groups Naming Convention

The best practice naming convention recommendation for Quick Add Groups may use the following pattern:

*<friendly hierarchy name>-QAG-<user type>-<phone-template-name>-[description]*

For example, GeoLogic-QAG\_BasicUser - 69XX SIP - CallWaiting

### 23.23.4. Quick Add Groups Named Macros for Quick Add Subscriber

When using Quick Add Subscriber (for Microsoft, Cisco, Webex Teams, or Hybrid subscribers) you'll choose a Quick Add Group that assigns services and sets up the subscriber.

Quick Add Groups contain one or more configuration templates that defines how the subscriber is assigned services. Named macros are used in the configuration templates. A default named macro is associated with each of the following Add Subscriber scenarios:

Where used?	Named Macro
Cisco Quick Add Subscriber	macro.Default_Quick_Add_Group_Cisco_Subscriber
Microsoft Only Quick Subscriber	macro.Default_Quick_Add_Group_Microsoft_Subscriber
Webex Teams Calling Only Quick Subscriber	macro.Default_Quick_Add_Group_Webex_Subscriber
Hybrid Quick Add Subscriber	macro.Default_Quick_Add_Group_Hybrid

By default, the values of these macros are set to be the first Quick Add Group found up in the hierarchy:

```
{{ fn.one data.QuickAddGroups.group_name | | direction:up }}
```

However, these named macros can be cloned to a hierarchy and modified in order to provide a reference to a specific default Quick Add Group to apply, as required.

**Note:** See the *Advanced Configuration Guide* for further details on macros.

When adding subscribers (with Quick Add Subscriber or Add Subscriber), choose the appropriate Quick Add Group for the user you're provisioning.

All subscriber services use configuration templates that belong to a Quick Add Group.

#### Related Topics

- Named Macros Overview in the Advanced Configuration Guide
- Quick Add Group Functions in the Advanced Configuration Guide

### 23.23.5. Configuration Templates for Microsoft in a Quick Add Group

A group of configuration templates are available for Microsoft in the Quick Add Group form.

**Note:** You can show or hide fields on a Quick Add Group form via a field display policy (FDP).

The table describes configuration template options for Microsoft on Quick Add Group forms:

**Note:** Automate ships with reference and system configuration CFTs that you can clone and customize, if required. The CFTs available for selection in the template fields on Quick Add Subscriber groups may be defaults or custom CFTs.

CFT Template Type	Description
MS 365 User Template MS Teams User Template	. CFTs for <b>MS Teams User Template</b> can define the Microsoft Teams policies to be included. See <a href="#">Introduction to Microsoft Teams Policies</a> .
MS Groups Add Template	CFTs available for <b>MS Groups Add Template</b> and <b>MS Groups Remove Template</b> can be selected to assign or unassign MS 365 group membership to a user when a Quick Add Group with this CFT selected is used during Quick Add Subscriber (for Microsoft). See <a href="#">Quick Subscriber (Microsoft)</a> . This functionality allows for group licensing, typically used in large enterprises. See: <a href="#">Licensing Users for MS Teams and Teams Phone by Group Membership</a> .
MS Groups Remove Template	CFTs available for <b>MS Groups Add Template</b> and <b>MS Groups Remove Template</b> can be selected to assign or unassign MS 365 group membership to a user when a Quick Add Group with this CFT selected is used during Quick Add Subscriber (for Microsoft). See <a href="#">Quick Subscriber (Microsoft)</a> . This functionality allows for group licensing, typically used in large enterprises. See: <a href="#">Licensing Users for MS Teams and Teams Phone by Group Membership</a> .
MS Exchange Online User Mailbox Template	These CFTs are used to set default values and import of the MS Exchange user mailbox. The selected CFT then applies to the Microsoft Quick Add Subscriber ( <a href="#">Quick Subscriber (Microsoft)</a> ) and <b>Add Subscriber from Profile</b> ( <a href="#">Add Subscriber from Profile</a> ). Automate also ships with a default CFT called <b>Reference MS Exchange Online User Mailbox Template</b> .
MS Exchange Online Convert Mailbox Template	The CFT you choose for <b>MS Exchange Online Convert Mailbox Template</b> is used when the Quick Add Group settings are applied, for example during the Quick Offboard Subscriber process if mailbox conversion to a shared mailbox is required. In the default reference CFT for this template type ( <b>Reference MS Exchange Online Convert Mailbox Template</b> ), the <b>Convert to Type</b> field also allows the conversion of a mailbox to a regular mailbox. See also <a href="#">Quick Offboard Subscriber</a> .

---

**Note:** You can also use the **Update Group Membership** multi-vendor quick action to manage a subscriber's group membership. See [Multi Vendor Subscribers](#) and [Enable Multi Vendor Subscribers](#).

---

### 23.23.6. Add a Quick Add (Subscriber) Group

This procedure adds a Quick Add Group (QAG).

---

**Note:** You can also create a new Quick Add Group by selecting an existing one, then cloning it (making a copy), and modify as required.

---

1. Log in as Provider, Reseller, Customer, or Site administrator.
2. Go to **Quick Add Subscriber Groups**.
3. Click **Add**, then fill out details for the new Quick Add Group.
  - (Mandatory) At **Group Name**, fill out a name for the new Quick Add Group.
  - Fill out a description.
  - Choose the required configuration templates to use in this Quick Add Group.

---

**Note:** Configuration templates (CFTs) available for selection are grouped per vendor scenario. You can choose one or more CFTs for:

- CUCM and Webex
  - Jabber and Dual-mode
  - CUC (Unity)
  - Webex App
  - Pexip Conference
  - Microsoft
  - Additional services
- 

4. Save your changes.

### 23.23.7. Delete a Quick Add Subscriber Group

The default Quick Add Group resides at the *sys* (system-level) hierarchy node.

---

**Note:** A Quick Add Group is required for the Quick Add Subscriber function to work.

---

1. Go to **Quick Add Subscriber Groups**.
2. Select the checkbox at the Quick Add Subscriber Group you want to delete.
3. Click **Delete**, then click **Yes** to confirm.

### 23.23.8. Quick Add Subscriber Groups Default Model

Default Group Model for Quick Add Subscriber and Add Subscriber Wizard Functions

Title	Field Name	Configuration Template Name
<b>Group</b>		
Group Name*	group_name	N/A
<b>CUCM and WebEx</b>		
CUCM User Template*	default_cucm_user_template	Default CUCM User Template Also used for vendor filtering. <sup>1</sup>
Phone Template	default_cucm_phone_template	Default CUCM Phone Template
Extension Mobility Template	default_cucm_device_profile_template	Default CUCM Extension Mobility Template
Line Template	default_cucm_line_template	Default CUCM Line Template
Remote Destination Template	default_cucm_rd_template	Default CUCM Remote Destination Template
Remote Destination Profile Template	default_cucm_rdp_template	Default CUCM Remote Destination Profile Template
Webex User Template	default_webex_user_template	Default Webex User Template
<b>Jabber and Dual-Mode</b>		
Jabber Android Template	default_cucm_jabber_android_template	Default CUCM Jabber Android Template
Jabber CSF Template	default_cucm_jabber_csf_template	Default CUCM Jabber CS Template
Jabber iPad Template	default_cucm_jabber_ipad_template	Default CUCM Jabber iPad Template
Jabber iPhone Template	default_cucm_jabber_iphone_template	Default CUCM Jabber iPhone Template
Carrier Integrated Mobile Device Template	default_cucm_jabber_cim_template	Default Carrier Integrated Mobile Device Template
CTI Remote Device Template	default_cucm_jabber_ctird_template	Default CTI Remote Device Template
<b>CUC(Unity)</b>		
CUC User Template	default_cuc_user_template	Default CUC User Template
CUC User Password Template	default_cuc_user_password_template	Default CUC User Password Template. Quick Add Subscriber applies this template and overrides CUC user template settings on CUC.
CUC User PIN Template	default_cuc_user_pin_template	Default CUC User PIN Template. Quick Add Subscriber applies this template and overrides CUC user template settings on CUC.
<b>WebEx App</b>		

continues on next page

Table 1 – continued from previous page

Title	Field Name	Configuration Template Name
Default Webex App User Template	default_spark_user_template	Default Webex App User Template
Default Webex App Calling Template	default_spark_calling_template	Default Webex Teams Calling Settings Template Also used for vendor filtering. <a href="#">Page 910, 1</a>
Default Webex App User CTI Device Template	default_spark_user_cti_device_template	Default Webex App User CTI Device Template
Default Webex App User iPhone Device Template	default_spark_user_iphone_device_template	Default Webex App User iPhone Template
Default Webex App User Android Device Template	default_spark_user_android_device_template	Default Webex App User Android Template
Default Webex App User Tablet Device Template	default_spark_user_tablet_device_template	Default Webex App User iPad Template
Default Webex App User CSF Device Template	default_spark_user_csf_device_template	Default Webex App User CSF Template
<b>Pexip Conference</b>		
Pexip Conference Template	default_pexip_conference_template	Reference Pexip Conference Template
<b>Microsoft</b>		
MS 0365 User Template		Also used for vendor filtering. <sup>1</sup>
MS Teams User Template		Also used for vendor filtering. <sup>1</sup>
MS Groups Add Template		Add one or more entries to the Group list to provide group membership to a user. <sup>2</sup>
MS Groups Remove Template		Add one or more entries to the Group list to remove group membership from a user. <sup>2</sup>
MS Exchange Online User Mailbox Template		Used for default MS Exchange user mailbox settings.
<b>Additional Services</b>		
VOSS Phone User Template		

Fields marked with \* are mandatory.

<sup>1</sup> See: [Quick Add Subscriber Groups Vendor Filtering](#).

<sup>2</sup> See: [Licensing Users for MS Teams and Teams Phone by Group Membership](#).

### 23.23.9. Quick Add Subscriber Groups Vendor Filtering

Quick Add Group selection in the VOSS Automate portal takes place for Quick Subscriber management. In these cases, the list of available Quick Add Groups to select will be filtered in accordance with populated entries in the Quick Add Groups themselves.

The following list shows the corresponding Quick Add Groups fields to allow filtering for each activity:

- Cisco Quick Subscriber: **CUCM User Template**
- WebexApp Quick Subscriber: **Default Webex App Calling Template**
- Microsoft Quick Subscriber: **MS 365 User Template** and **MS Teams User Template**

## 23.24. Class of Service (Subscriber)

### 23.24.1. Overview

Customer administrators and higher level administrators can create and maintain a Class of Service (CoS) that applies to subscribers.

A CoS specifies the CUCM and Calling Search Spaces (CSS) for a subscriber's line, thereby indicating whether local, national, and international numbers can be called.

An administrator can create a CoS at a customer level hierarchy. A CUCM is specified. A drop-down list of those available at the customer level is shown.

Optional device and line CSSs can also be added - either selected from those existing on the CUCM, or else added. Macros can also be used when adding new CSSs, for example, CSS-Gold-`{{macro.SITENAME}}`.

When a CoS is modified, the CUCM can't be modified. To refer to another CUCM, either clone an existing CoS, else, delete it and re-add it.

### 23.24.2. Add a Class of Service (Subscriber)

1. Log in as a Customer administrator or higher.
2. Choose the relevant customer hierarchy.
3. Go to (default menus) **Subscriber Management > Class of Service**.
4. Click **Add**.
5. From the **CUCM** drop-down, choose the relevant CUCM.
6. Fill out a name for the CoS.
7. From the **Device CSS** and **Line CSS** drop-downs, choose the relevant CSS types to be associated to this CoS.

---

**Note:** The value can also be a macro that evaluates to a valid CSS type that already exists on the selected CUCM. Blank values are also allowed.

---

#### 8. Save your changes.

You can view transaction progress and details in the Transaction Logs (when adding, updating, or deleting a subscriber's CoS).

#### Related Topics

- Transaction Logging and Audit in the Core Feature Guide
- Class of Service (Site) in the Core Feature Guide

## 23.25. Reset UC Passwords

### 23.25.1. Overview

VOSS Automate maintains details of user credentials. A VOSS Automate user can also be a corresponding user on a number of devices. In particular, users can have password (and PIN) credentials for:

- VOSS Automate user
- Unified CM (also PIN)
- Cisco Unity Connection (also PIN)
- LDAP user on Unified CM
- LDAP user on Cisco Unity Connection
- Conferencing user - WebEx, Zoom or PexIP (also PIN)

The Reset UC Passwords feature allows you to select a username for a user on Unified CM at a selected hierarchy and then, given the configured services for the user, you can select a check box to reset the user's password and/or PIN for the services.

The feature can be used by an administrator at the provider, customer and site hierarchy. It will, given a selected username, also enable options to select other devices for password modification and also displays notices or warning messages to indicate available devices and exclusions.

For example, the password of a Unified CM user that is also an LDAP user, cannot be modified. Such a user is also not a VOSS Automate user. In other instances, the VOSS Automate password is also reset when a user's device password is reset.

If a user is an LDAP user on either Unified CM or Cisco Unity Connection and they are selected, then only the PIN for the device will be reset.

---

**Note:** When bulk loading updates to passwords, the bulk load sheet only needs to specify values for the user and updated passwords - other fields can be left blank. See: [Bulk Loading Files](#).

---

### 23.25.2. Reset a UC Password

1. Log in as the provider, customer or site administrator and navigate to the hierarchy at which the Unified CM is available.
2. Choose **Subscriber Management > Reset UC Passwords**.
3. Choose the username on Unified CM from the User drop-down list.
4. Check boxes will show for the selected user according to the associated devices. The devices can be:
  - Reset CUC
  - Reset WebEx
  - Reset CUCM
  - Reset Pexip
5. Select the check boxes for the devices on which the user's password or PIN needs to be changed. Note that a PIN can only be reset for CUCM, CUC or Pexip, not for WebEx or VOSS Automate, because these have no PIN functionality.

Read the displayed Password or Pin notices and warnings. The messages show the conditions as to when passwords and PINs will be reset.

Note that the content of these messages must be inspected as the check boxes are selected or cleared, because the conditions change according to the status of the check boxes.

If no check boxes are selected, then only the VOSS Automate password can be changed. If the user is an LDAP user on either Unified CM or Cisco Unity Connection, then only the PIN for the device can be changed.

6. Click **Save**.

## 23.26. Pexip Conference Users

### 23.26.1. Overview

Pexip is a conferencing platform that provides users with their own personal Virtual Meeting Rooms (VMRs) to hold conferences, to share presentations, and for chat.

Virtual Meeting Rooms are set up as a part of VOSS Automate user management.

VOSS Automate integrates fully with Pexip, providing access to the following:

- [Pexip Server](#)
- Set Up and Manage Pexip Virtual Meeting Rooms and Conferencing:
  - [Add a Pexip Virtual Meeting Room \(VMR\)](#)
  - Provision the Pexip Service: [Provision the Pexip Conference Service](#)
  - IVR Theme for a Pexip Conference
- Resetting the Pexip PIN (see [Reset a UC Password](#))
- Pexip Conferencing upon subscriber deletion: [Global Settings](#)



## Related Topics

- [Add a Subscriber](#)
- [Quick Add Subscriber \(Cisco\)](#)
- [Provision the Pexip Conference Service](#)

### 23.26.2. Add a Pexip Virtual Meeting Room (VMR)

1. In the Admin Portal, go to (default menus) **Subscriber Management > Pexip Conference Users**.
2. View existing Pexip VMRs on the summary list view.
3. Click **Add**.
4. Select the relevant site.
5. On the **Virtual Meeting Room** tab:
  - Mandatory. Fill out the **Name** and **Owner's email address** fields.
  - Configure optional settings:
    - Fill out a description.
    - Set a host PIN.
    - Select **Show names of participants**.
    - Select **Allow Guests**, and set a guest PIN.
    - At the **View** drop-down, choose the conferencing view layout that participants will see.
    - At **IVR Theme**, choose a theme to use with this service.

---

**Note:**

- The host PIN can be reset. See [Reset a UC Password](#).
  - Selecting **Allow Guests** displays an additional field where you can enter a guest PIN.
- 

6. On the **Advanced options** tab, configure the following optional settings:
  - Define whether guests can present, in addition to the host
  - Enable chat
  - Define maximum inbound and outbound call bandwidth
  - Set maximum media content (Conference capabilities). Options are: Main video + presentation, Audio-only, Main video only
  - Define maximum call quality for participants
  - Define media encryption settings.
  - Set a participant limit
  - Set a service tag (a unique ID to track how this VMR is used)

7. On the **Alias** tab, configure one or more conference aliases.

---

**Note:** The alias is a dial string used to join the service, in the form that Pexip will receive it, including a domain, which is automatically added by the participant's endpoint or call control system, or dialed by the participant.

---

8. Click **Save**.

---

**Note:** The new VMR is added to the Virtual Meeting Rooms list view from the Services on the Pexip Conferencing Platform. Any changes to the VMR on the Pexip Conferencing Platform will also update the VMR in VOSS Automate.

---

## 23.27. PLAR (Hotdial)

### 23.27.1. Overview

Private Line Automatic Ringdown (PLAR), also called Hotdial, automates the Cisco Unified Communications Manager (CUCM, or CallManager) configuration required to set up PLAR for a phone.

PLAR provides an administrator with a single interface and workflow for managing the following parts of CUCM:

- RoutePartition
- CSS
- TransPattern
- Phone
- Line
- SIP Dial Rule

Additionally, the PLAR feature provides an administrator with the following:

- A simplified user interface to choose:
  - A phone that must be enabled for PLAR
  - A destination number
  - The destination CSS
- A workflow that creates and applies a number of elements to the relevant phone and number. These elements include:
  - The required CUCM partition
  - CSS
  - Translation pattern

To configure an existing phone for PLAR (Hotdial), you choose a pre-existing device and indicate that the device is a Hotdial device.

As soon as a PLAR-configured phone goes off hook (or the NewCall softkey or line key gets pressed), the phone immediately dials a pre-configured destination number. The phone can't dial any other number except the Hotdial destination that is configured for PLAR.

The PLAR configuration can be added or deleted, but not modified.

### 23.27.2. PLAR (Hotdial) Workflows

When adding a new Hotdial Phone (PLAR configuration), the following workflow is executed:

1. A CUCM route partition is created with:
  - a. Name set to the Hotdial Phone selected, prefixed with "HotdialPT-". For example: "HotdialPT-SEP000000000000".
2. A CUCM CSS is created with:
  - a. Name set to the Hotdial Phone selected, prefixed with "HotdialCSS-". For example: "HotdialPT-CSS000000000000".
  - b. The Partition created above is made a member of the CSS.
3. A CUCM translation pattern is created with:
  - a. Partition name is set to the Partition added, prefixed with "HotdialPT-", for example: "HotdialPT-SEP000000000000".
  - b. Calling Search Space Name set to the selected Destination Dialing CSS.
  - c. Called Party Transformation Mask is set to the selected Hotdial Destination Pattern.
  - d. Route Option is set to Route this pattern.
  - e. Urgent Priority is enabled.
4. The CUCM phone selected is updated as follows:
  - a. For SIP Phones only, a SIP Dial rule is created and the phone is set to use the SIP Dial Rule.
  - b. CSS name is set to the "HotdialCSS-" added for the phone.
  - c. Hotline Device is set to true if the phone is marked as a Hotline Device by the user on the input form.

VOSS Automate automatically resets the phone when required.

When deleting PLAR (Hotdial) for a phone (deleting the PLAR configuration), the following workflow is executed:

1. Update Phone CSS to the original CSS.
2. Delete the Hotdial Translation pattern.
3. Delete the Hotdial CSS.
4. Delete the Hotdial Route Partition.
5. For SIP Phones only, the device is updated to use a Dial Rule of "None", and the Dial Rule is deleted.

## 23.28. Hunt Groups

### 23.28.1. Overview

A hunt group is a combination a hunt pilot, hunt list, and line groups.

The table describes each of the elements of a hunt group:

Element	Description
Hunt Pilot	A hunt pilot comprises a string of digits (an address) and a set of associated digit manipulations that route calls to a hunt list. Hunt pilots provide flexibility in network design. They work in conjunction with route filters and hunt lists to direct calls to specific devices and to include, exclude, or modify specific digit patterns.
Hunt List	A hunt list displays a set of line groups in a specific order, and then associates with one or more hunt pilots, and determines the order in which those line groups are accessed. The order defines the progress of the search for available directory numbers for incoming calls. A hunt list comprises a collection of directory numbers as defined by line groups. A hunt list can contain only line groups. Each hunt list should have at least one line group. Each line group includes at least one directory number. A single line group can appear in multiple hunt lists.
Line Groups	Hunt groups provide a business context for the lines you choose as members of line groups. You will need to choose lines belonging to line groups, or any existing line groups that must be added to the hunt list members. A line group allows you to define the order in which directory numbers are chosen. CUCM distributes a call to idle or available members of a line group based on a call distribution algorithm and on the Ring No Answer (RNA) Reversion Timeout setting.

The hunt pilot, hunt list, and line group combination are automatically associated via unique identifiers for the following:

- The name of the hunt pilot and its hunt list is the same.
- The hunt list's line group members are set to the name of the associated line groups.

Searches can be performed on any of the details of the hunt pilot.

The site defaults auto-populates some values for hunt groups. To view or update the defaults, go to (default menus) **Site Management > Defaults**, choose a site to view its defaults, and locate the **Default CUCM Hunt Pilot Partition** field on the **General Defaults** tab. See [Site Defaults](#)

---

## Related Topics

- [Add a Hunt Group](#)

### 23.28.2. Add a Hunt Group

This procedure adds a hunt group in Automate and Cisco Unified Communications Manager (CUCM).

---

**Note:** When adding a hunt group, you'll specify the parameters of the hunt pilot and the hunt list, and choose one or more new or existing line groups.

If your administrator has enabled number inventory, you can choose the hunt pilot pattern from a list of available numbers. If number inventory is disabled, you'll need to specify a hunt pilot pattern, or choose from a limited selection of available numbers.

To allow the successful use of call forwarding in a hunt pilot, clear the defaults for **Max Callers In Queue** (32) and the default for **Max Wait Time In Queue** (900). To use queuing instead of call forwarding, change the default values, for example, to 33 and 901.

---

#### To add a hunt group:

1. Log in as site administrator or higher.
2. Choose the hierarchy (if necessary) where you want to add the hunt group.

---

**Note:** Hunt groups can be configured at the customer level or at site level.

---

3. Go to (default menus) **Cisco Subscriber Management > Hunt Groups** to open the summary list of existing hunt groups.
4. On the **Hunt Groups** list view, click **Add**.
5. Customer level only. If you're adding the hunt group at the customer level, choose a network device list (NDL).

---

**Note:**

- Choose a NDL that identifies the CUCM where the hunt group is defined.
  - The system supports adding duplicate hunt groups (two hunt groups with the same hunt list name), provided multi-cluster CUCM is configured and you choose a different NDL. The second hunt group and hunt list are added to the second CUCM.
- 

6. On the **Hunt Groups/New Record** page, fill out at least the required fields to configure the new hunt group.
7. Save your changes.

Saving triggers a workflow to add the new hunt group. This workflow:

- Adds a hunt list with the details you configured
- Adds a hunt pilot with the details you configured
- Creates one or more line groups with the specified directory numbers as members

## Related Topics

- [Hunt Group Configuration](#)

### 23.28.3. Edit a Hunt Group

It is possible to edit hunt groups, for example, to add or delete line groups, or to add or delete line group members.

When modifying a hunt group, the following workflow is executed (depending on the changes you made):

- The line group details are modified.
- Any new line groups are added.

A removed line group is deleted *only* if it is the last instance. If a shared line group is removed, it is deleted from the specified hunt group *only*, but is still included in other hunt groups that are also using it.

If the hunt group uses existing line groups, the existing line groups are updated when the hunt group is modified.

- The hunt list is modified.
- The hunt pilot is modified.

## Related Topics

- [Hunt Group Configuration](#)

### 23.28.4. Delete a Hunt Group

When deleting a hunt group, the following workflow is executed:

- The line groups that are members of the hunt list are deleted (if they are not used by any other hunt group in the system).

If a shared line group is removed, it is deleted from the specified hunt group *only*, but is still included in other hunt groups that are also using it.

- The hunt pilot is deleted
- The hunt list is deleted

### 23.28.5. Hunt Group Configuration

Details for hunt groups are added or updated on the **Hunt Groups/New Record [hunt group name]** page in Automate.

---

**Note:** You can toggle the layout on this page via a toolbar button that allows you to view the page content as either tabs or panels.

---

Content is added or updated in the following tabs/panels:

- **Base**
  - *Pattern Definition*
  - *Forward Hunt Busy*
  - *Forward Hunt No Answer*
  - *Queueing*
  - Park Monitoring
  - Calling Party Transformations
  - Connected Party Transformations
  - Called Party Transformations
  - AAR Group Settings
- *Hunt List*
- *Line Groups*

Home > Hunt Groups > EKB-9583-HL

Base | Hunt List | Line Groups

**Pattern Definition**

Hunt Pilot Pattern \* 82059584

Route Partition Cu1Si5-Feature-PT

Description Created by EKB-9583 Automation

Numbering Plan

Route Filter

MLPP Precedence Default

Hunt List \* EKB-9583-HL

Call Pickup Group

Alerting Name

ASCII Alerting Name

Block this pattern

Release Clause No Error

Provide Outside Dial Tone

Urgent Priority

**Forward Hunt No Answer**

Forward Hunt No Answer Action Do Not Forward Unanswered Calls

Forward Hunt No Answer

CFNA Destination

CSS CFNA

Maximum Hunt Timer

### Pattern Definition

For hunt groups configured at the customer level, the **Pattern Definition** tab/panel defines a unique hunt pilot pattern.

The hunt pilot pattern is added to the customer-level DN inventory and is marked as in-use and unavailable.

The table describes the fields on the **Pattern Definition** tab/panel:



Field	Description
Hunt Pilot Pattern	Mandatory. A hunt pilot pattern can include numbers and wildcards (no spaces). For example, for NANP, enter 9.@ for typical local access, or 8XXX for a typical private network numbering plan. Valid characters include uppercase characters A, B, C, D, and + (representing the international escape character +). Ensure that the directory hunt pilot, which uses the chosen partition, route filter, and numbering plan combination, is unique.
Route Partition	Choose a route partition from the list if you want to use a partition to restrict access to the hunt pilot, else, leave the field blank.
Route Filter	If your hunt pilot includes the '@' wildcard, choose a route filter from the drop-down. Route filters restrict some number patterns. The numbering plan you choose determines the route filters you can choose from.
Hunt List	Add the hunt list name to the <b>Name</b> field in the <b>Hunt List</b> section to auto-populate this field.
Call Pickup Group	The call pickup group to associate with this hunt group. Choose a call pickup group at the same hierarchy as this hunt group or if no call pickup groups are available at this hierarchy, choose a call pickup group at the hierarchy directly above. Call pickup group is the number that can be dialed to answer calls to this directory number (in the partition)
Alerting Name	Specify an alerting name for the hunt pilot in UNI-CODE format. This name is displayed on phones that the hunt pilot dials when it receives an incoming call, along with calling party information. Phone users can use this information to answer the call This name also displays on the calling phone. If you don't enter a name, the hunt pilot DN displays on the phones.
Provide Outside Dial Tone	Enable for each hunt pilot that routes the call off the local network and provides outside dial tone to the calling device. Disable if you want to route the call in the network.

### Forward Hunt Busy

The table describes the hunt group configuration options on the **Forward Hunt Busy** tab/panel:

Field	Description
Forward Hunt Busy Action	The hunt call treatment action. Options: <ul style="list-style-type: none"> <li>• Do Not Forward Busy Calls</li> <li>• Use Forward Settings of Device that Forwarded to Hunt Pilot Uses the call forwarding settings of the line group member.</li> <li>• Forward Busy Calls to Destination</li> </ul>
CFB Destination	The directory number where calls are to be forwarded. Enabled only when the selected <i>Forward Hunt Busy Action</i> is <i>Forward Busy Calls to Destination</i> .
CSS CFB	The line CSS, which applies to all devices using this directory number. The default is the default line CSS of the site. Enabled only when the selected <i>Forward Hunt Busy Action</i> is <i>Forward Busy Calls to Destination</i> .

### Forward Hunt No Answer

The table describes the hunt group configuration options on the **Forward Hunt No Answer** tab/panel:

Field	Description
Forward Hunt No Answer Action	Options for hunt call treatment: <ul style="list-style-type: none"> <li>• Do Not Forward Unanswered Calls</li> <li>• Use Forward Settings of Device that Forwarded to Hunt Pilot</li> </ul> Choose this option to use the call forwarding settings of the line group member. <ul style="list-style-type: none"> <li>• Forward Unanswered Calls to Destination</li> </ul>
CFNA Destination	The directory number where calls are to be forwarded. Enabled only when the selected <i>Forward Hunt No Answer Action</i> is <i>Forward Unanswered Calls to Destination</i> .
CSS CFNA	The line CSS, which applies to all devices using this directory number. The default is the default line CSS of the site. Enabled only when the selected <i>Forward Hunt No Answer Action</i> is <i>Forward Unanswered Calls to Destination</i> .
Maximum Hunt Timer	The maximum time for hunting without queueing. Do not use the same value for this field and for the <b>RNA Reversion Timeout</b> field in the associated line group.

## Queueing

The Queueing tab/panel defines whether to queue calls.

**Note:** *Forward Hunt No Answer* settings and *Forward Hunt Busy* settings define how calls are moved through the route list. On the other hand, *Queueing* settings are used to hold callers in a route list. Thus:

- If queueing is enabled, both *Forward Hunt No Answer* and *Forward Hunt Busy* are automatically disabled.
- If *Forward Hunt No Answer* or *Forward Hunt Busy* are enabled, queueing is automatically disabled.

The table describes the hunt group configuration options on the **Queueing** tab/panel:

Field	Description
Queue Calls	Select this checkbox to enable call queueing for hunt groups. Enabling call queueing disables <i>Forward Hunt Groups</i> , and enables additional queueing configuration fields on the tab/panel.
Network Hold MOH Source & Announcements	The Music On Hold (MoH) source that will be used to play announcements and to provide queue hold treatments. If nothing is selected (default), the default Network Hold MoH/MoH Source and Announcements configured on service parameter is used. The MoH source can be configured as unicast or multicast. Caller side's MRGL takes precedence for multicast or unicast. The MoH source announcement locale is used to determine the language used for the announcement. Only one type of language announcement can be played per hunt pilot. When any of the MoH settings are changed, the existing callers in queue are not affected. All future queued callers will listen to MoH and announcements as per the updated settings.
Maximum Number of Callers Allowed in Queue	Auto-populated with default value, 32. Range value is from 1 to 100. When the maximum number of callers in the queue is reached, and if subsequent calls need to be disconnected, select "Disconnect the call". When the maximum number of callers in the queue is reached, and if subsequent calls need to be routed to a secondary destination, select the "Route the call to this destination" radio button. Provide a specific device DN, shared line DN, or another Hunt Pilot DN. You may also select the "Full Queue Calling Search Space" from the drop-down (optional).
Maximum Wait Time in Queue	Auto-populated with default value, ``900``.
Queue Full Destination	Where to route calls when the maximum number of callers in the queue is reached. If you don't configure this secondary destination then calls are disconnected if the queue is full.

## Hunt List

Field	Description
Name	Maximum of 50 alphanumeric characters, and can contain combination of spaces, periods (.), hyphens (-), and underscore characters (_). Ensure each hunt list name is unique to the route plan. It is recommended that you use short, descriptive names for your hunt lists. The CompanynameLocationCalltype format provides enough detail and is short enough so you can easily identify a hunt list.
Cisco Unified Communications Manager Group	Choose a CUCM group from the list. The hunt list registers to the first node in the CUCM group. Choosing a CUCM with only one node configured triggers a system warning, so choose a group with more than one node.
Enable this Hunt List	Defines whether to enable your hunt list as soon as you save. No system reset is required.
For Voice Mail Usage	Define whether to use this hunt list for voicemail. Enabling this setting allows the route list control process to keep a count of the setups that are being served to the hunt list, and will not allow more setups than the number of available devices. As a result, each device in the hunt list is treated as if it has a Busy Trigger and related Maximum Number of Calls of one.

## Line Groups

It is recommended that you configure at least one line group member (directory number) for every line group you add. Before configuring the line group, you will need to add one or more directory numbers.

---

**Note:** Although it is possible to configure an empty line group (no members), CUCM does not support empty line groups for routing calls. If the line group has no members the hunt list stops hunting when the call is routed to the empty line group.

---



---

**Note:** For hunt groups configured at the customer-level, include lines defined at the customer level, and at any site within the customer.

---

The **Line Groups** tab/panel displays the line groups configured for the hunt group, with the following detail available for each line group:

- Line Group Name
- RNA Reversion Timeout
- Distribution Algorithm
- Automatically Logout Hunt Member on No Answer

The Line Group Configuration dialog allows you to add details for a new line group or to update an existing line group. Click on a line group in the table, or click the Plus (+) icon to open the Line Group configuration dialog to add the new record.

The table describes the line group configuration options:

Field	Description
Line Group Name	<p>The drop-down displays all line groups available at the site. You can choose a line group from the list or enter a name for the line group in the field.</p> <p>Names you add can be up to 50 alphanumeric characters and can contain any combination of spaces, periods (.), hyphens (-), and underscore characters (_). Ensure that each line group name is unique to the route plan.</p> <p>It is recommended that you use a short, descriptive name for your line groups. The CompanynameLocationGroup format usually provides a sufficient level of detail, and is short enough to be easily identified.</p>
RNA Reversion Timeout	<p>Specify a time, in seconds, after which CUCM will distribute a call to the next available or idle member of this line group or to the next line group if the call is not answered, and if the following option is chosen for Hunt Options No Answer: <i>Try next number; then try next group in Hunt List</i></p> <p>The RNA Reversion Timeout applies at the line-group level to all members.</p>
Distribution Algorithm	Applies at line group level, either top-down, circular, longest time, or broadcast.
Hunt Options No Answer	Choose a hunt option for CUCM to use if a call is distributed to a member of a line group that does not answer. This option is applied at the member level.
Automatically Logout Hunt Member on No Answer	Defines whether line members are automatically logged off the hunt list. Line members can log back in using the "HLOG" softkey or PLK.
Hunt Options Busy	Choose a hunt option for CUCM to use if a call is distributed to a member of a line group that is busy.
Hunt Options Not Available	Choose a hunt option for CUCM to use if a call is distributed to an unavailable line group member. The <i>Not Available</i> condition occurs when none of the phones that are associated with the DN in question is registered. Not Available also occurs when extension mobility is in use and the DN/user is not logged in.
Member	Line group members. For each member, choose a directory number, a partition, and specify a position.

## 23.29. Call Pickup Groups

### 23.29.1. Overview

Certain default values for call pickup groups are populated by the site defaults menu item, which can be viewed and edited (depending on your log in level). Choose **Dialplan Management > Site Defaults** and click on the required site name in the list view.

The Call Pickup Groups feature provides an administrator with the following:

- A single interface on which to create call pickup groups, and to select one or more lines as members of a pickup group.
- The ability to add Unified CM call pickup groups and to modify the call forward and call pickup settings of each Unified CM directory number for membership to a newly added call pickup group. When adding a call pickup group, if your administrator has enabled the number inventory feature, the **Pattern** can be selected from a drop-down list of available numbers. If the feature is disabled, the **Pattern** field is a free text field or a drop-down containing only selected available numbers.
- The ability to add lines to an existing call pickup group by selecting the pattern (directory number). When adding a member line, if your administrator has enabled the number inventory feature, the **Pattern** can be selected from a drop-down list of available numbers. If the feature is disabled, the **Pattern** field is a free text field or a drop-down containing only selected available numbers. The **Route Partition Name** field is populated automatically based on the selected **Pattern**.
- The ability to delete a pre-existing call pickup group, and to delete one or more lines from an existing call pickup group.

The first member of the associated pickup group name is set the newly created pickup group, and associated pickup groups can be added as part of the workflow.

### 23.29.2. Add a Call Pickup Group

This procedure adds a call pickup group in VOSS Automate.

1. Log in as Provider, Reseller, Customer, or Site administrator.
2. Set the hierarchy to the Customer or Site level.
3. If you've set the hierarchy level to Customer, choose the Network Device List. This step is not required if your hierarchy level is set to Site.
4. Go to **Subscriber Management > Call Pickup Groups**.
5. Click the **Add** button to open the **Call Pickup Groups** page.
6. Configure options on the **Call Pickup Group** tab:
  - Enter a name and a description.
  - At **Call Pickup Group Number**, choose the pickup group pilot number.
  - At **Route Partition Name**, choose the required route partition.
  - At **Pickup Notification**, choose the method, one of the following: **No Alert**, **Audio Alert**, **Visual Alert**, or **Audio and Visual Alert**.
  - At **Pickup Notification Timer**, enter the required period, as a number of seconds.

- If the call pickup group is associated with other pickup groups, click the Plus icon (+) at **Call Pickup Groups** to add an entry. Choose a pickup group name, and set a priority.

---

**Note:** This allows users to pick up incoming calls in a group that is associated with their own group. Note that the first member is automatically added, so there is no need to specify the first member as itself in an Add request.

For included pickup group names, ensure that the priority always starts at 1. When more than one included group exists, the group with Priority 1 has the highest the priority of answering calls for the associated group. Integer values are added in order of priority.

The associated Directory Name and Partition is automatically selected, based on the Call Pickup Group Name. Set any required Pickup Notification settings.

---

7. Configure options on the **Member Lines** tab:

- Click the Plus icon (+) to add an entry.
- At **Directory Number**, choose a directory number, which auto-populates the **Route Partition** field.

---

**Note:** You can choose a different route partition, if required.

Call pickup group members will only be successfully added if their directory number exists in a valid route partition. Directory numbers in a 'null' route partition appear as selectable members, but saving them results in an error.

---

- Repeat this step to add more member lines to the call pickup group.

8. Click **Save** to add the call pickup group.

---

**Note:** If you're using partitions with the call pickup numbers, ensure that the directory numbers that are assigned to the call pickup group have a calling search space (CSS) that includes the appropriate partitions. The recommendation is to use `CU{macro}-PreISR-PT` partition for the call pickup groups added at the customer hierarchy.

The selected Call Pickup Groups drop-down lists the call pickup groups created at the customer level and the site level. Select the required call pickup group from both the customer and the site level.

Adding a call pickup group at customer level with members across child sites, succeeds without error, and the configuration is pushed to the associated Unified CM (CUCM). However, when viewing the call pickup group configuration after it was added, the added members will not be seen. Added members are only seen if the call pickup group and its members are at the same hierarchy level

To verify the individual member line association with the call pickup groups, you can go to **Subscriber Management > Lines**. The call pickup group under **Lines** displays the associated call pickup group

---



### 23.29.3. Delete a Call Pickup Group

This procedure deletes a call pickup group in VOSS Automate.

1. Log in as provider, reseller, customer, or site administrator.
2. Set the hierarchy to the Customer or Site level.
3. Choose **Subscriber Management > Call Pickup Groups**.
4. Choose the call pickup group, and then click **Delete**.

## 23.30. Provision the Extension Mobility Service

### 23.30.1. Overview

In VOSS Automate, enabling extension mobility via Quick Add Subscriber (QAS) creates a device profile for the user on CallManager (the call processing component of CUCM).

A CUCM user device profile may be considered a dummy phone with lines. When the user logs in to a physical phone associated with the CallManager and enters their username and pin, CallManager applies their device profile to the phone (with their line, settings, and extension number), effectively assigning ownership of the phone to the user for the period they're logged in.

Provided a user is logged in to a physical phone via their device profile username and pin, they're always reachable via the extension number assigned to their device profile, regardless of the physical device they're using. The user's extension number is associated with their device profile and not to a physical device and is thus always 'mobile'.

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾ Help ▾

**Device Profile Configuration**

Save Delete Copy Add New

**Status**

Status: Ready

**Association**

Modify Button Items

- Line [1] - 82012000 in Cu1-DirNum-PT
- Line [2] - Add a new DN
- Add a new SD
- Add a new SD
- Add a new SD
- Add a new SD
- Unassigned Associated Items
- Add a new SD
- All Calls
- Add a new BLF Directed Call Park
- Call Park
- Call Pickup
- CallBack
- Group Call Pickup
- Hunt Group Logout
- Intercom [1] - Add a new Intercom
- Malicious Call Identification
- Meet Me Conference
- Mobility
- Other Pickup
- Quality Reporting Tool

**User Device Profile Information**

Product Type: Cisco 9971  
 Device Protocol: SIP  
 Device Profile Name\*: JohnD000-UDP  
 Description: Created by default template  
 User Hold MOH Audio Source: < None >  
 User Locale: < None >  
 Phone Button Template\*: Standard 9971 SIP  
 Softkey Template: < None >  
 Privacy\*: Default  
 Always Use Prime Line\*: Default  
 Always Use Prime Line for Voice Message\*: Default  
 Feature Control Policy: < None >  
 Ignore Presentation Indicators (internal calls only)  
 Do Not Disturb  
 DND Option\*: Ringer Off  
 DND Incoming Call Alert: < None >  
 Extension Mobility Cross Cluster CSS: < None >

**MLPP and Confidential Access Level Information**

MLPP Domain: < None >  
 MLPP Indication\*: Off  
 MLPP Preemption\*: Default

**Logged Out (Default) Profile Information**

Login User Id: < None >

## Related Topics

- Introduction to EMCC in the Core Feature Guide
- Configuration Templates in the Core Feature Guide
- Extension Mobility Profiles in the Core Feature Guide

### 23.30.2. EMCC and Multi-Cluster CallManager

A large organization (set up at the VOSS Automate Customer hierarchy) may have multiple CallManager clusters (separate CallManager servers in a multi-cluster setup). For example, a CallManager cluster located in London (providing phones and services to the London office), and a CallManager cluster located in New York (providing phones and services to the New York office). In this scenario, CallManager allows inter-cluster calls between these locations; each CallManager has a different IP address, and each has different data (the phones, users, and services, for either London or New York, in this case).

The screenshot shows the VOSS Automate web interface. On the left is a navigation menu with options: Hierarchy Management, Reseller Management, Customer Management, Site Management, Apps Management (highlighted), VOSS Assurance, CUCM, and Servers. The main content area displays a table of servers under the heading 'Servers'. The table has columns for Cluster Name, CUCM Server Name, id, Located At, and Device. Two servers are listed:

Cluster Name	CUCM Server Name	id	Located At	Device
AAAGlobal-CL1	192.168.100.15	4	AAAGlobal (Customer)	192.168.100.11, 8443, hcs
AAAGlobal-CL2	192.168.100.16	6	AAAGlobal (Customer)	192.168.100.11, 8443, hcs

A CUCM administrator configures cross-cluster via the CUCM Extension Mobility Cross Cluster (EMCC) feature settings on CUCM, and in VOSS Automate (via **Customer Management > EMCC**).

Once configured on CUCM, EMCC may be enabled per user in CUCM, and a EMCC calling search space (CSS) is chosen for the user device profile.

The screenshot shows the 'User Device Profile Information' form. The fields are as follows:

- Product Type: Cisco 8865
- Device Protocol: SIP
- Device Profile Name\*: user0011005-UDP
- Description: (empty)
- User Hold MOH Audio Source: < None >
- User Locale: English, United States
- Phone Button Template\*: Standard 8865 SIP
- Softkey Template: < None >
- Privacy\*: Default
- Always Use Prime Line\*: Default
- Always Use Prime Line for Voice Message\*: Default
- Ignore Presentation Indicators (internal calls only)
- Do Not Disturb
- DND Option\*: Ringer Off
- DND Incoming Call Alert: < None >
- Extension Mobility Cross Cluster CSS: EMCC-CSS-USA

**Note:** In VOSS Automate, EMCC groups define the clusters and countries to be used together for extension mobility. When saving an EMCC group, VOSS Automate creates the relevant route partitions, device pools, and the CSS related to the countries selected for the EMCC group.

A user enabled for EMCC can use their extension at another location that is part of the cluster. For example, a user can log in to a desk phone in London in the morning, travel to New York, and log in to a desk phone at the New York office when they arrive. Regardless of their physical location, the user remains reachable via the same extension number, provided they're logged in to a physical phone in a connected cluster, using their home cluster device profile username and pin.

### 23.30.3. Quick Add Subscriber and Configuration Templates

QAS references a selected QAG, which contains a number of configuration templates that define values for various settings. For example, the CUCM user template, or the extension mobility template (which defines the user device profile settings). For example, you can assign to the QAG, a CUCM user template that has **Enable Extension Mobility Cross Cluster** set to *True*, so that all subscribers added via QAS with this QAG are automatically enabled for EMCC.

The screenshot shows the VOSS Automate interface with a sidebar on the left containing navigation options such as Hierarchy Management, Reseller Management, Customer Management, Site Management, Apps Management, LDAP Management, Entitlement, User Management, Role Management, Flow Through Provisioning Configuration, Customizations, Global Settings, Subscriber Profiles, Model Filter Criteria, Flow Through Provisioning Criteria, Field Display Policies, and Configuration Templates. The main content area is titled 'Configuration Templates [Reference CUCM User Template]' and displays a 'Pin Credentials' section with the following fields:

- Pin Reset Hack Count
- Pin Cred Locked By Administrator
- Pin Cred Time Admin Lockout
- Pin Cred Does Not Expire
- Pin Cred Policy Name
- Pin Cred User Cant Change
- Pin Cred Time Changed
- Pin Cred User Must Change
- Department
- Enable Extension Mobility Cross Cluster (set to True)
- Confirm Digest Credentials
- Repeat Confirm Digest Credentials
- Primary Device
- User Group

### 23.30.4. Device Profiles and Extension Mobility Profiles

A CallManager device profile is called an extension mobility profile in VOSS Automate. Device profiles are configured in VOSS Automate via device profile configuration templates. EMCC CSS may be automatically assigned via device profile configuration template.

### 23.30.5. Assigning Extension Mobility via QAS

1. Go to **Subscriber Management > Quick Add Subscriber**, and choose a user from the **Username** drop-down list.
2. Select **Extension Mobility**.

- To enable EMCC, select **EMCC**.

---

**Note:** The **EMCC** checkbox displays only if you've selected the **Extension Mobility** checkbox.

---

- Click **Save**.

- The CUCM user is added on CUCM.
- The CUCM device profile user is added on CUCM, based on settings in the device profile configuration template in the QAG.
- The device profile is associated with the CUCM user.
- If you've enabled EMCC:
  - EMCC is enabled for the device profile on CUCM.
  - The EMCC calling search space (CSS) is set for the device profile. The CSS name is based on the country associated with the site, for example, EMCC-CSS-USA
  - The device profile is subscribed to the EMCC Login/Logout phone service on CUCM (which will allow the user to log in and log out of a physical device to use their extension remotely). VOSS Automate requires this service to exist on CUCM, or the provisioning will fail.

- Verify that the extension mobility profile name appears in the **Extension Mobility Profiles** field on the **Existing Services** tab.

---

**Note:** Extension mobility can also be enabled and inspected via the **Subscriber Management** list view (click on the subscriber and check the settings on the following tabs: **User**, **Extension Mobility**).

---

## 23.31. Provision the Voice Service

This procedure provisions a voice service to a subscriber.

1. Go to **Subscriber Management > Quick Add Subscriber**.
2. Select a user from the **Username** drop-down; then, select the **Voice** checkbox.
3. Optionally, select phone details in these fields:
  - Phone Type
  - Phone Protocol
  - Phone Button Template
  - Phone Security Profile

---

**Note:**

- To prevent conflicting QAS settings, fill out the optional fields in the order displayed on the form.
- Default values depend on the selected Quick Add Group (QAG). New values you define for the optional fields override existing values in QAG, CFT (configuration template), and in any other backend (non-editable) CFTs. The system populates any fields left blank with values from QAG, CFT, SDD (Site Defaults Document), or other backend CFTs.
- The template you select (for example, 'Phone Type'), must exist in the QAG and must be allowed by the entitlement profile, which filters the **Phone Type** drop-down to display only devices enabled by this profile.
- If a phone button template is not specified in QAG, or if the specified phone button template has blank values for the phone fields, the phone field values are pulled from the SDD.

To override the default phone button template, enter a new value in the **Phone Button Template** field. The new value is applied on Unified CM, if it allows the phone type.

---

4. Required. In the **Lines** section, select a line from the **Directory Number** drop-down.

---

**Note:** The line must be one of the directory numbers in **Subscriber Management > Directory Number Inventory**.

5. Required. In the **Phones** section, select a phone from the **Phone Name** drop-down.

---

**Important:**

- Phones available in this drop-down are:
  - In the assigned Quick Add Subscriber Group, which have possibly synced from Unified CM
  - Available at the specific site
  - Not currently owned by any other user

Note that the ability to associate an existing, un-associated phone to a subscriber using Quick Add Subscriber (QAS) depends on the Global Settings setup for Phones.

- If you wish to add a new phone, enter a valid name in the **Phone Name** field. Ensure you enter the phone name correctly (including the correct number of characters).

The phone name must have:

- A prefix (such as SEP)
- A MAC address (12 hexadecimal characters)

To add more phones, repeat this step until you have all the phones you need.

6. Click **Save**.

See also:

- [Global Settings](#)

## 23.32. Provision the Voicemail Service

1. Choose **Subscriber Management > Subscribers**. From the **Subscribers** list, click on the name of the subscriber to be provisioned with voicemail.
2. Choose the **Voicemail** tab.
3. In the **Voicemail Account** field, click +. The **Voicemail Line** drop-down appears.
4. Choose a line from the **Voicemail Line** drop-down and click **OK**.

For details on the workflow, see [Voicemail](#).

5. Choose **Subscriber Management > Quick Add Subscriber**, and choose the same user from the **Username** drop-down list.
6. Choose the **Existing Services** tab.
7. Make sure that the voicemail line appears in the **Voicemail Extension** field.

## 23.33. Provision Webex Service

This procedure enables a subscriber for the Webex service.

1. In the Admin Portal, go to (default menus) **Subscriber Management > Subscribers**.
2. From the **Subscribers** list, click the name of the subscriber to be provisioned with WebEx service.
3. Select the **WebEx** tab.
4. In the **WebEx User** field, click the Plus icon (+) to display the Webex configuration fields.
5. Fill out the following details: First Name, Last Name, Email, Password
6. In the **Privilege** section, select relevant Webex privileges.
7. Click **OK**.
8. Go to (default menus) **Subscriber Management > Quick Add Subscriber**, and choose the same user from the **Username** drop-down.
9. Select the **Existing Services** tab, and ensure that "ACTIVATED" appears in the **WebEx** field.



## Related Topics

- [Provisioning Subscribers with Cisco Webex](#)

## 23.34. Provision the Pexip Conference Service

The **Pexip Conference** tab is only available if:

- Pexip Conference service has been configured and is available to the hierarchy (via the Quick Add Subscriber Group).
  - Entitlement Profile: the **Conferencing** check box has been selected and associated to the Subscriber.
1. Choose **Subscriber Management > Subscribers**. From the **Subscribers** list, click the name of the subscriber to be provisioned with Pexip Conference service.
  2. Choose the **Pexip Conference** tab.
  3. In the **Pexip Conference** field, click +. The Pexip Conference configuration fields appear.
  4. Enter information as required, for example:

Field	Description
Description	The name of the conference: contains the Subscriber username
Host PIN	4-20 digits, including any terminal #.
Allow Guests	Enables Guest PIN input. If enabled, the same digit specification as Host PIN applies.
Guest PIN	4-20 digits, including any terminal #. Allows you to set a secure access code for Guest participants who dial in.
IVR Theme	A theme for the conference can be selected or else the default applies.

Refer to the interface tooltips and for details on all the form fields.

5. Click **Save**.
6. To verify: choose **Subscriber Management > Quick Add Subscriber**, and choose the same user from the **Username** drop-down list or verify on the **Pexip Users** menu.
7. Choose the **Existing Services** tab.
8. Make sure that "ACTIVATED" appears in the **Pexip** field.

If the subscriber is deleted, the **Pexip Conference** is either retained or also deleted - according to the Global Settings setting See: [Global Settings](#).



## Related Topics

- [Pexip Conference Users](#)
- [Add a Pexip Virtual Meeting Room \(VMR\)](#)

## 23.35. Provision the Jabber or Dual Mode Device Service

This procedure provisions a subscriber with the Jabber or dual mode device service, using Quick Add Subscriber (QAS).

1. Go to (default menus) **Subscriber Management > Quick Add Subscriber**.
2. From the **Username** drop-down, choose a user.
3. Select the **Jabber/Dual-Mode Device** check box. The **Jabber and Dual-Mode Devices** field appears.
4. Click the Plus icon (+) at **Jabber and Dual-Mode Devices** to expose the **Jabber/Dual Mode Agent** drop-down and **Device Name** field.
5. At **Jabber/Dual Mode Agent**, choose a device type. The **Device Name** field is automatically generated as follows:
  - a. If no device name exists in the format *<device type prefix><username>*, then in this format:  
*<device type prefix><username>*
  - b. If device name exists in the format *<device type prefix><username>* or *<device type prefix><username><number>*, then in the format:  
*<device type prefix><username><random number>*  
where *<random number>* is generated and unique.
    - *<device type prefix>* - always three characters, either BOT, CSF, TAB, TCT, CIM, or CTI.
    - *<username>* - 8 characters maximum. If a username contains '\_' and '.' characters, these characters are removed from the automatically generated username. Automatically generated usernames can be edited if required.
    - *<random number>* - dependent on length of username, to make up a total of 11 characters along with the username.

See examples in table below.

Example Device Type and Device Name Combinations

For this type of device	Device Name (automatically generated) Format (regex): “[a-zA-Z0-9]{1,15}”
Android (Cisco Dual Mode for Android)	For example: BOTJOHND003938
CSF (Cisco Unified Client Services Framework)	For example: CSFROBWOR77891
iPad (Cisco Jabber for Tablet)	For example: TABRQUENT18947
iPhone (Cisco Dual Mode for iPhone)	For example: TCTPDEVILLI156
Carrier Integrated Mobile	For example: CIMJOHNSMI
CTI Remote Device	For example: CTIJOHNSMI

For the following Agents, also select the **Mobile Identity** checkbox to enable Mobile Identity if required:

- Android
- iPhone
- Carrier Integrated Mobile

6. Click **Save**.

7. Go to **Subscriber Management > Quick Add Subscriber**.

8. From the **Username** list, choose the same user.

9. On the **Existing Services** tab, ensure that the **Phones** field displays the Jabber device.

For each device type, a Configuration Template that is associated with the Subscriber’s Quick Add Group is used to provision the device. For defaults, see: [Quick Add Subscriber Groups Default Model](#).

**Note:** If a CSF Jabber device type is selected, all lines are associated to the CSF Jabber device by default.

## 23.36. Contact Center



### 23.36.1. Overview

VOSS Automate provides Day 2 management support for Cisco Unified Contact Center Express (UCCX), and allows administrators to manage and configure agents from a single pane of glass.

A data sync in VOSS Automate allows Contact Center device models in VOSS Automate to sync to the UCCX server:

- UCCX server management:
  - [Configure Cisco Unified Contact Center Express \(UCCX\) Server](#)
- Day 2 integration:

- Add a UCCX device to a hierarchy, add entitlement profiles, then configure subscribers as Contact Center agents. Additional management can be performed in VOSS Automate, including overbuild. See *Objects Moved During the Overbuild*
- *Add a Contact Center Agent using Quick Add Subscriber*
- *Add a Subscriber* (Contact Center)
- Direct management:
  - *Agents* (device/uccx/Agent)
  - *Skills* (associated with competency levels)
  - *Teams* (device/uccx/Team)
  - Contact Center Resource Groups (device/uccx/ResourceGroup)
  - Contact Center Service Queues (device/uccx/ContactServiceQueue)
- Associate agent devices association with CUCM users:
 

Admins can specify the agent's controlled device via:

  - Quick Add Subscriber
  - Subscriber
  - Direct Agent management

The agent device is associated with the list of CUCM application users specified as part of the UCCX server configuration. The association is kept sync when phones and extension mobility profiles are deleted or replaced.
- VOSS Automate management interfaces for UCCX:
  - Manage agent profiles (see *Agent Profiles*)
  - Re-skilling (see: *Re-skill Agents*)

Bulk manage (add, remove) agent skills and competencies via side-by-side transfer boxes for the following:

  - \* Agents
  - \* Teams
  - \* Resource groups

### 23.36.2. Agents

You can view a list of Contact Center agents that have been synced in, or agents added when adding subscribers at a customer or site, via (default menus) **Subscriber Management > Contact Center > Agents**.

**Note:** Agents synced from UCCX but not yet moved to a site may be listed as located at the customer hierarchy.

To add a new Contact Center agent, from the list view click the Plus (+) icon, then on the **Agents / New Record** page, choose an agent by their user ID from the **User ID** drop-down.

To view or update an existing Contact Center agent, click on an agent in the list to view the agent's devices and tagged lines or to update the agent. You can manage the following agent properties:

Field	Description
<b>Alias</b>	The agent alias on the device. Note that there are restrictions on allowable characters in the alias.
<b>Type</b>	The agent type, either Agent or Supervisor.
<b>Team</b>	Agents who are not assigned to a specific team are assigned to the Default team.
<b>Resource Group</b>	Optional. Choose a resource group.
<b>Automatic Available</b>	Enabled by default. Defines whether the agent is automatically in an 'available' or 'ready' state after finishing a call and disconnecting.
<b>Skills</b>	Optional. Click the Plus icon to add skills.
<b>Controlled Device</b>	Click the Plus icon to add a device type, either Phone or Extension Mobility. When choosing Phone, you will need to choose the phone name.

### 23.36.3. Teams

On the **Teams** page (default menus, **Subscriber Management > Contact Center > Agents**) you can view a list of Contact Center agent team names, their primary and secondary supervisors, team members, and team availability. From the list view you can add and manage Contact Service Queues.

**Note:**

- When adding a new team at the Customer level, the NDL must have a reference set up to UCCX, via (default menus) **Customer Management > Network Device Lists**.
- Agents displayed in the **Available** list are agents that are currently not assigned to any other team, and may be assigned to the team you're working with. An agent can only be assigned to one team at a time.

### 23.36.4. Contact Center Resource Groups

Contact Center resource groups comprise one or more agent profiles. If you're creating resource groups directly in VOSS Automate, you will need to create the resource groups before creating the agent profiles. When creating the agent profiles, you reference the resource group where you want to add the agent profile. Contact service queues can be configured to use resource groups.

To view and manage resource groups for Contact Center agents, go to (default menus) **Subscriber Management > Contact Center > Resource Groups**.

---

### 23.36.5. Skills

VOSS Automate allows you to define skills and to assign competency levels to agents with these skills when associating a skill with an agent, agent profile, or skill group in a Contact Service Queue.

To view and manage skills for Contact Center agents, go to (default menus) **Subscriber Management > Contact Center > Skills**.

### 23.36.6. Contact Center Service Queues

Incoming contact center calls are placed in a queue and sent to a specific agent based on the queue configuration.

To view and manage contact service queues, go to (default menus) **Subscriber Management > Contact Center > Contact Service Queues**.

In the **Contact Service Queues** list view you can view, add, and update contact service queues. For example, you can associate a contact service queue with a resource group or skills.

VOSS Automate supports the following queue types:

- Chat
- Email
- Voice

If voice, chat, and email Contact Service Queues exist on UCCX, their data is included when a Contact Center server is imported to VOSS Automate, and you can manage the queues in VOSS Automate.

---

**Note:** When choosing queue type EMAIL, you will need to fill out details for the following mandatory fields:

- Email Username (accountUserId)
  - Email Password (accountPassword)
- 

### 23.36.7. Agent Profiles

Each agent profile specifies:

- Team
- Resource group (agent profiles can be grouped together as resource groups)
- Skill

---

**Note:**

- Before creating the agent profile, you will need to define the team, resource group, and skill you wish to associate with the agent profile.
  - If you're creating an agent using Quick Add Subscriber, you must first create the agent profile.
- 

To view and manage agent profiles, go to (default menus) **Subscriber Management > Contact Center > Agent Profiles**.

### 23.36.8. Re-skill Agents

Re-skilling Contact Center agents involves editing an agent's skills to either add new skills or remove existing skills previously assigned to the agent. You can re-skill one or more agents at a time.

**Note:** Re-skill is available for agents, teams, and resource groups in the Admin Portal. In the Business Admin Portal, only agent re-skill is supported.

This procedure re-skills agents. To re-skill teams or resource groups, select the relevant menu item via (default menus) **Subscriber Management > Contact Center**.

To re-skill agents:

1. In the Admin Portal, select the relevant customer from the organization picker.
2. Go to (default menus) **Subscriber Management > Contact Center > Re-skill Agents** to open the **Re-skill Agents** page.
3. On the **Re-skill Agents** page, choose the agents you wish to re-skill (one or more). Select agents in the **Available** field then click the right-pointing arrow to move the agent (or agents) to the **Selected** field, then:
  - To add new skills, click the Plus (+) icon at **Add Skills**, choose a skill, and select a competency level. Repeat this step to add additional skills.
  - To remove existing skills, click the Plus (+) icon at **Remove Skills**, and select the relevant skill from the **Skill** drop-down. Repeat this step to remove additional skills.
4. Click **Save**.
5. On the **Agents** page, click on an agent you re-skilled to verify that their new skills are added and their removed skills no longer display.

### 23.36.9. Example Setup Workflow for Contact Center

This section describes an example workflow for configuring Contact Center:

1. On the UC apps, configure CUCM and UCCX server integration (this is done directly on the UC apps).
2. At the relevant Customer level in the hierarchy, add a new UCCX server.
  - a. Use UCCX admin user credentials.
  - b. Select the list of CUCM application users to be used for agent device association.
3. Update the Network Device List (NDL):
  - a. Reference the relevant CUCM and UCCX servers in the NDL.
  - b. Set this NDL for each site where agents will be managed.
4. Sync the existing configuration from the UCCX server, either directly from the UCCX server page, or via the **Data Sync** menu.
5. Create agent profiles. To do this, go to (default menus) **Subscriber Management > Contact Center > Agent Profiles**.
6. Create a new agent. There are three options:

- Using Quick Add Subscriber, via (default menus) **Cisco Subscriber Management > Quick Add Subscriber**.
- Using Subscriber management functionality, via (default menus) **Cisco Subscriber Management > Subscribers**.
- Or add the agent directly, via (default menus) **Cisco Subscriber Management > Contact Center > Agents**.

### 23.36.10. Provision a Contact Center Agent

This procedure provisions a subscriber as a Contact Center agent.

#### Pre-requisites:

- The subscriber you wish to provision as a Contact Center agent must be assigned an entitlement profile that has Contact Center service enabled.

#### Perform these steps:

1. In the Admin Portal, go to (default menus) **Cisco Subscriber Management > Subscribers**.
2. From the **Subscribers** list, click on the subscriber to be provisioned as a Contact Center agent.
3. On the subscriber management page for the relevant subscriber, select the **Contact Center** tab.

---

**Note:** This tab is visible only if the subscriber is assigned an entitlement profile with Contact Center service enabled.

---

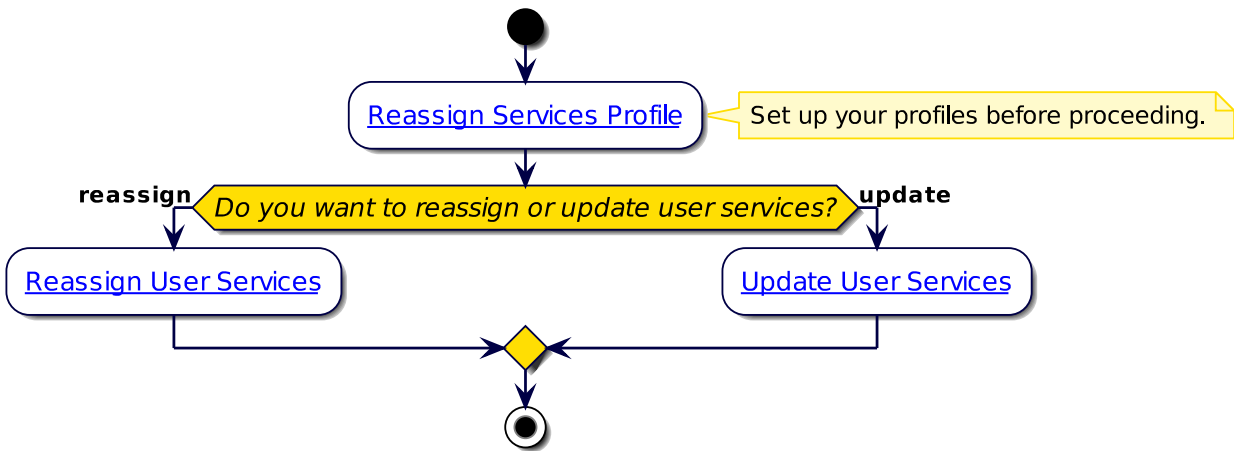
4. Provision the subscriber as a Contact Center agent.

## 23.37. Reassign User Services

### 23.37.1. Introduction to Reassign Services

Reassign Services simplifies and automates the transfer of existing Subscriber services from a Source User to a Target User.

### Reassign Services high level workflow



This utility is for example useful when an employee left the company and a new employee now starts the same role. Therefore, instead removing the old subscriber and configuring a new subscriber with the same settings and standards, the services and settings can be moved from the old subscriber to the new subscriber.

These services can include:

- Fixed phones
- Device Profile(s)
- Remote Destination Profile(s). Remote destination needs to be set up for the target user separately
- Voicemail user with related services including alternate extension and message handle (action)

---

**Note:** Webex (Meetings and App) and CCX services are not currently supported by this feature.

---

Custom settings can be applied to these services during the reassignment. A **Reassign Services Profile** setting is available to choose the configuration templates that will be used to update services during reassignment. These allow you to customize most settings on any of the above devices, including Line Alerting Name, Line Label, DisplayASCII values, and so on.

Example templates are provided that contain macro variables for fields that are likely to differ between subscribers. The field values then resolve with input from existing target user details. In this way the templates are not limited by for example a Site and Phone Model.

When reassigning services from existing source users to existing target users, the latter are moved to the *same site* as the source user, if these differ.

An option is also available to create a new target user as part of the Reassign Services process, instead of selecting an existing user without services. This user will be created at the same site as the source user.

Other features included are:

- Change User Details (modified Reassign Services) that updates the services of an existing subscriber using custom templates referenced in a Reassign Services Profile.

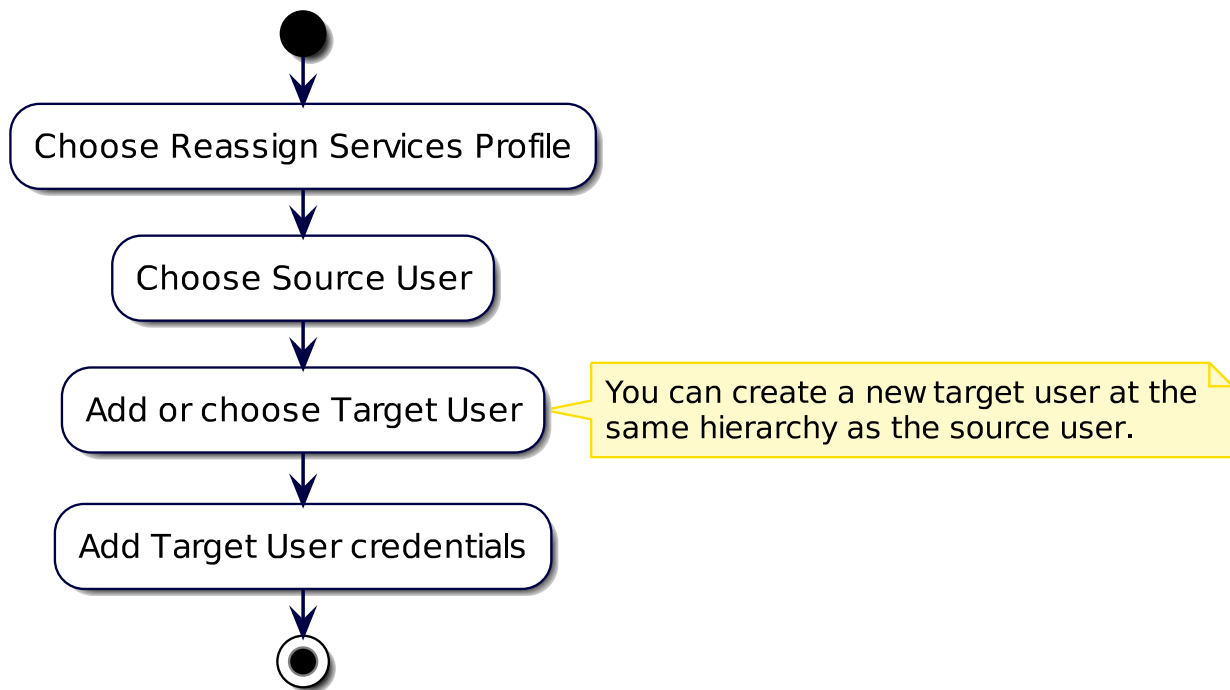


**Related Topics**

- *Reassign User Services*
- *Update User Details*
- *Reassign Services Profile*

**23.37.2. Reassign User Services**

The Reassign Services feature directs you to the Customer hierarchy (if you are not already there) because it supports target users that are on a different site as the source user.



Field Name	Comment
<b>Reassign Service Profile</b>	This field will pre-populate with the first profile. You can select a different profile if required. If no profile option is available, then a reassign service profile needs to be added in the system.
<b>Source User</b>	Choose the subscriber to be reassigned. This provides a list of usernames of Subscribers in the system. It will list local or CUCM-LDAP Synced Subscribers only (not VOSS-LDAP Synced). Once a subscriber is selected, the <b>Source User Services</b> tab is updated to show services currently assigned and that will be reassigned to the target user. This is a good way to validate that all the services are shown or that there are not services that you do not want reassigned.
<b>Source User Hierarchy</b>	Once a subscriber is selected the <b>Source User Hierarchy</b> will be populated - this is a read-only informational field.
<b>Add A New Target User</b>	Select this option if you need to add a new local user to the system as the target user. Once selected, the form updates to reflect this choice.
<b>Target User</b>	To reassign to an existing user: select the username from the drop-down. This will show local or CUCM-LDAP synced users at the customer level or lower. Once a user is selected, the <b>Target User Services</b> tab is updated to reflect any services currently assigned to the user. If the user has any entries on this tab then the transaction will be blocked. So this provides an option to check before submitting. To create a new target user: enter the username for the new user to be created. The user will be added to the same hierarchy as the source user.
<b>Target User Hierarchy</b>	Shown only if add new target user is not selected - read-only informational field. Shows the hierarchy of the selected target user. Can be different to the source user and the feature will move the target user to the same hierarchy as the selected source user.
<b>First Name</b>	First Name of the Target user. Will be read only if the target user is a LDAP synced user.
<b>Last Name</b>	Last Name of the Target user. Will be read only if the target user is a LDAP synced user.
<b>Email Address</b>	Email Address of the Target user. Will be read only if the target user is a LDAP synced user.
<b>Password</b>	Visible if the target user is not a LDAP synced user. Enter the password for the target user.
<b>Pin</b>	Enter the PIN for the target user (used for device profile and voice-mail).

## Notes:

- The feature requires that source user services should all be at the same site hierarchy.
- Target user and hierarchy:
  - New target user - will be added to the hierarchy of the source user.
  - Existing target user - If the target user is in a different hierarchy to the source user, the target user will be moved to the same hierarchy as the source user as part of the reassign of services.

---

**Note:** It is not possible to reassign services to a user who is on a different CUCM Cluster than the source user. The target user drop-down will currently not show users on a different cluster.

---

- The **Source User Services** tab will populate once a source user has been selected. This shows the services currently assigned to that user and the services that will be reassigned. This is a good way to validate the services that will be reassigned and to check if there are any services missing or that should not be reassigned. This can then be corrected as needed before reassigning the services.
- The **Target User Services** tabs will populate once a target user is populated. This is a good way to validate that the target user does not currently have any services assigned, as this will cause the transaction to fail with an error message indicating the target user has services. This can be resolved by choosing a different target user or by removing the services currently configured for the target user.
- Based on the setting in the reassign profile, the source user will either be left in the system (without any services) or removed from the system entirely.

Most of the services are updated to be associated to the target user and have settings updated according to the Configuration Templates (CFTs) in the reassign profiles.

There are some considerations:

- Single Number Reach (SNR) - Any existing remote destinations configured for the source user are deleted. The Remote Destination Profile (RDP) is then associated to the target user and updated per the CFT in the reassign services profile.
- Voicemail - the existing voicemail service for the source user is deleted to ensure a clean voicemail service. The voicemail service is then rebuilt for the target user based on the CFT in the reassign service profile. This means that any personalized settings, messages, greetings, and so on are cleared.
- Shared lines - Shared lines associated to the source user will only be updated if the shared line is the source user's primary extension.

The feature includes the optional ability to update shared line appearances of the source user's lines on other users' phones to reflect the destination user's details. For example:

- Bob.Smith has a phone with the following:
  - Line1: 55210 - Label: Bob Smith 55210
- Mary Smith has a phone with the following:
  - Line 1: 55220 - Label: Mary Smith 55220
  - Line 2: 55210 (shared line appear of Bob) - Label: Bob Smith 55210

In this case, when Bob's service is reassigned to a new user, Mary's Line 2 appearance will need to be updated to reflect the new user (e.g display name, label, etc.). This is supported for line appearances on Phones, Device Profiles, and Remote Destination Profiles. See the reassign services profiles section for more details on the controls.

## Related Topics

- Shared Lines in the Core Feature Guide.

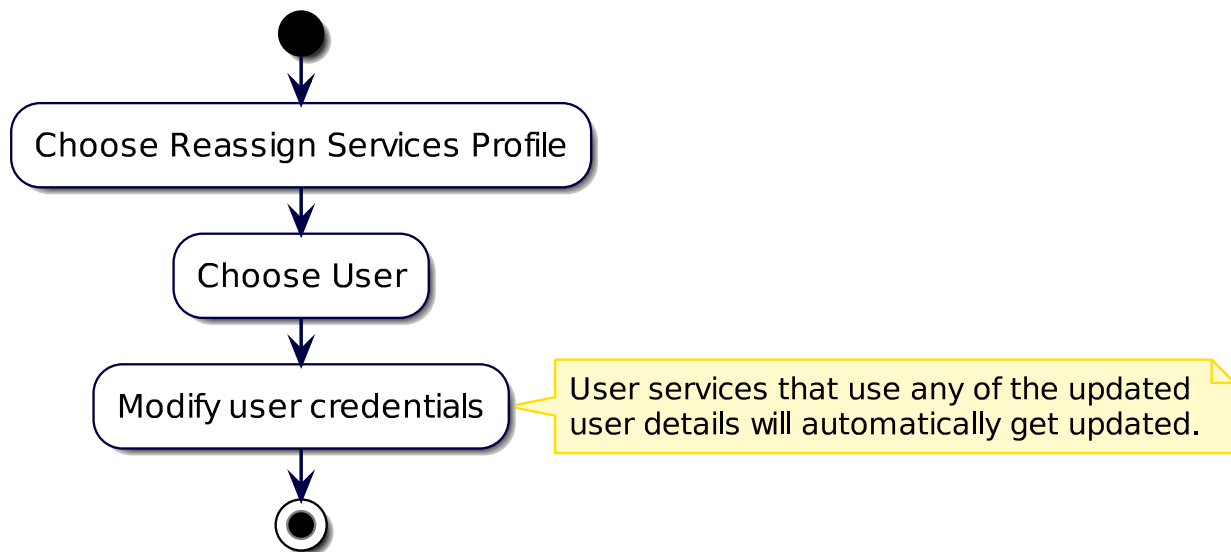
### 23.37.3. Update User Details

The **Update User Details** menu shows a simplified form of Reassign Services where only one source user is selected, and that user's services are updated using custom Configuration Templates referenced in a Reassign Services Profile. The input fields allow for an easy update of basic details such as First Name, Last Name, Email, Password and PIN. User services that use any of the updated user details will automatically get updated.

The **Reassign Services Profile** drop-down list is available to select a profile to be used to also update the user's services details.

Similar to Reassign Services, selecting a Username auto-populates the Hierarchy of the selected user and the **Current User Services** tab shows which services will be updated.

#### Reassign User Services (Update user services workflow)

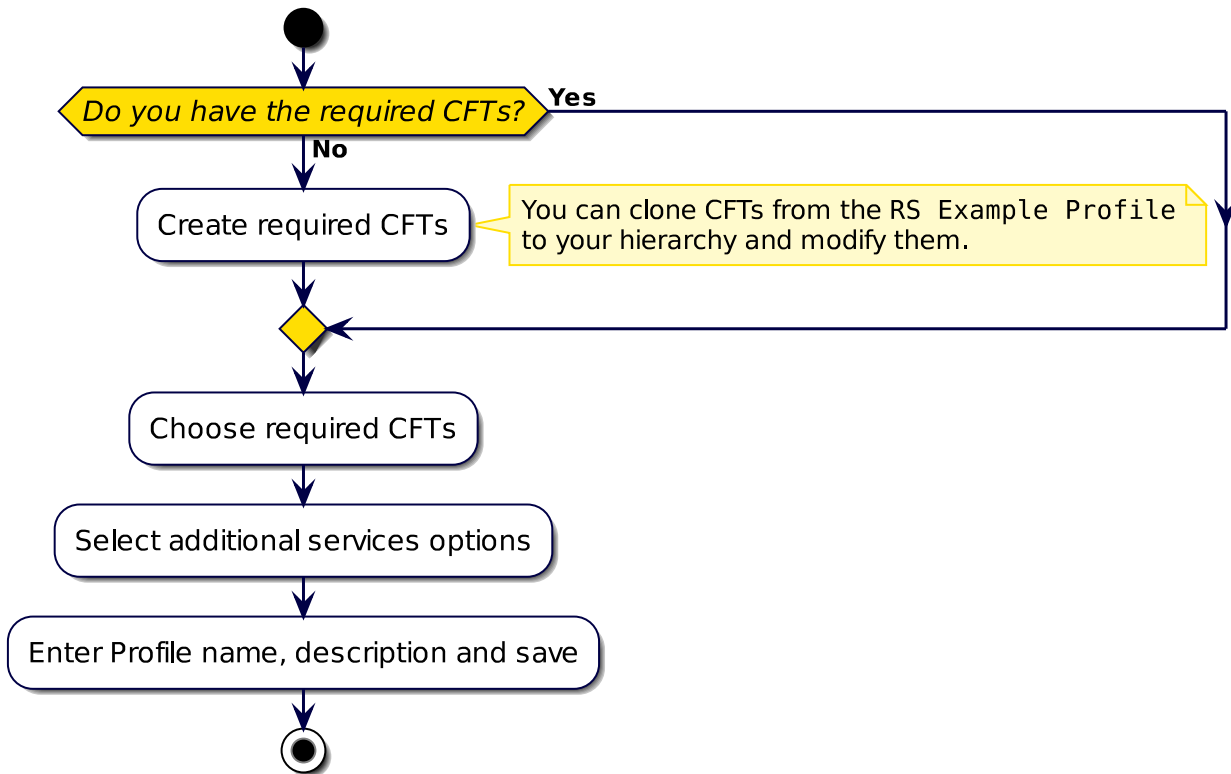


### 23.37.4. Reassign Services Profile

The **Reassign Services Profile** page allows for a set of configuration settings and additional settings to apply when the Reassign Services functionality is used.

### Reassign services profile workflow

The flowchart describes the configuration settings to apply. If no CFT is defined for a service, it is still moved to the new user. However, existing settings will be left in place.



### Configuration templates and profiles

Configuration templates (CFTs) selected in the profile determine how many of the detailed settings of the various services are updated as part of the reassign. This is essentially to allow you to re-align settings to your baseline service deployment logic and update any settings that incorporate the user's name - for example descriptions, alerting/display names, labels, and so on.

If no CFT is defined for a service, it is still moved to the new user. However, existing settings will be left in place. There are a few cases where the feature will make updates to specific service settings regardless of the CFT (i.e. when these settings are required to associate the user and service - owner of a phone, associated devices on the UCM user, etc). If the source user does not have a given service (e.g voicemail) then any CFT in the profile is ignored as the feature does not add new services that did not exist on the source user.

There is a set of example CFTs in the system by default - prefixed RS - that provides some examples of common settings and logic that might be used.

This profile and templates for configuration settings can be maintained per hierarchy as needed. The context for the reassign services feature is fairly similar to Quick Add Subscriber and this is to allow the reuse of macros/logic from your quick add group CFTs in the reassign services profiles. In many cases you could even use the same CFT to ease maintaining multiple sets of CFTs that define the baseline user and service configuration.

---

**Note:** At least one Reassign Services Profile must be created in order to use the feature.

---

### Reassign Services Profile field reference

To access this page, to to (default menus) **Subscriber Management > Reassign User Services > Reassign Services Profile**, then choose an existing profile to view settings, or add a new profile.

Field	Description
<b>Profile Name</b>	Name for the Profile - recommended to make it meaningful to the user's that will be using the feature if you need more than one profile.
<b>Profile Description</b>	Description for the profile
<b>Remove Source User</b>	If selected the feature will fully remove the source user after moving all the services. If not selected then the base user and subscriber will be left when the feature completes however no services will be enabled.
<b>User CFT</b>	This CFT defines VOSS User settings to apply to the target user - e.g. role
<b>CUCM User CFT</b>	This CFT defines the UCM User settings to apply for the target user - e.g. Department, Service Profile, etc.
<b>Line CFT</b>	This CFT defines the UCM Line settings to apply for the target user - e.g. Description, Alerting Name, Pickup Group, Call Forwarding, etc
<b>Phone CFT</b>	This CFT defines the Phone settings to apply to the devices being moved - e.g. Line Label, display name, device pool, CSS, etc. This same CFT applies to all phones (hardphones, soft-clients, etc) so typically relate to line appearance settings or other non-phone type specific settings. ownerID, mobility user (for soft clients) as set via the workflow irrespective of the CFT.
<b>Device Profile CFT</b>	This CFT defines the Device Profile (extension mobility) service for the user - e.g. Line label, display name, etc. As with the Phone this is typically for line appearance settings on the device profile.
<b>Remote Destination Profile CFT</b>	This CFT defines the Remote Destination Profile (Single Number Reach - SNR) settings to apply to the service being moved - e.g. line label, display name, CSSs, etc. Again typically for updating line appearance settings but can also edit other base RDP settings.
<b>CUC User CFT</b>	This CFT defines the CUC User (Voicemail) settings to apply when setting up voicemail for the user.
<b>Add CUC User Alternate Extension</b>	This setting determines if the feature will add a voicemail alternate extension for the user if voicemail exists on the source user. This can be used to add a standard alternate extension (e.g. short extension version of the user's number) if needed as part of your standard deployment.

Field	Description
<b>CUC Alternate Extension CFT</b>	This setting is visible if the add alternate extension setting above is true. This CFT determines the settings for the alternate extension that will be added. This is where you would define the alternate extension to be added as standard.
<b>Update CUC User Message Handler (Action)</b>	This setting determines if the feature will configure the message handler settings for voicemail (form of single inbox).
<b>CUC Message Handler (Action) CFT</b>	This setting is visible if the message handler setting above is true. This CFT determines the settings that will be configured for the message handler. So this will need to include the email address for example of the user as well as the message actions.
<b>Update shared lines (for unassociated Phones, Device profiles, RDP)</b>	This setting determines if the feature will update line appearances of the source user's lines on other user's devices. This can be used to update the display names or labels for instance on those remote devices to reflect the new user's details. These CFTs only apply to line appearance settings on those devices (not general phone settings) and only for the line appearances that are shared with the source user. Other line appearances on the devices will not be updated. For example, the other user's phone had 3 lines, only 1 of which was shared with the source user. Only that 1 line appearance will be updated and the other 2 will be left untouched.
<b>Shared Line (unassociated Phone) CFT</b>	This setting is visible if the Update Shared Line setting is true. This CFT determines the settings on the other users' Phones that have the line appearance.
<b>Shared Line (unassociated Profile) CFT</b>	This setting is visible if the Update Shared Line setting is true. This CFT determines the settings on the other users' Device Profiles that have the line appearance.
<b>Shared Line (unassociated RDP) CFT</b>	This setting is visible if the Update Shared Line setting is true. This CFT determines the settings on the other users' RDP that have the line appearance.

Typically, Configuration Templates similar to your current Quick Add Subscriber templates can be used. Example Configuration Templates are also available for each drop-down, with naming convention RS Example <service> CFT. The templates shown on the **Configuration Templates** menu can be cloned, renamed and modified per hierarchy as required.

Configuration examples:

- Template Name: RS Example CUCMPhone CFT

Field: **Line > Display Ascii**

Value:

```
((input.firstName == fn.null ))
<{{input.lastName}}>
<{{input.firstName}} {{input.lastName}}>
```

- Template Name: RS Example CUCMLine CFT

Field: **ASCII Alerting Name**

Value:

```
{{fn.sub_string input.lastName, 0, 30}}
```

Additional optional settings available:

- **Add CUC User Alternate Extension:**

If checked, a drop-down is enabled to select a template that updates the alternate extension.

Example template: RS Example CUCAlternateExtension CFT

Field: **DisplayName**

Value:

```
{{ input.firstName }} {{ input.lastName }} Alt
```

- **Update CUC User Message Handler (Action):**

If checked, a drop-down is enabled to select a template that updates the email address for single inbox.

Example template: RS Example CUCMessageHandler CFT

Field: **RelayAddress**

Value: if no input email address is available, a dummy address is added

- **Update shared lines (for unassociated Phones, Device profiles, RDP):**

If checked, a drop-down is enabled to select a template so that for any shared line instances from the source user, line label details can optionally be updated with those of the target user. The **Line CFT** template updates do not apply to shared lines.



## 24. Cisco Webex App

### 24.1. Introduction to Cisco Webex App

#### 24.1.1. Overview

Cisco Webex is a cloud-based business collaboration service that allows employees to message, meet, and call instantly in order to strengthen relationships and increase productivity.

Cisco Webex combines mobile devices and other communications tools to provide instant communications and live meetings to ensure a professional and effective collaboration experience.

The table describes the main Cisco Webex features:

Feature	Description
Messaging	Business messaging allows users to prepare, share, and repeat content, and it facilitates one-on-one or team messaging facilities in virtual rooms.
Meeting	Connect teams and meet customers easily with the added benefits of messaging and content sharing before, during, and after a meeting.
Call	The service enables voice and video communications via mobile, desktop, and room-based devices. Connect your existing PSTN1 services to Cisco Webex to enjoy one-touch directory dialing and join meetings from anywhere on any device. Mobile users get features such as single number reach, single voicemail service, video services, and the ability to seamlessly move between devices during a call.

#### Related Topics

- Cisco Webex Server
  - [Webex Servers](#)
- Cisco Webex Services:
  - [Add Cisco Webex Service](#)
- Cisco Webex Users:

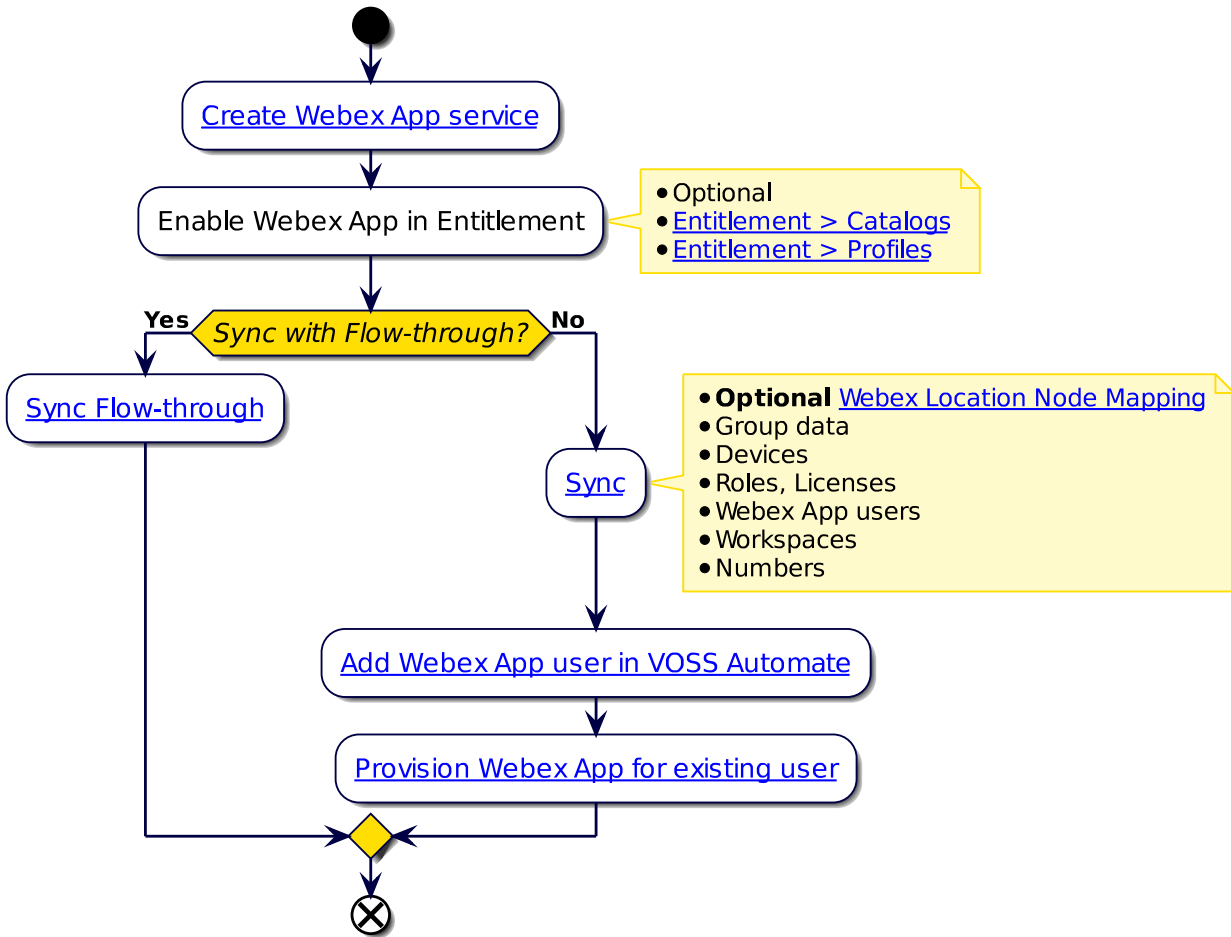
- *Users (Webex App)*
- *Bulk Update Webex App Users*
- *Webex App Licenses*
- *Add a Subscriber (Webex App tab)*
- Cisco Webex Workspaces:
  - *Workspaces*
  - *Webex App Manual Steps*
- Cisco Webex Locations
  - *Webex Locations*
- Cisco Webex App Devices
  - *Devices (Webex App)*

### 24.1.2. Cisco Webex Workflow

---

**Note:** Only creating a Webex App service for Cisco Webex to function in VOSS Automate. The other steps are dependent on your particular requirements.

---



### 24.1.3. Webex App Sync

#### Default Webex Calling Data Sync

The default Webex Calling sync that is used to sync Webex Calling data and is available from the Data Sync list applies:

- **Model Type List:** SparkDataAllMTL
- **Synchronization Order:** SparkDataSyncOrder

This list type contains an *empty* `exclusion` list, in other words, all device model instances are synced. If you need to exclude any models then you can update this list.

## Default synced models

```
device/spark/Organization
device/spark/Role
device/spark/License
device/spark/CallingProfile
device/spark/LocationFloor
device/spark/Location
device/spark/User
device/spark/UserConfig
device/spark/Place
device/spark/Group
device/spark/Team
device/spark/Room
device/spark/Number
device/spark/AutoAttendants
device/spark/CallPickup
device/spark/LocationCallingDetails
device/spark/CallParkGroup
device/spark/Announcements
device/spark/Schedules
device/spark/CallParkExtensions
device/spark/HuntGroup
device/spark/WorkspaceCallSettings
device/spark/ActivateDevice
device/spark/Floor
```

## Sync existing Cisco Webex Users for the Customer

A default sync schedule has the following name format: SyncSpark-SCHED-XXX

### Two sync methods

- Click **Action > Sync Webex App Users** (on the **Customer Access** page)
- Execute **SyncSpark[Customer]** (via **Administration Tools > Data Sync**) to run a sync

---

**Important:** To properly sync in calling behavior settings, ensure the sync setting **Quick Import** is set to *False* (disabled), and **Refresh Existing (Changed) Data** is set to *True* (enabled) on *all* data syncs that include the *device/Spark/user* model. By default, these are:

- *SyncSparkUsersXXX*, and
- *SyncSparkXXXX*

These are the default settings for the *device/spark/User* syncs, but it is important to ensure they correctly configured before syncing in users.

---

### Synced in Webex Numbers

Webex numbers are synced in and maintained in `device/spark/Number` and the Number Inventory.

The numbers of synced in Cisco Webex users display the following settings and values in the Number Inventory (see [Number Status and Usage](#)):

Setting	Value
Status	Used
Usage	User
Vendor	Webex Calling

### Synced in Licenses

Licenses are synced and maintained in `device/spark/License`.

### Synced in Locations

Locations are synced - see [Webex Locations](#).

### Synced in Rooms, Teams, Groups

Rooms, Teams and Groups details are synced in as read-only data to `device/spark/Room`, `device/spark/Team`, and `device/spark/Group`, respectively.

### Synced in Calling

Calling is synced in to `device/spark/UserConfig`, where the settings can be managed per user if the assigned license of which is "Webex Calling - Professional".

### Synced in Devices

Devices are associated either with a person or with a workspace. For users associated with a device, the person ID (converted to an email address) is used to sync the device to the correct hierarchy. See [Devices \(Webex App\)](#).

## 24.2. Users (Webex App)

### 24.2.1. Overview

You can add Webex App users into Automate in various ways:

- Add Webex App user via (default menus) **Cisco Webex App > Users**. See [Add Cisco Webex App User via Cisco Webex App Menu](#)
- Add Webex App user via Webex Teams Quick Subscriber. See [Quick Subscriber \(Webex App\)](#)

- Add Webex App user via (default menus) **Subscriber Management > Subscribers**. See [Add a Subscriber](#)
- Add Webex App user via flow through provisioning. See [Sync Webex App Users with Flow-through Provisioning](#)
- Add Webex App user via (default menus) **Subscriber Management > Quick Add Subscriber (QAS)**

**Note:** In this case, choose a *Webex Teams User Template* from the drop-down, or use the default user template (which is referenced in the *Quick Add Subscriber Groups\** associated with the user).

If you want customized values, clone the *Webex Teams User Template* (via **Customizations > Configuration Templates**), and edit as required.

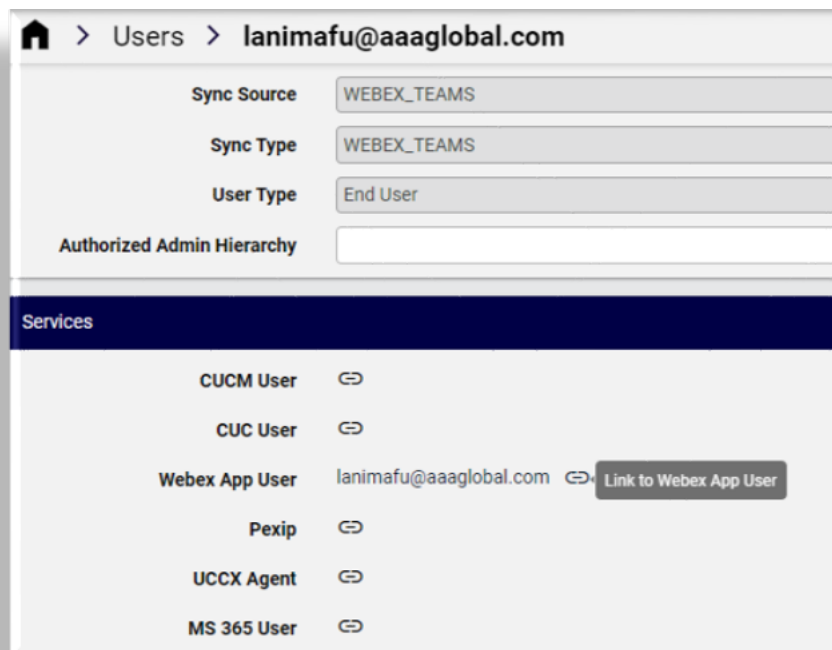
## Related Topics

- Provision Cisco Webex for an existing user (see [Provisioning Subscribers with Cisco Webex](#))
- [Quick Subscriber \(Webex App\)](#)

### 24.2.2. View Cisco Webex App User

To view a Cisco Webex App user:

1. Open the Webex App user's settings. Two options:
  - View the list of users on the **Users** page ([relation/User](#)). Select the relevant Webex Teams user to open their user management page. Here you can click the link (in the **Services** fieldset) to go to their Webex App user settings ([relation/SparkUser](#)).



- View the list of Webex App users on the Cisco Webex App **Users** page ([relation/SparkUser](#)), then click on the relevant user to view their Webex App user settings.

The screenshot displays the user settings for 'Iani' in the Cisco Webex App. The breadcrumb navigation shows 'Users > Iani'. There are two tabs: 'Account Details & Calling Type' (active) and 'Roles & Address'. The form contains the following fields and values:

Email Address *	lanimafu@aaaglobal.com
First Name	Iani
Last Name	Mafu
Display Name	Iani Mafu
Manager	
Manager ID	
Department	
Title	
Time Zone	
Location	
Date Created	November 12, 2021 at 10:32:37 AM South
Status	The user status could not be determined
Login Enabled	<input checked="" type="checkbox"/>
Invite Pending	<input checked="" type="checkbox"/>
Calling Behaviour	
Work Number	
Extension	

A 'Calling' button is visible on the left side of the form.

2. On the Webex App user's detail page, view their account details and calling type, and their roles and addresses.

If the user is associated with a phone (device) you can click the link adjacent to the device to go to [relation/WebexDevice](#) to view and manage the device settings.

---

**Note:** Multiple Jabber devices can be added to a Webex User as long as the user does not have an existing device of the same device type.

---



### 24.2.3. Add Cisco Webex App User via Cisco Webex App Menu

This procedure adds a new Cisco Webex user via the default **Cisco Webex App** menu in VOSS Automate.

**Note:** In this case:

- You can choose phone numbers and assigned licenses. For phone number type, a Webex Calling license is required, and the Webex API (used for syncing with the Webex Control Hub) only supports add or update for phone number type *Work*.
- The default option for **Calling Behavior** is Calling in Webex App.
- By default, **No administrator privileges** is enabled.

1. Log in to the Admin Portal as a Provider, Reseller, Customer, or Site administrator.
2. Go to (default menus) **Cisco Webex App > Users**.
3. View existing Cisco Webex App users (synced, or added in VOSS Automate).
4. Click **Add**.
5. Choose the hierarchy where you want to add the Cisco Webex user.
6. Fill out fields on the **Account Details & Calling Settings** tab/panel:
  - (Mandatory). Select an email address. This value is used to match users when they're moved during an overbuild.
  - Fill out a first name and last name.
  - (Mandatory) At **Display Name**, fill out a display name for this user, typically, name and surname.
  - At **Manager ID**, select the manager's email address.
  - **Location** - the location selected from those specified on the Webex Control Hub - as synced in.
  - **Calling Behavior** - options are auto-populated, and display as one of the following:
    - Calling in Webex App
    - Calling in Webex App (CUCM)



---

**Note:** Fields for device creation (Iphone, Android, CSF, Tablet) are displayed and checked by default.

---

- Cisco Jabber App
- Third Party App
- **Phone Numbers:** The fields: **Type** (e.g. “Work”) and **Number** are available for each entry.
- **Extension:** Webex Calling extension is available if a user has a Webex Calling license.
- **Assigned Licenses:** selected from licenses available on the Cisco Webex service as synced in from the Webex Control Hub.
  - Depending on a user’s license, services such as Collaboration, Conferencing are available.
  - If Webex calling is enabled and a user is assigned a **Webex Calling - Professional** license, a **Calling Settings** panel on the form allows for the user management of **Calling Settings** (such as Barge In, Caller ID, Call Forward, Call Recording, Call Waiting, Intercept).

🏠 / Phones & Services >> / Cisco Webex App Users / Adam

- > Webex Calling - Professional
- > Free screen share
- > Free message

### Calling Settings

**Barge In**

Enabled

**Call Bridge**

Warning Tone Enabled

**Caller Id**

Block In Forward Calls Enabled

Custom External Caller Id Name

Custom Number

Direct Number

Extension Number

External Caller Id Name Policy

**Note:** If a user has **Calling Settings** available, these need to be removed and to be re-provisioned if it is necessary to move the subscriber to another site. For details, see [Move Users](#).

7. On the **Roles** tab/panel, select relevant roles:

No administrator privileges	Default
Full administrator privileges	Access to all portal features, including: <ul style="list-style-type: none"> <li>• Assign roles</li> <li>• Company policy and templates</li> <li>• Device management</li> <li>• Licenses and upgrades</li> </ul>
Read-only administrator privileges	Read-only access to content available to a full privilege admin
Support administrator privileges	Access to user information and support logs
User and Device Administrator	.
Device Administrator	.

8. Click **Save** to add the Cisco Webex App user.

**Note:** You can view the details for the Cisco Webex App user you added in the summary list view, which also displays:

- On-Prem UCM Calling Service (True/False) - Defines whether calling services are on-premise or cloud. The On-Prem UCM Calling license is removed if the Cisco Webex Calling (with CUCM) is removed from the user.
- Calling Behavior (determines license use) - options are:
  - Calling in Webex App - Allows calling via the Webex app using native Webex calling
  - Calling in Webex App (Unified CM) - Allows calling via the Webex app using a registration to CUCM
  - Cisco Jabber App - Allows calling using a Cisco Jabber client registered to CUCM
  - Third Party App - Allows calling using a third party app registered to CUCM
- Use Organization's Domain (True/False) - When enabled, the Cisco Webex organization domain is used for calling in Cisco Webex (Unified CM)
- UC Manager Profile - May be used to identify the required CUCM cluster when a calling behavior using CUCM is selected. If the default CUCM domain is selected, this is not required.
- User Type - "Person", "Bot" or "App User (Guest User)".
- Status - the current Cisco Webex App user status: for example: active/inactive, in a call/meeting/presenting, and so on. If unknown, then displayed as: "The user status could not be determined".

### 24.2.4. Delete a Cisco Webex App User

This procedure deletes an existing Cisco Webex App user (synced, or added via VOSS Automate).

1. Log in to the Admin Portal as a Provider, Reseller, Customer, or Site administrator.
2. Set the hierarchy to the Customer or Site level.
3. Go to (default menus) **Cisco Webex App > Users**.
4. Choose the Webex users you wish to delete (one or more).
5. Click **Delete**.
6. Click **Yes** to confirm.

---

**Note:** When deleting a subscriber with Cisco Webex App, the internal number inventory (INI) is updated as the number status is changed to *Available*, and the description, if any, is removed.

---

### 24.2.5. Provisioning Subscribers with Cisco Webex

This section describes how to provision Cisco Webex for a subscriber, either via the Subscriber list view, or via Quick Add Subscriber (QAS).

#### Related Topics

- [Add Cisco Webex App User via Cisco Webex App Menu](#)
- [Add Webex App Service using Quick Add Subscriber](#)

#### Provision Cisco Webex via Subscriber list view

This procedure provisions a subscriber with Cisco Webex, via the Subscriber list view.

#### Prerequisite:

- The users entitlement profile must have Cisco Webex enabled (**Webex App** checkbox must be selected).
- Unless Cisco Webex service assigned is Message only, new users must have an input line specified, and existing users must have either a primary extension, or an input line must be specified.

See [Add Cisco Webex App User via Cisco Webex App Menu](#)

**To provision a subscriber with Webex:**

1. In the Admin Portal, go to (default menus) **Subscriber Management > Subscribers**.
2. From the **Subscribers** list, click on a subscriber you wish to provision with Cisco Webex.
3. On the subscriber configuration screen, select the **Webex App** panel (or if selected as display option, the tab).
4. In the **Webex App User** field, expand the **Webex App User** configuration fields.

---

**Note:** The following **Invite Pending** checkbox is read-only, indicating the user's status (whether their Webex account is active).

Options in the **Manager ID** and **Location** fields depend on the Cisco Webex Server to which the Cisco Webex Service is synced.

The **Calling Behaviour** field can be "Calling in Webex App", "Calling in Webex App (Unified CM)", "Cisco Jabber app" or "Third-Party app".

---

5. In the **Assigned License** section, the available licenses depend on the Cisco Webex Server to which the Cisco Webex Service is synced.
6. In the **Roles** section, select the relevant check boxes to configure the required roles:

No administrator privileges	.
Full administrator privileges	Access to all of Portal features, including: <ul style="list-style-type: none"> <li>• Assign roles</li> <li>• Company policy and templates</li> <li>• Device management licenses and upgrades</li> </ul>
Read-only administrator privileges	View only access to privileges available to a full administrator.
Support Administrator	Access to user information and support logs.
User and Device Administrator	.
Device Administrator	.

7. Click **OK**. Cisco Webex is provisioned for the subscriber.

To verify, ensure the **Webex App** column in the Subscribers list view displays the text, *Enabled*.

**Provision Cisco Webex via Quick Add Subscriber**

This procedure enables Cisco Webex for a subscriber via Quick Add Subscriber (QAS).

**Prerequisite:**

- The user's entitlement profile must have Cisco Webex enabled (**Webex App** checkbox must be selected).
- Unless Cisco Webex service assigned is Message only, new users must have an input line specified, and existing users must have either a primary extension, or an input line must be specified.

See [Add Cisco Webex App User via Cisco Webex App Menu](#) and [Add Webex App Service using Quick Add Subscriber](#)

1. Go to (default menus) **Subscriber Management > Quick Add Subscriber**.
2. From the **Username** drop-down list, choose the name of the subscriber to be provisioned with Cisco Webex.
3. Select the **Webex App** checkbox to enable Cisco Webex for the subscriber.
4. From the **Webex Teams User Template** drop-down list, choose the template you want to assign to the user.
5. Click **Save**. Cisco Webex is provisioned for the subscriber.

To verify that Cisco Webex is enabled for the subscriber, ensure the **Webex App** column in the Subscribers list view displays the text, *Enabled*.

---

**Note:** When Cisco Webex Calling (with CUCM) is removed from a Webex User, the 'On-Prem UCM Calling' license is removed from the Webex User.

---

### 24.2.6. Sync Webex App Users with Flow-through Provisioning

When using sync with flow through provisioning for Cisco Webex users, you need to configure several settings in VOSS Automate (including flow through provisioning criteria) before the initial sync from the Webex Control Hub. See: [Setting up Flow Through Provisioning](#).

- Flow Through Provisioning has been enabled in the Global Settings for a hierarchy (see: [Global Settings](#))
- The **Webex** settings on the Site Defaults (see: [Site Defaults](#)) matching the user's location have been configured so that **Move Filter Criteria** are `webexUserModelFilterCriteria`.

These criteria are used as a part of a subscriber profile.

- The workflow `AddSubscriberFromProfile` at site uses `CFT: Webex_FlowThroughProvisioning_SubscriberFromProfile`

This allows VOSS Automate to apply the correct configuration, licenses and services to imported users; and to move users to sites.

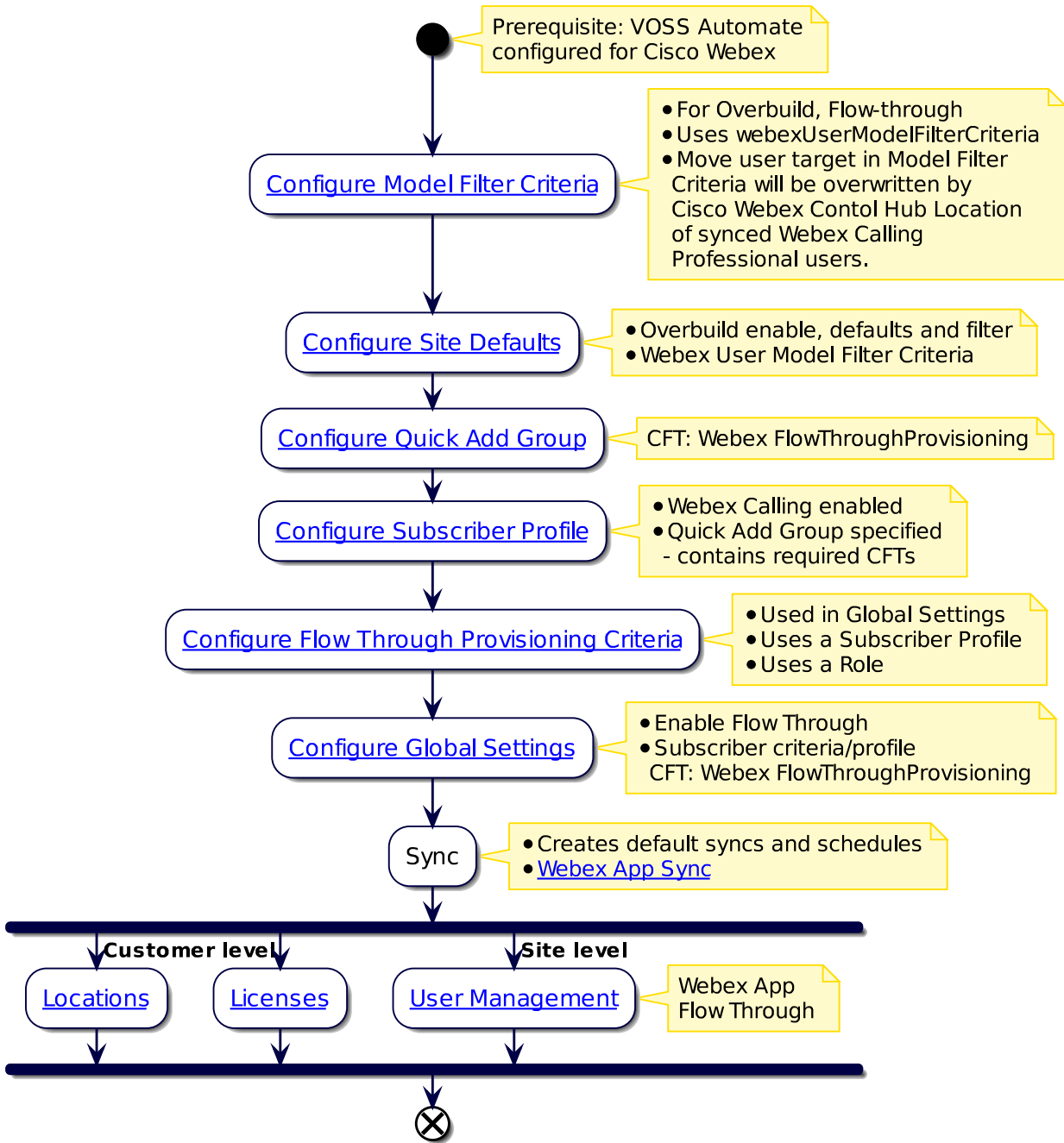
Once you run the sync, users are imported, provisioned, licensed, and moved to the correct synced in sites, as subscribers - in accordance with configured Webex User Model Filter Criteria and Subscriber Profile.

---

**Important:** Webex Control Hub users who have been assigned Webex Calling Professional licenses and have a **Location** assigned, this location will *not* be overwritten by any site setting configured in the VOSS Automate user move component (Model Filter Criteria) of Flow Through Provisioning.

---

The flowchart sets out the sync with flow through of Cisco Webex users and services.



## Related Topics

- Flow Through Provisioning in the Core Feature Guide

## 24.3. Quick Subscriber (Webex App)

This topic describes how to add a Webex App user via Webex App Quick Subscriber.

**Note:** You can find this page via (default menus), **Cisco Webex App > Quick Subscriber** ([view/WebexTeamsSubscriberQas](#)), or use the toolbar search to locate the page.

## Related Topics

- [Quick Actions for Multi Vendor Subscriber](#)

### 24.3.1. Add Cisco Webex App User via Quick Subscriber

This procedure adds a Webex Teams user via a standalone view called `view/WebexTeamsSubscriberQas`.

1. In the Admin Portal, go to (default menus) **Cisco Webex App > Quick Subscriber**.

**Note:** You can also access Quick Subscriber for Webex App users via the following multi vendor subscribers quick action, *Quick Subscriber (Webex App)*. See [Quick Actions for Multi Vendor Subscriber](#). In this case, the username is populated automatically.

2. At **Username**, select the relevant username (existing user) from the drop-down, or fill out a username (new user).

#### Note:

- To choose an existing user above the current site level, select **Include users at higher hierarchy**, then select a username.
- In a non-directory synced scenario (non-LDAP customer), users with the administrator role are excluded from the **Username** drop-down.
- If you're adding or updating a Webex Control Hub user, some fields are read-only.
- If you're adding a new user, fill out their first name, last name, email address, and other user details.

You can't add a new user for a directory-synced Webex Control Hub, that is, when the associated **Spark Customer** details have the **Directory Synchronization Enabled** checkbox selected.

A Webex Calling License is required for phone number type, but note that the Webex API (used for syncing with the Webex Control Hub) only supports add or update for phone number type *Work*.

- If a Webex Control Hub is directory synced, only an existing user can be configured by selecting the user's **Email address** and then for example update the phone number or Quick Add Group.



- **Display Name** auto-populates as a read-only value when selecting an existing user's email address that has a first name and last name. Else, **Display Name** is not populated and is not mandatory.

3. Mandatory. Select an option for **Quick Add Group**.

**Note:**

- Available Quick Add Groups are filtered by vendor (see [Quick Add Subscriber Groups Vendor Filtering](#)) and restricted according to the Global Settings (**General** tab, **Quick Add Group lookup level**, see [Global Settings](#)).
- You can provide Cisco Webex settings via the Quick Add Group.
- Cisco Quick Add Subscriber can be used for adding CUCM-based services, including Webex, where the user requires UCM calling or where UCM calling is not required (such as free calling or Webex calling services).
- Choosing a **Webex Calling** group allows a user to be assigned a *Webex Calling - Professional* license, enabling management of their calling settings.

In this Quick Add Group, the configuration template selected in the **Default Webex App Calling Template** is "Default Webex Teams User Calling Template".

If this Quick Add Group is available in a subscriber profile, then the **Add Subscriber from Profile** subscriber management option also allows management of calling settings.

5. Select a phone number, or select the **Use next available line** checkbox.

**Note:** If the user is LDAP-synced, updated phone number details are written back to the LDAP user.

6. Save your changes.

An email notification may be sent to the user (provided the required email setup is configured).

## 24.4. Bulk Update Webex App Users

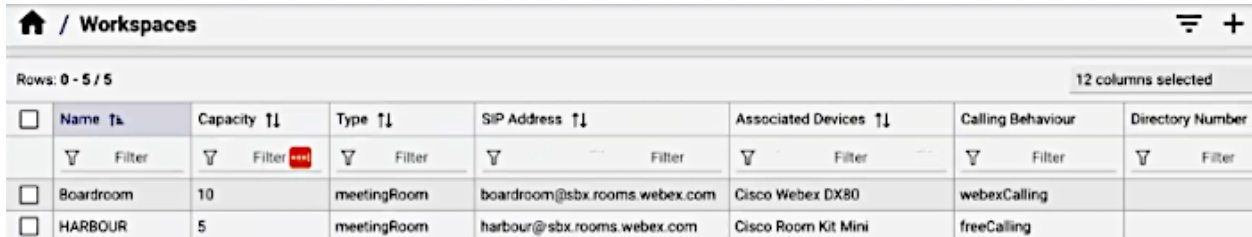
This procedure performs bulk actions into Webex App Control Hub.

1. In the Admin Portal, go to (default menus) **Subscriber Management > Webex App > Bulk Update Webex App Users**.
2. Choose the relevant hierarchy (Customer or below), where your Webex App users reside.
3. On the **Bulk Update Webex App Users** page, to filter users at your current hierarchy, choose a user filter from the **User Filter** drop-down. For example, all users or only users with Hybrid Calling enabled.
4. Select the relevant **User Template**, which contains the settings to apply to the filtered users. For example, to provide messaging only, select the Webex App User Messaging Only Template.
5. If necessary, you can select more users (move users from the **Available** field to the **Selected** field. Else move all users.
6. Click **Save**.

## 24.5. Workspaces

### 24.5.1. Overview

Webex App workspaces are synced in from a Webex Control Hub.

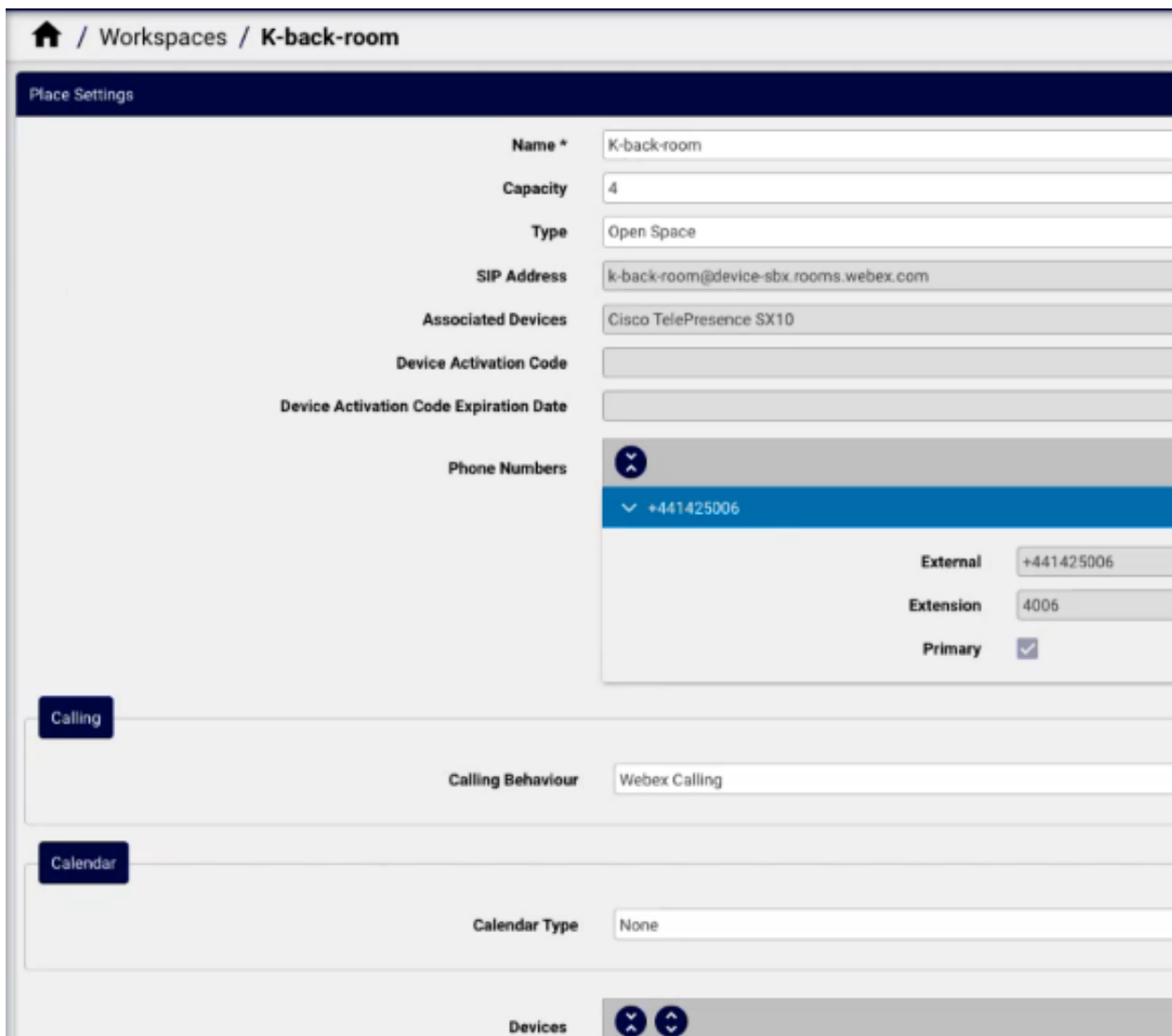


Home / Workspaces ≡ +

Rows: 0 - 5 / 5 12 columns selected

<input type="checkbox"/>	Name <span>↕</span>	Capacity <span>↕</span>	Type <span>↕</span>	SIP Address <span>↕</span>	Associated Devices <span>↕</span>	Calling Behaviour	Directory Number
	Filter	Filter	Filter	Filter	Filter	Filter	Filter
<input type="checkbox"/>	Boardroom	10	meetingRoom	boardroom@sbx.rooms.webex.com	Cisco Webex DX80	webexCalling	
<input type="checkbox"/>	HARBOUR	5	meetingRoom	harbour@sbx.rooms.webex.com	Cisco Room Kit Mini	freeCalling	

This includes Calling Behavior and Calendar settings, as well as Phone Numbers and Devices information associated with the workspace.



Home / Workspaces / K-back-room

Place Settings

**Name \*** K-back-room

**Capacity** 4

**Type** Open Space

**SIP Address** k-back-room@device-sbx.rooms.webex.com

**Associated Devices** Cisco TelePresence SX10

**Device Activation Code**

**Device Activation Code Expiration Date**

**Phone Numbers**

- +441425006
  - External** +441425006
  - Extension** 4006
  - Primary**

**Calling**

**Calling Behaviour** Webex Calling

**Calendar**

**Calendar Type** None

**Devices**

Upon sync, existing numbers in the Number Inventory will also updated with workspace details, for example in the corresponding Usage, Description, and Vendor fields.

You can define Webex App workspaces of various types in VOSS Automate, for example, meeting rooms or open spaces.

### 24.5.2. Add a Webex App Workspace

This procedure adds a Webex App workspace, and optionally, adds devices.

**Note:** You can add devices when adding a new workspace or when updating an existing workspace.

1. Log in to the Admin Portal as Provider admin, then go to (default menus) **Cisco Webex App > Workspaces**.
2. Choose the relevant site.

**Note:** Workspaces are created at site level.

3. Provide a workspace name and capacity, and from the **Type** field, choose the workspace type.
4. In the **Send Device Activation Code To** field, fill out the email address(es) where the device type code is sent.

**Note:** This code is unique to this created workspace and is entered into the device itself.

Once the code is created, the **Device Activation Code** (read only) value is returned and shown, as well as its **Device Activation Code Expiration Date**.

A VOSS Automate schedule checks the expiration date and generates a new code. The **SIP Address** of the workspace is also shown.

5. In the **Calling** section, choose the calling behavior (free or hybrid).

**Note:** The hybrid calling option displays additional fields where you need to choose a site and

an available directory number, which then generates a mail ID is generated from CUCM. The auto-generated value in the **Mail ID from Unified CM** field uses the following:

wt\_ + <random-number> + the email hostname set up for the Webex App service

For example, wt\_886821663180@myhost.com.

A subscriber user for the device is then added at the selected site, with the following:

- **User Id** and **Last Name**: wt\_886821663180
- **First Name**: workspace **Name**
- **Primary Extension**: **Directory Number**
- **Phone**: Spark Remote device with workspace specific settings

Once the device code is entered, the page displays details of the device associated with the workspace in the **Devices** group, for example: **Product**, **Connection Status** and **IP Address**. A link to the device is then also available, to show details (read only) as listed under the **Devices** menu for Webex App.

6. At **Calendar** section, you can add select a Calendar provider as available from the Scheduling section on the Webex Control Hub.
7. At **New Devices**, you can add one or more new devices to the workspace. This allows for activating devices in a workspace using the RoomOS driver.
  - a. Add the current **IP Address** for the Webex device.

---

**Note:** The configured IP address must be reachable by all of the VOSS Automate unified nodes via HTTPS using port 443.

---

- b. Select the **Profile** to use for configuring the device.

---

**Note:** The profile includes the required parameters for the configuration. Available profiles are managed via (default menus) **Webex App > RoomOS Device Configuration Profiles**.

---

- c. Add the device **Username** and **Password** if needed.

---

**Note:** You can add a device with the default username, `admin`, and no password. However, it is recommended that you add a second user on the device since, when the device registers with the Control Hub, by default, Control Hub disables the default username (`admin`) as part of the registration process, which prevents you from logging back in to the device using its IP address, unless you've added a second user. For example, without the second user, reset via the Admin Portal will not work because you will need to provide a username and password. If the default username is disabled, go to the Control Hub, locate your device, and access the device via the UI.

---

Existing devices in the workspace are shown in the **Devices** group, while all devices are shown from the **Devices** menu.

8. Save your changes. Wait for the transaction to complete.
  - The new workspace and devices are registered with Control Hub, which assigns an activation code. The activation code is used to make a second connection to the device local IP address to run the activation step with the configuration you specified in the configuration blocks.
  - In the Admin Portal, you can:

- View the new workspace in the the **Workspaces** list view via (default menus) **Webex App > Workspaces**, or type *Workspaces* in the Admin Portal search bar).
- View new devices via (default menus) **Webex App > Devices** (or type *Devices* in the Admin Portal search bar).

## 24.6. Workspace Call Settings

Synced Webex workspaces are maintained in VOSS Automate in the relation/*WebexWorkspaceCallSettings* model, and will show from the **Workspace Call Settings** menu list - with corresponding Webex location if available.

**Note:** Workspace call settings can't be added or removed.

## 24.7. Workspace Locations

A Workspace Location is a physical location with a name, address, country, city, latitude and longitude that can contain many workspaces. Examples of a typical location is a floor in the building or an entire building, depending on how the administrator would like to logically group the organisation.

## 24.8. Webex Locations

Webex Locations allow you to organize users and workspaces based on a physical location. You can configure both calling and workspace management functions into the same location.

**Note:** With *Workspace Locations*, the latitude and longitude of the location is also recorded.

Webex Locations are synced in from a Webex Control Hub and maintained in *device/spark/Location*.

Site names for a sync is determined by the Site Defaults setting **Webex Location ID**. See the **Webex** tab under *Site Defaults*.

Upon data sync at customer level, sites are automatically created or updated in VOSS Automate if no site exists with a matching name, in accordance with a Webex Control Hub Location.

**Important:** In order to ensure that Webex data sync can be executed successfully, the **Webex Location ID** in the respective Site Defaults needs to exist.

Synced Cisco Webex users and numbers of synced Cisco Webex users are automatically moved to the site matching the Location. For data sync at intermediate hierarchy level, see: *Webex Location Node Mapping*. name of the Intermediate node according to the matching rules set up in the *data/WebexLocationNodeMapping* model, a site is created under this intermediate node.

Otherwise, the site will be created under the customer hierarchy.

This model needs to be exposed in the administrator's menu in order to manage the mappings. The model allows for matching to be configured between **Intermediate Node** and **Search String** values. The entered **Search String** should be as specific as possible to match the **Intermediate Node** string.

The list view of the **Webex Locations** menu shows the Webex location name and the corresponding VOSS Automate hierarchy name in the **Located At** column

Webex locations can also be added and managed from the **Webex Locations** menu in Automate, to be synced to the Webex Control Hub

For example, the **Latitude**, **Longitude** and **Notes** fields can be added or updated. Upon adding, these show as **Webex Location ID** on the site's site defaults, and upon sync of **Webex Locations**, these will then also reflect in **Workspace Locations**.

### 24.8.1. Webex Location Calling Settings

Synced Webex location calling details are maintained in VOSS Automate in the `device/spark/LocationCallingDetails` and `relation/WebexCallingLocationDetails` models, thereby providing access to a single interface to manage a location's calling settings from the **Webex Location Calling Details** menu.

#### Note:

- If the `outsideDialDigit` value needs to be *reset* to `None`, this reset must be carried out on the Webex Control Hub and the data sync for location calling details executed to refresh the value.
- For any new update of the **PSTN Access Network Info** in **Webex Location Calling Settings**, this will only be applied if the location's country is: Belgium, Germany, or France. Changes to other countries or to existing connection details are ignored. This functionality is in accordance with a Webex API change starting April 11, 2024.

#### Related Topics

- [Introduction to Cisco Webex App](#)

## 24.9. Webex Location Node Mapping

The **Webex Location Node Mapping** menu (`data/WebexLocationNodeMapping`) allows for the mapping of an existing VOSS Automate intermediate hierarchy node to a Webex location name. This feature allows administrators to sort the Webex locations into business driven logical groupings. Note that the mapping of the Webex location name must be in place before the locations are synced from control hub. If the location match string is not found, a new location will be built directly under the customer node. Should a mapping be missing, an administrator may purge that location data, create the mapping in Webex Location Node Mapping and run the data sync again.

Upon data sync, Webex locations that match the **Search String** are then moved under the Intermediate node.

**Important:** The text entered into the **Search String** field:

- can be case-insensitive

- should be contained in the Webex location name as uniquely as possible, to exclude unwanted location name matches
- matching operator is `containsIgnoreCase`

1. Select the required **Intermediate Node** that the Webex location should be mapped to.
2. In the **Search String**, enter (case-insensitive) a distinctly matching string from the Webex location name should be mapped to the intermediate node.
3. Click **Save**.

Upon the next Webex data sync, Webex locations matching the **Search String** will be moved under the selected **Intermediate Node**.

### Related Topics

- [Introduction to Cisco Webex App](#)

## 24.10. Webex Bulk Actions

VOSS Automate provides the ability to replicate operations from a source reference to selected target Webex locations.

### 24.10.1. Schedules

When `schedules` (default) is selected as **Model** value, a **Reference Schedule** serves as the source to carry out an **Operation** on selected Webex locations.

To carry out an operation on selected Webex locations:

#### Prerequisites

- Create a **Reference schedule** through the `relation/WebexSchedules`. Give it a unique name that is easy to find.
- Clone the reference configuration template provided called `WebexBulkActionSchedules-Customizable` to the required hierarchy and modify the macro for the schedule **Name** to generate unique names, for example:

```
{{pwf.referenceScheduleData.name}}-{{pwf.locationName}}
```

Supported target hierarchies for the clone operation are: Customer, IntermediateNode, Site, LinkedSite.

This macro ensures a unique schedule name that is a combination of the source schedule name and the specific Webex location name.

### Add (replicate across Webex Locations)

Schedules will be added to all selected locations, with schedule names in accordance with the configuration template.

1. Select the add **Operation** is selected.
2. Provide the name of the **Reference Schedule** to apply to the selected Webex locations.
3. Select the created **Configuration Template** option.
4. In the **Target Webex Locations** transfer boxes, select Webex locations to which the action should apply.  
Use the search boxes inside the transfer boxes if needed.
5. Click **Save**.

The **Transactions** menu can be used to inspect the actions.

### Modify (replicate across Webex Locations)

Selected Webex locations are modified in accordance with the modified reference configuration template.

1. Modify the **Reference Schedule** to change the values in events or to add a new event; and save the schedule.
2. Select the modify **Operation**.
3. Select the name of the modified **Reference Schedule** to apply to the selected Webex locations.
4. In the **Target Webex Locations** transfer boxes, select Webex locations to which the action should apply.  
Use the search boxes inside the transfer boxes if needed.
5. Click **Save**.

The **Transactions** menu can be used to inspect the actions.

### Delete

Selected Webex locations are deleted.

1. Select delete **Operation**.
2. In the **Delete Schedules** transfer boxes, select Webex locations to which the action should apply.  
Use the search boxes inside the transfer boxes if needed.
3. Click **Save**.

The **Transactions** menu can be used to inspect the actions.



## 24.11. Webex Schedules

A Webex Schedule is associated with an existing Webex Location.

Existing Webex schedules from the Webex Control Hub are synced to the Webex location when running the default data sync - see the model list here: [Introduction to Cisco Webex App](#).

**Note:** To add a Webex Schedule at a hierarchy, a Webex Location must be available at the hierarchy. A message: “No Webex Location Found At This Hierarchy” will show in the **Webex Location Name** field when it is not available.

Refer to [Webex Bulk Actions](#) for details on the bulk add, delete or update of Webex schedules at more than one Webex location.

### 24.11.1. Add a Schedule

1. From the **Webex Schedules** menu, navigate to the Webex Location hierarchy and click **Add**.  
The **Webex Location Name** (read-only) shows on the **Details** form.
2. Provide a **Name** and **Type** for the schedule.
3. According to the selected **Type**, add one or more calendar **Events**, along with the event calendar from the calendar picker and associated recurrence details.

**Note:** You can set up a recurrence end date for Webex schedule events, or select **Recur Forever**. If you've selected a recurrence end date *and* you select **Recur Forever**, only the **Recur Forever** setting is configured for the Webex schedule. The end date, even if present, is thus disabled.

4. Click **Save** and inspect the entry in the **Webex Schedules** list view.

### 24.11.2. Modify a Schedule

Only *Event* entries can be modified on existing schedules.

**Note:** The schedule **Name**, **Location Name** and **Type** can't be updated. If you need to change any of these values, delete the schedule, then add a new schedule with updated values.

- You can't configure the sequence of **Events** entries.
- You can set up a recurrence end date for Webex schedule events, or select **Recur Forever**. If you've selected a recurrence end date *and* you select **Recur Forever**, only the **Recur Forever** setting is configured for the Webex schedule. The end date, even if present, is thus disabled.

### 24.11.3. Delete a schedule

You can delete Webex schedules from the list view or from the detail view.

## 24.12. Devices (Webex App)

### 24.12.1. Overview

You can add, update, and delete Webex devices in Automate, including collaboration devices, ATA (analog telephone adaptor) devices, MPP (IP desk phone) devices, and Wi-Fi devices.

You can also add Webex devices in the Webex Control Hub and sync in those devices to the correct hierarchy in Automate.

**Note:** MPP, ATA, and Wi-Fi device types supported in the Control Hub are dynamically retrieved, along with their respective configuration settings, from the Control Hub via the Control Hub's supported device API using Automate's device/spark/SupportedDevices model. This model populates the drop-downs in Automate where you can select a Control Hub supported device.

Webex devices are added by their MAC address to either a user or to a new or existing workspace. In Automate, devices can be added and updated via the Webex App **Devices** management page (described in this topic) or via Webex App Quick Add Device.

**Note:** Several configuration options are available for each device type. You can manually configure all these options via the **Devices** management page, or auto apply configuration via Quick Add Device.

Rows: 0 - 5 / 5										12 columns selected	
<input type="checkbox"/>	Name <small>ts</small>	Workspace <small>ts</small>	Person <small>ts</small>	Product <small>ts</small>	IP Address <small>ts</small>	MAC Address <small>ts</small>	Tags <small>ts</small>	Connection Status <small>ts</small>	Primary SIP URL <small>ts</small>		
	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter		
<input type="checkbox"/>	Keith-back-room	Keith-back-room		Cisco TelePresence SX10	172.16.1.200	70:6B:B9:00:BC:7B		disconnected	keith-back-room@vossd		
<input type="checkbox"/>	Room-10-3	Room-10-3		Cisco 191		FFEEDOCC0047		unknown			
<input type="checkbox"/>	Room-10-4	Room-10-4		Cisco 880		FFEEDOCC0042		unknown			
<input type="checkbox"/>	Room-10-6	Room-10-6		Cisco 8845		FFEEDOCC0043		unknown			
<input type="checkbox"/>	Webex phone:migrate		wpm@bg.com	Cisco 8845		502FABE06129		connected			

### Related Topics

- [Webex App Sync](#)
- [Introduction to Cisco Webex App](#)
- [Quick Add Device](#)
- [Replace Device](#)

## 24.12.2. Configure Cisco Webex App Devices

Cisco Webex App devices are managed via the **Devices** page.

You can select these tabs on the Cisco Webex App **Device** management page:

- Device
- Lines
- Advanced Configuration

**Note:** You can toggle the toolbar **Tab/Panel** icon to display the page layout as either tabs or panels.

### Device

The **Device** tab/panel displays read-only device details, such as the MAC address (device name) for a particular device.

	Device	Lines	Advanced Configuration
Name	Room-10-6		
Product	Cisco 8845		
Serial			
Workspace	Room-10-6		
Person			
MAC Address	FFEEDDCC0043		
IP Address			
Software	unknown		
Errors			
Tags			
Upgrade Channel	Stable		
Permissions			
Primary SIP URL			
SIP URLs			
Created	07/02/2024, 14:05:29		
Connection Status	unknown		

When adding a device, you'll choose the product (device type), and define whether to associate the device with a workspace or a person. When choosing a device, configuration settings relevant to the device type become available in **Advanced Configuration**.

**Note:** A device can be associated either with a workspace or with a person (Webex user), but not with both. A device associated with a person is defined as a personal device. The **Person** column in the Webex Devices summary list view displays the person ID (converted to an email address) when a person (rather than a workspace) is associated with a device.

The email address is used to identify the device and the associated user so that both can be moved to the correct hierarchy in a sync.

### Advanced Configuration

The **Advanced Configuration** tab/panel defines the calling parameters for a device. The available configuration settings depend on the device type, for example, MPP, ATA, or Wi-Fi device.

If you wish to apply custom configuration settings to the device, select **Define customized device settings** to display the additional custom configuration options for the device.

**Note:** Device-specific custom configuration settings are the same settings that may be defined on the Control Hub for the device type.

The image displays custom configuration settings for a MPP device:

The screenshot shows the 'Advanced Configuration' tab for a device. At the top, there are tabs for 'Device', 'Lines', and 'Advanced Configuration'. Below these, there is a section for 'Define customised device settings' with a checked checkbox. The main configuration area is divided into several sections, each with a blue header:

- Customisations**: Contains a sub-section for 'MPP' with an 'ACD' setting. The 'Enabled' checkbox is unchecked.
- Audio Codec Priority**: Contains a 'Use Custom Values' checkbox, which is unchecked.
- Background Image**: Contains a 'Custom URL' text input field and a 'Background Image' dropdown menu currently set to 'None'.
- Bluetooth menu**: Contains an 'Enabled' checkbox, which is unchecked.
- Default volume settings**: Contains two checked checkboxes: 'Allow end user override' and 'Wireless headset hookswitch control'.

**Note:**

- For a MPP device, default PSK (programmable soft key) settings are automatically populated from the Control Hub. All the PSK fields on the form are editable string fields and can be added to or changed, or reset to default values, if required.

Customise PSK

Reset to Default Values

PSK 1

PSK 2

PSK 3

PSK 4

PSK 5

- For a MPP device, settings in the **Customize softkey menus** fields comprise default values retrieved from the Control Hub, and are semi-colon separated lists of items that will display for the softkeys. These settings are editable strings that can be customized, or reset to default values, if required.

Customise softkey menus

Reset to Default Values

Conferencing key list

Connected key list

Connected video key list

Dialling input key list

Hold key list

Idle key list

Off-hook key list

Progressing key list

Releasing key list

Ringing key list

Shared active key list

Shared held key list

Start conference key list

Start transfer key list

To reset values for the custom softkey menus or the PSKs, select the applicable **Reset to Default Values** checkbox. When saving your settings, the default values are retrieved from the Control Hub to replace any custom values.

The image displays custom configuration options for an ATA device:

The screenshot shows the 'Advanced Configuration' page for an ATA device. The page is titled 'Define customised device settings' with a checked checkbox. The left sidebar has tabs for 'Device', 'Lines', and 'Advanced Configuration', with 'Advanced Configuration' selected. The main content area is divided into sections: 'Customisations', 'ATA', 'SNMP', and 'VLAN'. The 'ATA' section has a sub-section 'Audio Codec Priority' with a 'Use Custom Values' checkbox. The 'SNMP' section has an 'Enabled' checkbox. The 'VLAN' section has a 'VLAN Enabled' checkbox. Below these sections are several settings: 'ATA DTMF mode' (NORMAL), 'ATA DTMF method' (AUTO), 'CDP' (checked), 'LLDP' (checked), 'Nightly resync' (checked), 'QoS' (checked), and 'Web access' (checked).

Setting	Value/Status
Define customised device settings	<input checked="" type="checkbox"/>
ATA DTMF mode	NORMAL
ATA DTMF method	AUTO
CDP	<input checked="" type="checkbox"/>
LLDP	<input checked="" type="checkbox"/>
Nightly resync	<input checked="" type="checkbox"/>
QoS	<input checked="" type="checkbox"/>
Web access	<input checked="" type="checkbox"/>
Use Custom Values	<input type="checkbox"/>
Enabled	<input type="checkbox"/>
VLAN Enabled	<input type="checkbox"/>

The image displays custom configuration options for a Wi-Fi device:

The screenshot shows the 'Advanced Configuration' page for a device. At the top, there are tabs for 'Device', 'Lines', and 'Advanced Configuration'. Below the tabs, there is a section titled 'Define customised device settings' with a checked checkbox. Underneath, there are three main sections: 'Customisations', 'WiFi', and 'Web access'. The 'WiFi' section has a sub-section 'Audio Codec Priority' with a 'Use Custom Values' checkbox that is unchecked. The 'LDAP' section has an 'Enabled' checkbox that is unchecked. The 'Web access' section has an 'Enabled' checkbox that is checked, and a 'Set password' text input field. Below these sections, there is a 'Phone security password' text input field. At the bottom of the page, there is a 'Last Update Time' field showing '30/01/2024, 11:10:02' and an 'Update In Progress' checkbox that is unchecked.

### Hide custom configuration settings

To hide the custom settings and apply default settings from the Control Hub for the customer and site, deselect **Define customized device settings**.

The screenshot shows the 'Advanced Configuration' page for a device. At the top, there are tabs for 'Device', 'Lines', and 'Advanced Configuration'. Below the tabs, there is a section titled 'Define customised device settings' with an unchecked checkbox. Below this, there is a 'Last Update Time' field showing '07/02/2024, 14:57:16' and an 'Update In Progress' checkbox that is unchecked.



## 24.13. Quick Add Device

### 24.13.1. Overview

You can add Webex App ATA, MPP, and Wi-Fi devices using Quick Add Device. This tool uses a configuration template with pre-configured settings to add these devices and associate them with users and existing or new workspaces.

Quick Add Device can also be used to replace an existing device.

#### Related Topics

- [Devices \(Webex App\)](#)
- [Workspaces](#)
- [Replace Device](#)
- [Configuration Templates](#)

## 24.14. Replace Device

### 24.14.1. Overview

On the **Replace Device** page you assign a new MAC address to an existing Cisco Webex ATA, MPP, or Wi-Fi device, and to copy the configuration of the existing device (including user or workspace assignment) to a replacement device.

This allows you to easily replace a faulty or failed device without having to manually complete all of the configuration settings for a replacement device.

Select the current MAC address to auto-populate the form, then fill out the new MAC address, and save.

Replace Device	
Current MAC Address *	E8:65:49:B9:96:C9
Product	Cisco TelePresence SX10
Workspace	Voss_Workspace
User	
New MAC Address *	

## Related Topics

- [Quick Add Device](#)
- [Devices \(Webex App\)](#)
- [Workspaces](#)

## 24.15. Reset Devices to Baseline

Webex meeting room device users may regularly change device settings throughout the day, for example, to change the volume, or camera settings. Since custom settings could impact future meetings, it may be considered good practice to regularly reset and clear device settings to their baseline configuration (standard settings).

In the Admin Portal you can set up a regular schedule for resetting Webex-registered meeting room devices, which will typically execute daily (before the start of the working day), or reset one or more devices manually, as required.

Reset schedules are configured via (default menus) **Cisco Webex App > RoomOS Reset Schedule**.

Alternatively, you can manually reset active devices, via (default menus) **Cisco Webex App > Reset Devices to Baseline**.

You can view all registered (active) devices via (default menus) **Cisco Webex App > Devices**. You can add devices when adding a new workspace or when updating an existing workspace.

### 24.15.1. Manually Reset a RoomOS Device

1. In the Admin Portal, go to (default menus) **Cisco Webex App > Reset Devices to Baseline**.
2. Choose the device scope (refresh action). The table describes the available options:

Refresh Single Device	Choose one active device from the list that displays when you select this option.
Refresh Multiple Devices	Choose from the list of active devices that display when you select this option.
Refresh All Devices	Resets all active devices.



3. Choose a device configuration profile for resetting the device.
4. Fill out your username and password.

5. Click **Save**.

The device configuration profile resets the selected active devices (one, more, or all, depending on the option you selected for device scope).

## 24.15.2. Schedule RoomOS Device Reset

This procedure requires:

- customization: the cloning to a required hierarchy and modifying of the **Reset Device Schedule Configuration Template**
- the setup of the **Webex Schedule**.

### Reset Device Schedule Configuration Template

The **Reset Device Schedule Configuration Template** menu lists a default instance of WebexDeviceRefreshSchedule\_CFT that is to be cloned to the required hierarchy and modified:

- the **Device Scope**
- Devices
- Device Profile
- any associated usernames and passwords for devices

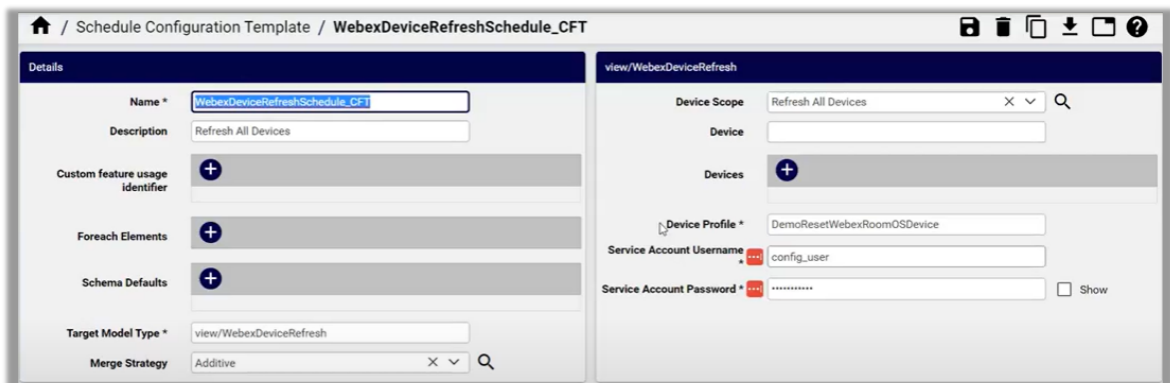
1. In the Admin Portal, go to (default menus) **Cisco Webex App > Reset Device Schedule Configuration Template**
2. On the **Schedule Configuration Template** list view, click on the schedule you want to use.

The schedule configuration template contains a workflow that is executed by the reset schedule. The default schedule configuration template name is WebexDeviceRefreshSchedule\_CFT.



Name	Description	Target Model Type	Located At
WebexDeviceRefreshSchedule_CFT	CFT To schedule the refresh of Webex Device Configuration	view/WebexDeviceRefresh	sys (System)
WebexDeviceRefreshSchedule_CFT	Refresh All Devices	view/WebexDeviceRefresh	AAAGlobal_(Customer)

3. On the schedule configuration page, choose the device scope, and the device configuration profile to use.



Details

Name \*

Description

Custom feature usage identifier

Foreach Elements

Schema Defaults

Target Model Type \*

Merge Strategy

view/WebexDeviceRefresh

Device Scope

Device

Devices

Device Profile \*

Service Account Username

Service Account Password \*

4. Fill out the username and password that has access to the devices.
5. Save your changes.

### Webex Schedule

When setting up the schedule, the **Resource** field is specified as `WebexDeviceRefreshSchedule`, which will reference the configured instance of `WebexDeviceRefreshSchedule_CFT`.

The screenshot shows the 'New Record' form in the Cisco Webex App. The form is titled 'Scheduling > New Record' and has a 'Details' section. The fields are as follows:

- Schedule Name \***: Schedule To Reset RoomOS Devices
- Last Executed (UTC Time)**: (empty)
- Owner**: (empty)
- Schedule Type \***: Multi Execution
- Active**:
- Skip execution on activation.**:
- Scheduled resources \***:
  - execute
    - Action \***: Execute
    - Resource Type \***: data/ProvisioningWorkflow
    - Resource Attribute \***: name
    - Resource \***: WebexDeviceRefreshSchedule (highlighted with a yellow arrow)
    - Perform Action**:

1. Go to (default menus) **Cisco Webex App > Webex Schedule**
2. On the schedule form, create the schedule, and at **Scheduled resources**, at the **Resource** drop-down, choose the schedule (`WebexDeviceRefreshSchedule`).
3. Save your changes.

Devices will be refreshed according to the schedule and the workflow defined in the schedule configuration template.

## 24.16. Device Configuration Profiles

VOSS Automate ships with the following default device configuration profiles for Webex App:

ActivateWebexRoomOSDevice	Used for activating a device.
ResetWebexRoomOSDevice	Used for resetting an already active device.

### Note:

- You can access device configuration profiles via (default menus) **Cisco Webex App > Device Configuration Profiles**, or use the Admin Portal search bar.
- The profiles can be cloned down and customized as required.

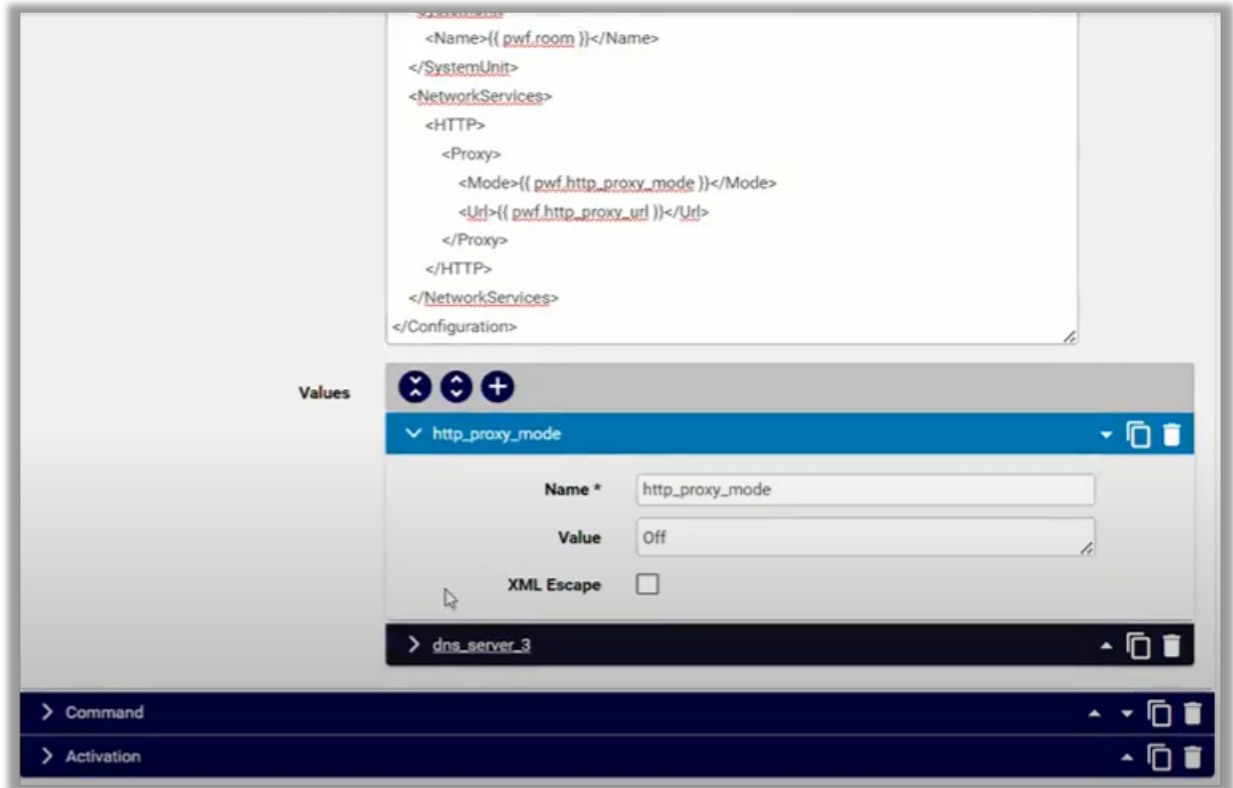
### Configuration Blocks

The device configuration profiles contain configuration blocks, such as **Configuration**, **Command** and **Activation**.

Configuration Blocks	Description
Configuration	The step uses the configuration API for the device.
Command	This step uses the command API, and may be used for customization, for example, of buttons and widgets for the device user interface. The <Upload> section in the XML is used to upload two .png files to the device, which can be used for the icons or panels.
Activation	This step is only present in the <code>ActivateWebexRoomOSDevice</code> device configuration profile, and performs the last step in the device configuration, which involves activating the device in the Control Hub.

**Note:** You can log in to your RoomOS device and view the API developer documentation for a description of the XML in each step.

Values used inside the configuration blocks (e.g. `{{ pwf.http_proxy_mode }}`) can be managed as name-value pairs (e.g. `http_proxy_mode: 0ff`) in the **Values** fieldset of the profiles.



When specifying icons or images in the configuration file, the default file contains two samples:

- teams\_button
- mm\_button

The .png files you're referencing in the configuration must be uploaded into VOSS Automate first via (default menus) **Administration Tools > File Management**. If the files are not uploaded, the configuration step will fail.

Custom device configuration profiles can be added and tested by selecting these on the input form of the **Test Device Configuration Profile Rendering** menu.

## 24.17. Webex App Manual Steps

When workspaces are created or updated in VOSS Automate from the **Workspaces** menu, the data entered on this input form is formatted as a sequence of steps in an email message to be carried out on the Webex App Control Hub.

The content of these manual steps for a workspace configuration can be seen as the **Steps** content of the instance from the **Manual Steps** menu.

## Related Topics

- [Workspaces](#)
- [Global Settings](#) for an email message example.
- [Introduction to Cisco Webex App](#)

## 24.18. Test Device Configuration Profile Rendering

To test the device configuration profile rendering:

1. In the Admin Portal, go to (default menus) **Cisco Webex App > Test Device Configuration Profile Rendering**.
2. Select an available **Profile** from the drop-down, and provide or override name-value pairs for the profile as **Mock Values** instances.

## 24.19. Webex App Licenses

Webex App license usage counts are automatically updated in VOSS Automate after licenses are assigned (that is, after assigning a subscriber with Webex App services). A sync with the Webex Control Hub maintains the status of Webex App user licenses.

### 24.19.1. Webex App License Syncs

Webex App user license syncs may be actioned manually:

Ad- min Por- tal	To sync Webex App users for the customer, click the <b>Services</b> menu, then on the Customer Access form, click <b>Action &gt; Sync Webex App Roles Licenses</b> Go to (default menu) <b>Administration Tools &gt; Data Sync</b> and run the SyncSparkRolesLicenses<customer_name> instance.
---------------------------	---

**Important:** Webex App Licenses need to be synced after upgrading to release 21.1:

1. Execute the Data Sync named SyncSparkRolesLicenses<CUSTOMER\_NAME>.
2. If the Webex App organization associated with the Customer hierarchy has multiple Subscriptions, a default Subscription must be configured under the Webex App Customer Access.  
See: [Add Cisco Webex Service](#).
3. If the Webex App organization associated with the Customer hierarchy has multiple Site URLs, a default Site URL must be configured under the Webex App Customer Access.  
See: [Add Cisco Webex Service](#).

Only licenses synced and managed by VOSS Automate will be assignable to a Webex User. This means that licenses from Subscriptions and Sites other than the default configured above will not be retained on a user.

---

**Note:** This process only collects data at customer and site levels.

---

### 24.19.2. View Webex App Licenses

This procedure provides a condensed view of the Webex App licenses consumed and available at the selected hierarchy level.

1. Go to (default menus) **Cisco Webex App > Licenses**.
2. View Webex App license details in the License list view:
  - Name (of the license)
  - Site URL (webex hub)
  - Site Type (for example: Control Hub managed site)
  - Subscription ID (ID - useful to distinguish licenses with similar names)
  - Total Units (total number of licenses available)
  - Consumed Units (the number of licenses still available)
  - Location (where the licenses are available and used)

## 24.20. Webex App Hunt Groups

Webex Hunt Groups are synced and are available to be managed: added, removed, updated. This includes the update of the Internal Number Inventory.

- Relation (for menu item): `relation/WebexHuntGroup`

Available fields on the input forms in VOSS Automate align with available fields in Webex Control Hub.

Add:

- One or more **Agents** can be added to a Hunt Group by selected **Id** (email address).
- From the **Call Policies** form, a defined **Policy** is selected.

Update:

- **Call Forward Settings** are available when editing Webex Hunt Groups. Options can be to enable **Always** or **Selective** forwarding.

**Selective** forwarding allows for a set of **Rules** to be added according to selected and configured criteria.



## 24.21. Webex App Call Park

In the Automate Admin Portal you can add, update, and delete Webex Call Park service. The relevant relations (for the menu items):

- `relation/WebexCallParkGroup`
- `relation/WebexCallParkExtension`

Available fields on the input forms in VOSS Automate align with available fields in Webex Control Hub.

Add:

- One or more **Agents** can be added to a Call Park group by selected **Agent** (email address).
- The **Recall To** form section allows an **Option** that determines if a Hunt Group should be alerted. If required, a **HuntGroup Name** is then selected.

Update:

- **Name** cannot be modified. Delete and re-add to update the name.

## 24.22. Webex App Auto Attendants

Webex Auto Attendants are available and can be managed: added, removed, updated:

- Relation (for menu item): `relation/WebexAutoAttendants`

Available fields on the input forms in VOSS Automate align with available fields in Webex Control Hub.

Add:

- Mandatory fields are shown on the form with an asterisk (\*).
- Only one of **Phone Number** and **Extension** is mandatory; for example, if **Phone Number** is selected, then **Extension** is no longer mandatory.
- On the **Business Hours Menu** and **After Hours Menu**, the selected **Greeting** allows for various additional details to be added.
  - **Business Hours Menu** is defined by a selected **Business Hours Schedule**.
  - At least one entry is required.
  - For **Key Configurations**, options are also determined by the selected **Action**. The **Announcement File** offers enterprise wide or local **Level** options.

Update:

- **Call Forward Settings** are available when editing Webex Auto Attendants. Options can be to enable **Always** or **Selective** forwarding.
 

**Selective** forwarding allows for a set of **Rules** to be added according to selected and configured criteria.

## 24.23. Webex App Call Pickup

Webex Pickup Groups are synced and are available to be managed: added, removed, updated:

- Relation (for menu item): `relation/WebexCallPickup`

Available fields on the input forms in VOSS Automate align with available fields in Webex Control Hub.

Add:

- Provide a Call Pickup Group **Name**.
- One or more **Agents** can be added to a Call Pickup Group by selected **Agent** (email address).

Update:

- **Name** cannot be modified. Delete and re-add to update the name.

## 25. Microsoft Subscriber Management

### 25.1. Introduction to Microsoft Onboarding and Offboarding

#### 25.1.1. Onboarding

Onboarding a Microsoft user involves adding or syncing in users to Automate from the Microsoft portal (Microsoft Entra) with the correct licenses, moving users to the correct site, and provisioning them with the correct services.

#### Related Topics

- *Microsoft Quick Start Guide for VOSS Automate*
- *Offboarding*

#### Onboarding Elements

The table describes the elements relevant for onboarding Microsoft users:

Element	Description
M365 User (Msoluser)	The base anchor for the user, and typically the first element pulled into Automate for a Microsoft user. Limited update options are available for this user. Automate can update usage location and licenses, depending on how the system is set up.
Usage location	Usage location is updated completely independent from licensing, provided a value for usage location is included in a configuration template (CFT) via Quick Add Group, Subscriber from Profile, or a field display policy (FDP). If usage location updates aren't required (either you're not using it or the permissions don't allow it), then exclude it from the CFT. The <i>LicenseAssignment</i> permission allows usage location update. Note that the Microsoft API sets the same usage location; it says it's updating usage location even if permissions don't exist.
Licenses	For onboarding, Quick Add Subscriber, Subscriber from Profile, or the field display policy (FDP) honors settings in the Quick Add Group configuration template (CFT) for the M365 user. Direct licenses are applied if they're included. If the CFT does not include any licenses, it won't try to apply licenses. Regardless of the license settings in the CFT, usage location can still be set. If using group licenses, this overrides any direct licenses configured in the onboarding CFTs.

### Msoluser Onboarding Scenarios

The table describes Automate's behavior for the M365 user (*Msoluser*) during onboarding, depending on whether templates exist in your Quick Add Group:

Scenario	Description
No M365 template in your Quick Add Group	Used when the <i>LicenseAssignment</i> permission is not assigned to the application. In this case: <ul style="list-style-type: none"> <li>• <i>Msoluser</i> is left untouched - usage location and license is not updated.</li> </ul>
M365 user template exists in your Quick Add Group	<ul style="list-style-type: none"> <li>• Usage location entry: <ul style="list-style-type: none"> <li>– Automate updates the usage location according to definition in the CFT</li> </ul> </li> <li>• License data (<i>LicenseAssignment</i> permission required): <ul style="list-style-type: none"> <li>– Automate adds any license/s defined in the CFT (direct license assignment to the user)</li> <li>– Any existing licenses the user has (direct) are replaced with what was configured in the template</li> </ul> </li> </ul>
MS Group Add template exists in your Quick Add Group	Used to add group memberships to the user/s (for licensing or other purposes). The user is assigned to the group/s in the CFT, in addition to any existing group memberships the user has.

## Common Onboarding Scenarios and Setup

The table describes example common onboarding scenarios and the setup required, whether using Quick Add Subscriber, Subscriber from Profile, or a field display policy (FDPs):

Example onboard scenario	Setup
No update to Msoluser at all (usage location and/or licenses)	Do NOT include a <i>M365</i> template in the Quick Add Group.
Update usage location, no license update	<ul style="list-style-type: none"> <li>• Include a <i>M365</i> CFT in your QAG. The CFT must include the usage location logic you require (for example, macro from site default, etc).</li> <li>• Leave the license fields blank in the CFT.</li> </ul>
Update usage location, and update license (direct licensing)	Include a <i>M365</i> CFT in your Quick Add Group that includes the usage location logic and licenses you require (e.g. macro from site default, etc).
Update usage location and group assignment (for license or other purposes)	<ul style="list-style-type: none"> <li>• Include a <i>M365</i> CFT in your Quick Add Group that includes the usage location logic you require (e.g. macro from site default, etc.)</li> <li>• Include a <i>Add Group</i> CFT in your Quick Add Group that includes the groups you wish to add to the user.</li> </ul>

### 25.1.2. Offboarding

Offboarding of Microsoft users in Automate is the process whereby the user is de-provisioned (their services are removed), and they're moved back to the customer level. When offboarding, the user's *Usage Location* remains unchanged. Since Automate doesn't automatically manage user licenses (you'll need to grant Automate permissions to do this for Microsoft user licensing), the users licenses remain in place when offboarded unless Automate has license management permissions.

**Note:** When offboarding and moving a user from the site back to the customer level, if that user had a Self-service role at the site, their Self-service role is retained when they move to the customer level and this Self-service role is retained if you later move that user to another site.

#### Related Topics

- [Quick Offboard Subscriber](#)

## Offboarding Workflow

The Microsoft Quick offboard subscriber (QOS) workflow is as follows:

- The number assigned to the user in Microsoft Teams is removed and Enterprise Voice is disabled.  
Any other setting defined in the Teams configuration template (CFT) in the Quick Add Group, such as policies, are applied.
- The number is released in the Automate number inventory, and is either made available or placed into cooling, depending on your setup.
- M365 user (Mso1user) is updated based on configuration:

Licenses	<ul style="list-style-type: none"> <li>– (Default) Remove licenses The default behavior is that all licenses are removed from the user. The <code>LicenseAssignment</code> permission is required in the system. If this permission is unavailable, the transaction ignores the error from Microsoft and continues to execute but leaves the licenses unchanged.</li> <li>– (Recommended) Leave licenses as is You'll need to configure Automate to leave the licenses unchanged if you don't wish to manage licenses. See the note below. It is recommended that you configure this behavior rather than relying on the default behavior (Remove licenses).</li> </ul>
Remove from group(s)	This behavior is based on the <i>Remove Groups</i> configuration template included in the Quick Add Group.

- Move the user and related Microsoft service records (Msoluser, Csonlineuser, Exchange, etc.) back to the tenant level in the hierarchy (typically, customer).

The user's role is also updated to a Self-service role at that level in the hierarchy. The user is then ready for onboarding again if needed (for example, in another site).

## Subscriber updates when offboarding

With regard to subscriber updates in terms of usage location and licenses when offboarding, similar to onboarding, the `LicenseAssignment` permission is required to update the Usage Location and License fields via the **Subscriber** page.

If permissions aren't granted and you're using direct licenses, it is recommended that you adjust your field display policy (FDP) for `relation/MicrosoftSubscriber` to make the Usage Location and License fields read-only for clarity to administrators.

---

**Note:** If you follow the steps in Quick Offboard to retain licenses on the user, any changes to licenses via the subscriber won't be applied. This is for the case where you won't be managing licenses from Automate.

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### 25.1.3. License Management when Onboarding and Offboarding

Automate requires the `LicenseAssignment` permission to manage Microsoft licenses.

To avoid system errors, it is recommended that you do not use the `Msoluser` device model (`device/msgraph/msoluser`) to make changes, particularly when license permissions aren't assigned. Instead, it is recommended that you use `relation/MicrosoftSubscriber` or other Automate functionality to update users.

If a user has any group assigned license, Automate won't attempt any direct license assignment at all, via onboarding or via `relation/MicrosoftSubscriber` updates, regardless of what may be included in Automate configuration templates or in the Microsoft portal.

When offboarding, if Automate is set up to remove a user's direct licenses, this is only possible when Automate is also removing all the license groups. If any license group remains, the direct licenses aren't removed. For example, if a user has base licenses (for example, E3) assigned via group, and you want VOSS Automate to add `MCOEV` as a direct license, this won't be possible. In this case, it is only possible to add the `MCOEV` license via a group license assignment, since it is possible to assign or remove additional groups.

The group license assignment during onboarding and offboarding is not only used for licenses, so it can be used to add or remove non-license groups together with direct licensing, or for no licensing, as needed.

### 25.1.4. Move a User Between Sites Using Offboard and Onboard

To move a user between sites in Automate, the recommended approach is to offboard the user from a voice perspective, then onboard the user in the new site. Moving the user in this way allows the user to be assigned a new number and updated policies, for example, *emergency*, from the new site.

#### To move a user between sites:

1. Run *Quick Offboard Subscriber* for the subscriber that needs to be moved.
  - The subscriber's existing voice configuration is removed, and if configured, their licenses are left in place. Other services aren't impacted.
  - The user and their related services are moved back to the customer level, ready to be onboarded in the new site.
2. Onboard the user into the new site, using your typical process - for example, *Subscriber from Profile*, or *Quick Add Subscriber*.

The user is moved to the new site with the correct voice services for the new site.

**Note:** You can follow this workflow even if the user is going to be keeping the same number. If the number sits at a level available to the new site (for example, customer or intermediate node), then no additional step is required.

If the number sits in the inventory in the old site (the site the user is moved from), you'll need to move the number in the inventory to either a shared level, such as *customer*, or to the new site, before running the onboarding step above.

## 25.2. Configure Automate for Microsoft Services

### 25.2.1. Overview

When using Automate with Microsoft (as a single or multiple vendor deployment scenario), you'll need to pre-configure several settings in VOSS Automate before importing Microsoft users, licenses, policies, and dialplans.

---

**Note:**

- Configuring Automate for Microsoft services is step two for integrating Automate with Microsoft. For the other steps, see [Microsoft Quick Start Guide for VOSS Automate](#).
- Automate v21.2 introduced sync with flow through provisioning for Microsoft users. This feature was extended in 21.3 to users synced in from LDAP and CUCM (Call Manager).
- Only *Add* is supported for syncs with flow through provisioning. Update and delete are not supported since the requirements may differ depending on the customer scenario.
- For details on the generic flow through provisioning feature (which includes Microsoft, LDAP, or CUCM users), see [Setting up Flow Through Provisioning](#)

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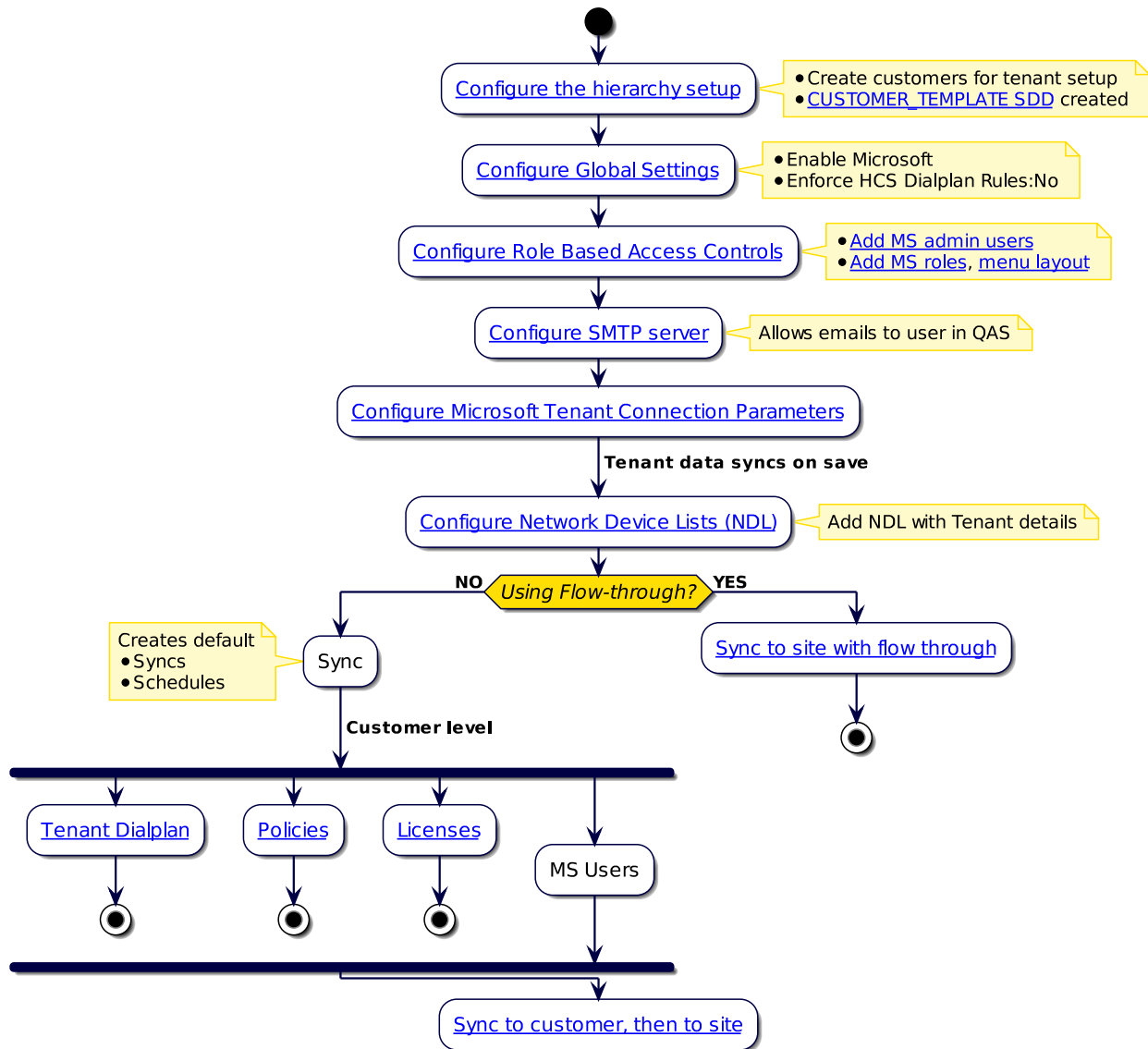
The flowchart sets out the initial configuration of Automate for Microsoft services.

**Prerequisites:**

- [Step 1: Microsoft UC Application Setup](#)



## 25.2.2. Automate Configuration and Sync Workflow



### Related Topics

- Microsoft Overview in the Core Feature Guide
- Sync to Site with Flow Through Provisioning in the Core Feature Guide
- *Sync to Customer, then to Site*
- *Setting up Flow Through Provisioning*
- *Introduction to Microsoft Onboarding and Offboarding*

### 25.2.3. Automate Configuration and Sync Workflow Steps

The high-level workflow for the steps in the flowchart are as follows:

1. Log in to Automate as a provider admin.
2. Add customers.
3. Go to **Customizations > Global Settings** to enable Microsoft:
  - On the **Enabled Services** tab, enable Microsoft services.
  - If you have a Microsoft-only environment, on the **Number Inventory** tab, set the following to *No* (False): **Enforce HCS Dialplan Rules**

---

**Note:** HSC dialplan is relevant only when using Cisco (in a single vendor or multi vendor installation).

---

4. Configure role-based access controls to apply to users on import:

---

**Note:** Automate allows an admin user to set up pre-defined role-based configuration, which will be applied to users on import. This allows users to be auto-provisioned on import, with the correct services, lines, policies, and licenses.

When preparing for import, you'll need to create the admin users, service profiles, user roles, and role-based menu layouts (to hide or display functionality for different categories of users). For example, you can assign a Microsoft-only user role (`MicrosoftOnlyRole`) in a Microsoft-only scenario.

- Add an admin user. See [Add Admin Users](#).
  - Configure menu layouts, See [Add or Edit a Menu Layout](#).
  - Add user roles, and choose menu layouts for the roles. See [Add and Edit Roles](#).
  - Configure a SMTP server, if required. See [Add a SMTP Server](#).
- 

5. Configure a tenant, one for each customer. See [Configure Microsoft Tenant Connection Parameters](#)

---

**Note:** The tenant configuration defines how Automate connects to the Microsoft Cloud to allow syncing of data between Automate and Microsoft Azure, Microsoft 365, Microsoft Teams, and Microsoft Exchange. Saving the tenant creates the default syncs and schedules.

---

6. Configure the network device lists (NDLs), which are required for creating the sites. See [Network Device Lists \(NDLs\)](#)

7. Go to the tenant configuration screen, then, choose a sync option:

- Click **Action > Sync All** to run a full pull sync (syncs in the tenant dialplan, policies, licenses, and Microsoft users to the customer level).
- Click **Action > Sync New Users** to sync in new or updated users *only* (add new users, or update existing users).

For **Sync New Users**:

New users are synced in for the following models:

- `device/msgraph/MsolUser`

- device/msteamsonline/CsOnlineUser
- device/msteamsonline/ApplicationInstance

Existing users are updated (add, modify, delete) for the following models:

- device/msgraph/MsolUser
- device/msteamsonline/CsOnlineUser

---

**Note:** If you're using flow through provisioning for Microsoft users, additional steps are required before running the initial sync. See [Sync to Site with Flow Through Provisioning](#)

You will need to enable the *Sync New Users* sync method initially (if you've upgraded to 21.3-PB1). To do this, save the tenant instance on this screen first so that the necessary data sync instances are created. These data syncs can be identified by the name format: SyncMSTeamsOnlineUsers\_\_<tenant>, with **Update** and **Remove** operations disabled by default.

---

## 25.3. Quick Subscriber (Microsoft)

This procedure displays and updates a Microsoft user, and moves the user to the correct site, with all configuration and licensing applied.

---

**Note:** Quick Subscriber simplifies onboarding with the use of Quick Add Groups (QAGs). QAGs are service and policy assignment templates that allow you to pre-configure how calling rights, policies, and services are assigned to users based on their user role.

When updating a user via Quick Subscriber, you select the relevant QAG, and the automated workflows in VOSS Automate handles the required cloud sync and licensing. The workflow also removes the need for an administrator to check the licensing, or to flag the required policies and settings individually, and then to wait for the cloud to sync in.

---

### Prerequisites:

- Sync in the MS Teams user to the Customer level
- Set up the site defaults and QAG with the appropriate configuration and licenses.

### Perform these steps:

1. Log in to the Admin Portal as a Provider admin, at the Customer level.
2. Go to (default menu) **MS Subscriber Management > Quick Subscriber**.
3. Choose the relevant site.
4. On the Quick Subscriber page:
  - Required. In the **Username** field, select the user to populate fields on the page.

---

**Note:** This workflow is intended for Microsoft-only users. When choosing a hybrid user with Cisco-Microsoft services, you'll need to work with this user via the Hybrid multi vendor actions. The **Hybrid Status Message** field displays the user's hybrid status. See [Hybrid Cisco-Microsoft Management](#)

---

- To include users higher in the hierarchy in the **Username** drop-down, select **Include users at higher hierarchy**.
- To send a subscriber a welcome email once they're set up, select **Send welcome email**.

---

**Note:**

- You must have a SMTP server set up to send emails.
- The read-only **User status** field displays the user's current status; that is, whether they are online, in staging, or not yet provisioned.
- The value in the read-only **Feature type** field defines whether this Microsoft user has MS Teams with or without the voice service. The user has MS Teams and voice service when feature type displays both *Teams* and *PhoneSystem*

- 
- Required. From the **Quick Add Group** drop-down, select the relevant Quick Add Group (QAG) (licenses the user and applies settings defined in the QAG).

The list of available Quick Add Groups are filtered by vendor (see [Quick Add Subscriber Groups Vendor Filtering](#)), and are restricted to those available at a selected hierarchy, based on the option selected for **Quick Add Group & Subscriber Profile lookup level** in the General Settings of the Global Settings. See [Global Settings](#).

Quick Add Groups support group licensing for MS 365 groups, so that subscribers can be licensed according to group membership. Refer to:

- [Licensing Users for MS Teams and Teams Phone by Group Membership](#)
- [Quick Add \(Subscriber\) Groups](#)

---

**Note:**

- If an existing user is holding a particular license is assigned a Quick Add Group where the group license provides additional services (for example, from existing IM services only to Voice services), the user license is updated as follows:
  - \* the user is either placed in the staging queue (see: [Microsoft Subscriber Staging](#)) until the license update is synced and then provisioned with services, or
  - \* the user is provisioned without a staging process.
- If **Tenant dial plan**, **Calling line identity** and **Online voice routing policy** values are set, these will be used.

- 
- From the **Line URI** drop-down, choose a number; alternatively, select **Use next available line** to automatically populate the **Line URI** field with the next available line.

---

**Note:**

- The **Line URI** and **Use next available line** fields display *only* when **Feature Type** is *PhoneSystem*, or **Manage Licenses** is enabled (via the **MS Teams** tab in the site default docs).
- The **Enterprise Voice Enabled** option has been deprecated since PowerShell V4.0.0. Setting **Enterprise Voice Enabled** is no longer required. Thus, to enable a licensed user for Enterprise Voice in Quick Subscriber, assign a line (choose a number from **Line URI**) and ensure that the **Feature Type** field displays value *Teams*, *PhoneSystem*. Alternatively, choose

a Quick Add Group that has a configuration template set up to enable Enterprise Voice for licensed users, regardless of whether a line is assigned.

If you wish to disable Enterprise Voice for this user (or enable it again in future), you can do so via the user's account settings (`relation/MicrosoftSubscriber`). See [Microsoft Subscribers](#)

- The **Line URI** drop-down displays available lines (staged lines are excluded), with the vendor and line type shown in brackets, for example, *Microsoft - CallingPlan*. Lines types may be: Direct Routing, Calling Plan, or Operator Connect
- When choosing a line, the INI will eventually update to this number.
- The default for **Use next available line** is False (disabled).

When selecting **Use next available line**:

- \* If the user does not already have a line, they are assigned the next available line.
- \* If the user has an existing line, this line is replaced by the next available line.
- \* Staged numbers are considered unavailable and will not be used.

- 
- If a **Quick Add Group** is selected and related values are set, the **Tenant dial plan**, **Calling line identity** and **Online voice routing policy** fields, will take those values, else values from the site defaults (SDD).

Choosing different values will overwrite QAG or site defaults (SDD) values.

- From **Calling Line Identity**, assign a calling line identity for this user, or use the value that comes from the QAG.
- Click **Save**.

5. Go to **MS Subscriber Management > Subscriber Staging** to view the user in the staging queue.

---

**Note:** The user is placed in the staging queue (with all configuration applied) while waiting for the cloud to sync in. Once the licensed user appears in the Microsoft Teams portal, a second, targeted sync is triggered, which searches only for staged users (not all users from the tenant). Once the sync completes, the user becomes a fully provisioned subscriber, and the number is flagged as used. The subscriber receives a welcome email (if you've chosen this option, and you have a SMTP server configured).

Starting with VOSS Automate v21.3-PB1, you can, with immediate effect, un-stage a user waiting in the staging queue. This executes a direct sync to the Microsoft cloud to determine whether the user has appeared in MS Teams after their licensing update.

---

6. Verify that the subscriber is configured and licensed:

- Go to (default menu) **Subscriber Management > Subscribers**.

---

**Note:** The **Located At** column on the Subscriber list displays the hierarchy location of each subscriber added to the system, for example, customer or site.

---

- Click on the subscriber to open the Subscribers[name] page.
- On the **MS Licenses** tab, view the subscriber's license details.
- On the **MS Teams** tab, verify the following:

- The user's number is allocated
- Policies are assigned

### Related Topics

- Microsoft Subscribers in the Core Feature Guide
- Sync to Customer, then to Site in the Core Feature Guide
- Flow Through Provisioning in the Core Feature Guide
- Subscriber Staging (Microsoft Users) in the Core Feature Guide
- Microsoft Licenses in the Core Feature Guide
- *User Voicemail Settings*

## 25.4. Microsoft Subscribers

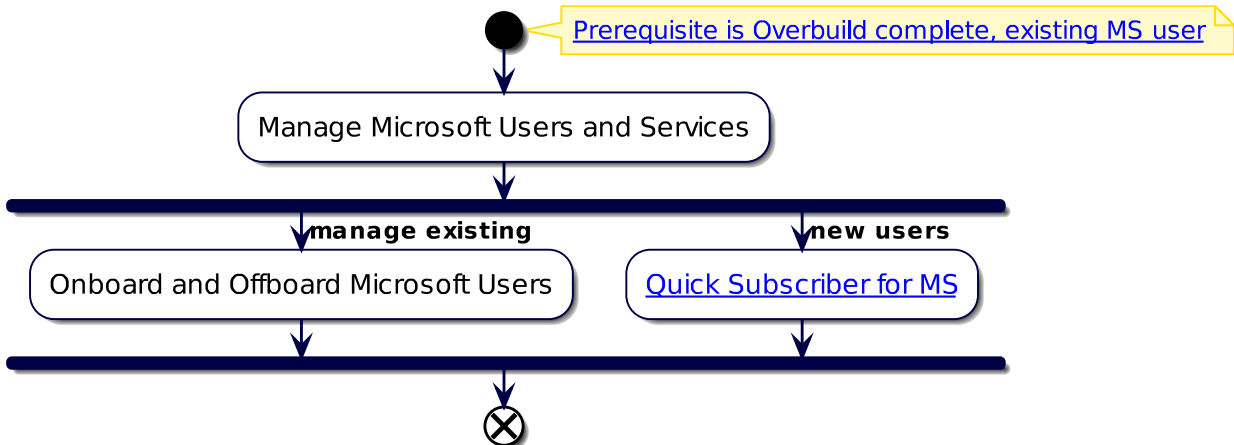
### 25.4.1. Overview

You will need to onboard Microsoft users to create Microsoft subscribers in VOSS Automate.

Onboarding a Microsoft user involves importing users and related data to the customer level from the Microsoft Cloud service, and then moving users to the correct sites as fully provisioned subscribers.

Automated workflows configure imported objects once changes are synced in, and apply the required configuration, policies, and licenses. This means administrators won't need to continually monitor the sync, or to perform additional steps to complete the process.

Once synced in (at the customer or site level), administrators can manage Microsoft users and subscribers via a single interface and login, from within the VOSS Automate Admin Portal. To maintain data integrity, to manage licenses, and to automate number auditing for synced in users, regular, targeted backend syncs poll for changes made at the device model layer.



## Related Topics

- Microsoft Overview in the Core Feature Guide
- Automate Configuration and Sync for Microsoft Services in the Core Feature Guide
- Sync to Site with Flow Through in the Core Feature Guide
- Microsoft Exchange in the Core Feature Guide
- [Quick Offboard Subscriber](#)
- [Quick Subscriber \(Microsoft\)](#)

### 25.4.2. Onboarding Microsoft Users

VOSS Automate provides two onboarding options for Microsoft users:

Sync users to customer level, and then to sites	<p><a href="#">Configure Automate for Microsoft Services</a></p> <p>This option starts with an initial import of dial plans, policies, licenses, and Microsoft users, to the customer level (sync all to the tenant). Then you will need to set up the configuration and user move criteria before moving users to the sites (set up model filter criteria, site defaults, quick add groups, subscriber profiles, and number inventory). Finally, you have two options to move users to the sites as fully provisioned subscribers:</p> <ul style="list-style-type: none"> <li>• Run the overbuild to move multiple users to your sites at once.</li> <li>• Update single users via Quick Subscriber (for Microsoft users)</li> </ul> <p>When moving users to site, the VOSS Automate automated workflow applies the required configuration, services, lines, policies, and licenses.</p>
Sync users directly to sites	<p><a href="#">Sync to Site with Flow Through Provisioning</a></p> <p>In this option, you run the initial sync together with flow through provisioning. In this case, you start by setting up the configuration and user move criteria before running the initial sync. That is, to set up the model filter criteria, site defaults, quick add groups, and subscriber profiles.</p> <p>In addition, you will need to:</p> <ul style="list-style-type: none"> <li>• Configure flow through provisioning criteria</li> <li>• Enable flow through in the Global Settings</li> </ul> <p>Once changes are synced in from the Microsoft Cloud, VOSS Automate automated workflows move the tenant dial plan, policies, and licenses to the customer level, and moves users directly to the appropriate sites as fully provisioned subscribers.</p>

#### Note:

- VOSS Automate v21.2 introduced sync with flow through provisioning for Microsoft users. In 21.3, this feature extends the functionality to users synced in from LDAP and CUCM (Call Manager).
- Only *Add* is supported for syncs with flow through provisioning. Update and delete are not supported since the requirements may differ depending on the customer scenario.
- For details on the generic flow through provisioning feature (which includes Microsoft, LDAP, or CUCM users), see [Setting up Flow Through Provisioning](#)

### 25.4.3. View and Edit Microsoft Subscribers

#### View a summary list of all Microsoft subscribers

This procedure displays a summary list of Microsoft subscribers.

1. Log in to the VOSS Automate Admin Portal.
2. Choose the hierarchy.
3. Go to (default menus) **Microsoft Subscriber Management > Subscribers**.
4. On the **Subscribers** list, view a summary of Microsoft subscribers at the current hierarchy.

The Subscribers summary list view for Microsoft users provides details for the following, for each subscriber in the list:

- User principal name, first name, and last name
- Licenses
- Department
- City, country, phone number, location
- Associated device

#### View and update a Microsoft subscriber

This procedure displays and edits the details of a single Microsoft subscriber.

---

**Note:** This workflow is intended for Microsoft-only users. When choosing a hybrid user with Cisco-Microsoft services, you'll need to work with this user via the Hybrid multi vendor actions. The **Hybrid Status Message** field displays the user's hybrid status. See [Hybrid Cisco-Microsoft Management](#)

---

1. Log in to the Automate Admin Portal.
2. Choose the hierarchy.
3. Go to (default menus) **Microsoft Subscriber Management > Subscribers**.
4. On the **Subscribers** list, view a summary of Microsoft subscribers at the current hierarchy.
5. Click on a subscriber in the list to open the **Subscribers[subscriber name]** page.
6. Select a tab (or scroll to the relevant panel) to view and update settings:



The screenshot shows a web interface for managing Microsoft Subscribers. The breadcrumb navigation is 'Subscribers > DiegoS@vossautobuild.onmicrosoft.com'. There are four tabs: 'MS 365' (selected), 'MS Licenses', 'MS Teams', and 'Local User'. The main content area displays a list of user details for Diego Sicilian, with each field in a separate input box.

Display Name	Diego Sicilian
First Name	Diego
Last Name	Siciliani
User Principal Name	DiegoS@vossautobuild.onmicrosoft.com
Title	HR Manager
Phone Number	+1 205 533-0108
Mobile Phone	
Usage Location	United States
Department	HR
Office	14/1108
Street Address	3535 Gradview Parkway Suite 335
Postal Code	35243
City	Birmingham
State	AL
Country	United States

**Note:** Automate allows you to toggle between a panel or tab layout via a toolbar button. The tabs/panels that display depend on enabled functionality.

Tab/Panel	Description
MS 365	Microsoft user details, such as their display name, first and last name, User Principal Name (UPN), title, contact details, usage location, department, employee ID, employee type, and groups.
Exchange Custom Attributes	<p>Read-only. Displays on the subscriber's form only when Microsoft Exchange is installed and enabled for the subscriber (the subscriber has a Microsoft Exchange license), and provided values are filled out for these fields on the subscriber's Microsoft Exchange settings in Automate.</p> <p>These are fifteen additional fields that can be used for filtering from Microsoft Entra ID using model filter criteria, and to have the values available for flow through provisioning. The same fields are also available in the Microsoft Exchange settings (when installed) in Automate.</p> <p>The fields allow more flexibility when filtering users to be imported and then moved and, optionally, processed with flow through provisioning in Automate.</p>
MS Licenses	<p>View and update the subscriber's Microsoft license details, including their type (Group or Direct), and their licenses.</p> <hr/> <p><b>Note:</b> When the license type is "Group", all license details (SKU and service plans) read-only.</p> <hr/>
MS Teams	<p>The Microsoft subscriber's MS Teams details. The fields below are read-only:</p> <ul style="list-style-type: none"> <li>• User status</li> <li>• Interpreted User Type</li> <li>• Country or Region</li> <li>• Feature Types</li> <li>• Line URI</li> <li>• Line Type</li> </ul> <p>On this tab you can also enable or disable Enterprise Voice for this user.</p> <ul style="list-style-type: none"> <li>• You can only enable Enterprise Voice for a user that has a PhoneSystem license.</li> <li>• You can only assign a number to a user that has a PhoneSystem license.</li> </ul>
Local User	The user corresponding with this subscriber.

## 7. Save your changes.

**Related Topics**

- [Model Filter Criteria](#)
- [Setting up Flow Through Provisioning](#)

**25.4.4. Manage a Subscriber's MS Teams Policies**

This procedure displays and updates the policies of individual subscribers via the Subscriber edit functionality:

---

**Note:** Some policies support full CRUD (create, update, delete) operations within VOSS Automate.

---

**Note:** This workflow is intended for Microsoft-only users. When choosing a hybrid user with Cisco-Microsoft services, you'll need to work with this user via the Hybrid multi vendor actions. The **Hybrid Status Message** field displays the user's hybrid status. See [Hybrid Cisco-Microsoft Management](#)

---

1. Go to (default menu) **Subscriber Management > Subscribers**.
2. Click on a subscriber to open the Subscribers [subscriber name] page.
3. Select the **MS Teams** tab.
4. View currently applied policies for the subscriber.
5. To choose different policies, click the down-arrow at the relevant policy, and select an alternative from the drop-down.
6. Save your changes. Policy changes are synced back to the Microsoft cloud when performing an overbuild or a sync.

The screenshot displays the VOSS Automate Admin Portal interface for configuring a user's calling settings. The left sidebar contains a navigation menu with categories like Hierarchy Management, Reseller Management, Customer Management, Site Management, Apps Management, LDAP Management, Entitlement, User Management, Role Management, Customizations, Flow Through Provisioning Configuration, Cisco Dial Plan Management, MS Teams Dial Plan Management, MS Teams Emergency Management, MS Teams Policies, Number Management, Cisco Subscriber Management, MS Subscriber Management, Quick Add Groups, Licenses, Subscribers, User Calling Settings, Quick Subscriber, Quick Offboard Subscriber, Subscriber Staging, and Groups. The main content area shows the configuration for 'Aaron McDaniels' under the 'MS Teams' tab. The settings are organized into sections: User status, Enterprise Voice Enabled, Feature Types, Account Enabled, Is SIP Enabled, Line URI, Line Type, Line URI TEL portion, Line URI EXT portion, Dial Plan, Meeting Policy, Messaging Policy, Live events policy, App Permission Policy, App Setup Policy, Call Park Policy, Calling Policy, Caller ID policy, and Teams Policy. Each setting is either a checkbox, a text input field, or a dropdown menu.

## 25.5. User Calling Settings

### 25.5.1. Overview

#### Microsoft

VOSS Automate supports configuration of calling (voice) settings for Microsoft users with enabled accounts, from within the VOSS Automate Admin Portal. Configurable settings include call settings and dial out policy, such as call forward and delegation.

#### Important:

- If you're upgrading to VOSS Automate 21.4 from an earlier version, you may need to run an import to ensure all user call settings are imported and are in sync with the settings for this functionality in the Microsoft Teams cloud portal.

- User calling settings display and are configurable *only* for Microsoft users with enabled accounts that can have user calling settings. For example, resource accounts do not have calling settings.

**Note:** Call delegation allows you to assign another user to make or receive calls on your behalf, for example, when you're out of office or otherwise unable to make or receive calls from your device. In this case, VOSS Automate allows you to define user calling settings that assign the person authorized to make or receive calls on your behalf, including whether this user may change your call settings.

## Related Topics

- [Multi Vendor Subscribers](#)

### 25.5.2. Manage User Calling Settings

This procedure adds and updates user calling settings.

1. Go to (default menus) **Subscriber Management > User Calling Settings**.

The list view displays configured user calling settings, with a default sort by user principal name.

User Principal Name	Display Name	Account Enabled	Usage Location	Country	City	Line URI
AA_RA_1@vossautobuild.onmicrosoft.com	AA_RA_1		US			
AA_RA_2@vossautobuild.onmicrosoft.com	AA_RA_2		US			
AA_RA_3@vossautobuild.onmicrosoft.com	AA_RA_3					
AdeleV@vossautobuild.onmicrosoft.com	Adele Vance	✓	US	United States	Bellevue	tel:+18694400020
admin@vossautobuild.onmicrosoft.com	Admin PT	✓	US			
Aposs inUpdate555@vossautobuild.onmicrosoft.com	Aposs 555	✓	US			tel:18694400004
CC_RA_1@vossautobuild.onmicrosoft.com	CC_RA_1		US			
CC_RA_2@vossautobuild.onmicrosoft.com	CC_RA_2					
cc_test1@vossautobuild.onmicrosoft.com	cc_test1					

2. Click on a user in the list view that has the **Account Enabled** column set to True (green check icon), to open their calling settings configuration page.

3. At **User Dial Out Policy**, select an outbound calling setting from the drop-down. Options are:

- Any destination
- In the same country or region as the organizer
- Don't allow

4. At **User Calling Settings**, configure call answering options for this user:

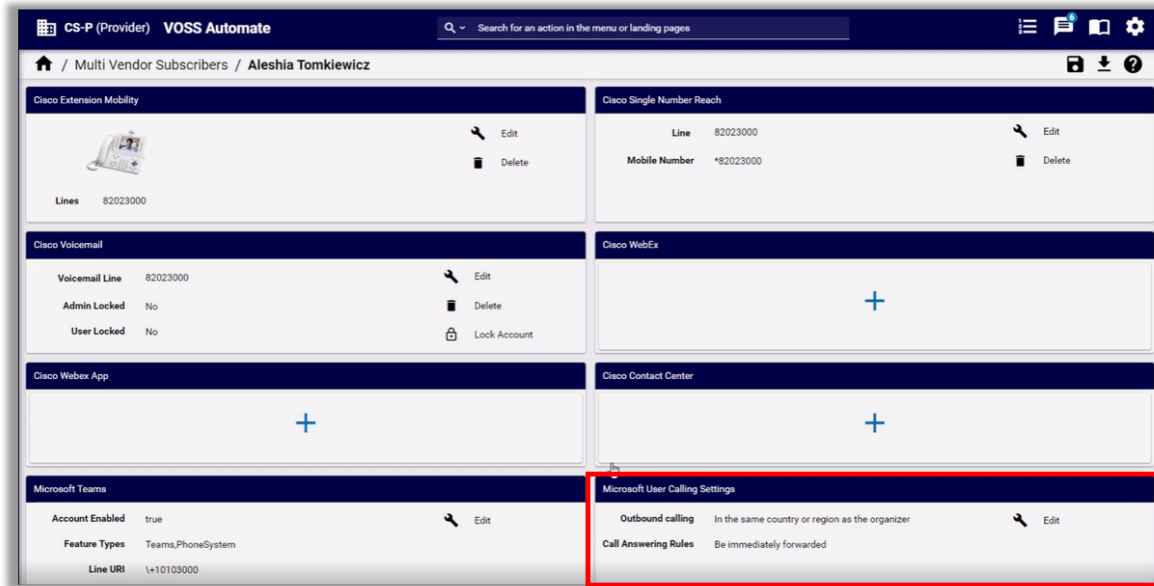
**Note:** User calling settings display and can be configured only for Microsoft users with enabled accounts, that can have user calling settings (for example, resource accounts do not have user calling settings).

The table describes configurable options, which depend on the call answering rule you choose:

Call Answering Rule	Description
Ring devices	<p>When call answering rule is <i>Ring devices</i>, choose one of the following <b>Ring device settings</b> for these <b>Also allow</b> options:</p> <ul style="list-style-type: none"> <li>• Simultaneous ring a user Select a person, and choose settings in case the call is unanswered, for example, send to voicemail, forward to another person or to another number, allow group call pickup, set up call delegation, or do nothing. You can also define the number of seconds to wait before the call is redirected.</li> <li>• Simultaneous ring a number Specify another number to ring at the same time, and define rules if the call is not answered.</li> <li>• Call delegation Set up call delegation (choose the user, set up permissions, and define whether the delegated user may change call settings).</li> <li>• Group call pickup Define how the call is redirected if no user answers the call, for example, send to voicemail, forward to a specified person or number, set up call delegation, or do nothing. Also define how many seconds to allow the device to ring before redirecting.</li> <li>• None If <b>Also allow</b> is set to <i>None</i>, define ring settings if the call is not answered, including the number of seconds to wait before redirecting the call.</li> </ul>
Be immediately forwarded	<p>When your call answering rule is to immediately forward the call, at <b>Call forward type</b>, choose one of the following options, and configure forwarding settings:</p> <ul style="list-style-type: none"> <li>• Voicemail The call is forwarded to your voicemail.</li> <li>• Forward to a person Choose the relevant alternative user to forward the call to.</li> <li>• Another number Specify the alternative number to forward the call to.</li> <li>• Delegate Set up call delegation, and define rules for how the call is handled if the call is not answered by the delegated user.</li> <li>• Group call pickup</li> </ul>

5. Save your changes.

You can also view and edit a multi vendor, enabled, Microsoft user's calling settings via (default menus) **User Management > User Services > Multi Vendor Subscribers**.

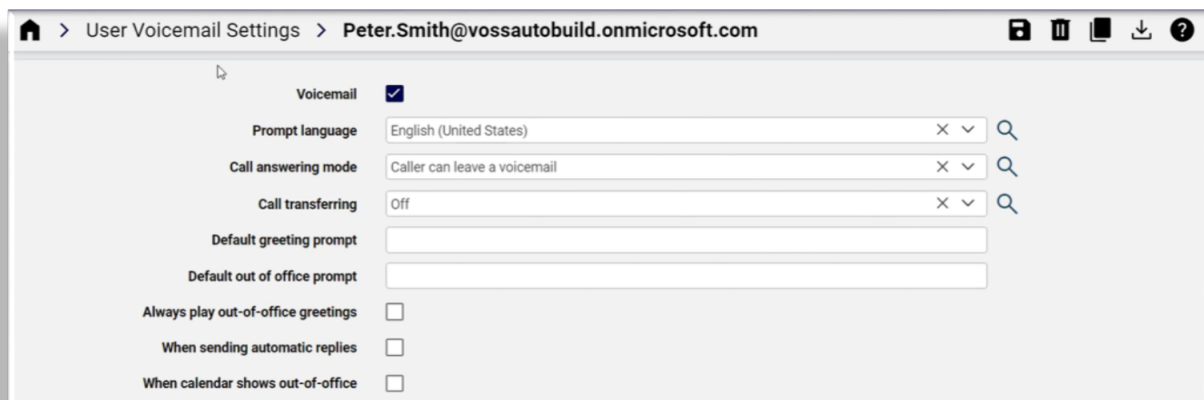


## 25.6. User Voicemail Settings

### 25.6.1. Overview

#### Microsoft

VOSS Automate supports syncing and management of Microsoft Teams user voicemail settings. Any changes you make for these settings in Automate or in the Microsoft Teams online portal are automatically and immediately synced between Automate and the Microsoft online portal.



**Note:**

- The User Voicemail Settings page is associated with model device/msteamsonline/CsOnlineUser with the CsOnlineUser\_VoicemailSettings\_FDP applied.
  - The Microsoft user voicemail service can also be applied via Microsoft Quick Subscriber and a Quick Add Group (QAG) that includes the voicemail settings.
- 

**Related Topics**

- [Multi Vendor Subscribers](#)
- [Quick Subscriber \(Microsoft\)](#)
- [Quick Subscriber \(Microsoft\)](#)

### 25.6.2. Configure Voicemail

This procedure configures voicemail settings for a Microsoft subscriber in Automate.

---

**Note:** You can also configure these settings on the Microsoft Teams online portal. Automate fetches any updates when you load the voicemail settings page.

---

1. Log in to the Admin Portal, then go to **User Voicemail Settings** to display the list view of Microsoft subscribers with voicemail settings.

---

**Note:** You can navigate to the page via the default menus (**Subscriber Management > User Voicemail Settings** or use the toolbar **Search** to locate the page).

---

2. Click on the relevant user in the list to open their voicemail settings management page.
3. Update voicemail settings for this subscriber, any of the following:
  - Enable/disable voicemail
  - Select the prompt language.
  - Select the call answering mode, either of the following:
    - Caller can leave a voicemail
    - Play an outgoing message to the caller
    - Service declines the call with no message
  - Enable/disable call transferring.
  - Optionally, fill out a default greeting prompt and a default out-of-office prompt.
  - Fill out a default out-of-office prompt.
  - Define whether to always play out-of-office greetings.
  - Define when to apply the voicemail settings, either when sending automatic replies and/or when the calendar shows out-of-office.



4. Click **Save**. Your changes are immediately and automatically updated for this user in the Microsoft Teams online portal.

## 25.7. Quick Offboard Subscriber

### 25.7.1. Overview

Quick offboard subscriber (QOS) offboards a Microsoft subscriber, and moves the subscriber from the site back to the tenant level in the hierarchy, typically, customer.

This feature provides a simple way to choose a user and to complete the offboard process.

---

**Note:** When offboarding and moving a user from the site back to the tenant level in the hierarchy (typically, customer), if that user had a Self-service role at the site, their Self-service role is retained when they move to the customer level and this Self-service role is retained if you later move that user to another site.

---

---

**Note:** A MSOL configuration template (CFT) removes licenses. A CSOL CFT only removes voice services (disables enterprise voice and removes the line). The CSOL CFT clears or changes values and should contain `fn.unset` for any fields that need to be cleared, such as `LineURI` and `enterpriseVoiceEnabled`. See the [System Microsoft Teams Online User Template Un License User CFT](#) for an example of the minimum configuration required.

For customers using VOSS Automate for license management and assigning license directly to users, the default behavior for Quick Offboard Subscriber is to remove all licenses from the user.

If you want licenses to remain unchanged when running Quick Offboard, the default `ProviderAdmin`` role (or any cloned role with similar access) will need to clone the `MicrosoftSubscriberMsolUser_Update` CFT to the customer hierarchy, and without making any changes to this CFT, just click **Save**.

---

### Related Topics

- [Introduction to Microsoft Onboarding and Offboarding](#)

### 25.7.2. Offboard a Microsoft Subscriber

This procedure is for Microsoft-only users.

---

**Note:** When choosing a hybrid user with Cisco-Microsoft services, you'll need to work with this user via the Hybrid multi vendor actions. The **Hybrid Status Message** field displays the user's hybrid status. See [Hybrid Cisco-Microsoft Management](#)

---

To offboard a Microsoft subscriber:

1. Log in to the Admin Portal.
2. Go to **Quick Offboard Subscriber**.
3. Choose the relevant site or customer.

4. At **Username**, select the subscriber you wish to offboard.
  1. Click **Save**.
  2. Verify that the user is de-provisioned and offboarded.

---

**Note:** The system default for offboarding is to remove the user's licenses and services. An offboarded user is always moved from the site back to the tenant level in the hierarchy (typically, customer level).

---

- Go to **Subscribers**, and confirm that the value in the **Is Licensed** column of the list view is *false*.
- Click on the subscriber to open their management page, and verify that they have no services assigned (for example, their MS Teams user status should be *User not provisioned for MS Teams*).
- Confirm that the user is now at the tenant level (typically, customer).

---

**Note:** When moving a user from the site to the customer level, if that user had a Self-service role at the site, their Self-service role is retained when they move to the customer level and this role is retained if you later move that user to another site.

---

---

**Important:** The offboard transaction requires a sync with the Microsoft Cloud and relies on waiting for incoming new data from Microsoft. For this reason, you may expect some delay (between 30 and 60 seconds), before the user's new status (unlicensed and/or services removed) displays in Automate. For example, the user may still appear as licensed in Automate, and values such as *PhoneSystem* may still display as an assigned service in the Automate cache, even though the user is unlicensed and services are removed.

---

### 25.7.3. Custom Fields on Quick Offboard Subscriber

The **Quick Offboard Subscriber** form allows for the exposure of up to ten custom string fields and up to 10 custom boolean fields to the field display policy you apply to the Quick Offboard Subscriber form (*view/MicrosoftSubscriberQos*).

Values are:

- **Custom String 1** (`customString1`) to **Custom String 10** (`customString10`)
- **Custom Boolean 1** (`customBoolean1`) to **Custom Boolean 10** (`customBoolean10`)

This provides flexibility to add additional details for a subscriber, if required to set specific values that for can example trigger workflows during off-boarding.

## Expose Custom Fields on Quick Offboard Subscriber

This procedure exposes custom fields for *view/MicrosoftSubscriberQos*.

1. Log in to VOSS Automate as Provider admin or higher.
2. Create or update the Customers data model field display policy:
  - Go to (default menus) **Customization > Field Display Policies**, and locate the entry for target model type *view/MicrosoftSubscriberQos*.
  - Click on the default field display policy (FDP) for the model (the FDP named *default*).
  - Clone (copy) the default FDP for the model, and give the clone a new name.

---

**Note:** You can't modify default FDPs that ship with the system. This allows you to refer to or revert to a system default at any time, if required.

---

- Modify the new FDP (the clone).

---

**Note:** You can add a new group of fields containing only the new custom fields, or add fields to existing field groups.

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- Save your changes.

3. Update the dashboard (*Automate Dashboards*) or menu layout (*Menu Layouts*) to apply the field display policy, and save your changes.
4. Log out, then log in again as Provider admin.

Role-based access profile changes refresh so that you can view the updated menu layouts and field display policies you applied, including new custom fields.

## 25.8. Microsoft Licenses

### 25.8.1. Overview

VOSS Automate can be used to assign, modify, and remove Microsoft user licenses.

To allow VOSS Automate to manage Microsoft user licenses, you will need to enable the following setting in the site's defaults (**Site Management > Defaults, MS Teams tab**): *Manage Licenses and Allow User Staging*

When VOSS Automate is enabled for license management:

- Admins can use Quick Subscriber to optionally configure the correct licensing and MS Teams configuration when onboarding new users.
- Microsoft license data can be synced in to VOSS Automate from the Microsoft cloud, and specified in the Quick Add Group (QAG) configuration templates as part of the provisioning workflow.

Users are placed in staging (an unsaved state) while license data is synced in to VOSS Automate. A licensed user may be assigned with a line and available number in VOSS Automate.

Targeted syncs may be scheduled from VOSS Automate to poll the Microsoft cloud for changes at regular intervals. Users are automatically provisioned in VOSS Automate, based on their service profiles and

assigned licenses. The sync process moves Microsoft users to appropriate sites with the correct configuration, based on the site defaults, filter criteria, and user service profiles. The number assigned to the user is added to a number inventory in VOSS Automate, and is flagged with the user's name.

---

**Note:**

- To view staged users, go to (default menu) **Subscriber Management > Subscriber Staging**.
  - Starting with VOSS Automate v21.3-PB1, you can, with immediate effect, un-stage a user waiting in the staging queue. This executes a direct sync to the Microsoft cloud to determine whether the user has appeared in MS Teams after their licensing update.
- 

### 25.8.2. View Microsoft Licenses by Customer

To view all Microsoft licenses synced currently synced in to VOSS Automate, go to (default menu) **Subscriber Management > Licenses**. The Licenses summary list view provides the following license details per customer:

- SKU ID
- Number of active licenses
- Number of used licenses
- Customer name

### 25.8.3. Licensing Users for MS Teams and Teams Phone by Group Membership

VOSS Automate provides options to manage licensing by group membership. Licenses associated with the group apply to members of the group.

---

**Important:** In VOSS Automate, licensing by group membership has priority over user licensing, so that if a user already had any individual licenses prior to group membership, these are replaced by the group license. Similarly, if a user that was licensed by group membership is removed from the group, the user becomes unlicensed.

---

Such licensing can be configured:

- For subscriber on-boarding and off-boarding by the selected **Quick Add Groups** in the case of:
  - **Quick Subscriber**
  - **Quick Offboard Subscriber**  
Selected in the Quick Offboard Subscriber configuration template (for target model view/`MicrosoftSubscriberQas`)
  - **Flow Through Provisioning**  
Flow through provisioning uses the associated **Subscriber Profile** that selects an item from **Quick Add Groups**.

This option requires the selection of specific configuration templates for **Microsoft** in the user **Quick Add Groups** associated with users:

- **MS Groups Add Template**
- **MS Groups Remove Template**

For details on configuring these templates, refer to the *Configuration Templates for MS Groups* section below.

- Manually from the **MS Subscriber Management > Manage Group Membership** menu. For details on using the form on this menu, see: [Manage Group Membership](#).

A corresponding Multi-vendor Quick Action is also available to open this form - see: [Configure Quick Actions for Multi Vendor Subscribers](#).

### Configuration Templates for MS Groups

VOSS provides reference configuration templates that can be cloned to a hierarchy, renamed and modified in order to customize the group membership that will be affected by the operation associated with the configuration template.

The templates are shown on the **Customizations > Configuration Templates** menu and the model associated with the configuration templates is `view/MsGraphManageGroup`.

- **Reference Microsoft Groups Add Template**  
Add one or more entries to the **Group** list to provide group membership to a user.  
If a user is already a member of a group, the corresponding entry is ignored.
- **Reference Microsoft Groups Remove Template**  
Add one or more entries to the **Group** list to remove group membership from a user.  
If a user is not a member of a group, the corresponding entry is ignored.

The **Group** names need to be typed in, and the list can be inspected from the **MS Subscriber Management > Groups** menu. If MS licenses are associated with the groups, these will be applied or removed according to the configuration template **Operation** function. (For cloned templates, the **User** and **Operation** values do not have to be modified if the operation of the original template is to remain the same.)

---

**Important:** If the Add and Remove configuration templates contain the same list of groups, these should not both be selected when creating a Quick Add Group, since the result of applying the Quick Add Group will then be to both add *and* remove the overlapping group.

The best practice is to create separate Quick Add groups to apply for on-boarding and off-boarding a user, each containing only the required configuration template.

However, in cases where administrators wish to ensure only a standard set of groups apply during on-boarding or off-boarding, the configuration templates can be combined to achieve the desired set.

---

These created configuration templates can now be applied to the relevant created Quick Add Groups for use in on-boarding, off-boarding and flow-through provisioning.

## Related Topics

- [Quick Subscriber \(Microsoft\)](#)
- [Quick Offboard Subscriber](#)
- [Setting up Flow Through Provisioning](#)
- [Subscriber Profiles](#)
- [Manage Group Membership](#)
- [Quick Add \(Subscriber\) Groups](#)

### 25.8.4. View a Subscriber's Microsoft Licenses

To view the license details of individual subscribers via the Subscriber management functionality:

1. Go to (default menu) **Subscriber Management > Subscribers**.
2. Click on a subscriber to open the Subscribers [subscriber name] page.
3. Select the **MS Licenses** tab.
4. View currently enabled licenses for the subscriber.

### 25.8.5. Off-boarding Users and Licensing

Off-boarding a user in VOSS Automate simply involves removing the user's licenses. See [Onboarding Microsoft Users](#)

## Related Topics

- [Microsoft Subscribers in the Core Feature Guide](#)

## 25.9. External Access for MS Teams

### 25.9.1. Overview

VOSS Automate allows you to view and update external access settings for Microsoft Teams users, from within the VOSS Automate Admin Portal. This feature allows you to define how Microsoft Teams users in your organization may communicate with users and domains from outside of your organization.

Any changes you make in VOSS Automate or in the Microsoft Teams online portal for external access settings, are synced.

## 25.9.2. View and Manage External Access Settings

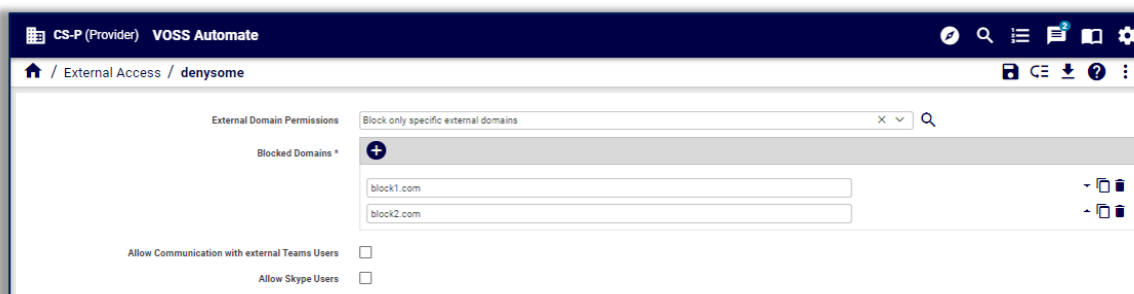
1. Log in to the VOSS Automate Admin portal.
2. Go to (default menus) **Microsoft Subscribers > External Access** to open the **External Access** summary list view, where you can view existing external access settings.

### Note:

- A default “allow all” instance with “Global” identity is available at the Customer hierarchy.
- From the list view you can also export one or more items.

Cs External Access Policy			
<input type="checkbox"/>	Identity	Located At	Device
<input type="checkbox"/>	FederationAndPICDefault	GeoLogic (Customer)	Connection parameters for Microsoft TeamsOnline GeoLogic, GeoLogic, hcs.CS-P.GeoLogic
<input type="checkbox"/>	FederationOnly	GeoLogic (Customer)	Connection parameters for Microsoft TeamsOnline GeoLogic, GeoLogic, hcs.CS-P.GeoLogic
<input type="checkbox"/>	Global	GeoLogic (Customer)	Connection parameters for Microsoft TeamsOnline GeoLogic, GeoLogic, hcs.CS-P.GeoLogic
<input type="checkbox"/>	NoFederationAndPIC	GeoLogic (Customer)	Connection parameters for Microsoft TeamsOnline GeoLogic, GeoLogic, hcs.CS-P.GeoLogic

3. To view or update an existing external access settings configuration, click on an item in the list view to open its management page, then, choose an option:



- To export these settings, click the **Export** icon.
- To modify the external access settings you’re working with, choose options on the page.

The table describes external access configuration options:

<b>External Domain Permissions</b>	Choose a permission type from the drop-down. Options are: <ul style="list-style-type: none"> <li>– Allow or block all external domains When external domains are allowed, users in your organization can chat, add users to meetings, and use audio video conferencing with users in external organizations. By default, your organization can communicate with all external domains.</li> <li>– All or block specific domains In this case you're able to specify the domains to allow or block, using the following format for the domain name: <code>example.com</code></li> </ul>
<b>Allow Communication with external Teams Users</b>	Defines whether users in your organization may communicate with external MS Teams users (MS Teams users whose accounts are not managed by your organization).
<b>Allow Inbound Teams Users</b>	Displays only when <i>Allow Communication with external Teams Users</i> is enabled. Defines whether external MS Teams users may contact users in your organization.
<b>Allow Skype Users</b>	Defines whether MS Teams users in your organization may communicate with Skype users.

4. Click **Save**.

Any changes you made are synced to the external access settings on the Microsoft Teams online portal. Also, any settings changed through the Microsoft Teams portal will reflect in VOSS Automate.

### Related Topics

- Microsoft Quick Start in the Core Feature Guide

## 25.10. Groups

### 25.10.1. Overview

VOSS Automate allows you to view the details of Microsoft Teams Active Directory (AD) groups synced in from the Microsoft Teams cloud portal, so that you can choose these groups for use with Microsoft auto attendants and call queues.

On the **Groups** page, you can also add, update, and delete groups.

**Note:** Guest users (Msol users external to the tenant) are synced in, but their group details (information about which groups they're associated with) won't be included in the sync.



## Related Topics

- [Auto Attendants](#)
- [Call Queues](#)
- [Teams](#)
- [Syncing Teams and Groups on Large Microsoft Tenants in the Best Practice Guide](#)

### 25.10.2. View and Manage Groups

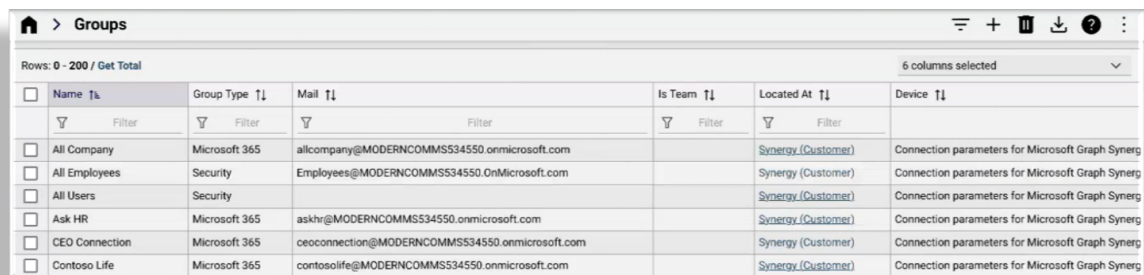
This procedure displays groups synced in from the Microsoft Teams cloud portal, and allows you to view a group's details, and to add, update, or delete a group.

**Note:** Since Microsoft doesn't differentiate between Teams and Groups on the MS Entra ID portal, both the Teams and Groups list view and details page point to the same model, `device/microsoftgraph/Group`, with a filter applied to differentiate between these entities in the Automate GUI.

The **Groups** list view displays only high level data synced in from the Microsoft Portal. Clicking on a group in the list view triggers a live update from the Microsoft Entra ID portal to fetch additional details for the Group. This is to ensure efficient and fast data syncing for Teams and Groups from Microsoft Entra ID. Data syncs for Teams and Groups are handled in the same way in the Automate GUI.

Changes you make for groups in Automate updates the Microsoft online portal.

1. In the VOSS Automate Admin Portal, go to (default menus) **Subscriber Management > Groups** to open the **Groups** list view.



<input type="checkbox"/>	Name ↕	Group Type ↕	Mail ↕	Is Team ↕	Located At ↕	Device ↕
<input type="checkbox"/>	All Company	Microsoft 365	allcompany@MODERNCOMMS34550.onmicrosoft.com		Synergy (Customer)	Connection parameters for Microsoft Graph Synerg
<input type="checkbox"/>	All Employees	Security	Employees@MODERNCOMMS34550.OnMicrosoft.com		Synergy (Customer)	Connection parameters for Microsoft Graph Synerg
<input type="checkbox"/>	All Users	Security			Synergy (Customer)	Connection parameters for Microsoft Graph Synerg
<input type="checkbox"/>	Ask HR	Microsoft 365	askhr@MODERNCOMMS34550.onmicrosoft.com		Synergy (Customer)	Connection parameters for Microsoft Graph Synerg
<input type="checkbox"/>	CEO Connection	Microsoft 365	ceoconnection@MODERNCOMMS34550.onmicrosoft.com		Synergy (Customer)	Connection parameters for Microsoft Graph Synerg
<input type="checkbox"/>	Contoso Life	Microsoft 365	contosolife@MODERNCOMMS34550.onmicrosoft.com		Synergy (Customer)	Connection parameters for Microsoft Graph Synerg

2. View existing groups in the list.

**Note:** The number of groups in the list view matches the number of groups in the Microsoft Portal.

3. **Do you want to ...**

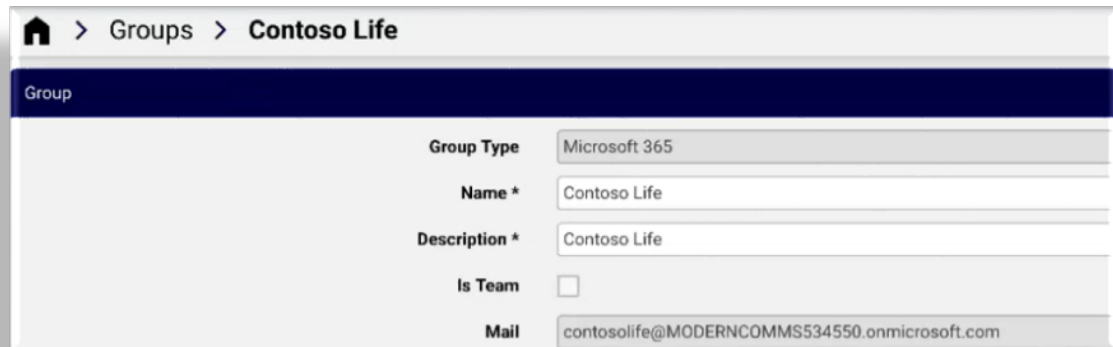
- **View details for an existing group?** Click on a group in the list to view its details.

**Note:**

- Group members don't display on a group's detail page.
- Assigned licenses display the friendly name (SkuPartNumber) of the Assigned License in the **SKU ID** field.

– The **Is Team** flag is enabled only when the entity you're viewing is a Microsoft Team.

- **Update a group?** Click on a group in the list view to open its details page. Update the group details, then save.
- **Delete a group?** Select the relevant group in the list view, or click on the group to view its details, then click the toolbar **Delete** icon.
- **Add a group?** Click the toolbar **Plus (+)** icon to create a new record. Then add group details - select the group type (Security or Microsoft 365), fill out a name and description, then save.



The screenshot shows a web interface for managing groups. The breadcrumb navigation is 'Groups > Contoso Life'. Below the breadcrumb is a 'Group' header. The main content area contains the following fields:

Group Type	Microsoft 365
Name *	Contoso Life
Description *	Contoso Life
Is Team	<input type="checkbox"/>
Mail	contosolife@MODERNCOMMS534550.onmicrosoft.com

## 25.11. Teams

### 25.11.1. Overview

VOSS Automate allows you to manage Microsoft Teams from within the Admin portal. Changes you make to teams in VOSS Automate or in the Microsoft Teams online portal are synced.

A team comprises its members, its channels (where team members share messages and other resources), and its privacy and permissions settings.

**Note:** A Microsoft Team is a collection of people, content, and tools that are grouped together for a common purpose. For example, you may want to add a group of engineers working for the same project, to a team.

In the Microsoft Teams online portal, an admin user can:

- Add or update a team, and give it a name and description
- Make the team private or public.
- Add a team owner
- Move a team (Provider admin only)

When using a Microsoft client (desktop or phone), a Microsoft end user can add teams from teams templates.

## Related Topics

- [MS Teams Templates](#)
- [Groups](#)
- [Syncing Teams and Groups on Large Microsoft Tenants in the Best Practice Guide](#)

### 25.11.2. Add and Update MS Teams

This procedure adds, edits, or deletes Microsoft Teams, teams and team members, in VOSS Automate.

**Note:** Changes you make to MS teams in VOSS Automate syncs to the Microsoft Teams online portal. You can also view changes made to MS teams in the MS Teams portal online, from VOSS Automate.

#### Pre-requisites:

- When configuring VOSS Automate for Microsoft, you will need to assign the following permissions to the API registration in the MS Entra admin portal to allow MS Teams objects to successfully sync in to VOSS Automate, and to allow you to manage these objects in VOSS Automate:
  - TeamMember.Read.All,
  - TeamMember.ReadWrite.All,
  - TeamMember.Read.Group

#### To add and update MS teams:

1. In the VOSS Automate Admin Portal, go to (default menus) **Subscriber Management > Teams**.

## 2. View existing teams in the list view.

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**Note:**

- The number of Teams in the list view matches the number of Teams in the Microsoft Portal.
  - The **Teams** list view displays synced in data for MS Teams. Clicking on a Team to view its details triggers a live update from the Microsoft Entra ID portal to fetch additional details for the Team, including its members and channels. This is to ensure efficient and fast data syncing for Teams and Groups from Microsoft Entra ID. Data syncs for Teams and Groups are handled in the same way in the Automate GUI. Since Microsoft doesn't differentiate between Teams and Groups, both the Teams and Groups list view and details page point to the same model, `device/msgraph/Group`, with a filter applied to differentiate between these entities in the Automate GUI.
- 

## 3. Choose an option:

- **Edit a team:** To edit a MS team, click on the relevant team in the list view to open its management page, then update settings, and click **Save**.

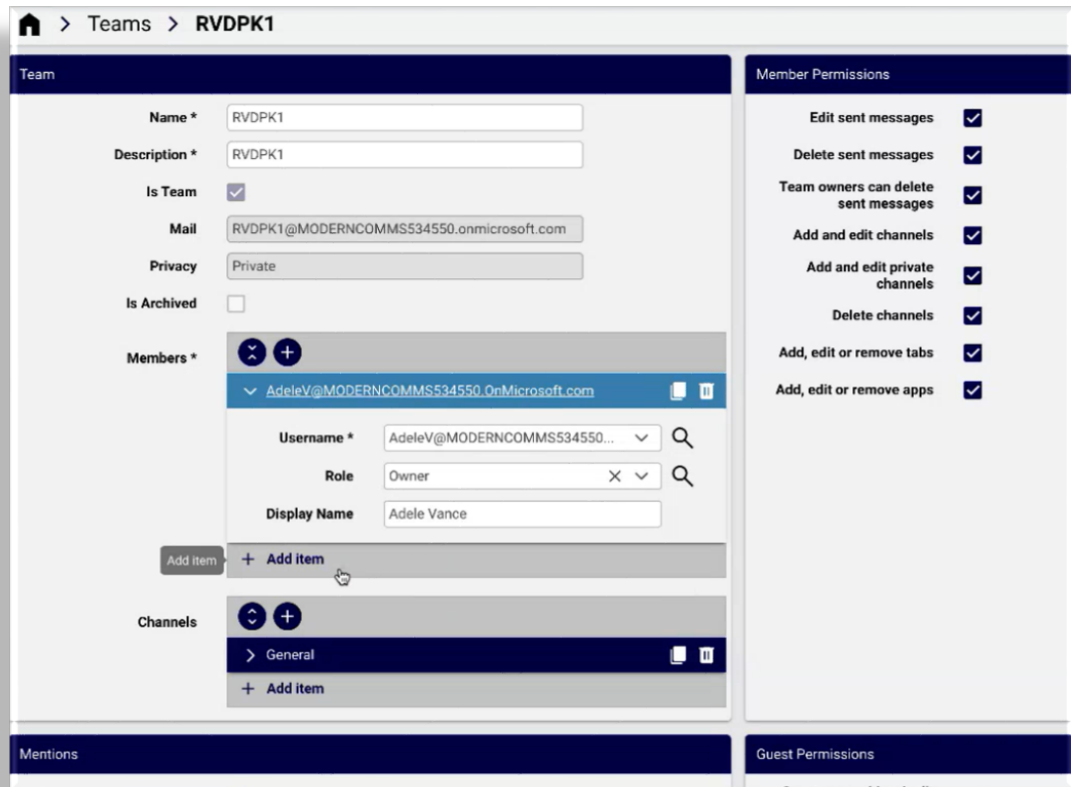
---

**Note:** You can add or remove members, change member roles, update Team settings, and archive, unarchive, or delete a team, and move a team (Provider admin only). However, channel membership type is read-only in the Automate Admin Portal, and will need to be updated in the Microsoft Portal, if required.

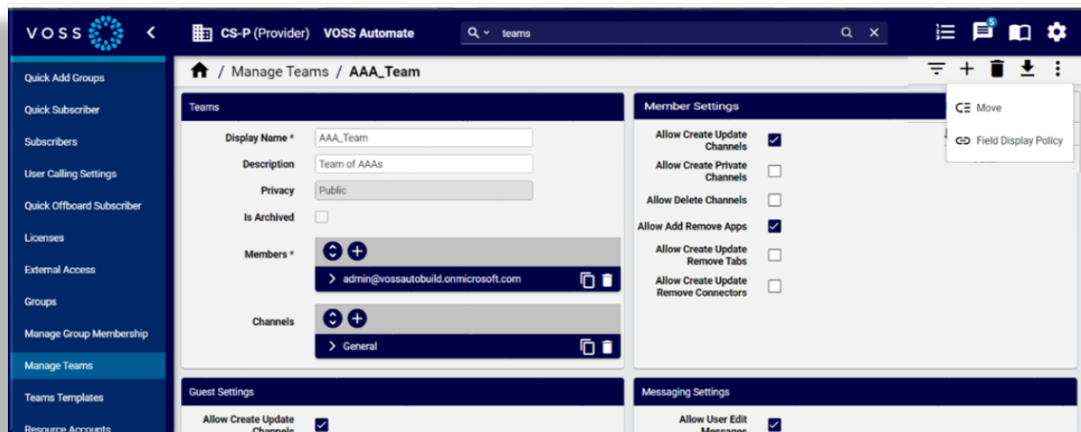
To archive or unarchive a Team, select the relevant team(s) in the list view, then click the relevant toolbar option (Archive Team or Unarchive Team). The **Is Archived** checkbox is read-only when a team is archived, and you can't add or update team members and channels.

All changes are synced to the Microsoft Teams online portal.

---



- **Move a team:** As a Provider admin, you can move one or more MS teams via the list view, or click on a team to open its configuration page, then move the team.



**Note:** When moving a team, team members remain at their existing location. Only the team is moved. However, let's say you moved a team to a site and you want to add additional members, then you can add new members that are at the site where the team now exists, even though the team still contains members that may be at a different location in the hierarchy.

- **Add a team:** To add a MS team, click the Plus icon (+) to open the **Teams** page, then fill out team details:

- Fill out a display name (mandatory) and (optionally) a description.
- Choose a privacy policy, either public or private.

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**Note:** The default is *Public*.

---

- At **Is Archived** define whether the team may be archived.
- At **Teams Templates**, choose a template, if you wish to create the team from a predefined, custom template.
- At **Members**, click the Plus icon (+) to add team members (one or more), and define the member's role, either owner or member.

---

**Note:** At least one user must be assigned the team owner role.

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- At **Channels**, click the Plus icon (+) to add channels (one or more).

---

**Note:** The first channel (*General*), is added by default. All members you add to the team are added to this channel.

VOSS Automate only supports adding channels with membership type *Standard*. In the Microsoft Teams online portal, you can add channels that have any of the following membership types: Private, Standard, or Shared

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- At **Member Settings**, select permissions that will apply to team members. For example, you can define whether to allow team members to add or update channels, to create private channels, to add or remove apps, or to delete channels.
- At **Guest Settings**, define whether to allow guest team members to add, update, or delete channels.
- At **Messaging Settings**, define permissions for messages, for example, choose whether to allow ordinary members to edit or delete messages, define whether team owners can delete messages, and whether to allow team or channel mentions.
- At **Fun Settings**, define whether to allow Giphy, set a content rating for Giphy, and define whether to allow stickers and memes.

## 25.12. Manage Group Membership

### 25.12.1. Overview

VOSS Automate allows you to add or remove Microsoft Teams Active Directory (AD) groups (and any associated group licenses) for a selected user.

This task can be carried out either from the **MS Subscriber Management > Manage Group Membership** menu for a particular user, or by means of Quick Add groups and related configuration templates: **MS Groups Add Template** and **MS Groups Remove Template**.

## Related Topics

- [Licensing Users for MS Teams and Teams Phone by Group Membership](#)

### 25.12.2. Add or Remove Microsoft Teams Groups for a User

This procedure displays groups synced in from the Microsoft Teams cloud portal, and allows you to view a group's details.

1. In the VOSS Automate Admin Portal, go to (default menus) **MS Subscriber Management > Manage Group Membership** to open the **Manage Group Membership** transfer box view.
2. Select an **Operation** to carry out: Add or Remove.
3. Select a **User** from the drop-down list to whom the operation applies.
4. Under **Group**, select groups from the **Available** list and move them to the **Selected** list as required.
5. Click **Save**. In accordance with the selected **Operation**, the user is assigned to or removed from the groups in the **Selected** list.

#### Note:

- For the **Add** operation, if the user is already a member of the group, no operation is carried out.
- For the **Remove** operation, if the user is not a member of the group, no operation is carried out.
- If the group in the **Selected** list has a MS license associated with it, the group license is then also added or removed from the user in accordance with the selected **Operation**.
- This **Manage Group Membership** transfer box is also available to be selected as a **Quick Action** for multi-vendor subscribers. See: [Quick Actions for Multi Vendor Subscriber](#).
- During the setup of Quick Add Group configuration templates to carry out these tasks, the **Operation** and **Group** as shown on this **Manage Group Membership** transfer box, is also selected. See [Licensing Users for MS Teams and Teams Phone by Group Membership](#)

## 25.13. MS Teams Templates

VOSS Automate allows you to import templates from the Microsoft Teams online portal. You can view the settings for these teams templates, and apply templates to the teams you can manage from within VOSS Automate.

From within VOSS Automate, you cannot add, modify, or delete teams templates.

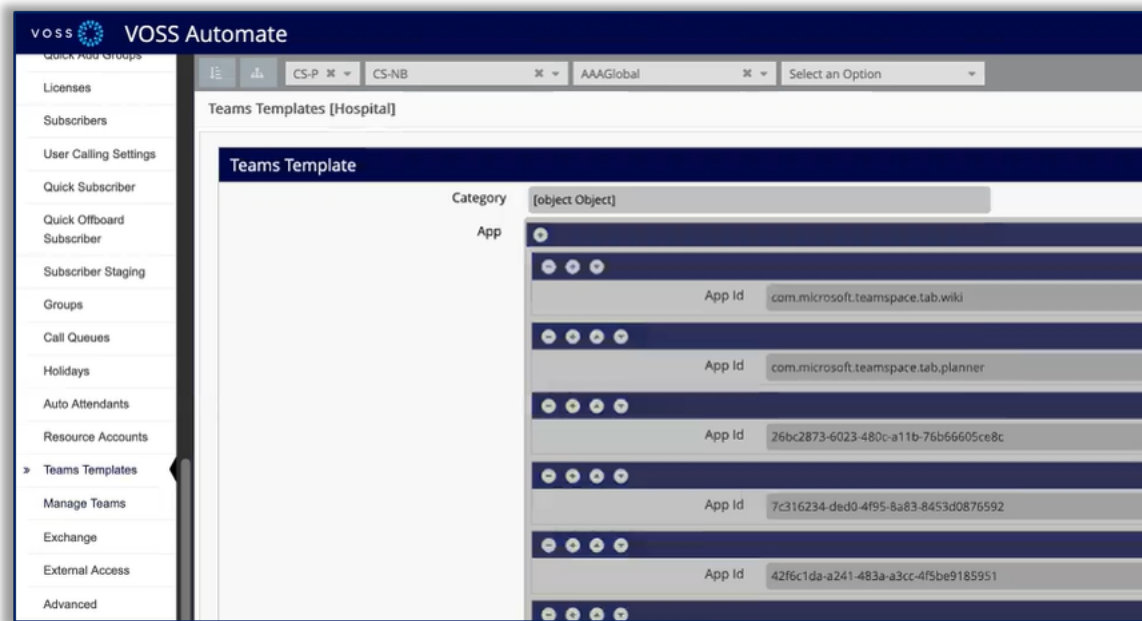
**Note:** Microsoft teams templates can be used to create teams, channels, and apps that will be available to users with common needs or a common project.

A Microsoft end user, working through a Microsoft client (desktop or phone), can add a team from a team template that has been pre-configured with resources, such as team-specific channels or applications. Users added to the team will then have access to the resources set up for the team via the template.

To view Microsoft teams templates from the VOSS Admin Portal, go to (default menus) **Subscriber Management > Teams Templates**. Click on a template in the list to view its settings.

## Related Topics

- [Teams](#)



## 25.14. Resource Accounts

### 25.14.1. Overview

MS Teams resource accounts are licensed, non-enabled user accounts that may be created to assign system resources to voice features such as call queues and auto attendants.

Changes you make to resource accounts in VOSS Automate are synced to the MS Teams portal. When adding or updating resource accounts in the MS Teams portal, these changes are also synced to VOSS Automate.

**Note:** From Automate 24.1, only Microsoft 365 Global Admins or User Admins will be able to create and manage resource accounts. The following roles will no longer have “user create” permissions on resource accounts:

- Teams Administrator
- Teams Communications Administrator
- Teams Telephony Administrator

Organizations using these Teams roles will require administrators with the “user create” permission, such as Microsoft 365 Global Admin or User Admin, in order to create and manage resource accounts.



## 25.14.2. View, Modify, and Add Resource Accounts

This procedure displays, adds, and edits resource accounts from within the VOSS Automate Admin portal.

**Note:** Resource accounts can only be deleted using PowerShell. It is not possible to delete resource accounts from the VOSS Automate Admin portal or from the MS Teams cloud portal.

1. In the VOSS Automate Admin portal, go to (default menus) **Subscriber Management > Resource Accounts** to open the **Resource Accounts** list view.
2. View details of existing resource accounts in the list view.

**Note:** The list view displays resource accounts that have been added either in the MS Teams cloud portal or in VOSS Automate. Each resource account has a display name, and is associated with a username, and a device.

3. Choose an option:

- To modify an existing resource account, click on a resource account in the list to open its the editing page. Update the resource account, and save your changes.

**Note:** The following fields are editable: Application ID, Display Name

Changes you make to resource accounts in VOSS Automate are synced to the MS Teams portal. When adding or updating resource accounts in the MS Teams portal, these changes are also synced to VOSS Automate.

- To add a new resource account, click the Plus icon (+) to add a new record, then:
  - At **Application ID**, choose an option, either call queue or auto attendant.
  - At **Display Name**, fill out a user-friendly display name for the new resource account.
  - Mandatory. At **Username** fill out a username.
  - At **Domains**, choose a domain.

**Note:** The value for **User Principal Name** (UPN) is auto-populated, and is a combination of the display name you specify, and the domain name you choose from the drop-down.

Domain names are imported from Azure and are associated with your Microsoft tenant, which may have multiple domains.

Once you save the resource account, the UPN is read-only.

4. Save your changes.

**Note:** Adding a new resource account creates an Office 365 user in the MS Teams portal, which may be identified via their department name, *Microsoft Communications Application Instance*.

Deleting this user account from Office 365 places the linked resource account in an *Inactive* state, although it remains associated with the auto attendant.

When resource accounts (resource users) are added to call queues and auto attendants, deleting a call queue or auto attendant triggers a system workflow that first disassociates any associated resource accounts, then deletes the call queue or auto attendant.

Refresh your MS Teams portal account to view updates to resource accounts made from the VOSS Automate Admin portal.

## 25.15. Call Queues

### 25.15.1. Overview

Microsoft Teams call queues allow you to manage incoming callers as they arrive in a call queue, and for the duration of their wait in the call queue, until they're connected to an agent. For example, you can set up a call queue to play a greeting message as a caller arrives in the queue, or play a music file while they're waiting to route to a call agent.

**Note:** Call queues support the following audio file types: *.MP3*, *.WAV*, *.WMA* Call queues updated in VOSS Automate will copy the audio files to the Microsoft Admin Portal using SCP. This can be seen in the transaction logs.

Name	Number of Resource Accounts	1st Resource Account Name	1st Phone Number of 1st Resource Account	Number of Call Agents	Presence-based routing	Maximum calls in the queue	Maximum wait time	Route
Audit Call Queue						50	1200	Atter
Bean Tree Cafe 1929					✔	50	1200	Atter

Automate administrators may configure all call queue related configuration within the Automate Admin Portal without requiring additional configuration in the Microsoft Admin Portal.

You can set up a call queue to efficiently route callers out of the queue, to the first available agent, for example. If no agents are signed in or when all agents have opted out of the queue, you can also define, from within Automate or from the Microsoft Admin Portal, how new incoming calls are managed. In this case, you can choose to add new incoming calls to the queue, or disconnect, or redirect the call.

**Note:** Visit the Microsoft documentation for more information around the recommended call queue configuration, including some options that you can set up in VOSS Automate (<https://docs.microsoft.com/en-US/microsoftteams/create-a-phone-system-call-queue>).

Microsoft's recommended settings for call queue are as follows:

- Enable *Conference mode* (Call answering tab in VOSS Automate)
- Set *Routing method* to *Round robin* or *Longest idle* (Agent selection tab in VOSS Automate)
- Enable *Presence-based routing* (Agent selection tab in VOSS Automate)
- Set *Agent alert time* to a minimum of 20 seconds (Agent selection tab in VOSS Automate)

Changes you make to call queues from within VOSS Automate updates call queues in the Microsoft cloud portal, and changes made in the Microsoft cloud also syncs to the relevant call queues in VOSS Automate.

## 25.15.2. View and Manage Microsoft Teams Call Queues

This procedure displays, edits, and deletes existing Microsoft Teams call queues, and adds new call queues, from within the Automate Admin Portal.

1. In the Automate Admin portal, go to (default menus) **Subscriber Management > Call Queues** to open the **Call Queues** summary list view.
2. View existing call queues, which may have been added either from VOSS Automate or from the Microsoft Teams Admin Portal.

---

**Note:** From the list view you can choose to update, delete, move, or export existing call queues, or add new call queues, and your changes will sync to the call queue details in the Microsoft Teams Admin Portal.

---

3. Choose an option:
  - **Update an existing call queue:**
    - Click on a call queue in the list view to open the **Call Queues** management page.
    - Click through the tabs on the page to update the configuration.
    - Save your changes. Updates are synced to the Microsoft Teams cloud portal.
  - **Add a new call queue:**
    - In the list view, click the toolbar Plus (+) icon.
    - Choose the customer or site hierarchy where you're adding a call queue.
    - On the configuration page, click through the tabs to configure the call queue:
      - \* *General Info*
      - \* *Greeting and Music*
      - \* *Call Answering*
      - \* *Agent Selection*
      - \* *Call Overflow Handling*
      - \* *Call Timeout Handling*
      - \* *No Agent Handling*
    - Save your changes.

A new call queue is added to the Microsoft Teams Admin Portal with the settings you configured. Any changes made to update an existing call queue are synced to the Microsoft Teams Admin Portal. Any changes you make to these settings on the Microsoft Teams Admin Portal sync to Automate to update the call queue in Automate.

### 25.15.3. Call Queues Page

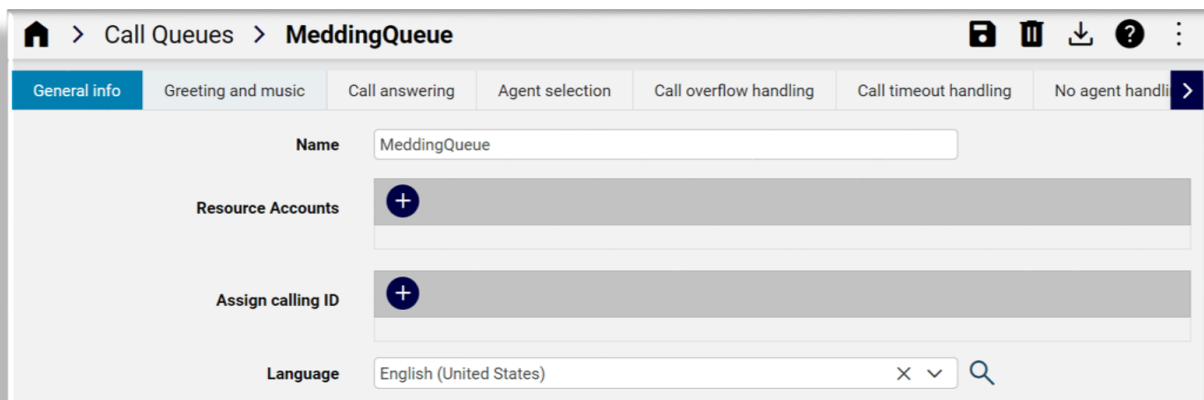
You can select the following tabs on the Call Queues configuration page (once you select a call queue in the summary list view):

- [General Info](#)
- [Greeting and Music](#)
- [Call Answering](#)
- [Agent Selection](#)
- [Call Overflow Handling](#)
- [Call Timeout Handling](#)
- [No Agent Handling](#)
- [Authorized Users Tab](#)

#### General Info

This tab/panel configures the call queue name, adds resource accounts and calling IDs (optionally), and allows you to choose the language that will be used for transcribing voicemail messages and to play system prompts.

**Note:** When resource accounts (resource users) are added to call queues and auto attendants, deleting a call queue or auto attendant triggers a system workflow that first disassociates any associated resource accounts, then deletes the call queue or auto attendant.



The screenshot shows the configuration page for a call queue named 'MeddingQueue'. The page has a breadcrumb trail: Home > Call Queues > MeddingQueue. At the top right, there are icons for save, delete, download, help, and a menu. Below the breadcrumb is a tabbed interface with the following tabs: 'General info' (selected), 'Greeting and music', 'Call answering', 'Agent selection', 'Call overflow handling', 'Call timeout handling', and 'No agent handling'. The 'General info' tab contains the following fields:

- Name:** A text input field containing 'MeddingQueue'.
- Resource Accounts:** A section with a blue plus icon and a grey bar, indicating a list of resource accounts.
- Assign calling ID:** A section with a blue plus icon and a grey bar, indicating a list of calling IDs.
- Language:** A dropdown menu showing 'English (United States)' with a search icon to its right.

## Greeting and Music

This tab/panel configures greeting and music on hold options.

The table describes configuration options on the tab/panel:

Field	Description
Greeting > Options	<p>Choose a greeting option, either of the following:</p> <ul style="list-style-type: none"> <li>• No greeting</li> <li>• Play an audio file Selecting this option displays the <b>Audio file</b> field, where you can choose the audio file you wish to use.</li> <li>• Add a greeting message Selecting this option displays the <b>Message</b> field, where you can fill out the greeting message to use. The typed message will be converted to an audio message by MS text-to-speech.</li> </ul>
Greeting > Music on hold	<p>Choose an option for playing music while the caller is on hold. Options are:</p> <ul style="list-style-type: none"> <li>• Play default music</li> <li>• Play an audio file Selecting this option displays the <b>Audio file</b> field, where you can choose the audio file you wish to use.</li> </ul>

### Note:

- VOSS Automate supports the following audio file formats for call queues: *.MP3*, *.WAV*, *.WMA*
- Microsoft Teams provides a default MOH file to play to callers while they're on hold in a queue. You can choose to play the default file, or choose a file you uploaded (custom files). Custom files are uploaded via File Management to the relevant sites in VOSS Automate.

## Call Answering

This tab/panel defines how incoming calls in the call queue are answered.

The screenshot shows the configuration interface for the 'MeddingQueue' call queue. The 'Call answering' tab is selected, and the 'Call answering' sub-tab is active. The configuration includes the following fields:

- Options:** Choose a team
- Team:** team\_med
- Channel:** General
- Should Overwrite Callable Channel Property:**
- Conference Mode:**

The table describes configuration options on this tab/panel:

Field	Description
Options / Team / Channel	Defines whether to have a specific MS Team and channel answer calls in the queue or choose to assign specific call agents, distribution lists, and groups. Assigning a MS team to call answering must be configured on the MS Teams portal and synced to VOSS Automate. The ability to set this up from within VOSS Automate is reserved for future development.
Should Overwrite Callable Channel Property	A Teams channel can only be linked to one call queue at a time. To force reassignment of the Teams channel to a new call queue, set this to value to True.
Conference Mode	Enables or disables conference mode. The recommended setting is <i>Enabled</i> . Enabling conference mode reduces the time it takes for the caller to connect with an agent. Conference mode enabled requires that the agent answering calls is using Microsoft Teams desktop client or a Microsoft phone.

**Note:** An edge case scenario exists where deleting a user or a group that is referenced by a call queue causes invalid data to display for the call queue. Typically, this is visible when opening the call queue in the Automate portal and the group or user ID is shown under call answer settings instead of a name.

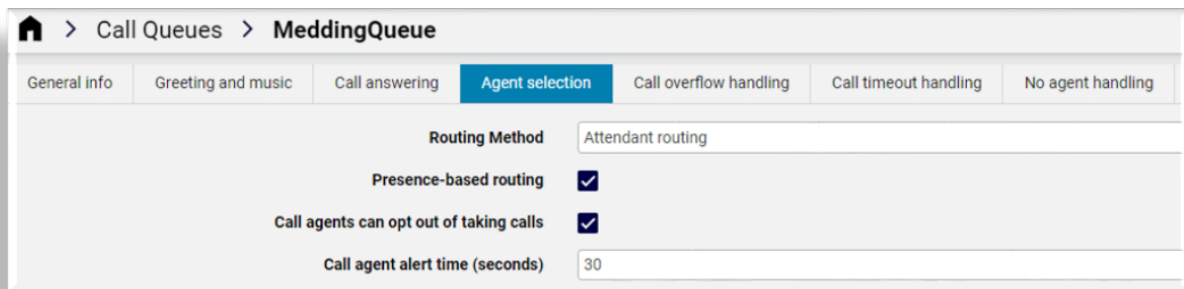
This is due to MS Teams still including the deleted resource(s) in the call queue settings response that VOSS

Automate retrieves. This case has the most impact if the group or user that was deleted is the only resource left in the call queue. The pkid of the resource (user or group) is seen instead of the proper name in the dropdown and if you save the call queue, it may error out as MS Teams will then yield an error for those resources being invalid.

As a workaround, you can remove the resource(s) that appear as pkids from the call queue before saving the call queue. This will ensure the call queue update that happens only includes valid data.

## Agent Selection

This tab/panel defines the agents available to answer calls, and how calls are distributed and routed to agents.



The screenshot shows the configuration interface for the 'MeddingQueue' under 'Call Queues'. The 'Agent selection' tab is active. The configuration includes:

Property	Value
Routing Method	Attendant routing
Presence-based routing	<input checked="" type="checkbox"/>
Call agents can opt out of taking calls	<input checked="" type="checkbox"/>
Call agent alert time (seconds)	30

The table describes configuration options on the Agent selection tab/panel:

Field	Description
Routing method	Defines how calls are routed: Options are: <ul style="list-style-type: none"> <li>• Attendant routing Rings all agents in the queue at the same time. The first agent to pick up the call takes the call.</li> <li>• Serial routing Rings call agents in the order they're listed in the call agents list. The call cycles through agents until one answers the call.</li> <li>• Round robin A recommended routing method, representing a balanced approach that sends the same number of calls from the queue to each agent.</li> <li>• Longest idle A recommended routing method that routes the next call to the agent who has been idle the longest. An agent is considered idle when their <i>presence</i> status is set to <i>Available</i>. Calls won't be routed to agents with their <i>presence</i> status set to <i>Unavailable</i>. You cannot enable <i>Presence-based routing</i> for this routing method.</li> </ul>
Presence-based routing	Recommendation is <i>Enabled</i> . However, this setting can't be enabled for routing option <i>Longest idle</i> . Disable to send calls to agents who choose to receive calls, regardless of their presence status. Enable to send calls only to agents with their presence status set to <i>Available</i> .
Call agents can opt out of taking calls	Recommendation is <i>enabled</i> . Disable to ensure agents accept a call routed to them. Enable to allow agents to choose not to answer a call.
Call agent alert time	The time, in seconds, to wait before redirecting the call to the next agent. The recommendation is a minimum of 20 seconds. The minimum alert time is 15 seconds, and the maximum alert time is 180 seconds.

### Call Overflow Handling

This tab/panel defines the maximum number of calls that may be in the queue, and how the system handles calls that exceed the maximum.



The screenshot shows the 'Call overflow handling' configuration panel for the 'MeddingQueue'. The panel has several tabs: 'General info', 'Greeting and music', 'Call answering', 'Agent selection', 'Call overflow handling' (selected), 'Call timeout handling', and 'No agent handling'. The 'Maximum calls in the queue' is set to 50. Below this, there is a section titled 'When the maximum number of calls is reached' with a dropdown menu. The 'Options' dropdown is set to 'Disconnect', and the 'Option' dropdown is set to 'None'.

The table describes configuration options on the Call Overflow Handling tab/panel:

Field	Description
Maximum calls in the queue	Defines the maximum number of incoming calls you want to allow in the call queue. The default maximum number of incoming calls allowed in a call queue is 200 calls.
When the maximum number of calls is reached	<p>This fieldset defines the system behavior once the number of incoming calls in the call queue reaches your defined maximum. Two options are available:</p> <ul style="list-style-type: none"> <li>• <b>Disconnect</b> Disconnects the call. In this case you can choose to disconnect and take no further action (None), or play an audio file (and select an audio file), or add a greeting message (and fill out a greeting message).</li> <li>• <b>Redirect the call</b> In this case, calls can be re-directed to another person, a voice app, an external phone number, or to a shared or personal voicemail. For each redirect option you choose you can set up further configuration. For example, when redirecting to a shared voicemail, you'll choose the shared voicemail account, define whether to allow transcription, define whether to skip the voicemail system message, and configure a greeting with an audio file or greeting message.</li> </ul>

### Call Timeout Handling

This tab/panel defines the maximum wait time (in seconds) that an incoming call can remain in the call queue. Once you've set up the maximum wait time, you can configure what happens to the call, that is, disconnect the call, or redirect it (and configure redirect options).

**Note:** The default maximum wait time is 2700 seconds (45 minutes). The call is dropped or redirected after the predefined wait time threshold is reached.

## No Agent Handling

This tab/panel defines how to manage new incoming calls when no agents are signed in or when all agents have opted out of the queue.

The table describes configuration options on the tab/panel:

Field	Description
Apply settings only to new incoming calls	Defines whether to apply the settings you're configuring to new calls coming in to the call queue. Either Yes or No. Default is No.
No Agent Action	<p>Defines the action to take when no agents are signed in or opted in to handle new incoming calls.</p> <p>Options are:</p> <ul style="list-style-type: none"> <li>• Queue Call - The call is added to the call queue, with no further configuration options.</li> <li>• Disconnect - This option allows you to take no further action or to play an audio file (and choose an audio file) or to add a greeting message.</li> <li>• Forward - Allows you to redirect the call to: <ul style="list-style-type: none"> <li>– An external phone number (and fill out the phone number)</li> <li>– A person in the organization (and select the person) This is the default setting when the setting is <b>Forward</b>.</li> <li>– A voice app (and select the voice app)</li> <li>– Voicemail (personal) (and select the voicemail)</li> <li>– Voicemail (shared) - in this case you select the shared voicemail, define whether to transcribe the message, define whether to skip the voicemail system message, and set up a greeting (add a greeting message or play an audio file)</li> </ul> </li> </ul> <p>The following file formats are supported for audio files: MP3, WAV, and WMA. The maximum file size is 5 MB.</p>

## Authorized Users Tab

This tab adds and edits authorized users for the call queue. Authorized users are Teams users who have been authorized by a Teams admin center administrator to make configuration changes to Auto attendants and Call queues. This user does not require access to the Teams admin center portal or the assignment of any administrative roles. They can manage Call queues and Auto attendants settings using their Teams client or web portal, for example, Music on hold, Voicemail greeting for Call queues, or Business hours greetings for Auto attendants.

The users allowed to become authorized users must be have A Voice Application Policy assigned to them in MS Teams. However, this policy is not (currently) shown in VOSS Automate and therefore the dropdown of users available to be authorised users in Automate are for users with Enterprise Voice enabled.

When adding an authorized user, you choose the user from the dropdown list.

## 25.16. Auto Attendants

### 25.16.1. Overview

VOSS Automate allows you to add, update, and delete auto attendants for Microsoft Teams users from within the VOSS Automate GUI, and to have these changes update on the Microsoft Teams portal. Changes you make on the Microsoft Teams portal online also update the auto attendants in VOSS Automate.

**Note:** Auto attendants allow people who call in to your organization to self-navigate a menu so that they can be correctly routed to the required department, person, or operator. When setting up an auto attendant for your system, you can choose a greeting, set up menus, and choose how calls are redirected.

## 25.16.2. View and Manage Auto Attendants

To work with auto attendants for Microsoft subscribers in VOSS Automate, go to (default menus) **Subscriber Management > Auto Attendants** to open the **Auto Attendants** page.

The list view displays all auto attendants that exist for your organization, whether added in VOSS Automate or in the Microsoft Teams online portal. On this page, you can:

- Click on an auto attendant in the list view to open its editing page, where you can view its details, or update it.
- Select an auto attendant in the list to delete it.
- Click the Plus icon (+) to add a new auto attendant.

You can select the following tabs on the **Auto Attendants** page in VOSS Automate:

- *General Info Tab*
- *Call Flow Tab*
- *After Hours Call Flow Tab*
- *Holiday Call Flows Tab*
- *Dial Scope Tab*
- *Resource Accounts Tab*
- *Authorized Users Tab*

---

### Note:

- Voicemail options you choose on the tabs of the Auto Attendants page are your MS Exchange service data synced in to the Microsoft tenant you have set up in VOSS Automate, from the Microsoft Teams online portal.
  - Only users enabled for Enterprise Voice can be used as the answer or redirect options in call flows for auto attendant.
  - If you wish to use audio files for the auto attendant, to play a message or greeting for example, note the following:
    - VOSS Automate supports the following file types: *.MP3*, *.WMA*, *.WAV* Auto Attendants updated in VOSS Automate will copy the audio files to the Microsoft Admin Portal using SCP. This can be seen in the transaction logs.
    - To have the audio files available for selection when choosing for the audio attendant, you will need to upload them to VOSS Automate, via (default menus) **Administration Tools > File Management**.
-

## General Info Tab

The table describes the fields on the General Info tab:

Field	Description
Name	Mandatory. The name of the auto attendant.
Operator Type	Optional. Options are: <ul style="list-style-type: none"> <li>No operator</li> <li>Person in organization</li> <li>External phone number</li> <li>Voice app</li> </ul>
Operator Value	Mandatory. Field is hidden when operator type is <i>No operator</i> . When operator type is <i>Voice app</i> , operator values are call queues or auto attendant resource accounts.
Operator Number	Field is hidden when operator type is <i>No operator</i> .
Time zone	Mandatory.
Language	Mandatory.
Voice Inputs	Optional. Defines whether the auto attendant uses voice input.

## Call Flow Tab

This tab defines the call flow for the auto attendant. On this tab you can set up greeting and routing options, and menu options for call routing.

The screenshot shows the 'Call Flow' tab in the VOSS Automate interface. The breadcrumb path is 'Auto Attendants / Research'. The 'Call Flow' tab is active, showing several configuration sections:

- Greeting options:** A search bar with the option 'No greeting'.
- Call routing options:** A search bar with the option 'Play menu options'.
- Set up the greeting and menu options:**
  - Greeting:** A search bar with the option 'Add a greeting message' and a 'Message' input field.
  - Set menu options:** A table with the following data:

Dial key	Voice Command	Redirect To	Operator	Person in organization	Voice app	Voicemail	Transcription	Skip Voicemail System Message	External phone number	Announcement (Play an audio file)	Announcement (Type in a message)	
1		External phone number							+91 555 555 230			

The table describes the fields on the Call Flows tab:

Field	Description
Greeting options	Defines whether there is a greeting, and if so, choose the greeting, for example, play an audio file or add a greeting message.
Call routing options	Defines the system behavior for call flow, for example, play menu options, disconnect the call, or redirect the call.
Set up the greeting and menu options	Choose greeting options, a message, and set up the dial keys that define the behavior for how a call is routed via the menu, for example, to send a call to voicemail, or to a person in the organization, or play an announcement. Depending on the options you choose, you can define options for the redirect, for example, to choose a number for voicemail, or choose the voice app, or set up the external phone number to redirect the call.

**Note:** Audio files required for the auto attendant must be either *.MP3*, *.WMA*, or *.WAV* files, and must be uploaded to VOSS Automate via (default menus) **Administration Tools > File Management**.

### After Hours Call Flow Tab

This tab defines the call flow for after hours calls for the auto attendant.

On this tab you define the business hours for your organization for each day of the week. You will need to choose a start time and an end time from a drop-down of hours and minutes (in 15 minute increments for a 24 hour period), and then define the system behavior for routing incoming calls outside of the predefined business hours, Monday through Sunday, for example, to set up greeting options and menu options, and define whether calls are disconnected or redirected, and the options for the call flow in each instance.

To set the after hours period to a full day, choose a start time of *12:00 AM*. The system automatically sets the end time also to *12:00 AM*, representing a full day. Choose *None* to clear a start or end time.

The screenshot displays the 'After Hours Call Flow' configuration page. At the top, there are navigation tabs: 'General Info', 'Call Flow', 'After Hours Call Flow' (selected), 'Holiday Call Flows', 'Dial Scope', and 'Resource Accounts'. Below the tabs is a 'Set business hours' button. The main area lists the days of the week: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday. Each day has a plus sign icon to add a business hour range. The Tuesday entry is expanded, showing a 'Start At' field set to '9:00 AM' and an 'End At' field set to '6:00 PM'. There are also icons for deleting and copying the entry.

## Holiday Call Flows Tab

On this tab you can set up automated greetings and call routing options for days when your business is closed or operating at less than full capacity due to holidays in your region.

Setting up holidays in your system allows you to automate how calls are answered when the business is closed or operating at less than full capacity. For example, you can choose to play a greeting or message on specific dates, and define how calls are routed. For example, the call may disconnect at the end of a message, or you can present menu options to redirect the call to voicemail, to an announcement, or to a specific person in your organization.

**Important:** If more than one call flow is added, a selected **Holiday** of each should *not* contain days that overlap with a Holiday selected in another call flow. Adding call flows with holidays containing overlapping days will result in a transaction error.

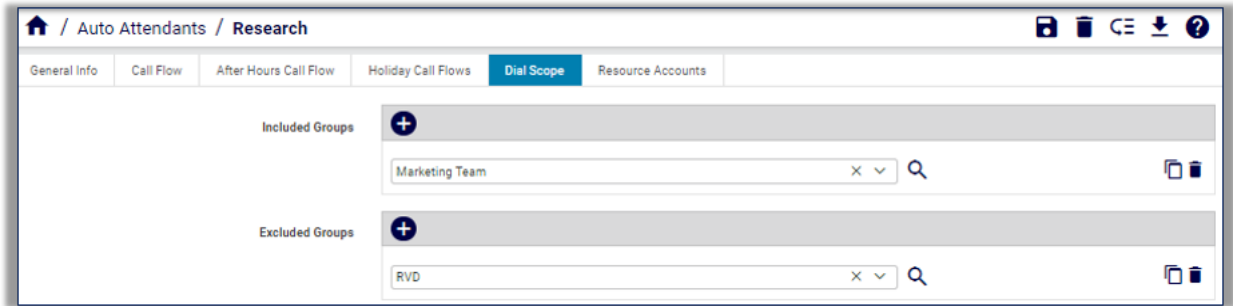
The screenshot displays the 'Holiday Call Flows' configuration page. At the top, there are navigation tabs: 'General Info', 'Call Flow', 'After Hours Call Flow', 'Holiday Call Flows' (selected), 'Dial Scope', and 'Resource Accounts'. Below the tabs, the page title is 'Auto Attendants / Research'. The main content area is titled 'Call flows during holidays' and shows a list of call flows. One call flow, 'holiday1', is expanded to show its configuration details:

- Name:** holiday1
- Holiday:** Workers Day
- Greeting options:** Add a greeting message
- Message:** Thanks for calling. We will be back tomorrow.
- Call routing options:** Play menu options
- Set up the greeting and menu options:**
  - Greeting:** Play an audio file
  - Audio File:** (empty field)

## Dial Scope Tab

This tab configures dial scope for the auto attendant, allowing you to choose the Microsoft groups from Microsoft Entra ID (including Microsoft Exchange), to include or exclude from the dial scope.

**Note:** Microsoft changed the name of Azure Active Directory to Microsoft Entra ID in August 2023.



### Resource Accounts Tab

This tab adds and edits resource accounts for the auto attendant. When adding a resource account, you choose the resource account, and specify the resource account number.

In VOSS Automate, the application ID is the resource account type in the MS Teams online portal. There are two options for application ID/resource accounts:

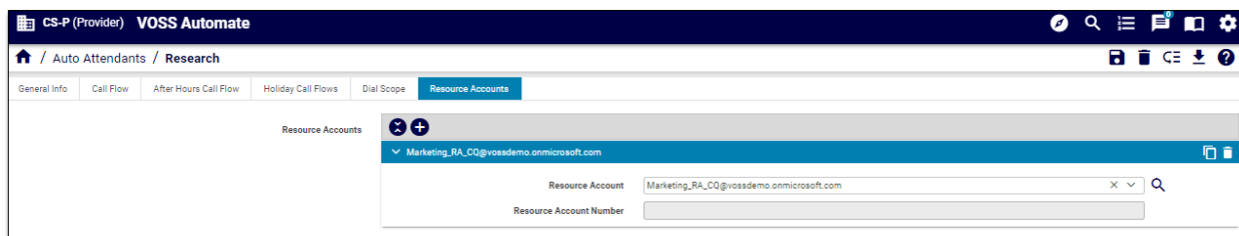
- Call queues
- Auto attendants

**Note:** MS Teams resource accounts are licensed, non-enabled user accounts, created to assign system resources to voice features such as call queues and auto attendants.

The **Resource Account** drop-down on this tab displays both licensed and unlicensed resource accounts. Choosing an unlicensed resource account triggers a warning and the transaction will fail in VOSS Automate. The resource account you choose must be Enterprise Voice enabled.

Each resource account has a display name, and is associated with a username, a phone number, and a device.

When resource accounts (resource users) are added to call queues and auto attendants, deleting a call queue or auto attendant triggers a system workflow that first disassociates any associated resource accounts, then deletes the call queue or auto attendant.



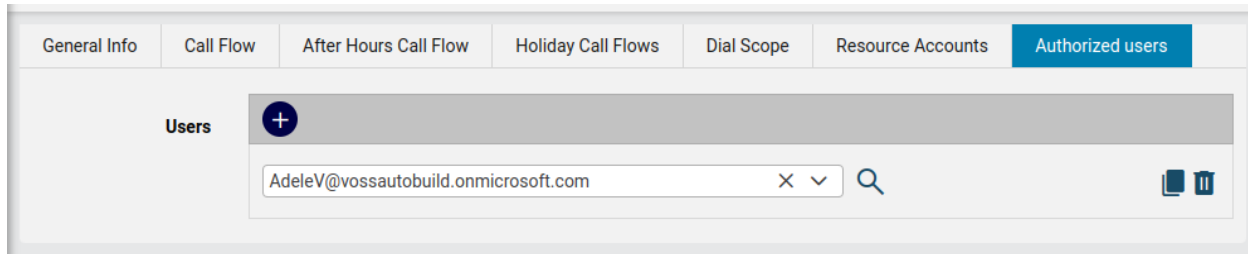


## Authorized Users Tab

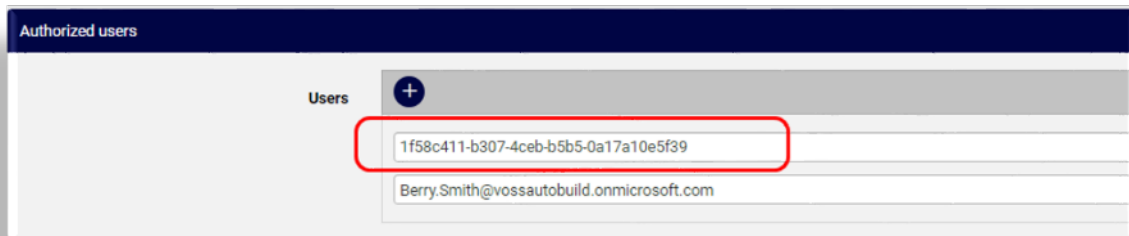
This tab adds and edits authorized users for the auto attendant. Authorized users are Teams users who have been authorized by a Teams admin center administrator to make configuration changes to Auto attendants and Call queues. This user does not require access to the Teams admin center portal or the assignment of any administrative roles. They can manage Call queues and Auto attendants settings using their Teams client or web portal, for example, Music on hold, Voicemail greeting for Call queues, or Business hours greetings for Auto attendants.

The users allowed to become authorized users must be have A Voice Application Policy assigned to them in MS Teams. However, this policy is not (currently) shown in VOSS Automate and therefore the dropdown of users available to be authorised users in Automate are for users with Enterprise Voice enabled.

When adding an authorized user, you choose the user from the dropdown list.



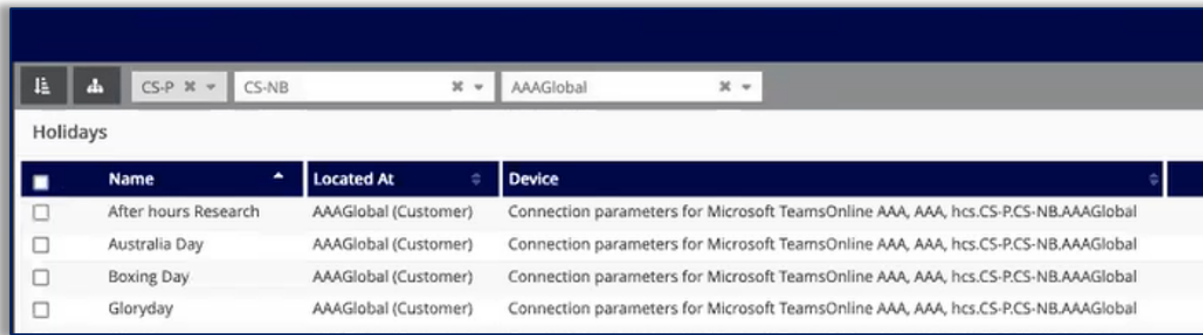
**Note:** If a users displays only with the PKID value (as in the image below), this occurs when the user has been deleted from the Microsoft portal (Microsoft Entra) but the user sync is not yet complete in Automate to remove the user from the cache.



## 25.17. Holidays

VOSS Automate allows you to add, edit, and delete holidays (days where your business is closed due to holidays in your region). On holidays, you may want to automate how incoming calls are routed.

To access this feature, go to (default menus) **Subscriber Management > Holidays** to open the Holidays list view for Microsoft subscribers.

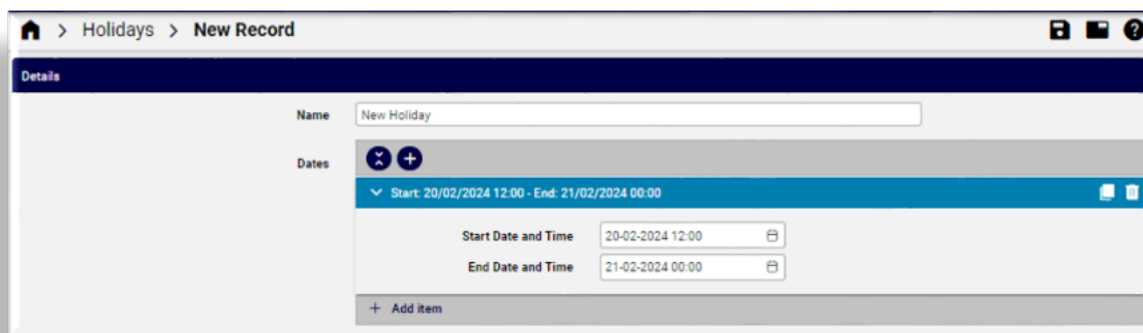


	Name	Located At	Device
<input type="checkbox"/>	After hours Research	AAAGlobal (Customer)	Connection parameters for Microsoft TeamsOnline AAA, AAA, hcs.CS-P.CS-NB.AAAGlobal
<input type="checkbox"/>	Australia Day	AAAGlobal (Customer)	Connection parameters for Microsoft TeamsOnline AAA, AAA, hcs.CS-P.CS-NB.AAAGlobal
<input type="checkbox"/>	Boxing Day	AAAGlobal (Customer)	Connection parameters for Microsoft TeamsOnline AAA, AAA, hcs.CS-P.CS-NB.AAAGlobal
<input type="checkbox"/>	Gloryday	AAAGlobal (Customer)	Connection parameters for Microsoft TeamsOnline AAA, AAA, hcs.CS-P.CS-NB.AAAGlobal

Click the Plus icon (+) in the list view to create a holiday. Or click a holiday in the list view to update it or delete it.

**Note:** You can set a start date and time, and an end date and time. The time selection is in 15 minute intervals.

Changes you make in VOSS Automate or in Azure are synced.



Holidays > New Record

Details

Name: New Holiday

Dates:

Start: 20/02/2024 12:00 - End: 21/02/2024 00:00

Start Date and Time: 20-02-2024 12:00

End Date and Time: 21-02-2024 00:00

+ Add item

## 25.18. Microsoft Exchange

### 25.18.1. Overview

This feature allows you to manage Microsoft Exchange Online mailboxes and calendars from within VOSS Automate, including assigning access and calendar permissions to users and team members licensed for Microsoft Office.

Using automation, it is possible to model the end-state of a user's mailbox configuration during their onboarding or offboarding workflow. For example, it is possible to have the correct retention policy or archiving status set when a user's mailbox is being on-boarded. Or automatically have email forwarding and automated replies set when the user's mailbox is being offboarded.

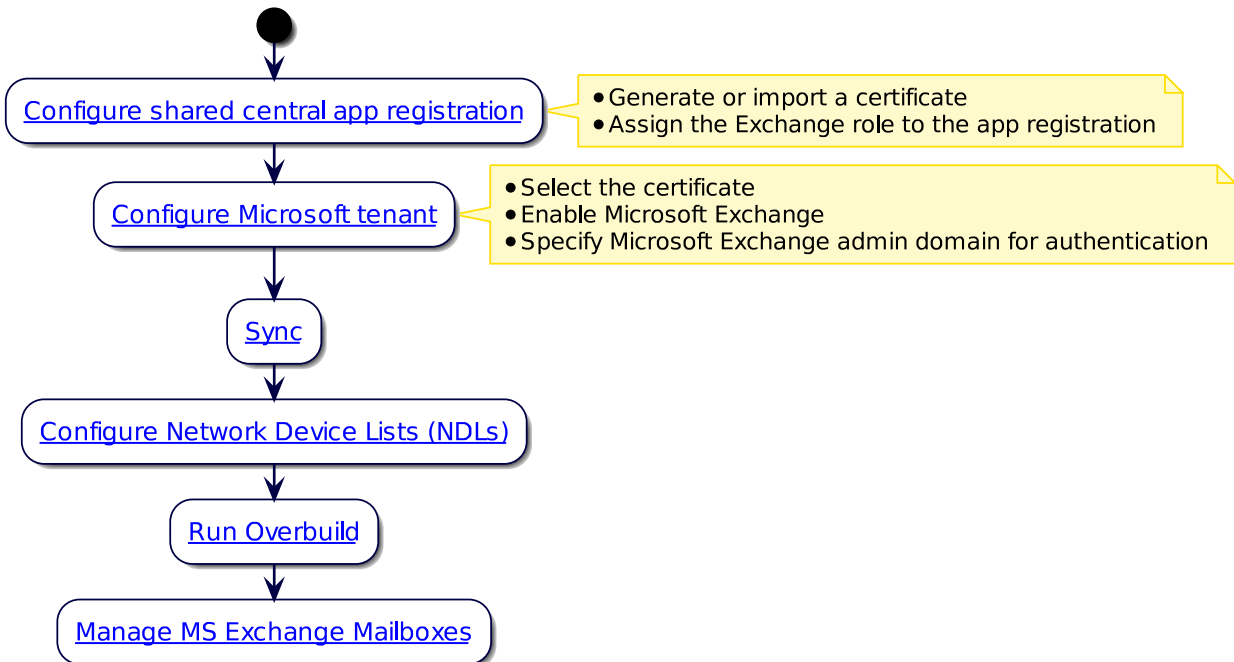
**Note:** Any admin role (Provider, Customer, Site) can access and work with Microsoft Exchange mailboxes, provided that Microsoft is enabled at the hierarchy.

## Related Topics

- [Configure Microsoft Tenant Connection Parameters in the Core Feature Guide](#)
- [Overbuild for Microsoft in the Core Feature Guide](#)

### 25.18.2. Microsoft Exchange Integration

The diagram displays the workflow steps for integrating VOSS Automate with Microsoft Exchange:



The table describes the steps in the Microsoft Exchange integration workflow diagram:

Integrate Microsoft Exchange	Description
1. Generate/import certificate in Automate, & enable Exchange	When adding the new Microsoft tenant and you're using Microsoft Exchange, you must either generate a certificate or import an existing certificate and have Automate manage it. Automate pushes the certificate to the PowerShell proxy.
2. Perform a sync	Once the Microsoft tenant is configured, perform a sync from the tenant configuration screen. This syncs in all Microsoft entities configured on the tenant, including Microsoft Exchange components.
3. Configure NDLs	To prepare for the overbuild that will move synced in Microsoft entities to the sites (including Microsoft Exchange components), add the Microsoft Exchange authentication credentials to the network device lists (NDLs) for sites with subscribers requiring mailbox management in VOSS Automate.
4. Run overbuild	Microsoft users must be included in the overbuild settings. An overbuild moves Microsoft Office 365 users to the sites, based on the model filter criteria defined in the overbuild settings. Microsoft 365 users includes users enabled for Microsoft Teams and Microsoft Exchange on the Microsoft Cloud portal.
5. Manage mailboxes	<p>Once you've set up VOSS Automate for integration with Microsoft Exchange Online, synced in mailboxes, and run the overbuild to move users and mailboxes to the sites, you can manage these mailboxes and calendars for users and users and teams from within VOSS Automate:</p> <ul style="list-style-type: none"> <li>• Assign access and calendar permissions for user mailboxes</li> <li>• Add, update, or delete shared mailboxes, including assigning or removing mailbox access and calendar permissions</li> <li>• Add or update the <b>Owners</b> field for Distribution Group mailboxes</li> </ul>

### 25.18.3. Supported Microsoft Exchange Mailboxes in VOSS Automate

Four types of Microsoft Exchange mailboxes are supported in VOSS Automate:

- User mailboxes
- Shared mailboxes
- Room mailboxes
- Distribution Groups

User mailboxes are created for individual Microsoft Office 365 users on the Microsoft Cloud portal, while shared mailboxes, room mailboxes, and distribution groups can be created on the Microsoft Office portal or in VOSS Automate.

Any changes made to the mailboxes and their associated calendars are synced between the Microsoft Cloud portal and VOSS Automate. This allows a VOSS Automate admin user to manage mailboxes from within VOSS Automate, and have these changes seamlessly update on the Microsoft Cloud.

The table describes the Microsoft Exchange mailboxes supported in VOSS Automate, and the ways in which you can work with these mailboxes:

Mailbox type	Description
User	<p>User mailboxes are assigned to a single, licensed, Microsoft Office user. These mailboxes are created on Microsoft Exchange Online and synced in to VOSS Automate.</p> <p>The ability to manage access permissions on user mailboxes and calendars is useful where you need to allow other users to view, send, or receive emails on behalf of the mailbox owner. For example, to grant access to an executive assistant, or to monitor the mailbox of a user who is unable to attend to their emails or calendar items while out of office.</p>
Shared	<p>Shared mailboxes can be created on Microsoft Exchange and synced in to VOSS Automate, or they can be added, updated, or deleted on VOSS Automate, and any changes are then synced back to the Microsoft Cloud portal.</p> <p>Shared mailboxes are useful for groups of individual users or for teams. For example, a shared mailbox might be used for a support or sales team, with different members having the same or custom access and calendar permissions on the shared mailbox.</p> <p>The owner, or user principal, of a shared mailbox is a 'dummy', unlicensed user on the Microsoft Cloud, and does not add to the VOSS Automate subscriber count. The user principal name of a shared mailbox is auto-generated based on the display name you define.</p>
Room	<p>Room mailboxes can be created on Microsoft Exchange and synced in to VOSS Automate, or they can be added, updated, or deleted on VOSS Automate, and any changes are then synced back to the Microsoft Cloud portal.</p> <p>Rooms are entities, typically an actual room at a physical location, that become a user for the purpose of creating the Microsoft Exchange mailbox. The entity name is the user principal name of the room mailbox.</p>
Distribution Group	<p>Distribution Groups can be created on Microsoft Exchange and synced to VOSS Automate, or they can be added, updated, or deleted on VOSS Automate, and any changes are then synced back to the Microsoft Cloud portal.</p> <p>A distribution group is typically used to send emails to a group of recipients. You can add owners (one or more), for a distribution group in VOSS Automate, as well as modify owners.</p>

## Mailbox Access Permissions and Calendar Permissions

Access permissions on Microsoft Exchange mailboxes define the ownership rights and mailbox access permissions of one or more users for the mailbox. When configuring access permissions on a mailbox, you select a user from a list of users at the same hierarchy level as the mailbox, and select their access role permissions, for example, Read and Manage, Send As or Send on Behalf.

Calendar permissions allow you to assign a combination of role access permissions, such as Owner, and individual permissions, such as Delete All Items, to one or more users, on the calendar associated with the mailbox.

You can assign or remove access permissions and calendar permissions on all mailbox types, for users that exist at the same site as the mailbox.

### 25.18.4. Manage Microsoft Exchange Mailboxes in VOSS Automate

This procedure updates Microsoft Exchange user mailboxes, and adds, modifies, and deletes Microsoft Exchange shared mailboxes, room mailboxes, and distribution groups.

**Note:** You can only add or delete shared mailboxes, room mailboxes, and distribution groups in VOSS Automate. User mailboxes may be updated in VOSS Automate, but they can be added or deleted only on the Microsoft Cloud portal.

1. Log in to the Automate Admin Portal.
2. Go to (default menus) **Microsoft Subscriber Management > Exchange**
3. Choose the menu for the relevant mailbox type, either **User Mailboxes**, **Shared Mailboxes**, **Room Mailboxes**, or **Distribution Groups**.
4. View the summary list view of the mailbox type you selected.

#### Note:

- The **Located At** column in the list view displays the hierarchy level of mailboxes. Some may be at the customer level, and some may have been moved to a site.

Microsoft Exchange mailboxes are initially synced in at the customer level, and must be moved to the sites, either manually (via the list view or the mailbox management screens), or when running the overbuild.

- Separate menu items are available for recipient types of mailboxes: **User Mailboxes** and **Shared Mailboxes**. If required when a user is off-boarded, the **User Mailboxes** entry can be converted to a **Shared Mailboxes** entry. Refer to the additional API operations available for the subscriber's mailbox ArchiveStatus at [Microsoft Subscribers](#).

#### 5. Do you want to ...

- **Move one or more mailboxes to a different level of the hierarchy?** Select the relevant checkboxes, then click **Move**.
- **Export the data of one or more mailboxes?** Select the relevant checkboxes, then click **Export**. Choose an export format, and click **Export**.
- **Delete one or more mailboxes (shared or room mailboxes, or distribution groups only)?** Select the relevant checkboxes, then click **Delete**.

- **Add a new mailbox (shared or room mailboxes, or distribution groups only)?**

- Click the toolbar **Plus** icon.
- Define a **Display Name** for the new mailbox. The **Mail Name** field automatically updates with an allowed string value of the **Display Name** (for example, no spaces).
- Select a **Mail Domain**. The **Primary Email Address** using the specified domain is assigned to the new mailbox.
- Save your changes. Go to step 6 to update mailbox permissions and settings.

- **View or update a mailbox?**

- Click in the relevant row to open the mailbox management screen.
- Go to step 6 to update mailbox permissions and settings.

## 6. Update mailbox settings:

For all mailbox types	<p>You can:</p> <ul style="list-style-type: none"> <li>• Move the mailbox to another level in the hierarchy.</li> <li>• Update the mailbox display name.</li> </ul> <p>On the <b>Delegation</b> tab you can set permissions and calendar permissions. To do this, select a mailbox user and assign access rights.</p>
For user mailboxes	<ul style="list-style-type: none"> <li>• On the <b>User mailbox</b> tab you can modify the retention policy and the archive status.</li> <li>• On the <b>Email forwarding</b> tab you can choose an option for forwarding all emails to this mailbox. Options are: <b>None</b>, <b>Internal</b>, or <b>External</b>. You can then add an internal or external email address, and choose whether to send email to this mailbox and forward to another mailbox (if you've chosen Internal or External).</li> </ul> <p>Configuration templates associated with the Quick Add Group allows you to set default values when adding or removing the subscriber. See the following settings in Quick Add Subscriber Groups:</p> <ul style="list-style-type: none"> <li>• MS Exchange Online User Mailbox Template</li> <li>• MS Exchange Online Convert Mailbox Template</li> </ul> <p>Available fields:</p> <ul style="list-style-type: none"> <li>• DisplayName: mailbox display name</li> <li>• Permissions</li> <li>• CalendarPermissions: users and their access rights can be managed.</li> <li>• ForwardingAddress: for the Internal forwarding mailbox address.</li> <li>• ForwardingSmtpAddress: for the External forwarding mailbox address.</li> <li>• DeliverToMailboxAndForward: additional setting for the Internal forwarding to deliver to both the user mailbox and the forwarding mailbox.</li> <li>• AutoReplyState: automatic replies are enabled or disabled.</li> <li>• InternalMessage: set internal autoreply message.</li> <li>• ExternalAudience: choose None, contact list, all senders</li> <li>• ExternalMessage: set external autoreply message.</li> <li>• RetentionPolicy: selected policy for mailboxes</li> <li>• ArchiveStatus - for enabling and disabling archiving (Automate contains API operations for mailbox conversion and archiving)</li> <li>• Custom attributes (1 to 15) - you can't update these values in Automate; MS Exchange updates will reflect on the user display form.</li> </ul>

For shared mailboxes	<ul style="list-style-type: none"> <li>• The <b>Email forwarding</b> tab offers similar settings to the <b>User mailbox</b>, but applied to the shared mailbox.</li> <li>• The <b>Automatic replies</b> tab allows you to enable or disable this feature (scheduling not available yet), with options to specify reply messages and audience.</li> </ul>
For room mailboxes	<ul style="list-style-type: none"> <li>• Add or update the <b>Location</b> field to define the physical location of the room associated with this mailbox.</li> <li>• Add or update the <b>Room Capacity</b> field to define the number of people the room associated with this mailbox holds.</li> </ul>
For a distribution group	<p>You can:</p> <ul style="list-style-type: none"> <li>• Add or update owners</li> <li>• Add or update members (users with access permissions for sending emails as a selected user, or on behalf of a selected user).</li> </ul>

---

**Note:** Delete is allowed only for shared mailboxes, room mailboxes, or distribution groups.

---

7. Assign or remove permissions:

- To assign access or calendar permissions to a user:
  - Click the **Plus** icon at either **Permissions** or **Calendar Permissions** (as applicable).
  - Select the user, and select the relevant permissions.
  - Repeat this step to assign permissions to additional users.
- To remove access or calendar permissions from a user:
  - Either uncheck permissions assigned to the user, or remove the user entry from the relevant permissions field (**Permissions** or **Calendar Permissions**).
  - Repeat this step to remove permissions from additional users.

---

**Note:** Calendar permissions are only relevant for user, shared, and room mailboxes. For distribution groups, only mailbox access permissions are relevant.

When deleting (removing) permissions, the Microsoft cloud portal may take a few minutes to process the update, which may cause a delay for the refreshed data to reflect in the Automate GUI.

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8. Save your changes.



### Related Topics

- [Quick Add \(Subscriber\) Groups](#)

## 25.19. Microsoft Subscriber Staging

When onboarding Microsoft users into VOSS Automate, unlicensed Microsoft 365 users are synced in to VOSS Automate from the Microsoft Teams cloud portal.

It is possible to license Microsoft users from within VOSS Automate. You could use Quick Subscriber to apply a user's MS Teams configuration and to license the user in a single operation. Since there is a dependency on the Microsoft cloud to sync the changes once the user is licensed, VOSS Automate places the user in a staging queue while it waits for the Microsoft cloud process to complete.

A scheduled staging sync and workflow executes every 30 minutes. This workflow removes the user from staging, re-runs the Quick Subscriber workflow, updates the Microsoft Teams user with their correct provisioning details, provisions the subscriber in VOSS Automate, and flags their number as used.

---

**Note:** While the staging workflow runs every 30 minutes, if the Microsoft Teams cloud portal takes too long to create the Microsoft Teams user and you don't want to wait for the scheduled workflow to execute, you can perform an un-stage action on the Subscriber Staging page to immediately execute the workflow.

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### Related Topics

- [Microsoft Subscribers in the Core Feature Guide](#)
- [Quick Subscriber for Microsoft Users in the Core Feature Guide](#)
- [Site Defaults in the Core Feature Guide](#)

## 26. MS Operator Connect Management

### 26.1. Microsoft Operator Connect Management in VOSS Automate

#### 26.1.1. Overview

This feature provides support for Microsoft Operator Connect in VOSS Automate, which allows service providers to manage the numbers that customers can order from them, from within VOSS Automate.

Data is synced between VOSS Automate and the service provider's Operator Connect portal to automate the process of setting up customers, and the ordering and assignment of numbers.

Service provider customers log in to their Operator Connect portal to order numbers. These requests are sent to the service provider's Operator Connect portal as *Customer Consents*, which are synced in to VOSS Automate via the service provider's Operator Connect tenant that is set up in VOSS Automate.

VOSS Automate supports the following MS Operator Connect management features:

- Customer onboarding
- Pushing numbers via the service provider's Operator Connect APIs to their customer tenants and into the service provider's Session Border Controller (SBC) infrastructure
- Removing numbers
- Removing customers

Providers use the MS Operator Connect functionality in VOSS Automate only when they're providing Operator Connect numbers to customers. Operator Connect support in VOSS Automate is intended as an additional feature, alongside the MACDs and other Microsoft capabilities, for those service providers offering additional services.

The workflow for MS Operator Connect is as follows:

1. The admin user adds an Operator Connect tenant at the Provider level, which also creates a number of default syncs in the Admin Portal.
2. The admin user initiates a test connection on the Operator Connect tenant.
3. The admin user can initiate a sync on the Operator Connect tenant to import data from the Operator Connect tenant.

Imported data is moved from Provider level to Customer level automatically:

- When the imported data is added (based on the Tenant ID configured for each Customer in relation/MicrosoftTenant)
- When imported data is updated (based on the Tenant ID configured for each Customer in relation/MicrosoftTenant for any data which was previously at the Provider level).

MS Operator Connect functionality in VOSS Automate:

- View and update the partner consent status, at Provider or Customer level. See [Partner Operator Consent](#)
- View a list of calling profiles at the Provider level. See [Calling Profiles](#)
- View a list of number usage capabilities at the Provider level. See [Number Usage Capabilities](#)
- View a list of previously ordered numbers, at Provider or Customer level. See [Number Order History](#)
- View a list of previously released numbers, at Provider or Customer level. See [Number Release History](#)
- Add or remove numbers and number ranges, at the customer or site level. See [Upload Number Range](#) and [Numbers \(for MS Operator Connect Tenants\)](#)

### Related Topics

- [Operator Connect Tenant](#)
- [Partner Operator Consent](#)
- [Numbers \(for MS Operator Connect Tenants\)](#)
- [Number Order History](#)
- [Onboard Customers for Operator Connect using the Customer Build Tool](#)

## 26.1.2. Operator Connect Tenant

Creating an Operator Connect tenant in VOSS Automate allows for syncing of data between the service provider's Operator Connect tenant on their Operator Connect portal, and VOSS Automate.

As a service provider, you can create an Operator Connect tenant in VOSS Automate at the Provider level in the hierarchy, and add the details to connect to your Operator Connect tenant.

Once you've added the tenant, you can test this connection, then initiate a sync to import data, using the default data sync that is created when saving the new Operator Connect tenant in the VOSS Automate Admin Portal.

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**Note:** Default syncs are created in VOSS Automate for adding and updating data from your Operator Connect tenant on the Operator Connect portal. See [Operator Connect Default Data Syncs](#)

---

Imported data is automatically moved from the sync-in level (Provider) to the Customer level, when data is added or updated, based on the Tenant ID configured for each Customer in relation/MicrosoftTenant. For updated data, this is also based on any data that was previously at the Provider level.

## Related Topics

- [Microsoft Operator Connect Management in VOSS Automate](#)
- [Operator Connect Default Data Syncs](#)
- [Partner Operator Consent](#)

## Add an Operator Connect Tenant

This procedure adds the Operator Connect tenant and creates the default data syncs.

1. In the VOSS Admin Portal, log in as Provider admin, then go to (default menus) **MS Operator Connect Management > Operator Connect Tenant**.
2. Choose the Provider hierarchy.

---

**Note:** You can only add a tenant for Operator Connect at the Provider level.

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3. In the list view, click the Plus icon (+) to add an Operator Connect tenant, then fill out the following details for the new tenant:
  - Fill out a name (mandatory), and a description (optional).
  - (Mandatory) Fill out the client ID (application ID) from the Azure AD app registration portal.
  - (Mandatory) Fill out the tenant ID (directory ID) from the Azure AD app registration portal.
  - (Optional) Fill out the client secret previously created in the Azure AD app registration portal.
  - (Optional) Fill out the details of the Microsoft proxy and the Microsoft secure proxy.
5. Click **Save** to add the new tenant, and wait for the transaction to complete.
6. Click **Action > Test Connection** to verify that the tenant can connect to Azure.
7. Click **Action > Sync** to import data.
  - Default syncs are added.
  - Imported data is automatically moved from the Provider level to the Customer level (based on the tenant ID configured for each customer (in *relation/MicrosoftTenant*)).

---

**Note:** In subsequent syncs, previously imported data may be updated based on the tenant ID configured for each customer (in *relation/MicrosoftTenant*), for any data that was previously at the Provider level.

---

### Operator Connect Default Data Syncs

When adding an Operator Connect tenant, a number of default data syncs are added to VOSS Automate for retrieving data from the Operator Connect tenant.

To view these data syncs, go to (default menus) **Administration Tools > Data Sync**.

---

**Note:** In the **Data Sync** list view, type all or part of the phrase *Operator Connect* in the **Name** column or the **Device Type** column to filter the list for only the data syncs relevant to Operator Connect.

---

The default data syncs for Operator Connect simplify scheduling; that is, you can add a schedule at any time, and use the default data syncs.

The table describes the default data syncs for Operator Connect:

OperatorConnect Sync Type	Description
SyncMSOperatorConnect	A full pull sync that syncs in all data.
SyncMSOperatorConnectNumber	Contains a model type list that syncs in just numbers.
SyncPartnerOperatorConsents	Syncs in new or updated partner consents.
PurgeMSOperatorConnect	A purge sync that removes all locally synced data from the Automate database.

### 26.1.3. Partner Operator Consent

Partner operator consents define the progress of a service provider's relationship with their customer. For example, when the customer first contacts the service provider, the partner consent status is set to *Customer Contacted*.

You can view and manage partner consent statuses for your customers (at Provider or Customer level), via (default menus) **MS Operator Connect Management > Partner Operator Consent**.

Provider or customer-level partner operator consents are initially synced in from the MS Operator Connect portal to Automate once you add the Operator Connect tenant and run a full pull sync. Thereafter, you can run a SyncPartnerOperatorConsents sync to sync in only new or updated partner consents.

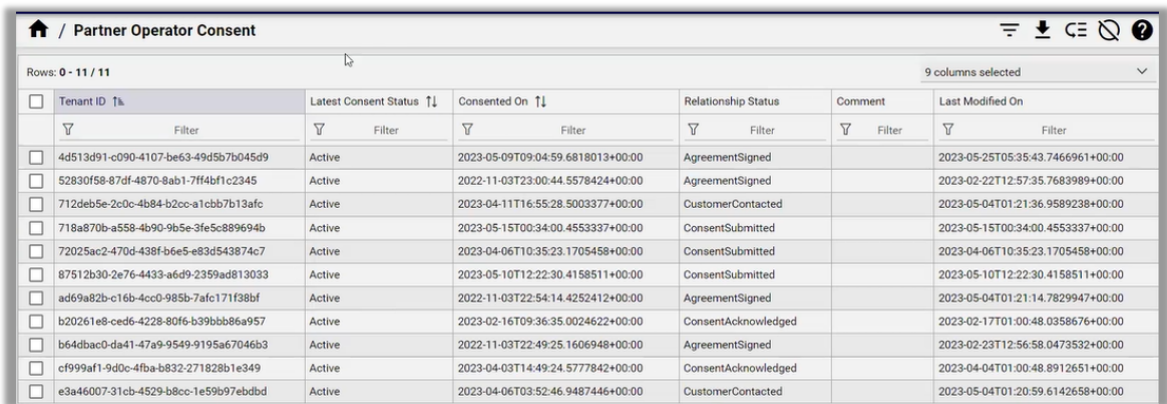
## Related Topics

- [Microsoft Operator Connect Management in VOSS Automate](#)
- [Operator Connect Tenant](#)
- [Operator Connect Default Data Syncs](#)

## View Partner Operator Consents

1. Log in to the Admin Portal at the Provider or Customer level hierarchy.
2. Go to (default menus) **MS Operator Connect Management > Partner Operator Consent**.
3. In the summary list, view the list of existing partner operator consents:

**Note:** The list of partner operator consents can also be viewed via the MS Operator Connect portal.



Tenant ID	Latest Consent Status	Consented On	Relationship Status	Comment	Last Modified On
4d513d91-c090-4107-be63-49d5b7b045d9	Active	2023-05-09T09:04:59.6818013+00:00	AgreementSigned		2023-05-25T05:35:43.7466961+00:00
52830f58-87df-4870-8ab1-7ff4bf1c2345	Active	2022-11-03T23:00:44.5578424+00:00	AgreementSigned		2023-02-22T12:57:35.7683989+00:00
712deb5e-2c0c-4b84-b2cc-a1cbb7b13afc	Active	2023-04-11T16:55:28.5003377+00:00	CustomerContacted		2023-05-04T01:21:36.9589238+00:00
718a870b-a558-4b90-9b5e-3fe5c889694b	Active	2023-05-15T00:34:00.4553337+00:00	ConsentSubmitted		2023-05-15T00:34:00.4553337+00:00
72025ac2-470d-438f-b6e5-e83d543874c7	Active	2023-04-06T10:35:23.1705458+00:00	ConsentSubmitted		2023-04-06T10:35:23.1705458+00:00
87512b30-2e76-4433-a6d9-2359ad813033	Active	2023-05-10T12:22:30.4158511+00:00	ConsentSubmitted		2023-05-10T12:22:30.4158511+00:00
ad69a82b-c16b-4cc0-985b-7afc171f38bf	Active	2022-11-03T22:54:14.4252412+00:00	AgreementSigned		2023-05-04T01:21:14.7829947+00:00
b20261e8-ced6-4228-80f6-b39bbb86a957	Active	2023-02-16T09:36:35.0024622+00:00	ConsentAcknowledged		2023-02-17T01:00:48.0358676+00:00
b64dbac0-da41-47a9-9549-9195a67046b3	Active	2022-11-03T22:49:25.1606948+00:00	AgreementSigned		2023-02-23T12:56:58.0473532+00:00
cf999af1-9d0c-4fba-b832-271828b1e349	Active	2023-04-03T14:49:24.5777842+00:00	ConsentAcknowledged		2023-04-04T01:00:48.8912651+00:00
e3a46007-31cb-4529-b8cc-1e59b97ebdbd	Active	2023-04-06T03:52:46.9487446+00:00	CustomerContacted		2023-05-04T01:20:59.6142658+00:00

The table describes the columns on the Partner Operator Consents page list view:

Column	Description
Tenant ID	Unique tenant IDs for each of the end customers. Once the tenant ID is matched to a customer, all new or updated details for the consent is moved to the relevant customer. Each of the service provider's customers are associated with a unique tenant ID that displays in both the VOSS Automate Admin Portal and on the MS Operator Connect portal. This is the tenant belonging to the end customer, and you can use this tenant ID to onboard the customer with the Customer Build tool in VOSS Automate, and add the tenant ID to the tenant so that when you sync in data, the system associates the data with the customer's tenant ID so that the data is moved to the appropriate customer.
Latest Consent Status	Status of the latest consent.
Consented On	Date of latest consent.
Relationship Status	The currently configured relationship status, in the order history, for the consent (last synced in from the API), for example: <ul style="list-style-type: none"> <li>• Consent Acknowledged</li> <li>• Customer Contacted - the first time the customer contacts you</li> <li>• Agreement Signed</li> <li>• Consent Declined</li> <li>• Contract Terminated</li> </ul>
Comment	Notes for the consent.
Last Modified On	The last time the consent was updated.
Product Context	The product associated with the partner consent.
Located At	The hierarchy level, either Provider or Customer. Since the tenant is first added at Provider level, the first sync pulls in the consents initially to the Provider level. Once you start provisioning and adding customers, the consents are moved to the relevant customer level.
Device	

4. Click on a row in the list view to view more details for the customer and the associated partner consent.

---

**Note:** The only change you can make to a partner consent in the management page is to update the relationship status. See [Update Partner Operator Consent](#).

All other values are read-only on this page.

---

## Related topics

- [Onboard Customers for Operator Connect using the Customer Build Tool](#)

## Update Partner Operator Consent

The only change you can make to a partner consent in the Admin Portal's Partner Operator Consent management page is to update its relationship status.

1. Log in to the Admin Portal at the Provider or Customer hierarchy.
2. Go to (default menus) **MS Operator Connect Management > Partner Operator Consent**.
3. In the summary list, click on a relevant row.

The screenshot displays the 'Partner Operator Consent' management page in the VOSS Automate Admin Portal. The page is titled 'CS-P (Provider) VOSS Automate' and includes a search bar. The breadcrumb navigation shows the path: / Partner Operator Consent / 52830f58-87df-4870-8ab1-7ff4bf1c2345. The page is divided into three main sections: 'Customer Consent', 'Customer Relationship', and 'Contacts'. The 'Customer Consent' section contains the following fields: Tenant ID (Auto Build Tenant), Consented On (2022-11-03T23:00:44.5578424+00:00), Consented Countries (AU), Last Modified On (2022-11-04T02:46:17.4148144+00:00), Product Context (teams), and Latest Consent Status (Active). The 'Customer Relationship' section contains the following fields: Relationship Status (Consent Acknowledged) and Last Modified On (2023-01-19T03:49:04.8083212+00:00). The 'Contacts' section is currently empty.

4. Click the down-arrow at **Relationship Status**, then select a new value.
5. Save your change.

### 26.1.4. Numbers (for MS Operator Connect Tenants)

Numbers belonging to your customers are initially synced in to VOSS Automate from the Operator Connect portal, at the Provider level. Once you add customers and start provisioning and syncing, the numbers are moved to the relevant customers, based on their unique tenant IDs.

You can view the numbers associated with your Operator Connect customers, including the level where the numbers exist (Provider or Customer level) via (default menus) **MS Operator Connect Management > Numbers**.



Telephone Number	Tenant ID	Calling Profile	Product Context	Acquired Capabilities	Iso Country Code
+91746690	b485203f-f4a1-4e77-8e0a-d5b824b8c	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91746691	ff98aa42-a5e7-4b86-ab75-2c377b872	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91746692	ff98aa42-a5e7-4b86-ab75-2c377b872	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91746694	b64dbac0-da41-47a9-9549-9157046b3	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91746695	b64dbac0-da41-47a9-9549-9157046b3	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91746698	b64dbac0-da41-47a9-9549-9157046b3	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	FirstPartyAppAssignment, Office365, [+2]	AU
+91746699	b64dbac0-da41-47a9-9549-9157046b3	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	FirstPartyAppAssignment, Office365, [+2]	AU
+91747240	4d513d91-c090-4107-be63-497b045d9	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	FirstPartyAppAssignment, Office365, [+2]	AU
+91747241	4d513d91-c090-4107-be63-497b045d9	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91747242	4d513d91-c090-4107-be63-497b045d9	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91747243	4d513d91-c090-4107-be63-497b045d9	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91747244	4d513d91-c090-4107-be63-497b045d9	40c5e10d-fcfc-42d4-a409-54c2e2b727ca	teams	Office365, InboundCalling, [+2]	AU
+91780844	b64dbac0-da41-47a9-9549-9157046b3	460658a2-fc9d-47c8-bbcb-27e1da6eaf4a	teams	Office365, InboundCalling, [+1]	AU
+91780870	b485203f-f4a1-4e77-8e0a-d5b824b8c	460658a2-fc9d-47c8-bbcb-27e1da6eaf4a	teams	Office365, InboundCalling, [+2]	AU
+91780871	ff98aa42-a5e7-4b86-ab75-2c377b872	460658a2-fc9d-47c8-bbcb-27e1da6eaf4a	teams	Office365, InboundCalling, [+2]	AU
+91780872	ff98aa42-a5e7-4b86-ab75-2c377b872	460658a2-fc9d-47c8-bbcb-27e1da6eaf4a	teams	Office365, InboundCalling, [+2]	AU

Once numbers are synced in, a number inventory entry is added to the VOSS Automate Number Inventory (accessible via, default menus, **Number Management > Number Inventory**).

When adding a new number or number range (via the *Upload Number Range* menu) from the Operator Connect tenant, at the customer or site level:

- An inventory instance is added to the VOSS Automate number inventory (data/InternalNumberInventory) for each number in the range.
- If this is a new number, or if the number already exists in the number inventory, the internal number type on the directory number is set to “OperatorConnect”.
- No SBC provisioning occurs.

When removing a number or number range from a customer or site (via *Release Number Range*):

- The inventory instance for each number is removed from the number inventory, if the number is in state, *Available*.
- If the directory number is not being deleted, then “Operator Connect” is removed as its internal number type .
- No SBC provisioning occurs.

Internal Number	Status	Usage	E164Number	Release Date	Tag	Description	Reservation notes	Vendor	Internal Number Type
+91746694	Available							Microsoft	OperatorConnect
+91746695	Available							Microsoft	OperatorConnect
+91746698	Available							Microsoft	OperatorConnect
+91746699	Available							Microsoft	OperatorConnect

## Related Topics

- [Upload Number Range](#)

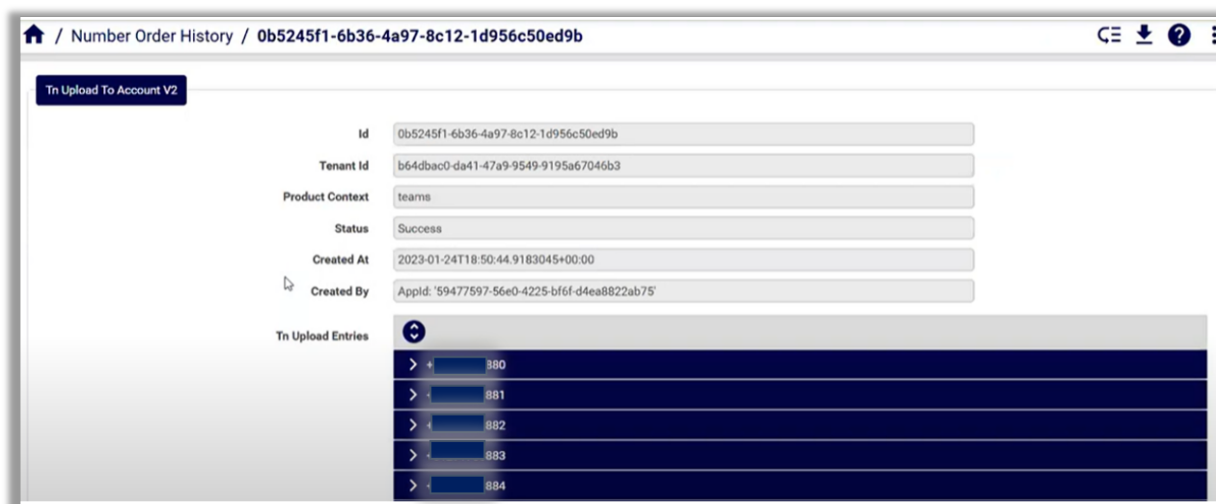
### 26.1.5. Number Order History

The **Number Order History** page displays a record of the number ranges and individual numbers your customers have ordered.

You can view the number order history via (default menus) **MS Operator Connect Management > Number Order History**, then click on a number to view its order history details.

#### Note:

- In the list view, numbers are sorted in the list view from earliest to latest.
- The value for **Product Context** is read-only.



### 26.1.6. Number Release History

The **Number Release History** page displays the history of numbers that have previously been released. Number release history is synced in at the Provider level until you've added customers, and started syncing and provisioning. The release history can be viewed at the relevant customer level once you add the customer and make changes in the provisioning.

You can view the number release history via (default menus) **MS Operator Connect Management > Number Release History**, then click on a number to view its release history details.

#### Note:

- In the list view, numbers are sorted in the list view from earliest to latest.
- The value for **Product Context** is read-only.

### 26.1.7. Upload Number Range

The **Upload Number Range** feature allows you to add a new number or new number range.

**Note:** Data is provided via a view that is integrated with the customer build tool. The customer build step calls the **Upload Number Range** tool to perform provisioning and ordering, and adds or updates directory numbers based on the specified range values so that SBC provisioning forms part of the customer build tool. See [Onboard Customers for Operator Connect using the Customer Build Tool](#).

**Note:** Once you start ordering numbers, you can edit the number range, if required.

#### Add a Number or Number Range

This procedure uploads a new number or a new number range.

1. In the Admin Portal, go to (default menus) **MS Operator Connect Management > Upload Number Range**.
2. Set the hierarchy to the relevant customer or site.
3. At the **Tenant** field, choose the customer name.

**Note:** At the time of writing (for 21.4-PB2), since you're at the relevant customer level, the customer's name is the only available value to select from the drop-down. However, auto-populating the **Tenant** field with the customer name is reserved for future development, so for now, you'll need to select the customer name from the drop-down.

4. Choose a calling profile.
5. At **Usage**, select the calling user assignments (one or more).

**Note:** Once the number is provisioned to the end-customer, this value restricts or defines how the number can be used, for example, *Mobile* and/or *InboundCalling*, and/or *OutboundCalling*.

6. At **Start Telephone Number**, fill out the number that should be ordered, for example, *+91868416580*. If you're ordering a range of numbers, the starting telephone number should have an *X* at the end, for example, *+9186841658X*.
7. At **Range**, fill out the range value.

**Note:** To order just one number, use *1*, or for a range of 10 numbers, beginning with the first number you specified in the previous step, use *10*, and so on.

You can specify a range from 1 to 1000. For example, to order a range of 10 numbers with starting telephone number, *+9186841658X*, fill out a range value of 10, to order numbers from *+91868416580* to *+91868416589* (0-9).

8. If you're using civic addresses (for emergency calling), you can select the civic address specified on the Operator Connect tenant. Choosing a civic address associates the number with the civic address.

**Note:** By default, **Allow Tenant Address Update** is enabled (set to True), which means you won't need to select a civic address ID.

The drop-down contains valid addresses (for emergency numbers), imported from the MS Operator Connect portal for the associated tenant.

---

9. Save your changes to order the number/s.

---

**Note:** The number/s you ordered:

- Will be available on the Operator Connect portal.
  - Will display in the VOSS Automate Number Inventory, as described in [Numbers \(for MS Operator Connect Tenants\)](#)
  - Will display in the **Number Order History** list view (see [Number Order History](#)), from where you can track it.
- 

### Related Topics

- [Numbers \(for MS Operator Connect Tenants\)](#)
- [Number Order History](#)

## 26.1.8. Release Number Range

The **Release Number Range** page allows you to remove a number or range of numbers.

---

**Note:** Data is provided via a view that is integrated with the customer build tool. See [Onboard Customers for Operator Connect using the Customer Build Tool](#).

---

### Remove a Number or Range of Numbers

This procedure removes a number or a range of numbers from a customer.

1. In the Admin Portal, go to (default menus), **MS Operator Connect Management > Release Number Range**.
2. Set the hierarchy to the relevant customer.

The screenshot shows a web form titled "Release Number Range". It contains the following fields and controls:

- Tenant Id \***: A dropdown menu with "Engin" selected.
- Product Context \***: A dropdown menu with "teams" selected.
- Start Telephone Number \***: An empty text input field.
- Range [1-1000] \***: A text input field containing the number "1".
- Remove Numbers from Operator Connect Tenant**: A checkbox that is checked.

3. Choose the customer name from the drop-down.
4. Fill out the telephone number you wish to remove, and the range.

---

**Note:**

- To remove one number, fill out the number, and specify range as *1*.
- To remove a range of numbers, fill out the starting telephone number, and specify a range from 1 to 1000.

5. At **Remove Numbers from Operator Connect Tenant**, define whether to also remove the number or number range from the Operator Connect tenant.

---

**Note:** By default, **Remove Numbers from Operator Connect Tenant** is enabled (True). When set to *False* (unchecked), the provisioning workflow skips the step to remove numbers from the Operator Connect tenant. This is required where, for example, a customer cancels their contract and is off-boarded, and their numbers no longer exist on the Operator Connect tenant. In this case, if **Remove Numbers from Operator Connect Tenant** is enabled, the transaction will fail if the workflow attempts to remove numbers that no longer exist on the tenant.

---

6. Save your changes.

When removing a number or number range from a customer:

- The inventory instance for each number is removed from the number inventory, if the number is in state, *Available*.
- If the directory number is not being deleted, then "Operator Connect" is removed as its internal number type .
- No SBC provisioning occurs.

## Related Topics

- [Numbers \(for MS Operator Connect Tenants\)](#)

### 26.1.9. Calling Profiles

MS Operator Connect calling profiles are synced in from the Operator Connect portal, and an admin user can view the list of calling profiles at the Provider level in the Admin Portal.

---

**Note:** Calling profiles are always at the Provider level since they're associated with the service provider and not with a specific customer.

---

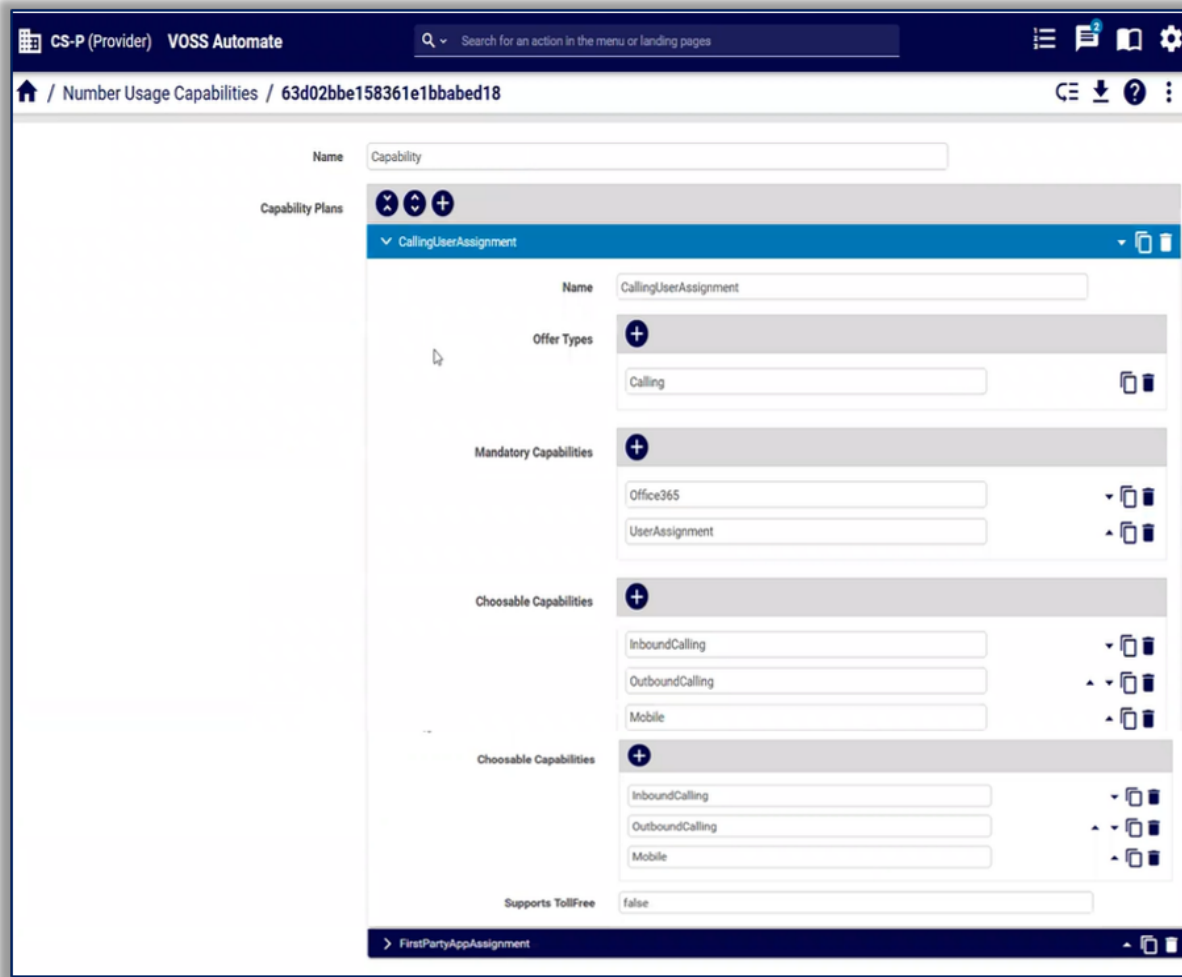
To view the calling profiles, go to (default menus) **MS Operator Connect Management > Advanced > Calling Profiles**.

You can click on a calling profile in the list to view its details.

### 26.1.10. Number Usage Capabilities

VOSS Automate queries the Operator Connector portal to retrieve and display number usage capabilities, which are imported to, and remain at, the Provider level.

To view imported number usage capabilities, go to (default menus) **MS Operator Connect Management > Advanced > Number Usage Capabilities**, then click on an item in the list view to inspect its details.



### 26.1.11. Onboard Customers for Operator Connect using the Customer Build Tool

You can add customers for Operator Connect using the Customer Build template tool.

**Note:** VOSS Automate's Customer Build tool allows you to add and onboard customers (and their sites, if provided), with defined number ranges, or to update or delete a customer.

Using this tool, you can create a re-usable template of a customer, with all of the provisioning steps required for adding a customer, modeled in the tool. You can set up one or more customer build tools for different types of customers, depending on the provisioning requirements and the type of customer, for example, whether managed or not, or whether they're Cisco-only, Microsoft-only, hybrid, or just require number management, such as Operator Connect customers.

In the Customer Build tool, you can choose the type of customer you wish to build, fill out minimum details for this type of customer, and set up the workflow steps for provisioning.

Please contact VOSS support services if you wish to use the tool and have it exposed in your menus.

### To create and onboard a customer for Operator Connect:

1. Log in to the Admin Portal, and set the hierarchy to *Reseller*.
2. Go to (default menus) **Customer Management > Customer Build**.
3. Fill out the tenant ID.
4. Select the customer build type used for Operator Connect (*MicrosoftOperatorConnectOnlyCustomer*).

**Note:** The Operator Connect build type allows you to add Operator Connect-only customers, which don't need to be managed since you're only managing numbers.

In this case, you only need to provide the Microsoft tenant name and the tenant ID (customer secrets are not required).

If you wish to use the Customer Build tool for managed customers (direct routing customers), you can choose another customer build type, either of the following:

- CiscoCustomer
- MicrosoftCustomer
- HybridCustomer
- CallRedirectionOnlyCustomer (used for disaster recovery)

5. At **Customer Build Configuration Template**, select the customer build configuration template for Microsoft Operator Connect customers, *Customer-Build\_StandardMicrosoftOperatorConnectCustomersOnly\_CFT*, which contains all the steps to allow the standard provisioning.

**Note:** You can clone and customize this template, if required.



6. For the provisioning of numbers, add numbers and number ranges.

---

**Note:** The SBC may be provisioned with the number ranges you specify in the **Number Ranges** fields of the customer build tool, or via (default menus) **MS Operator Connect Management > Upload Number Range**.

When specifying number ranges for Operator Connect customers through the customer build tool, you can choose the default Microsoft Operator Connect usage template (*Default\_OC\_CallingUser\_Assignment*), which contains the pre-configured number range usage requirements. This template can be cloned and customized for different number ranges, if required.

Numbers are ordered and provisioned once you save and trigger the workflow for the customer build tool.

---

7. Choose a build action, in this case, Add, then save to trigger the workflow.

The table describes the available customer build actions:

Customer build action	Description
AddDataOnly	
Validate	
Add	<p>On-boards (adds) a new customer. Saving the customer build tool with this action selected triggers the customer build workflow, which:</p> <ul style="list-style-type: none"> <li>• Adds the tenant</li> <li>• Adds the customer</li> <li>• Uploads the selected number range to the Operator Connect tenant</li> <li>• Adds directory numbers (DNs) to the customer</li> <li>• Provisions the SBC with the numbers and appropriate routing elements.</li> </ul> <p>Once the workflow completes, you can:</p> <ul style="list-style-type: none"> <li>• View the new customer in the <b>Customers</b> summary list view.</li> <li>• Go to the <b>Numbers</b> page (in the default menu, <b>MS Operator Connect &gt; Numbers</b>), and choose the new customer from the hierarchy picker to view the numbers added for this customer and the specified ranges.</li> <li>• Go to (default menu) <b>MS Operator Connect &gt; Number Order History</b>, to view the numbers ordered for the new customer.</li> <li>• View directory numbers added to the number inventory for the customer and the specified range (via, default menus, <b>Number Management &gt; Number Inventory</b>). Note that the number status remains <i>Available</i> until the numbers are assigned, and the internal number type is <i>OperatorConnect</i>.</li> </ul>
Modify	<p>Updates the customer. Allows the admin to add or release number ranges. In this case, the SBC is provisioned with the ordered or released number ranges, and the DN's are added or removed. For example, if the customer requires additional numbers, you can remove already provisioned number ranges and/or add additional number ranges, then save to trigger the workflow.</p>
DeleteCustomer	<p>Deletes the customer. The workflow is as follows:</p> <ul style="list-style-type: none"> <li>• SBC is configured to remove the number ranges belonging to the customer, as well as number ranges for released numbers.</li> <li>• The Microsoft Operator Connect tenant is removed.</li> <li>• Customers are removed, as well as any sites added for the customer.</li> </ul>
DeletecustomerData	<p>Removes the relation/CustomerBuild_CustomerData_REL instance.</p>
DeleteCustomerAndcustomer-Data	<p>Runs the Delete steps (as for DeleteCustomer) and removes the relation/CustomerBuild_CustomerData_REL instance.</p>

The new customer is created and saved, and is added to the list of customers under (default menus) **Customer Management > Customers**. The workflow for setting up the customer executes as described in

the table for the *Add* build action.

The build tool template used for the customer can be viewed and updated (to add or remove numbers or number ranges, for example). Note that removing a number range via the customer build tool will de-provision numbers that were previously provisioned.

### Related Topics

- [Customers](#)

# 27. Overbuild

## 27.1. Overbuild Introduction

### 27.1.1. Introduction to Overbuild

#### Overview

VOSS Automate's overbuild tool allows Provider and Reseller administrators to integrate vendor system components into VOSS Automate, without re-provisioning, if required.

Sites must be included in an overbuild via the site's site default settings, via either of the following:

- Overbuild > Site Defaults
- Site Management > Defaults > Overbuild Defaults tab

#### Related Topics

- *Overbuild for Microsoft*
- *Overbuild for Cisco*
- *Run Overbuild*
- *Run Dial Plan Overbuild*
- *Overview Tool*
- *Device Models*
- *User Phone Associate Tool*
- *Overbuild Analog Gateway*
- *Filter Calling Search Spaces and Assign a Class of Service*
- *Move Phones*
- *Move Users*
- *Overbuild Defaults Tab*
- *Number Inventory*
- *Audit Number Inventory*
- *Customer Onboarding Quick Start Guide (Multiple Vendors)*
- *Microsoft Quick Start Guide for VOSS Automate*

## Scheduling Overbuild

The first time you run the overbuild, an overbuild schedule is automatically created for a customer in VOSS Automate. You can configure the schedule to run at a predefined interval, instead of running it manually.

Typically, this is done if you're expecting a consistent stream of additions of resources in the underlying applications.

The scheduled overbuild allows the system to move the new resources that are synced in to the correct site if they match the overbuild criteria. This is the same as running the overbuild manually.

The default schedule (named "Overbuild\_CustomerSchedule") is disabled. You can review the schedule details, update the frequency and other schedule details, and then activate it if you would like to schedule it to run.

The scheduled version of overbuild executes the overbuild process for the customer, using the overbuild settings in the site's site defaults, with the same result as manually invoking overbuild in the Admin Portal (via the Run Overbuild action, "All Enabled Sites Using Site Defaults Doc Overbuild Settings").

## Moving Model Instances

If the Move operation is enabled for a model, instances can be moved from its current hierarchy level to another level. Data models, Device models and Relations can be enabled for the Move operation. For lists of objects moved during a move operation, see [Objects Moved During the Overbuild](#) for data and device models, and [Moving Subscriber Management Models](#) for Subscriber Management models.

Instances can only be moved up in the hierarchy if the administrator is at a higher hierarchy. For example, for an instance at level cust1.site1 and the level cust1.site2 also exists, then the user needs to be at level cust1 to carry out a move of this instance 'sideways' to cust1.site2 by going up and back down the hierarchy levels.

The move is typically used in conjunction with data sync, which pulls the entities in, for example users, phones, dial plan, and so on. By default the entities reside at the level of the cluster, so the move feature allows them to be allocated to a different hierarchy (if needed).

## Move Rules

From the user interface, the following move rules apply:

- On the Admin Portal, the only option shown on the drop-down is to move an item to a lower hierarchy.
- For the core application and the Overbuild tool:
  - LDAP device models can be moved to a hierarchy that is at or below the hierarchy where the device is located, regardless of the Network Device List Reference (NDLR).
  - Non-LDAP device models can be moved to a hierarchy where the device is located.
  - Non-LDAP device models can be moved to a hierarchy where the NDLR references the associated device.
  - Other instances at a hierarchy node can only be moved to a hierarchy that is below their current hierarchy.

Once the resource is moved, the metadata of all the resources at the moved hierarchy and below is updated to indicate the latest changes in the hierarchy path.

---

**Note:** For User Management local administrators and users, where the language is derived from the default hierarchy language, the default language is recalculated based on the new hierarchy tree location.

---

### Moving Subscriber Management Models

Administrators have permissions to manually move these Subscriber Management Menu models:

- Lines
- Voicemail
- WebEx
- Webex App
- Hunt Groups
- Call Pickup Groups

It is recommended that you use the dedicated tools to move subscribers and phones between customer and site hierarchy levels.

### Moving Subscriber Management List View Items

1. Log in as a Customer Administrator or higher.
2. Choose the hierarchy level of the **Subscriber Management** menu item from which you want to move the items.
3. From the list view, choose the items to be moved by selecting the check boxes next to the items.
4. Click **Action > Move**. A form prompts you to choose the target hierarchy from a drop-down list.
5. Choose the target hierarchy and click **OK**.

The items are moved to the selected hierarchy, and will then be shown in their new hierarchy.

## 27.1.2. Overbuild for Cisco



### Overview

VOSS Automate's overbuild feature allows Provider and Reseller administrators to integrate an existing, deployed Cisco Unified Communications Manager (CUCM) system into VOSS Automate without re-provisioning, unless required.

This option is available for single-cluster dedicated deployments only.

Overbuild tools allow an administrator manage data synced from existing configurations in CUCM and Cisco Unity Connection (CUC).

**Important:** It is recommended that VOSS Automate training and/or VOSS Services are engaged during the initial use of the overbuild feature to help ensure optimized processes and guidance.

Although a deployed CUCM system does not contain VOSS Automate components such as hierarchies or subscribers, the relationship between CUCM components makes it possible to, for example, create a VOSS Automate subscriber at a site hierarchy during the overbuild process. The necessary workflows, macros and brownfield move processes are available for this purpose. You will not need to access these tools directly; they are part of the **Run Overbuild** user interface.

The table summarizes the overbuild logic:

Component	Description
Phones	This is based on the device pool of the phone. It will be moved to a site based on the device pool matching one of the device pools set up under the site defaults for a site.
Dual Mode Remote Destinations	This will move the remote destination to the site of the dual mode device.
Phone Remote Destinations	(Provider deployment). This will move the remote destinations to the site of the associated phone.
Users	If the user has an associated phone, that user is moved to the same site as the phone. A user without an associated phone must be manually moved to the relevant site, using the <b>Move Users</b> menu (under either <b>User Management</b> or <b>Overbuild</b> ). It is recommended that you do this prior to the overbuild, so that all their related services are moved during overbuild, or you will need to run the overbuild again, after moving the user, to handle their related services.
Device Profiles	This will move the device profile to the same site as the user associated to the device profile.
Remote Destination Profiles	This logic is the same as phones, based on the device pool of the RDP. It will be moved to a site based on the device pool matching one of the device pools setup under the site defaults for a site.
Remote Destinations	This will move the remote destination to the same site as the associated remote destination profile.
Lines	This will move the line to the same site as the phone/device profile/RDP it is associated to.
CUC Users	This will move the voicemail user to the same site as the base user.
Webex App Users	This will move existing Webex App users that are synced into VOSS Automate to the same site as the base user (if it finds a matching email address).
Contact Center Agents	This will move contact center agents to the same site as the base user (if it finds a matching CUCM user ID).

**Overbuild Workflow**

[provider-admin](#)

[reseller-admin](#)

The table describes the general steps for overbuild:



Component	Description
1. Initial setup	<p>Step 1 involves the initial setup and configuration on VOSS Automate; the provisioning of the business hierarchy. Identify the business information of the existing, deployed system, and add these details to VOSS Automate. This can be done manually, or via bulk load.</p> <ul style="list-style-type: none"> <li>• Create the hierarchy, with customers, sites, and site codes to generate the initial configuration data, such as site dial plan (Provider deployment only), and site defaults data.</li> <li>• Modify the data, if required, according to CUCM data, so that overbuild processing can move the data to required sites. For example, the default, generated VOSS Automate Site Defaults for a site have the site name as the device pool name. Since the Site Defaults are used in the overbuild, this name should be modified to match the device pool name on the imported phones before the overbuild is run.</li> </ul> <p>VOSS Automate allows Provider and Reseller Administrators to modify Site Defaults update the configuration of an overbuild. While customers and sites have access to the Site Defaults under the <b>Site Management</b> menu, the <b>Overbuild Defaults</b> tab in Site Defaults is only visible to Provider and Reseller Administrators.</p>
2. Create shell dial plan schema	<p>Provider deployment only.</p> <p>Associate a shell schema group with the customer, then add a custom dial plan under <i>Advanced Configuration</i> (Optional at the site hierarchy). In this step, you will need to create a shell dial plan schema group at the Customer hierarchy. The shell schema group enables Partners, Resellers, and Provider Administrators to access customers that have existing or deployed dial plans without having to use the pre-packaged type 1-4 dial plans.</p> <p>The shell schema groups only contain two default values:</p> <ul style="list-style-type: none"> <li>• Device Pool</li> <li>• CUCM Group</li> </ul> <p>The rest of the fields are blank for customization. This enables administrators to “over-build” VOSS Automate operations on top of customers’ existing dial plans. See “Provider HCS Dial Plan Management Support Guide”.</p>
3. Configure network device connections	<p>Identify and create network device connections, associate these with a Network Device List (NDL) and import. This includes CUCM and CUCX clusters.</p> <p>This step involves provisioning Cisco UC applications, NDLs, and NDL references. Once the UC applications are configured, the sync from CUCM is scheduled and executed.</p> <p>Caution: Whenever this data is synced in, it becomes managed by VOSS Automate and, as a result, would be deleted by any hierarchy delete. One CUCM typically belongs to a customer and resides in a cluster, so this device import takes place at the created customer hierarchy. The device can also be associated with a NDL on VOSS Automate that is mapped to a created hierarchy.</p>

Component	Description
4. Choose device pools and devices	Choose the device pool and devices for the site on both the General tab and on the Overbuild Default tabs in the Site Defaults.
5. Run overbuild	<p>Run the overbuild to move the imported UC applications data into the site hierarchy that corresponds with the existing deployed site.</p> <ul style="list-style-type: none"> <li>• Select <b>User</b> on <b>Run Overbuild</b> to move users exposed in <b>User Management</b> to the site of their associated phones (as specified in the Site Defaults Doc Device Pools). Users without phones are not moved and can be moved separately. Note that the user's role is not changed when moving to the site. The following model instances are moved from customer level to the site level: <ul style="list-style-type: none"> <li>– data/User</li> <li>– device/cucm/User</li> </ul> </li> <li>• If the <b>Lines</b> checkbox is selected on <b>Run Overbuild</b>, lines are moved to the relevant site, and marked as <i>in use</i> in the Directory Number (DN) inventory. If a matching DN inventory entry does not exist then one is created. DN entries are created at site by default unless the Create Internal Number Inventory at Customer option is selected (in Site Defaults &gt; Overbuild Defaults tab). Note: Adding Directory Number inventory at Customer level is only possible if the dial plan is non-SLC, if no dial plan is in use.</li> </ul> <p>The <b>Run Overbuild</b> tool selects which data to move based on device pool configurations. You can run the tool for all sites, or a particular site. The existing system's provisioned phones that have been imported should have their device pools matched with Site Default data values on each specific site.</p> <p>Imported elements are moved according to overbuild Move workflows, which are triggered by the <b>Run Overbuild</b> tool. These workflows identify imported network device data and move it to the site hierarchy that corresponds to the existing deployed site.</p>

Component	Description
6. Verify data	<p>Use <b>Overbuild &gt; Overview Tool</b> to verify the number of UC elements at the selected hierarchy and below.</p> <p>You can manually validate and modify the overbuild run by reviewing the moved items, using the Overview Tool. Use Device Models and/or Relations to move, update, delete, and in a few limited cases, add instances of device types for the selected hierarchy.</p> <p>Optionally, review the device model types listed with hierarchy in the Device Models or Subscriber Management menu.</p>
7. Post-move	<ul style="list-style-type: none"> <li>• Move any users who were not moved during the overbuild</li> <li>• Add your E.164 inventory (optional). See Add an Inventory of E164 Numbers in the Core Feature Guide.</li> <li>• Filter calling search spaces and assign a class of service (optional). See Filter Calling Search Spaces and Assign a Class of Service in the Core Feature Guide.</li> <li>• Perform Self-service authentication provisioning steps for non-LDAP, LDAP, and SSO-enabled scenarios. See User Authentication in the Core Feature Guide.</li> <li>• Add additional internal number inventory for future lines. See Number Management.</li> </ul>

### Related Topics

- [Move Users](#)
- [Site Defaults](#)
- [Run Overbuild](#)
- [User Authentication](#)
- [Number Range Management](#)
- [Bulk Loading Files](#)
- [Run Overbuild](#)
- [Overview Tool](#)
- [Device Models](#)
- [Add an Inventory of E164 Numbers in the Core Feature Guide](#)
- [Filter Calling Search Spaces and Assign a Class of Service in the Core Feature Guide](#)

### 27.1.3. Overbuild for Microsoft

#### Overview

The Overbuild feature enables Provider and Reseller administrators to integrate existing, deployed Microsoft tenants into VOSS Automate without re-provisioning, unless required.

---

**Important:** It is recommended that VOSS Automate training and/or VOSS Services are engaged during the initial use of the feature to help ensure optimized processes and guidance.

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In Automate, a Microsoft tenant shows the combined and specific details of a MS Office 365 and MS Teams tenant.

Overbuild provides tools to help the administrator manage Microsoft Tenant data synced from existing configurations.

While a Microsoft Tenant does not contain such VOSS Automate components as a hierarchy or a subscriber, the relationship with Microsoft tenant components makes it possible to, for example, create an Automate subscriber at a site hierarchy during the Overbuild process. The necessary filters can be set up and workflows, macros, and brownfield move processes are available for this purpose.

After overbuild is run for the first time, a schedule is created in Automate that can be set up to run at a selected interval.

The table describes overbuild logic for handling users and subscribers:

Component	Description
Users	The synced in Microsoft tenant user is moved to the site, based on the MS 365 model filter criteria selected for the site in the site overbuild defaults. To allow this, ensure you select <b>Include Site for Overbuild and Microsoft Users</b> (on the <b>Overbuild Defaults</b> tab in the site defaults). To view the number of Microsoft users at the hierarchy level (MS 365 users, MS Teams users, and MS Exchange users), go to <b>Overbuild &gt; Overview Tool</b> .
Subscribers	A Microsoft tenant user can be set up with services using Quick Subscriber.

---

**Note:** Guest users (Msol users external to the tenant) are synced in, but their group details (information about which groups they're associated with) won't be included in the sync.

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## Related Topics

- [Quick Subscriber \(Microsoft\)](#)

## Configure Overbuild Site Defaults for Microsoft

### Pre-requisite:

- [Sync to Customer, then to Site](#)

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### Note:

- Ensure the NDLS are configured for the overbuild by adding tenant details, including MS Exchange details if you wish to move mailboxes to the site in the overbuild.
  - All Microsoft elements must be moved to customer level in a sync before running the overbuild, which moves these elements to the sites.
- 

### To configure a site for overbuild:

1. In the Automate Admin Portal, go to (default menus) **Overbuild > Site Defaults**.

---

**Note:** Alternatively, go to (default menus) **Site Management > Defaults** and select the **Overbuild Defaults** tab. You can also fill out the search term, *Site Defaults*, in the Automate Admin Portal **Search** field to locate **Site Defaults**.

---

2. In the **Site Defaults** list view, click on a site to open its site default settings.
3. On the **Overbuild Defaults** tab, configure the following:
  - Enable **Include Site for Overbuild**
  - At **Overbuild Device Control**, choose **Limit Moved Devices**.
  - Select **Microsoft Users** to enable Microsoft users.
4. On the **Move Filter Criteria** tab, configure the following:
  - At **MS 365 User Model Filter Criteria**, select the relevant filter.

---

**Note:** For more information about filters, see [Model Filter Criteria](#).

---

- If required, select **Move by Number**.

---

**Note:** User data is moved to a site using **Move by Number** only if the synced in Microsoft Teams user's LineURI matches a pre-loaded internal number at that site.

If you've selected a filter for **MS 365 Model Filter Criteria** and you've enabled **Move by Number**, the overbuild first processes **MS 365 Model Filter Criteria**, and then processes **Move by Number**.

For more information about options on the **Move Filter Criteria** tab, see [Site Defaults](#) in the Core Feature Guide.

---

## Related Topics

- Site Defaults in the Core Feature Guide
- [Model Filter Criteria](#)

## Run Overbuild

1. In the Automate Admin Portal, go to (default menus) **Overbuild > Run Overbuild**.
2. Choose the site.
3. In a Microsoft-only environment, select only **Microsoft Users** to include in the overbuild.

---

**Note:** This allows Microsoft users to move to the site. Automate looks at the MS user, and checks whether it has MS Teams and MS Exchange, and moves these elements to the sites along with the user.

---

4. Save your changes to run the overbuild.

---

**Note:** The overbuild moves assigned numbers to the number inventory, flagged with the user's name, location (customer or site), number status (**Used** when assigned, else, **Available**), and the relevant vendor (Microsoft, in this case).

The number management step occurs on sync, overbuild, as well as in a number audit. You can run a number audit anytime to verify that numbers are correctly flagged as used or available (via **Number Management > Audit Number Inventory**) - see [Audit Number Inventory](#).

---

## Related Topics

- Microsoft User Move Configuration in the Core Feature Guide
- Model Filter Criteria in the Core Feature Guide
- Flow Through Provisioning in the Core Feature Guide
- [Audit Number Inventory](#)

## 27.2. Run Overbuild

### 27.2.1. Run Overbuild

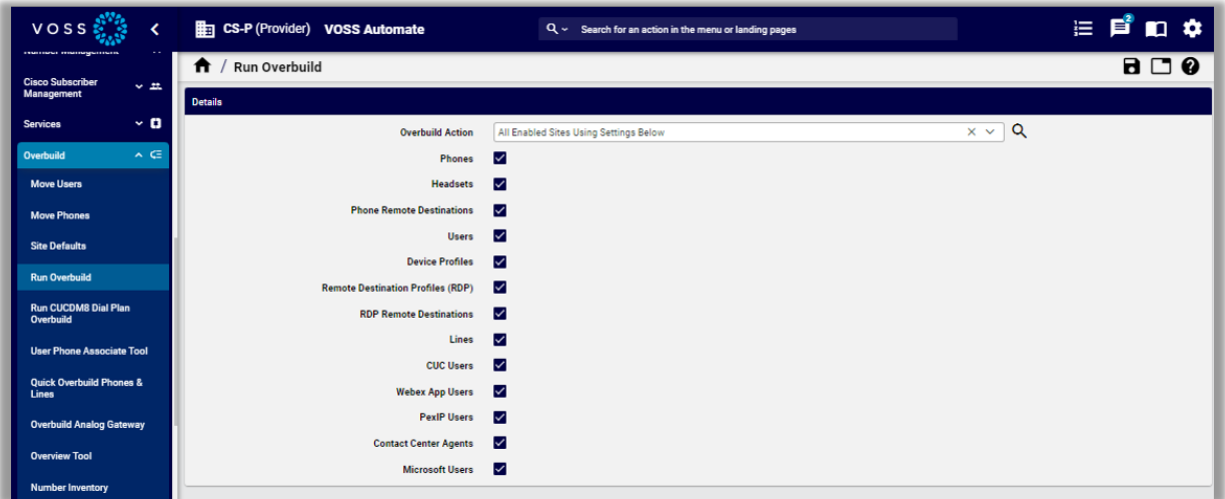
#### Overview

The Run Overbuild tool imports objects.

---

**Note:** To access the Run Overbuild tool, go to (default menus) **Overbuild > Run Overbuild**. Alternatively, search for Run Overbuild from the VOSS Automate Search bar.

---



## Overbuild Action

The table describes options available for **Overbuild Action** on the **Run Overbuild** page

Overbuild action	Description
All Enabled Sites Using Settings Below	<ul style="list-style-type: none"> <li>• Includes all devices selected on the form.</li> <li>• Includes all sites that have their site defaults doc configured to include the site in overbuild</li> <li>• An internal number inventory is created at customer level when Create Internal Number Inventory at Customer setting is selected, else, it's created at the site (if Lines are included).</li> <li>• Device pools are from the General Defaults tab in the Site Defaults, and additional device pools are from the Overbuild Defaults tab.</li> <li>• The devices that display when <b>Limit Move Devices</b> is selected on the <b>Overbuild Defaults</b> tab are ignored. Runs Overbuild for all sites, and uses the devices selected on the <b>Run Overbuild</b> page.</li> </ul> <p>When Run Overbuild executes with this option, it applies to all sites and uses devices selected on the <b>Run Overbuild</b> page.</p> <p>Run Overbuild devices supersede the devices selected in <b>Limit Move Devices</b>.</p>
All Enabled Sites Using Site Defaults Doc Overbuild Settings	<ul style="list-style-type: none"> <li>• Hides and ignores selected devices on the Run Overbuild page. Moves all selected devices (when Limit Moved Devices is selected on the Overbuild Defaults tab in the Site Defaults)</li> <li>• Includes sites that are included for overbuild in their Site Defaults doc.</li> <li>• Creates internal number inventory at Customer level (when Create Internal Number Inventory at Customer option is chosen, else at site level (if Lines is selected)).</li> <li>• Device pools are from the General Defaults tab in the Site Defaults, and Additional Device Pools are used from the Overbuild Defaults tab in the Site Defaults.</li> </ul>



Overbuild action	Description
Single Enabled Site Using Settings Below	<ul style="list-style-type: none"> <li>• Overbuild is applied to the single site you choose.</li> <li>• The only sites available for selection are sites included for overbuild via their Site Defaults.</li> <li>• Includes all devices you choose on the page</li> <li>• Creates internal number inventory at Customer (if Create Internal Number Inventory at Customer option is selected); else, only at site (if Lines are included)</li> <li>• Device pools are from the General Defaults tab in the Site Defaults doc, and Additional Device Pools from the Overbuild Defaults tab.</li> <li>• Devices displayed when the Limit Move Devices option is selected on the Overbuild Defaults tab are ignored. Runs Overbuild for the selected site, and uses the devices selected on the <b>Run Overbuild</b> page.</li> </ul> <p>When the Run Overbuild tool executes with this option, it applies to the selected site only, and uses devices selected on the Run Overbuild page. Run Overbuild devices supersede the devices selected in <b>Limit Move Devices</b>.</p>

### Available device types

Available device types include:

- Phones
- Phone Remote Destinations
- Users (device/cucm/User)
- Device Profiles
- Remote Destination Profiles (RDP)
- RDP Remote Destinations
- Lines (a number inventory entry is also added for all device/cucm/Line instances that are in the system at the customer or site level)
- CUC Users
- Webex App Users
- Pexip Users
- Contact Center Agents
- Microsoft Users

### Affected device models

The following device models are affected by the overbuild move:

- device/cuc/User
- device/cuc/UserPassword
- device/cuc/UserPin
- device/cuc/AlternateExtension
- device/cuc/ExternalServiceAccount
- device/cuc/SmtpDevice
- device/cuc/SmsDevice
- device/cuc/PagerDevice
- device/cuc/PhoneDevice
- device/cuc/HtmlDevice
- device/cuc/Callhandler
- device/cuc/CallhandlerMenuEntry
- device/cuc/CallhandlerTransferOption
- device/cuc/Greeting
- device/cuc/MessageHandler
- device/cucm/Phone
- device/cucm/User
- device/cucm/DeviceProfile
- device/cucm/RemoteDestinationProfile
- device/cucm/RemoteDestination
- device/cucm/Line
- device/pexip/Conference
- device/spark/User
- device/uccx/Team
- device/uccx/Skill
- device/uccx/ResourceGroup
- device/uccx/Agent

### Affected data models

The following data models are affected when moving a user during overbuild:

- data/User

Device types available for selection depend on the status of other device type check boxes. For example:

- The following device types are only available if you've selected **Phones**:
  - Dual-Mode Remote Destinations
  - Users
  - Lines.
- The following device types are only available if you've selected **Users**:
  - Device Profiles
  - Remote Destination Profiles
  - CUC Users

### Overbuild and failures

Overbuild workflows do not stop on any transaction failures and no transaction rollback takes place on errors. For example, device instance move operations to sites continue for all selected devices. Inspect the transaction log for errors.

In the Transaction log, sub-transactions of a successful overbuild workflow show their status as "Fail" if a model (such as a User) already exists.

The sub-transaction logs also show details of the duplicate model and an "ignore error code" information message.

### Run Overbuild (Cisco)



The Run Overbuild tool processes CUCM imported objects for all sites in the current customer.

Run Overbuild must be run at the Customer hierarchy. A device model is moved to a site on condition that there is a Network Device List Reference (NDLR) referencing the device at the site.

---

**Note:** The line goes to the first site that the Run Overbuild tool finds. The site selection is not deterministic.

---

The table lists the conditions for creating or updating the INI (Internal Number Inventory) during overbuild:

Given	Then
<ul style="list-style-type: none"> <li>• INI exists at Site.</li> <li>• Site Defaults “Create Internal Number Inventory at Customer” check box is clear.</li> </ul>	The lines in the INI at the Site are updated to “Used”.
<ul style="list-style-type: none"> <li>• INI exists at Customer.</li> <li>• Site Defaults “Create Internal Number Inventory at Customer” check box is clear.</li> </ul>	The lines in the INI at the Customer are updated to “Used”.
<ul style="list-style-type: none"> <li>• No INI exists.</li> <li>• Site Defaults “Create Internal Number Inventory at Customer” check box is clear.</li> </ul>	The INI is created at the Site.
<ul style="list-style-type: none"> <li>• INI exists at Customer.</li> <li>• Site Defaults “Create Internal Number Inventory at Customer” check box is selected.</li> </ul>	The lines in the INI at the Customer are updated to “Used”.
<ul style="list-style-type: none"> <li>• INI exists at Site.</li> <li>• Site Defaults “Create Internal Number Inventory at Customer” check box is selected.</li> </ul>	The lines in the INI at the Site are updated to “Used”.
<ul style="list-style-type: none"> <li>• No INI exists.</li> <li>• Site Defaults “Create Internal Number Inventory at Customer” check box is selected.</li> </ul>	The INI is created at the Customer.

### Objects Moved During the Overbuild

The overbuild processes imported ÇUCM objects for selected sites in the current customer. During overbuild, some objects are moved to the site hierarchy, while others remain at the customer hierarchy.

## Objects moved to the site during overbuild

The table describes objects moved to the site during the overbuild:

Object	Description
Unified CM models	device/cucm/Line device/cucm/Phone device/cucm/RemoteDestinationProfile device/cucm/RemoteDestination device/cucm/DeviceProfile device/cucm/User
Cisco Unity Connection models	device/cuc/User device/cuc/UserPassword device/cuc/UserPin device/cuc/AlternateExtension device/cuc/SntpDevice device/cuc/SmsDevice device/cuc/PagerDevice device/cuc/PhoneDevice device/cuc/HtmlDevice device/cuc/CallHandler device/cuc/CallhandlerMenuEntry device/cuc/CallhandlerTransferOption device/cuc/Greeting device/cuc/MessageHandler
Voicemail-related models	device/cuc/User device/cuc/UserPassword device/cuc/UserPin device/cuc/AlternateExtension device/cuc/SntpDevice device/cuc/SmsDevice device/cuc/PagerDevice device/cuc/PhoneDevice device/cuc/HtmlDevice
Self-care models	device/cuc/Callhandler. By default, one CallHandler entry is created when a Cisco Unity Connection user is created. device/cuc/CallhandlerMenuEntry

- Contact Center

After the initial sync, agents will be located at the customer hierarchy level. The overbuild tool will attempt to move these agents to the correct site hierarchy levels, based on matching Cisco Unified CM users. This matching is done according to the Unified CM user ID and the agent user ID.

Contact Center models	device/uccx/Team device/uccx/Skill device/uccx/ResourceGroup device/uccx/Agent
-----------------------	---

Data models affected when the user is moved during overbuild:

- data/User

### Objects remaining at the customer during overbuild

The table describes objects that remain at the customer hierarchy during the overbuild:

Object	Description
CUCM models	device/cucm/DevicePool device/cucm/Region device/cucm/Location device/cucm/VoiceMailPilot device/cucm/VoiceMailProfile device/cucm/Css device/cucm/RoutePartition device/cucm/HuntList device/cucm/HuntPilot device/cucm/LineGroup device/cucm/CallPickupGroup device/cucm/DirectedCallPark device/cucm/CallPark device/cucm/CtiRoutePoint
Cisco Unity Connection models	operator undeliverablemessagesmailbox
CallHandler device models	Goodbye Opening Greeting Operator operator undeliverablemessagesmailbox
Call Pickup Groups	no objects moved

## 27.3. Overbuild Tool

### 27.3.1. Overview Tool

The *Overview Tool* validates your *Run Overbuild* process.

Overbuild users can use individual device models to ensure that the required CUCM elements have been moved to the right hierarchy.

**Note:** To access this feature, go to (default menus) **Overbuild > Overview Tool**.

You can use the *Overview Tool* at the Customer or Site hierarchy. The report shows the numbers of each CUCM customer-specific data, for example phones, lines, users, etc., at the selected hierarchy and below. This is displayed in the format “current hierarchy/below.” For example, “390/20” means that 390 elements are at the current hierarchy and 20 elements are at hierarchies below the current hierarchy. Change the hierarchy to inspect the overbuild overview at that hierarchy.

When running the *Overview Tool* at site level, the number on the right will always show as 0, since site is the lowest VOSS Automate hierarchy level.

To verify the individual device models after running Overbuild, choose **Overbuild > Device Model > (model name)**. The hierarchy where each device model instance exists will be listed in the far right column in the list view of the device model.

## 27.4. Run Dial Plan Overbuild

provider

### 27.4.1. Run Dial Plan Overbuild

Cisco

#### Overview

The dial plan overbuild process moves specific dial plan elements, imported from CUCM, to a specified site, based on the VOSS Automate Location Name and Location ID.

#### Move Dial Plan Elements to a Site

##### Prerequisites

You must know the following VOSS Automate location details:

- Location Name
- Location ID
- Location Dial Plan Country Code

1. Log in as a provider administrator or higher.
2. Enter the **Location Name**, **ID**, and **Dial Plan Country Code** to identify the location from which you want to move the elements.
3. From the **Destination Site Name** drop-down, choose the site to which you want to move the elements.
4. Click **Save**.

#### Dial Plan Elements Moved to the Site Hierarchy

The table describes the dial plan elements moved when running a dial plan overbuild:

Model Type	Model Field	Condition	Filter Text
device/cucm/Region	name	endswith	phone-{{ input.v8_siteid }}
device/cucm/Region	name	startswith	{{ input.v8_sitename }}

continues on next page

Table 1 – continued from previous page

Model Type	Model Field	Condition	Filter Text
device/cucm/Line	shareLineAppearanceCssName	endswith	CSS{{ input.v8_siteid }}
device/cucm/Line	shareLineAppearanceCssName	startswith	{{ input.v8_sitename }}
device/cucm/Location	name	endswith	-{{ input.v8_siteid }}
device/cucm/Location	name	startswith	{{ input.v8_sitename }}
device/cucm/DevicePool	name	endswith	pool{{ input.v8_siteid }}
device/cucm/DevicePool	name	startswith	{{ input.v8_sitename }}
device/cucm/DevicePool	regionName	endswith	-{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Calls{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	CallsCLIR{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	-{{ input.v8_dp_countrycode }}{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Enh{{ input.v8_dp_countrycode }}{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Std{{ input.v8_dp_countrycode }}{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Rst{{ input.v8_dp_countrycode }}{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Service{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Internal{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Features{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	LclManagers{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	PT{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Site{{ input.v8_siteid }}
device/cucm/RoutePartition	name	endswith	Plus{{ input.v8_siteid }}
device/cucm/RoutePartition	name	startswith	{{ input.v8_sitename }}
device/cucm/Css	name	endswith	CSS{{ input.v8_siteid }}
device/cucm/Css	name	endswith	LBO{{ input.v8_siteid }}
device/cucm/Css	name	startswith	{{ input.v8_sitename }}
device/cucm/CtiRoutePoint	callingSearchSpaceName	endswith	CSS{{ input.v8_siteid }}
device/cucm/CtiRoutePoint	devicePoolName	endswith	{{ input.v8_siteid }}
device/cucm/CtiRoutePoint	devicePoolName	startswith	{{ input.v8_sitename }}
device/cucm/VoiceMailProfile	voiceMailPilot.cssName	endswith	CSS{{ input.v8_siteid }}
device/cucm/VoiceMailPilot	cssName	endswith	CSS{{ input.v8_siteid }}
device/cucm/VoiceMailPilot	cssName	startswith	CSS{{ input.v8_siteid }}

continues on next page



**Table 1 – continued from previous page**

Model Type	Model Field	Condition	Filter Text
device/cucm/CallPark	routePartition-Name	endswith	Site{{ input.v8_siteid }}
device/cucm/CallPark	routePartition-Name	endswith	Feature{{ input.v8_siteid }}
device/cucm/CallPark	routePartition-Name	startswith	{{ input.v8_sitename }}
device/cucm/DirectedCallPark	routePartition-Name	endswith	Site{{ input.v8_siteid }}
device/cucm/DirectedCallPark	routePartition-Name	endswith	Feature{{ input.v8_siteid }}
device/cucm/DirectedCallPark	routePartition-Name	startswith	{{ input.v8_sitename }}
device/cucm/CallPickupGroup	name	startswith	{{ input.v8_sitename }}
device/cucm/CallPickupGroup	routePartition-Name	startswith	{{ input.v8_sitename }}
device/cucm/CallPickupGroup	routePartition-Name	endswith	Site{{ input.v8_siteid }}
device/cucm/CallPickupGroup	routePartition-Name	endswith	AllowCallFeatures{{ input.v8_siteid }}
device/cucm/HuntPilot	routePartition-Name	endswith	Site{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	endswith	-{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	endswith	-{{ input.v8_dp_countrycode }}{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	endswith	Plus{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	isexactly	AllowEmerCalls{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	isexactly	AllowInternal{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	endswith	Enh{{ input.v8_dp_countrycode }}{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	endswith	Std{{ input.v8_dp_countrycode }}{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	endswith	Rst{{ input.v8_dp_countrycode }}{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	endswith	-PT{{ input.v8_siteid }}
device/cucm/TransPattern	routePartition-Name	startswith	{{ input.v8_sitename }}
device/cucm/RoutePattern	routePartition-Name	isexactly	SNRRRPT{{ input.v8_siteid }}

**continues on next page**

Table 1 – continued from previous page

Model Type	Model Field	Condition	Filter Text
device/cucm/RoutePattern	routePartition-Name	isexactly	AllowVMCalls{{ input.v8_siteid }}
device/cucm/RoutePattern	routePartition-Name	endswith	EmerCalls{{ input.v8_siteid }}
device/cucm/RoutePattern	routePartition-Name	isexactly	AllowInternal{{ input.v8_siteid }}
device/cucm/RoutePattern	routePartition-Name	endswith	-PT{{ input.v8_siteid }}
device/cucm/RoutePattern	routePartition-Name	startswith	{{ input.v8_sitename }}
device/cucm/RouteList	name	endswith	-{{ input.v8_siteid }}
device/cucm/RouteGroup	name	endswith	-{{ input.v8_siteid }}
device/cucm/CallingPartyTransformationPattern	routePartition-Name	endswith	PT{{ input.v8_siteid }}
device/cucm/CalledPartyTransformationPattern	routePartition-Name	endswith	PT{{ input.v8_siteid }}
device/cucm/VoiceMailProfile	description	endswith	location{{ input.v8_siteid }}
device/cucm/CallPark	routePartition-Name	isexactly	AllowCallFeatures{{ input.v8_siteid }}
device/cucm/GatewaySccp Endpoints	callingSearchSpace Name	endswith	-CSS{{ input.v8_siteid }}
device/cucm/GatewayEndpoint AnalogAccess	callingSearchSpace Name	endswith	-CSS{{ input.v8_siteid }}
device/cucm/H323Gateway	callingSearchSpace Name	endswith	-CSS{{ input.v8_siteid }}
device/cucm/MeetMe	routePartition-Name	endswith	Site{{ input.v8_siteid }}

## 27.5. User Phone Association

### 27.5.1. User Phone Associate Tool

#### Overview



VOSS Automate uses the associated or controlled devices value on the CUCM user (Subscriber in VOSS Automate) to determine which phones are associated to that subscriber.

The **User Phone Associate Tool** verifies that CUCM phones in the system with the ownerID value set are correctly associated to the CUCM user (Subscriber), for correct association in VOSS Automate.

For example, you may have phones synced in from an existing environment for overbuild, where the ownerID on the phones were set, but these were not associated from the CUCM user perspective. In this case, check whether you can see the phones in the Subscriber view, but it appears they are owned by the user. In this scenario, you can run the **User Phone Associate Tool** to correct the association.

---

**Note:** When adding phones and subscribers from *within* VOSS Automate, the phone-user relationship is bi-directional.

---

## Run the User Phone Associate Tool



1. Navigate to the hierarchy of the CUCM and choose it from the **CUCM** drop-down list.

The **Number of Phones that will be checked** value that is displayed is the number of phones on the CUCM, at the hierarchy, that have been synced in to VOSS Automate and have an ownerID set, but cannot be found to be an associated device of any subscriber at the hierarchy, or lower.

2. To run the **User Phone Associate Tool**, click **Save**.

The tool searches in VOSS Automate for subscribers that match the ownerID, and, if found, their associated devices will be updated with the phone.

3. Re-run the tool for the selected CUCM. For any of the checked phones that were set as associated devices, the **Number of Phones that will be checked** value will decrease accordingly.

---

**Note:** If a subscriber already has other associated devices, any new associated devices will be appended to the existing list.

---

## 27.6. Overbuild Analog Gateway

### 27.6.1. Overbuild Analog Gateway

#### Overview

VOSS Automate offers management of analog gateways (FXS ports) using the SCCP and MGCP protocols. This feature also provides an overbuild capability.

VG2XX and VG3XX models are supported providing a range of port capacities from 2 – 160 ports. VG400 (8 ports max) and VG450 (144 ports max) models are also supported.

## Using Overbuild Analog Gateway

This feature is initiated via the **Overbuild Analog Gateway** form (accessed via the default menu location **Overbuild > Overbuild Analog Gateway**).

The only required attribute is the **CUCM IP Address**, which is selected from a drop-down list. When executing the overbuild, all MGCP and SCCP gateways are discovered.

For each gateway not already at site level, a new IOS device is created, and the gateway and ports are moved to the site level based upon the device pool found on the first port. The gateway can then be managed in the normal way.

**Note:** Since the device pool associated with the first gateway port is used to identify the location of the gateway, a gateway with no configured ports cannot be moved.

## 27.7. Device Models

### 27.7.1. Device Models



From the Overbuild's **Device Models** menu, you can view details about the devices, by model, in the selected hierarchy. Like the **Overview Tool**, this can be useful to indicate where devices have moved as a result of an overbuild.

When choosing a device model type from this menu, the list view displays data about the devices of that model type in the hierarchy, such as:

- Device names or identifiers
- Their device pools
- Their hierarchies at and below the currently selected hierarchy
- Data related specifically to the selected device model

In a device model you can select individual devices to modify, delete, and export them. You can also bulk change settings for all the devices in a device model by selecting the **Select All** checkbox at the top of the table in the list view, then choose **Action > Bulk Modify**.

**Caution:** It is strongly recommended that you do NOT directly edit the device models via this menu. Instead, use other menus in Automate, such as the Subscriber Day 2 menus. The **Device Models** menu items should be used for manually moving device models that the **Overbuild Tool** can't move or that need additional manual moves after **Run Overbuild** is executed.

For CUC models, two system users (`operator` and `undeliverablemessagesmailbox`) remain at the Customer level. All associated CUC device models for the two system users will remain at the Customer hierarchy and will show in the device model counts and device model lists at the Customer hierarchy.

For call handler device models, there are 5 default instances that remain at the Customer hierarchy:

- Goodbye (a CUC system default call handler)

- Opening Greeting (a CUC system default call handler)
- Operator (a CUC system default call handler)
- operator (the system user 'operator' call handler)
- undeliverablemessagesmailbox (the system user undeliverablemessagesmailbox call handler)

These 5 call handlers remain at the Customer hierarchy and appear in the device model count and device model lists for call handlers at the Customer hierarchy.

These device models also allow you to add device instances. However, it is not recommended to add device instances in the **Overbuild** menu.

- CUCM CtiRoutePoint
- CUCM DirectedCallPark
- CUCM Phone
- WebEx User

## 27.7.2. Locate a User Associated with a CUC Device Model



The CUC device models use internal UUID references to the CUC user objects. As a result, most CUC device models do not have a field showing the ID of the user associated with the device model. You can use Search in VOSS Automate to find the associated user information.

### Perform these steps:

1. Go to (default menus) **Overbuild > Device Models**.
2. Click the desired CUC device model in the menu, then view the list of CUC device models that display.
3. Click the relevant device model instance.
4. In the CUC device model output, find the field Subscriber Object ID.
5. Search for the following string in the VOSS Automate Admin Portal. See [Search in VOSS Automate](#)

```
device/cuc/User WITH object_id like 9b16c8ce-edd9-43c4-9262-c25296d3560b
```

where 9b16c8ce-edd9-43c4-9262-c25296d3560b would be replaced with the output of the Subscriber Object ID.

The equivalent VOSS Automate API request would be:

```
https://<host-or-proxy>/api/tool/Search/?
format=json&
device%2Fcuc%2FUser%20
with%20object_id%20like%20
9b16c8ce-edd9-43c4-9262-c25296d3560b
```

## 27.8. Filter Calling Search Spaces

provider

### 27.8.1. Filter Calling Search Spaces and Assign a Class of Service

Cisco

This procedure filters calling search spaces (CSS) so that drop-down lists contain only the CSSs that are relevant to the selected devices and lines. Additionally, you can flag a CSS as a class of service (CoS).

---

**Note:** For the overbuild, VOSS Automate does not filter the Calling Search Space (CSS) fields that are used for various lines and devices in the user interface.

---

#### Perform these steps:

1. Enable CSS filtering.
  - a. Log in to VOSS Automate as provider, reseller or customer administrator.
  - b. Choose the customer hierarchy.
  - c. Go to (default menus) **Dial Plan Management > Customer > Dial Plan**.
  - d. Click the dial plan.
  - e. Select the **Enable CSS Filtering** check box.
  - f. Click **Save**.
2. Move CSSs from the customer hierarchy to the site hierarchy.
  - a. While still at the customer hierarchy, Go to (default menus) **Overbuild > Device Models > CUCM CSS**.
  - b. Select the check box to the left of each CSS that you want to move.
  - c. Click **Action > Move**.
  - d. From the **Move Resources to Hierarchy** drop-down, choose the site to which you want to move the CSS.
  - e. Click **OK**.
  - f. Repeat steps b through e if you want to move more CSSs.
3. Identify the CSSs that you want to appear in the filtered drop-down lists for the devices, services, and lines.
  - a. Choose the site hierarchy.
  - b. Go to (default menus) **Dial Plan Management > Site > Class of Service**.
  - c. Click **Add**.
  - d. From the **Class of Service Name** drop-down, choose the CoS that you want to associate with the CSS.

- e. Click **Save**.
  - f. Repeat steps b through e for each CoS that you want to associate with a CSS.
4. Verify that the CSS field is filtered correctly.
    - a. While still at the site hierarchy, choose **Subscriber Management > Lines**.
    - b. Click **Add**.
    - c. From the **Calling Search Space** drop-down, verify that the items in the list are the CSSs that you flagged as CoS.
  5. (Optional) Remove the CoS flag from a CSS.
    - a. Log in to VOSS Automate as provider, reseller or customer administrator.
    - b. Choose the site hierarchy.
    - c. Go to (default menus) **Dial Plan Management > Site > Class of Service**.
    - d. Click the required Class of Service Name.
    - e. Click **Action > Exclude from CoS**.

Note:

Ensure that you exclude the CSS from the CoS when you want to remove the CoS flag. If you delete the CoS instead, the CSS is deleted from CUCM.

## 28. Administration Tools

### 28.1. Import

#### 28.1.1. Introduction to Import

##### Overview

Model definitions and instances can be imported using JSON files. These can be compressed ( `.json.zip` ) or be uncompressed files with extension `.json`.

The format of the JSON files should correspond with the JSON schema for the model or instance that is imported. Typically, a model instance is exported as a JSON file in order to obtain such a schema. The export can then for example be edited as required.

For each model instance in a JSON file, if it contains the same values for a business key as an existing model instance, then the import will update the existing instance. Otherwise, the import will add a model instance. The business key of a model is specified on its design form and can be seen in the Add Form schema of the Model API Help Reference.

When exporting items that belong to a package, all hierarchy information will be removed from item meta business keys so that the packages have no hierarchy.

The importing process will still adhere to the hierarchy specified in the meta of each item except for a data/Package instance, which will be imported at the import hierarchy (breadcrumb hierarchy). For items other than Packages, the hierarchy where the items is loaded can be overridden (to the same or lower hierarchy level only) by specifying the hierarchy in the meta of the item.

If no hierarchy is found in the meta of the item, then the hierarchy will be taken from the import hierarchy (breadcrumb hierarchy).

##### Import a File

1. Choose the hierarchy level for the import (not applicable to packages - see [Introduction to Import](#) for more details).
2. Go to the **Import** page (default menus **Administration Tools > Import**).
3. Choose the file (`.json`, `.json.tar.gz`, or `.json.zip`) that you want to import. Wait until the file name is displayed on the form.

---

**Note:** An archive file may *only contain one* JSON file.

---



4. Click **Import** to import the file to the hierarchy.

## 28.2. Bulk Administration

### 28.2.1. Bulk Load

#### Overview

The bulk loader tools enable the quick and easy management of system data using pre-populated MS Excel formatted spreadsheets.

A spreadsheet template can be generated by the system for any of the resources in the system - either from the Admin Portal or the API.

The data on the sheet includes column headers to indicate the hierarchy, action, search criteria and attribute names of the model to which the data applies. Rows include the data for model individual instances.

---

**Note:** To carry out a bulk load, the selected model should allow add operations in the Access Profile for the user.

---

Use a single sheet in the file to manage multiple templates by adding additional header rows and data under them. A file can include multiple sheets with a single or multiple templates on each.

When the file is loaded, it can either be processed immediately or scheduled for a date and time. A scheduled bulk load file is listed on the Schedule list view as a Single Execution schedule type and with resource type of data/BulkLoad. Items on the Schedule list are deleted once the scheduled item has been executed. This means that after a scheduled bulk load has been executed, you will no longer see it in the list of schedules.

A single parent transaction is created for the entire bulk load. Unless a sheet is set to execute rows in parallel, each row in the bulk load sheet results in a separate sub-transaction that is executed sequentially and synchronously. If a single sub-transaction fails, the bulk load transaction continues and does not roll back the preceding sub-transactions. In the case where a bulk load sub-transaction has other sub-transactions - for example a provisioning workflow with multiple steps - failure in any of the steps will cause a roll back of all the steps in the bulk load sub-transaction.

If a sheet is set to process rows in parallel, then by default, 14 rows are processed in parallel. Refer to the topic on the bulk load sheet layout for more details.

If a file is processed and further files are loaded, they are processed in parallel. Thus, bulk load transactions are executed in parallel, as with all transactions. Bulk load transactions are executed immediately.

Transactions, once started, cannot be canceled.

## 28.2.2. Data Export

Data can be exported in JSON format and as MS Excel spreadsheets.

The system JSON file format is used to Export and Import various operations on model instances. The operations available via JSON files are: Add, Modify, Delete. This Import and Export task is carried out from the Admin Portal or API using the file Export and Import functionality.

The JSON file format for the different operations is available when you **Export** a specific model and choose **JSON** as the export format. The API provides a request URL and parameter for this task - refer to the API documentation. The export file format is a compressed JSON file. The import filename and format can be <filename>.JSON, <filename>.JSON.zip or <filename>.JSON.gz.

The Excel file format for data export of selected items can be carried out in the list or instance view of a model.

Commands can be exported from the Admin Portal by choosing **Export** and then selecting either **Excel** or **Excel (formatted)** as the export format. The API provides a request URL and parameter for this task - refer to the API documentation. The export file format is a MS Excel XLSX file.

The Field Display Policy that applies to a menu item from which an Excel (formatted) export of data is carried out, is reflected in the Excel (formatted) exported sheet as follows:

- Titles of attributes
- Sequence of the attributes
- Group names
- Hidden fields, with the exception of mandatory fields.

## 28.2.3. Bulk Export of Model Data

1. Choose the hierarchy to which the model belongs.
2. Choose the items to be exported from the List view and click **Export**.
3. From the **Export format** list, choose the required export format and export the selected items. The following file formats correspond with the selected item in the list:
  - JSON - an export containing data in JSON format as in the system database. Item properties such as strings that are empty or Boolean values that are not set, are not included. The export filename also contains a date stamp.
  - Excel - an export containing data and Excel columns for all fields as shown in the JSON export format. The export filename also contains a date stamp and reference to the export data type.
  - Excel(formatted) - an export containing data and Excel columns as arranged by any Field Display Policies that apply. The columns correspond with those of a Bulk Load Template export sheet. This sheet can therefore be used to modify and update data if required. The export filename also contains a date stamp and reference to the export data type.
4. If required, the export JSON file can be decompressed, and the JSON file (.json) can be opened in a text editor. The XLSX file can for example be opened in MS Excel.

---

**Note:** The bulk export of Device Model data will export locally *cached* data, not data on the device itself.

---

## 28.2.4. Bulk Load Template Export

### Overview

You can use the MS Excel format spreadsheet bulk load template of a model to easily create a template of a sheet from the user interface. See [Bulk Load Template Sheet Layout](#).

The VOSS Automate multi-domain core supports the ability to generate a MS Excel format spreadsheet bulk load template for any of the resources in the system directly from the user interface.

You can populate the template sheet with data and then load it using the Bulk Load administration tool.

Excel Bulk Load operations using spreadsheets support multiple (tabbed) worksheets that are loaded in tab sequence. Defined Configuration Templates on the system can be referenced in the sheets and applied during the Bulk Load operation.

The field specific help of the product can be used to assist the user with populating the bulk loaders with the correct data. See [Bulk Load Template Sheet Layout](#).

### Perform Bulk Load Template Export

The export of a bulk load template of a model is available on the list view.

1. Choose the hierarchy where the model is available.
2. Choose the required form and choose the export option **Bulk Load Template**.

A MS Excel sheet is created that contains the bulk load template for the selected model. The sheet is available in the download directory of the browser application.

Use the bulk load template sheet to enter data.

Use the Bulk Load administration tool to upload the bulk load template sheet.

## 28.2.5. Bulk Load Sheets

### Overview

A bulk load template is a Microsoft Excel .xlsx format spreadsheet workbook that contains a single sheet, and is used for bulk loading data into VOSS Automate.

A tabbed workbook may contain two or more template sheets (one sheet per model). When using a tabbed workbook, bulk load transactions are carried out from left to right, starting with the far left tab, and ending at the far right tab. For example, when adding a site under a customer in a bulk load, ensure you add the customer sheet to the left of the sheet containing details of the associated site, so that the customer detail is loaded before the site.

You can use any filename for the bulk load workbook, but since the same file can be loaded multiple times, it is recommended that you use unique names to differentiate bulk uploads.

## Bulk Load Limitations

VOSS Automate bulk load automation templates employ advanced features, such as configuration templates (CFTs), customizable field display policies (FDPs), and GUI rules.

For some resources, generated bulk load templates won't produce the provisioning results that may be achieved when using the GUI to upload and configure data. This topic provides an overview of the bulk load limitations to consider for such scenarios.

**Note:** See the Bulk Load Reference Guide for more information around the specific resources where these limitations apply, the impact of the limitations, and for best practice advice for using generated loaders for various resources.

The table describes the general bulk load limitations:

Limitation	Description
Certain fields link together different resources	These fields might be hidden in the GUI, or they may be read-only. In generated bulk load templates, these field are currently exposed as mandatory fields. The fields and the specific conventions that are used in the template to link the fields together are highlighted in notes specific to the resource. For example, the value for remote destination name should be specified as RDP-<username>.
Certain fields are derived from other system data	Notes specific to the resource highlights where to obtain possible values for such fields. Examples are key-value type fields of a phone's vendor configuration settings.
GUI rules defined in the user interface that aren't replicated in the backend workflow must be considered in the loader to achieve the same provisioning results as the GUI.	Examples - GUI rules may: <ul style="list-style-type: none"> <li>• Set a default value for a visible field (fixed value or derived from other data in the system). Include this column and corresponding value in the loader for this to be provisioned.</li> <li>• Set a value for a hidden field. Include the column and corresponding value in the loader for this to be provisioned. Note that this means that fields may be included in the loader that would not be visible in the user interface.</li> <li>• Make a field visible depending on some condition such as the value of another field (for example, a checkbox being selected). Include the column in the loader, and populate it under the appropriate conditions.</li> </ul>

The image shows that A GUI Rule may, for example, disable input fields based on the state of a checkbox. On the worksheet, the selected checkbox is represented as TRUE in the column. Columns associated with the disabled fields should not be filled.

	Y	Z	AA	AB	
1					
2	forwardHuntNoAnswer.destination	forwardHuntNoAnswer.usePersonalPreferences	forwardHuntNoAnswer.callingSearchSpaceName	forwardHuntBusy.destination	forwardH
3					
4	# Destination	# Use Personal Preferences	# Calling Search Space Name	# Destination	# Use
5		TRUE			

## Sample Bulk Load Sheets

To overcome the complexities introduced by the bulk load limitations, a set of sample bulk load sheets have been generated that enable users to get started quickly and to leverage the best practices developed by VOSS.

The latest sample bulk loaders can be obtained from your account team.

## Bulk Loading Files

This procedure uploads two or more .xlsx worksheets in a bulk upload.

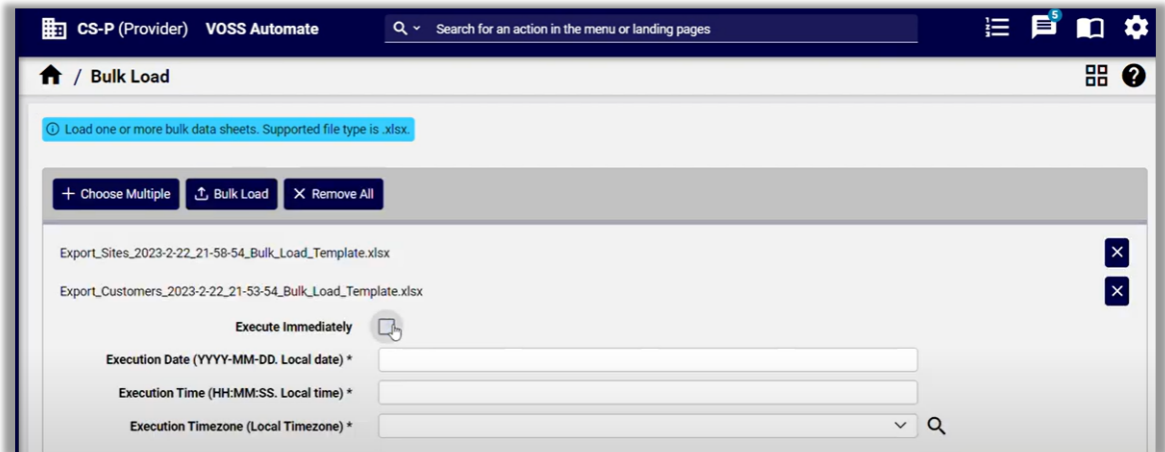
### Prerequisites

- File formats must be .xlsx.
- Ensure any referenced configuration templates are available.
- Verify details in each file, and ensure they contain all required information.
- Remove any comments from the worksheets, for example, comments showing as a marker in the cell with a pop-up.
- To send empty values, in the relevant cell of the value column:
  - type <NULL> in the cell

**Note:** Spreadsheet formulas in data are ignored, for example: '=7+2'

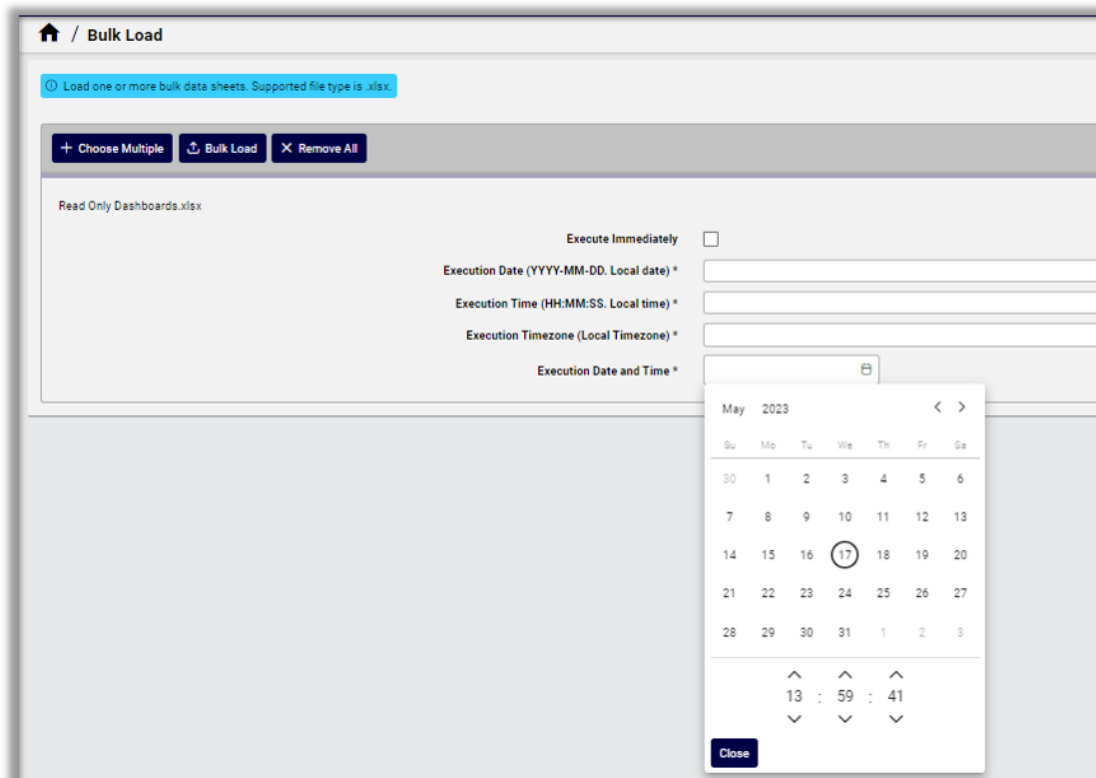
### To bulk load files

1. In the Admin Portal, go to (default menus) **Administration > Bulk Upload** to open the **Build Load** page.
2. Set the hierarchy to the level where you want to add bulk data.
3. On the **Bulk Load** page, click **Choose Multiple**; then, browse to the files you wish to upload.



#### 4. Choose an option:

- To remove any files, click the **X** icon adjacent to the filename.
- To remove all files, click **Remove All**, and if required, choose alternative files.
- To execute the bulk load transaction immediately, select **Execute Immediately**, else, clear the checkbox and specify an execution date, time, and timezone.



#### 5. Click **Bulk Load**.

#### 6. Wait for the transaction to complete, then view results.

#### Note:

- The **Execute Bulk Load** sub-transaction list will show the transaction for each row of the sheet.
- If the transaction is scheduled for a future date, you'll need to check on it at the scheduled execution date and time. Scheduled bulk loads display in the list view of the schedule, with the name and upload date of the sheet.
- The **Bulk Load** button is temporarily disabled until the sheets that have been bulk loaded and are in progress have completed. To continue bulk loading while sheet loading is in progress, clear (remove) the current sheet or choose **Remove All** and select a new sheet to load.

### 28.2.6. Sample Bulk Loaders

Sample loaders enable a quick start by providing working examples of the most frequently used loaders. These can be customized according to user requirements and data.

Furthermore, sample bulk load sheets incorporate best practices for using bulk loaders; ensuring rapid customer and subscriber on-boarding.

Note that the sample loaders are built according to the default Field Display Policies and Configuration Templates that are shipped with the product. Since these are configurable, the use of non-default Field Display Policies or Configuration Templates may result in a change of the sample loaders. For example, if an additional field is exposed by the Field Display Policy, it needs to be added if it is to be managed in the loader.

The latest sample bulk loaders can be obtained from your account team.

### 28.2.7. Bulk Load Template Sheet Layout

This topic describes a typical generated sheet when using the Export Bulk Load Template menu option.

Colors and styles are applied to the exported sheet:

- dark colors style for header rows
- yellow text for base group titles
- mandatory fields have red title text headers
- optional fields text headers are in white

Although an attribute that has nested attributes may be optional, if this attribute has mandatory nested attributes, then the containing attribute becomes mandatory. If a field is mandatory, it is shown on the sheet regardless of any Field Display Policy instruction to hide it.

The Field Display Policy that applies to a menu item from which a Bulk Load Template Export is carried out, is applied to the exported sheet as follows:

- Titles of attributes
- Sequence of the attributes
- Group names
- Hidden fields, with the exception of mandatory fields.

---

**Note:**

- Macros can be included in the loader to either be loaded as text or evaluated as part of the load. See documentation in this guide around `evaluate_macros` header for more details on macro behavior in the loaders.
- A single sheet of a file can be used to manage multiple templates by adding additional header rows and data under them. A workbook file can include multiple sheets with single or multiple templates on each.

entity: relation/HuntGroupRelation; hierarchy: sys; parallel: False; parallel_transaction_limit: ; template: ; meta_pre									
\$hierarchy	\$action	\$search_fields	\$device	\$template	\$nd1	\$pkid	pattern	name	
# Base					# Hunt Pilot Pattern				
Comment	Hierarchy	Nod	Action	Search	Fields	Device	FT	Templa	Network
	Device	Li	Unique	Identifie	#	Hunt	Pilot	Pattern	# Name

Refer to the example sheet snippet. A bulk load sheet contains the following information:

### Sheet name (tab on spreadsheet workbook)

Any name can be provided on the tab or sheet. If the name is prefixed with a # on the tab, the sheet is ignored during loading.

### Row 1 - Resource and instructions

The exported bulk loader template will have the resource as target entity (model) as well as the hierarchy shown on the top row of the sheet. Verify the entity in the first row of an exported sheet. The reference data in the first row is of the format shown below, with variable values indicated in {}:

```
entity: {entity name}; \
hierarchy: {hierarchy}; \
parallel: {True | False}; \
parallel_transaction_limit: {n}; \
template: {config_template}; \
meta_prefix: {c}; \
evaluate_macros: {True | False}
```

- *entity: {entity name}*: the name of the model, in the format *{modeltype}/{model name}*, for example *data/User*
- *{hierarchy}*: the hierarchy, in the format *{level1}.{level2}.{level3}*, where *{level1}* is the first system level. Verify the hierarchy at which the bulk load should take place.
- *parallel*: True or False. By default, the value is False and rows are processed sequentially. If multiple templates are entered on a single sheet, they should all *only have a single value*: True or False.

Sheet rows can be processed in parallel. The sheet should then not contain multiple, sequence dependent models. If there are a large number of rows for complex models on the sheet, the duration of a bulk load transaction is significantly reduced by parallel processing.

By default, 14 rows are processed in parallel, since bulk loads are low priority transactions that are limited to 50% of the maximum allowed parent transactions, which is by default set to be 30 per unified node. The default value supposes that one slot is used by the parent bulk load transaction itself.

The maximum allowed parent transaction limit can be modified from the Command Line Interface (CLI) using the command: **voss workers <number>**.



- *parallel\_transaction\_limit*: the maximum number of rows that can be processed in parallel by the bulk load at any given time. The minimum value that can be set is 1 and the maximum is 100.
- *template*: The Configuration Template *{config\_template}* that is associated with the user's menu item for the *{entity\_name}* from which the export was carried out. The exported sheet will show a row of values from the Configuration Template.

When a sheet is created to bulk load, the Configuration Template should be available on the target system and it will only apply to rows on the sheet that has **add** specified in the # Action column.

Note: this header item is not used when Configuration Templates are loaded.

- *meta\_prefix*: By default, the value is \$. The # character cannot be used, as it is used for comments. The character is prefixed to the # Base group of columns in Row 2. - see: [Row 2 - Base columns \(grouped by # Base in Row 3\)](#).

The purpose of the prefix is to distinguish a special set of base columns from the entity attributes on bulk load sheets.

Note that the bulk load sheets will fail to load if the # character is used as prefix. An error message will be shown in the transaction log.

- *evaluate\_macros*: By default, the value is False. When set to True, named macros can be added as values to be evaluated before the sheet is loaded. Otherwise, the value is a string.

The format of the macro is `{{ fn.bulkload_evaluate macro.NamedMacro }}`, where *NamedMacro* is the name of an existing data/Macro instance. The function prefix `fn.bulkload_evaluate` is required in the value for the macro to be evaluated.

- For examples, see [Bulk Load Sheet Macro Evaluation](#).

Note: `fn.bulkload_evaluate` is not available via the Macro Evaluator. For testing purpose using the Macro Evaluator, please use the `fn.evaluate` function prefix.

### Row 2 - Base columns (grouped by # Base in Row 3)

The list below describes the column values with the default value of `meta_prefix`, in other words, column names by default prefixed by \$.

The purpose of the columns is to provide more detailed instructions or overriding data for a row.

- **Comments**: Any row that contains a # character in column A is considered a comment row and will be ignored. Empty rows are also ignored. Column A - the first column - is also a # Comment column, so that any value entered in it is considered a comment. If all rows on a tab are commented, but the tab name itself is not commented, the tab sheet load will fail.
- **\$hierarchy**: A hierarchy column with the name # Hierarchy Node is also available so that individual rows of a sheet can be loaded to a specified hierarchy. If a hierarchy is specified in this column for the row, it takes precedence over the hierarchy in the first row. The format for the hierarchy in the row is the same as for the first row: the full hierarchy, with levels separated by dots.
- **\$action**: Any row that contains an action in the # Action column : **add**, **delete**, **modify**, **execute** or a custom action name, will have the action carried out. The action values in the column are case insensitive.

If no action is entered, the **add** action is carried out. The list below shows the functionality for the values entered in the row. Also refer to the Search Fields entry below.

- **add** or empty - the data in the attribute columns is added. Any values in the # Search Fields column are ignored.
- **delete** - the row matching the unique criteria in the # Search Fields column is deleted.

- **modify** - the row matching the unique criteria in the # Search Fields column is updated with values in the attribute columns. Refer to the Search Fields entry below.
  - **execute** - if the action is available for the model, the row matching the unique criteria in the # Search Fields column is executed, using any values entered in attribute columns.
  - custom action name - if the custom action is defined for the model, it is carried out for the row matching the unique criteria in the # Search Fields column.
- \$search\_fields: The column applies to rows where the action is not **add** and consists of a colon-separated list of attribute names and values, for example, fullname: 'John Smith', username: jsmith.

Note that if present, the pkid field takes precedence over search fields criteria when locating a resource. If search field criteria should apply to locate the resource, remove the pkid value of the resource from the sheet.

- **delete** - the search fields and corresponding attribute values uniquely identify the model instance to delete.
- **modify** - the search fields and corresponding attribute values uniquely identify the model instance to modify, with the values to modify in the attribute columns.
- **execute** - the search fields and corresponding attribute values uniquely identify the model instance to execute.

---

**Note:** Where the sheet is for a Relation model, only the left model attributes in the Relation can be in the Search Fields column. This is the standard search behavior for Relations.

If it is necessary to carry out a search on relation data, the search can be applied to the underlying models for the purposes of bulk loading or export.

---

- \$device: The column is used when a sheet includes attribute columns that belong to a device model. This column then contains the comma-separated list of business keys of the device model, as well as its hierarchy. These values narrow the search for the device to which the data in the sheet applies. Examples of such sheets would contain device models or relations that have device model attributes in the left hand association of the relation.

The format of the values in this column is:

<business\_key1>,<business\_key2>,...,<business\_keyn>,<device\_hierarchy>.

For example, if a CM instance in a model data/CallManager has host and port as business keys, the value would for example be: 10.120.2.175,8443,sys.Varidion.InGen.Tokyo.

- \$template (Configuration Template): If a row that contains a Configuration Template name that applies to the model, this template is applied to the row when it is loaded. Upon bulk loading, values in this column will override any value for template in the sheet header.
- \$ndl (Network Device List): The column is used when a sheet includes attribute columns that belong to a device model. This column then contains the name of the Network Device List that includes the required device in the list of devices. The NDL can be filled in as either the business key friendly name or in the NDL business key format, for example ["322-CL1-NDL", "hcs.MTLAB.Ops.IBM"]. The friendly name ("322-CL1-NDL") will then be used during the bulk load.

If the Device column is also filled in, then the value in the Network Device List column overrides it.

- \$pkid (Unique Identifier): On modify, delete, execute, and custom action operations, this pkid is used to identify the resource represented in the row data.

Note that if present, the `pkid` field takes precedence over search fields criteria when locating a resource. If search field criteria should apply to locate the resource, remove the `pkid` value of the resource from the sheet.

The `pkid` is unique to the resource on the particular database and cannot be relied upon when attempting to manipulate an identical resource on a different database.

---

**Note:** Macros inserted into the Base columns will not evaluate. See: [Bulk Load Sheet Macro Evaluation](#).

---

## Row 2 - Column names

- base column names (prefixed by the `meta_prefix` character and listed above)
- attribute names. Entity attribute names show as column header data in the spreadsheet.

Columns can be in any order in a row. Nested object attribute names follow a dot notation.

Array objects will be sorted, so that attributes with names such as `filter_fields.<number>.xx` will be in sequence: `filter_fields.0.xx`, `filter_fields.2.xx`, and so on - before further ordering (represented by `.xx` here) is applied.

- If a column header starts with a `#`, the column will not be loaded.
- If a column header is blank, this indicates the end of the sheet header. Subsequent columns will not be loaded.

entity: relation/HuntGroupRelation; hierarchy: sys; parallel: False; parallel_transaction_limit: ; meta_pref									
Hierarchy	Action	Search_fields	Sdevice	Stemplate	Sndi	Spkid	pattern	name	
# Base							# Hunt Pilot Pattern		
<b>Comment: Hierarchy Nod# ActionSearch Fiel # Device-FT TemplaNetwork Device Li# Unique Identifie # Hunt Pilot Pattern # Name</b>									
									33121
#									33122

## Row 3 - Group or description

The row provides a description of a column or columns (as for example `# Base` for the sheet base columns), or else the group name of attributes that are grouped on the GUI as tabs on the detail or input GUI form.

A group is specified in the row by merging the group name across all the columns of the group. For attributes that are required and are not grouped in the GUI (or may be hidden in the GUI), the group name: Not Grouped Fields is given on the sheet.

“Default” values of attributes in this group need to be removed from an exported sheet before the sheet is used to bulk load rows.

## Row 4 - Title

Title of:

- the reference for base column names (hierarchy, action and so on)
- the column attribute as on the GUI. This title may be modified by a Field Display Policy.

## Data rows

The exported template contains no data.

**Important:** As a part of bulk loader sheet design, attention should be paid to the API payload posted to the system. The data entered in the loader sheet columns should correspond with the API payload.

GUI drop-down lists may contain user-friendly titles, while the actual value sent to the API may differ.

### 28.2.8. Export Data Sheet Layout

This topic describes an exported sheet, either formatted or not formatted.

For both exported sheet formats, the header and column layout shows correspondences with the Bulk Load Template sheet.

The following items apply to sheets containing data exports:

- The # Comment column shows the text “Exported data” in green for each row of data.
- The # Hierarchy Node column shows the source hierarchy of the exported row. The hierarchy: value in the sheet header shows the hierarchy from which the data export was run.
- If device instances were exported, the # Device columns shows the business key of the device (for example, comma-separated: host, port, hierarchy).
- If a Configuration Template was applied during the export - for example if it applied to the Admin Portal form - # CFT Template column will show this name for each row, as well as the template value in the sheet header. If a sheet is used for loading, the row value overrides the sheet header value.
- The # Unique Identifier contains the pkid that is used to identify the exported resource represented in the row data. On modify, delete, execute, and custom action operations, this pkid is used to identify the resource instance on the database represented in the row data.

The pkid field:

- takes precedence over the search fields criteria when locating a resource
- is unique to the resource on the particular database and cannot be relied upon when attempting to manipulate an identical resource on a different database
- For a formatted Excel export, the columns in the sheet correspond with an exported Bulk Load Template sheet.
- For a non-formatted Excel exported sheet, the columns correspond with the properties of an exported JSON file. For example, only properties where strings are not empty and boolean values are set, are exported.
- A formatted, exported sheet of data can be used just as a Bulk Load Template sheet to bulk load data. For other Actions, the # Search Fields column needs to be completed. Refer to [Bulk Load Template Sheet Layout](#).
- “Default” values of attributes in any Not Grouped Fields group need to be removed from a sheet before it is used to bulk load rows.
- The rows and data in the columns of an exported sheet are bound by the limitations of the MS Excel format. For example, model data with property values longer than 32,767 characters (maximum length of MS Excel cell contents) will be truncated in the exported sheet.

## 28.2.9. Bulk Load Sheet Macro Evaluation

Bulk load sheets can be configured to allow for macro evaluation.

The first row of a bulk load sheet has a variable to enable or disable macro evaluation (see [Bulk Load Template Sheet Layout](#)):

```
evaluate_macros: {True | False}
```

- If the variable is set to True, macros in a sheet will be evaluated upon loading. In this case, it is important that:
  1. The macro be prefixed with `fn.bulkload_evaluate`.
  2. A named macro must be used, in other words, a `data/Macros` instance. Macro functions (`fn.<name>`) cannot be used here.
  3. If the named macro that is used evaluates to a boolean or integer value, it will be evaluated and the sheet will be processed with that value.

For example:

1. If the sheet is used to update a site at its hierarchy, and the `evaluate_macros`: value is set to True in the first row, then:
  - The macro `{{ fn.bulkload_evaluate macro.SITENAME }}` will be evaluated to the site name when the sheet is loaded, but inserted as plain text.
  - The macro `{{ fn.evaluate macro.SITENAME }}` will be *not* evaluated to the site name when the sheet is loaded, but inserted as plain text.
  - The macro `{{ macro.SITENAME }}` will be *not* evaluated to the site name when the sheet is loaded, but inserted as plain text.
  - The macro `{{ input.sitename }}` will be *not* evaluated to the site name when the sheet is loaded, but inserted as plain text.
  - Rows containing entries with a *combination* of the type `{{fn.bulkload_evaluate <named macro>}}` and other types macros will *only evaluate* the former type and load others as plain text.
  - Macros (in any format above) entered into the Base columns of a sheet will *not* evaluate - for details on the Base columns, see [Bulk Load Template Sheet Layout](#).
2. If the sheet is used to update a site at its hierarchy, and the `evaluate_macros`: value is set to False in the first row, then *all* macros entered will be inserted as plain text.

---

**Note:** If the named macro needs to be tested with the macro evaluator, the format is `{{ fn.evaluate macro.SITENAME }}`.

---

- See the topic on macros in VOSS Automate documentation for named macro examples.
- For further details, also refer to the Advanced Configuration Guide and Named Macro Reference.

## 28.2.10. Bulk Load Transactions

### Overview

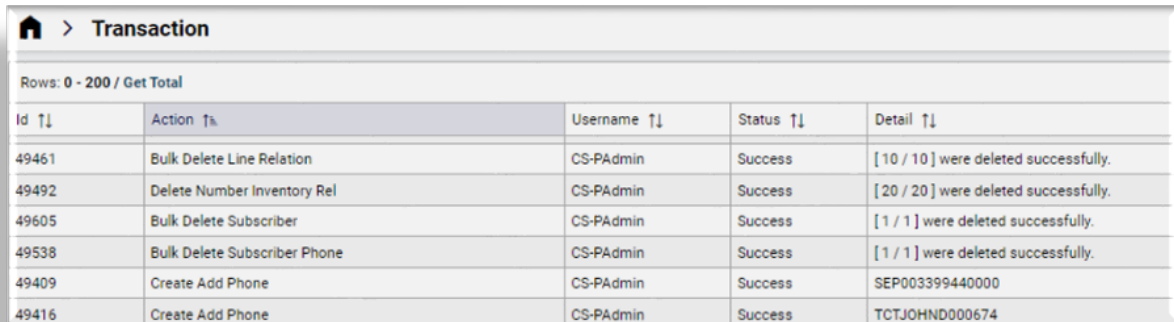
Once you run a bulk load transaction, you can view its transaction details on the Transaction Log.

### Related Topics

- Transaction Logging and Audit in the Core Feature Guide
- View a Transaction in the Core Feature Guide

### View Bulk Load Transaction Details

Go to the **Transaction** menu. Bulk load transactions show in the log:



Transaction				
Rows: 0 - 200 / Get Total				
Id ↑↓	Action ↕	Username ↑↓	Status ↑↓	Detail ↑↓
49461	Bulk Delete Line Relation	CS-PAdmin	Success	[ 10 / 10 ] were deleted successfully.
49492	Delete Number Inventory Rel	CS-PAdmin	Success	[ 20 / 20 ] were deleted successfully.
49605	Bulk Delete Subscriber	CS-PAdmin	Success	[ 1 / 1 ] were deleted successfully.
49538	Bulk Delete Subscriber Phone	CS-PAdmin	Success	[ 1 / 1 ] were deleted successfully.
49409	Create Add Phone	CS-PAdmin	Success	SEP003399440000
49416	Create Add Phone	CS-PAdmin	Success	TCTJOHND000674

- In the list view, the bulk load is shown in the **Action** column of the log. If the bulk load was scheduled, this is shown as a schedule with the detail column indicating it to be a bulk load. The Action column will show “Execute Bulk Load” or “Execute Schedule” respectively.
- The submitted, start, and stop time for the entire bulk load transaction is also shown.
- The Detail section will hold the name of the file that is bulk loaded as well as the workbook sheet number and the number of successful rows out of the total, for example:

```
[ 8/9 ] succeeded from [ 1 ] sheet in data_Users_bulkloadsheets.xlsx.
```

Checks are made to validate the user’s access profile, the provided hierarchy information, and data constraints for the bulk load transaction when updating the target models. The parent bulk load transaction will show the error message if this validation fails and no rows will be loaded.

Where rows are loaded, each row in the bulk load sheet appears as a sub-transaction within the bulk load transaction. The Message box shows the number of successful and failed rows loaded.

Failed asynchronous transactions display below the sub transactions. If the number of failed asynchronous transactions exceeds 10, these details display on a new tab on the page.

Transaction ID: 63398

Action: Execute Bulk Load

Detail: [8/10] succeeded from [1] sheet in Export\_Internal\_Number\_Inventory\_2024-4-24\_13-25-56\_Excel\_Formatted.xlsx.

User: tdkadmin

Priority: Normal

Message: Bulk load Success

Rolled Back: No

Submitted Time: May 1, 2024 8:53:16 PM

Started Time: May 1, 2024 8:53:16 PM

Completed Time: May 1, 2024 8:53:22 PM

Submitted on Node: VOSS

Processed on Node: VOSS-voss-queue-1

Duration: 6.108 seconds

Id	Action	Status	Submitted Time	Detail	Rolled Back
63399	Execute Bulk Load	Success	May 1, 2024, 8:53:17 PM	[8/10] succeeded in Sheet2.	No

Action	Status	Submitted Time	Detail
Create Internal Number Inventory	Fail	May 1, 2024, 6:53:21 PM	Hunt Group Auto_Hunt_Group
Create Internal Number Inventory	Fail	May 1, 2024, 6:53:20 PM	Hunt Group Auto_Hunt_Group

For each loaded sheet, bulk load transactions are run in series for each row. Multiple bulk load sheets can be loaded and these transactions will load in parallel.

Sheet rows can be processed in parallel. The sheet should then not contain multiple, sequence dependent models. Refer to [Bulk Load Template Sheet Layout](#).

For each row of the bulk load sheet carrying out the default add action, a Create action is shown on the list of transactions. Sheet rows that led to a successful Create action have a Success status, while rows that failed show a Fail status. If a row fails, the load process continues. For failed actions, the transaction can be selected to show the error message.

If one or more rows of the sheet failed to load, the Bulk Load Sub Transaction shows a Success status, while the Log list will show “error” for failed rows.

On the list of sub transactions, you can inspect the details of each sub transaction. For example, the submitted, start, and stop time for the bulk load sub transaction corresponding with a row on the bulk load sheet is shown. In the case of a failed sub transaction, further information about the failure - such as the error message and row data - is shown in the sub transaction.

A canceled bulk load transaction means the Processing worksheet sub transaction, as well as all sub transactions within the worksheet transaction in a Processing or Queued state, will fail.

For parallel transactions, multiple resource transactions may be in a Queued or Processing state. By default, 14 rows are processed in parallel. Refer to [Bulk Load Template Sheet Layout](#) for more details. If a worksheet transaction fails as a result of bulk load transaction cancellation, subsequent worksheet tabs in the bulk load workbook will not be processed by the bulk loader.

## 28.3. Alerts

### 28.3.1. Alerts

#### Overview

Alerts in Automate are messages that are triggered by back-end processes when certain conditions are met. While alerts typically indicate that the system is in an error state, the conditions that trigger alerts can be

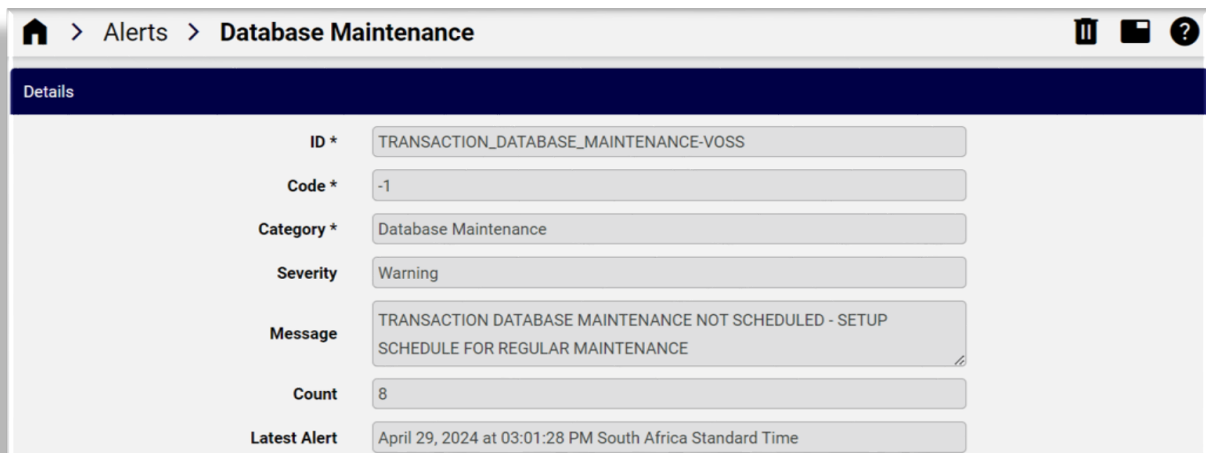
related to system performance, task completion, or any metrics that are important to the functioning of the system.

**Note:** You'll only be able to view alerts if your access profile permissions allow it (read permissions on data/Alert).

Alert notifications display via the **Messages** icon, and all active alerts are listed on the **Alerts** page. You can click the icon to open the list, or use the **Search** bar to locate the **Alerts** page in your system.



You can click on an alert in the list on the **Alerts** page for more information about the alert.



Alerts can be customized for the needs of the organization to ensure that relevant parties are notified promptly when specific events occur.

Alerts are enabled by default for the following functionality:

- Database maintenance
- Licensing
- Change notifications
- Number inventory availability

Provider admins can view all alerts, including alerts related to the database or licensing. Once any user clicks on an alert link via the Messages icon, the flag no longer displays in the notifications lists of other users. The alert will appear in the list until its deleted.



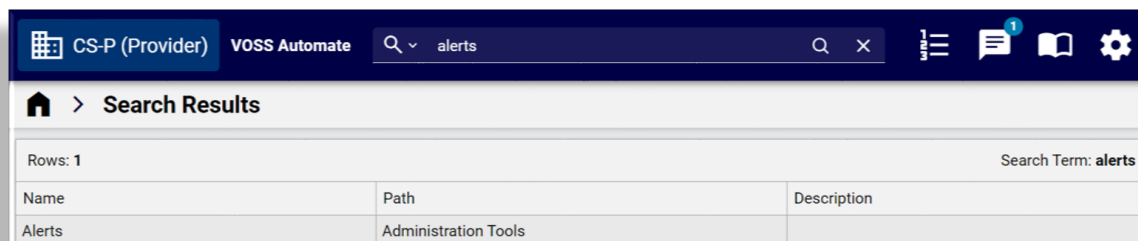
## Related Topics

- CUCM Change Notification Alerts in the Core Feature Guide
- Alert Types and Alert Field Reference in the Core Feature Guide
- Error Messages in the Platform Guide

## View Alerts

This procedure displays the alerts page list, and allows you to inspect the details of a selected alert.

1. To open the **Alerts** page, click the toolbar **Messages** icon, or locate the page via the **Search** bar.



2. On the **Alerts** page, review currently active alerts.

The screenshot shows the 'Alerts' page with a breadcrumb navigation of 'Home > Search Results > Alerts'. It indicates 'Rows: 0 - 2 / 2' and '6 columns selected'. The table has four columns: 'Category', 'Code', 'ID', and 'Latest Alert'. Each column has a filter icon. The table contains two rows of alert data:

Category	Code	ID	Latest Alert
Database Maintenance	-1	TRANSACTION_DATABASE_MAINTENANCE-VOSS	4/29/2024, 3:01:28 PM
WARNING: Automate License Expiry	120002	AUTOMATE_LICENSE	4/29/2024, 2:20:25 AM

The table describes the columns on the **Alerts** page summary list view:

Column	Description
Category	The alert category - either Database Maintenance, Licensing, Change Notification, or Number Inventory
Code	The error or warning code associated with the alert.
ID	The unique identifier, referencing the source of the alert.
Latest Alert	A timestamp for the last time this alert occurred.
Count	The number of times the same alert has occurred for a specific device. Alerts with the same ID and code updates the count of this alert as well as the last time that the alert occurred. This means that a single alert is shown on the list for each alert with the same ID and code.

3. Click on an alert that you want to inspect to open its **Details** page.
4. View the alert severity level (either Error, Warning, or Info), and in the **Message** field, view information around how to resolve the alert, for example, to renew a license, or to schedule database maintenance.

4. Once you've resolved the issue that raised the alert, you can delete the alert from the **Alerts** list.

### 28.3.2. Alert Types and Alert Field Reference

For alert codes also see:

the Error Messages topic in the Platform or API Guides and SNMP Traps in the Platform Guide.

#### Database Maintenance Alerts

If database maintenance schedules have not been set up from the Command Line Interface (CLI), alerts are shown *at the provider level hierarchy* for each required schedule.

The schedules are required to periodically:

- Archive or delete database transaction logs (CLI: **voss transaction archive** or **voss transaction delete**)

Refer to the Platform Guide topic "Enable Database Scheduling" for details.

The format of the alert is:

- ID: A generated identifier:
  - TRANSACTION\_DATABASE-<hostname>

---

**Note:** The <hostname> will be a primary unified node. These are where alerts are generated.

---

- Code: An error or warning code associated with the alert. (-1)
- Alert category: Database Maintenance
- Severity: Warning
- Message:
  - TRANSACTION DATABASE MAINTENANCE NOT SCHEDULED
- Count: Displays the number of times the alert has occurred.
- Latest Alert: Displays the last time this alert occurred.

Alert Code	Alert ID	Alert Category
-1	TRANSACTION_DATABASE-<hostname>	Database Maintenance
-1	CACHE_DATABASE-<hostname>	Database Maintenance

## Licensing

Alert Code	Alert ID	Alert Category
36200	Hierarchy Resolution Failure	Licensing
36100	License Audit File Transfer or data/SmtpDestination, data/HttpDestination, etc.	License Audit File Transfer

## Change Notification

Alert Code	Alert ID	Alert Category
calling exception code: 40000-40006, 40008	device pkid OR business key	Device Change Notification Collector <model type>

## Number Inventory Alerts

If alerts have been enabled on available number inventory numbers in global settings, alerts are raised when the availability threshold is exceeded. See: [Global Settings](#).

Alert Code	Alert ID	Alert Category
110000	Number Inventory Threshold of {{ pwf.INI_ALERT_THRESHOLD }}% Exceeded ...	Number Inventory

In the GUI, the alert **Message** field also provides details on the INI threshold, availability, hierarchy, count and a CSV list of nodes and numbers, as shown in the alert message template below. (Long message strings are truncated). For details on macro references, refer to [Email HTML Templates](#):

```

{{ pwf.INI_ALERT_HIERARCHY_NODE_TYPE }} [{{ pwf.INI_ALERT_HIERARCHY_NAME }}].
Hierarchy full path = {{ pwf.INI_ALERT_HIERARCHY }}
Total INI Available = {{ pwf.INI_ALERT_TOTAL_INI_AVAILABLE }}
Total INI count = {{ pwf.INI_ALERT_TOTAL_INI_COUNT }}
Total percent available = {{ fn.as_string pwf.INI_ALERT_TOTAL_PERCENT_AVAILABLE }}%

{{ pwf.INI_ALERT_NODES_EXCEEDED_THRESHOLD_DATA_ALERT }}

```

### Important:

- If alerts have been enabled, a schedule called "InternalNumberInventoryAlert" is also created that is by default set to run daily if the availability threshold in the global settings is exceeded. For schedule management, see [Scheduling](#).

## Alert Field Reference

- The field Title is indicated in bold. An asterisk \* indicates the field is mandatory.
- If the field Type is an array, its the Field Name has a `[n]` suffix, where n is the array index placeholder.
- Object and array names are listed to provide the context of fields.
- If a field belongs to an object or an array, the full name is in dot separated notation.
- Where cardinality is shown, the range is `[MinItems..MaxItems]`.
- If a field has a Default value, the value is shown.
- If a field has a Pattern, the regular expression pattern is shown.

<b>ID *</b>	
Field Name	alert_id
Description	The unique ID of the alert
Type	String
<b>Code *</b>	
Field Name	alert_code
Description	The code of the alert
Type	String
<b>Category *</b>	
Field Name	alert_category
Description	The category of the alert
Type	String
<b>Severity</b>	
Field Name	alert_severity
Description	The severity of the alert
Type	String
Choices	["Error", "Warning", "Info"]
<b>Message</b>	
Field Name	alert_message
Description	The message describing the alert
Type	String
<b>Count</b>	
Field Name	alert_count
Description	The number of times this alert has occurred
Type	Integer
<b>Latest Alert</b>	
Field Name	alert_timestamp
Description	The last time this alert occurred
Type	String
Format	date-time

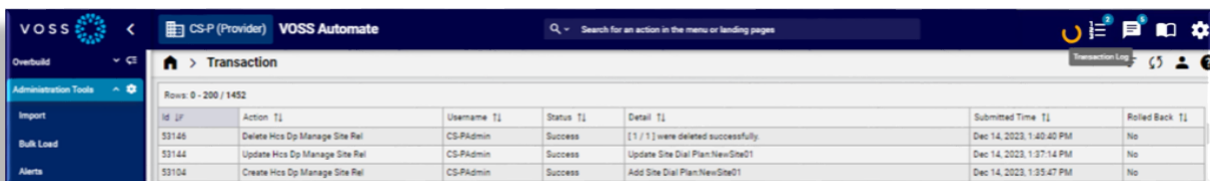
## 28.4. Transactions

### 28.4.1. Transaction Logging and Audit

#### Overview

Transactions are a record of all activities that occur in VOSS Automate. You can inspect the summary list view of past and in-progress transactions in the **Transaction Log**, where you can drill into the details of a transaction and related sub-transactions, as well as view the logs to audit the transaction steps.

**Note:** You'll only have access to the Transaction Log if your access profile permissions allow it (read permissions on tool/Transaction).



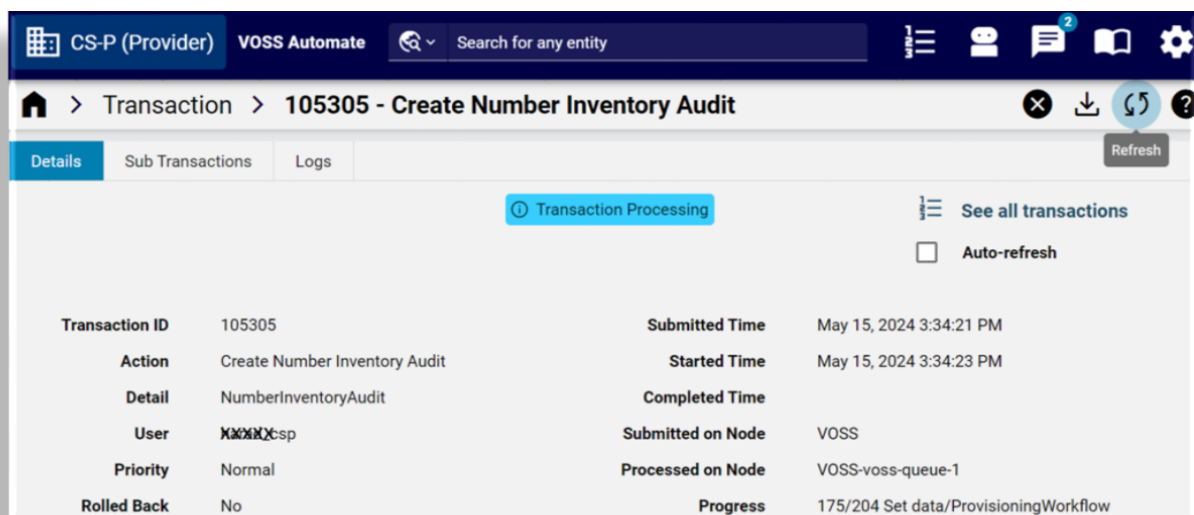
ID	Action	Username	Status	Detail	Submitted Time	Rolled Back
53146	Delete Hics Dp Manage Site Rel	CS-Admin	Success	[1 / 1] were deleted successfully	Dec 14, 2023, 1:40:43 PM	No
53144	Update Hics Dp Manage Site Rel	CS-Admin	Success	Update Site Dial Plan:NewSite01	Dec 14, 2023, 1:37:14 PM	No
53104	Create Hics Dp Manage Site Rel	CS-Admin	Success	Add Site Dial Plan:NewSite01	Dec 14, 2023, 1:35:47 PM	No

#### Related Topics

- [Bulk Load Transactions](#)
- [Filter Transactions](#)

#### View a Transaction

In the Transaction logs you can click on a transaction to view the transaction details, and if available for this transaction, any sub-transactions, as well as the logs.



Transaction ID		Submitted Time	
105305		May 15, 2024 3:34:21 PM	
Action		Started Time	
Create Number Inventory Audit		May 15, 2024 3:34:23 PM	
Detail		Completed Time	
NumberInventoryAudit			
User		Submitted on Node	
XXXXXcsp		VOSS	
Priority		Processed on Node	
Normal		VOSS-voss-queue-1	
Rolled Back		Progress	
No		175/204 Set data/ProvisioningWorkflow	

Additional tabs may display for transaction details:

- Details
- Sub Transactions
- Logs
- Failed Asynchronous Transactions

### Transactions Toolbar

When viewing the details of a transaction the following toolbar actions may be available, depending, for example, on the transaction type, and on whether the transaction is in progress or complete, and whether it is a successful or failed transaction:

---

**Re-fresh** You can click the **Refresh** button while a transaction is running to update its progress and status in realtime

**Auto-refre** Automatically refreshes the transaction progress and its status, every 5 seconds, while the transaction is running.

**Can-cel** Cancels a transaction, if its still running. The status of a cancelled transaction updates to *Fail* with a system message that says *Transaction canceled*.

If you cancel a transaction that has sub-transactions, a currently in-progress sub-transaction will complete, and then this sub-transaction as well as any preceding sub-transactions will rollback to their previous states.

However, for a cancelled bulk transaction, the system views each bulk load sub-transaction as a main transaction, and thus only the currently in-progress sub-transaction is rolled back to its previous state.

**Re-play** For completed transactions, you can click the **Replay** button to repeat (replay) the transaction, if required. For example, let's say a transaction fails because a target system service was not running. In this case, you can replay the transaction instead of having to re-input data on the form in the Admin Portal.

---

---

## Edit and Replay

Click **Edit and Replay** to first open the form that was used for input data prior to running a transaction. You can now make changes to the input data that was used, and then re-run the transaction. This is useful where, for example, incorrect input data causes a transaction to fail.

Note the following:

- Edit and Replay is only available for transactions that don't originate from bulk loads or from pop-up forms.
- Edit and Replay should only be used at the same hierarchy where the original transaction was executed. This is because GUI rules apply to forms at specific hierarchies.
- Replay and Edit and Replay are not supported by the bulk loader, because the bulk load files are not stored by default. The bulk loader extracts data from the spreadsheets and then performs the necessary action. A bulk load file is only stored in the database is when the bulk load is scheduled. In this case, the bulk loader keeps the file until it is triggered by the scheduler to execute the actions in the file. When the data is extracted from the file, it is deleted.
- When using Edit and Replay for a failed Quick Add Subscriber transaction, the following user information fields will not automatically update when changing the Username field and will need to be edited manually:
  - Entitlement Profile
  - Firstname
  - LastName
  - Email

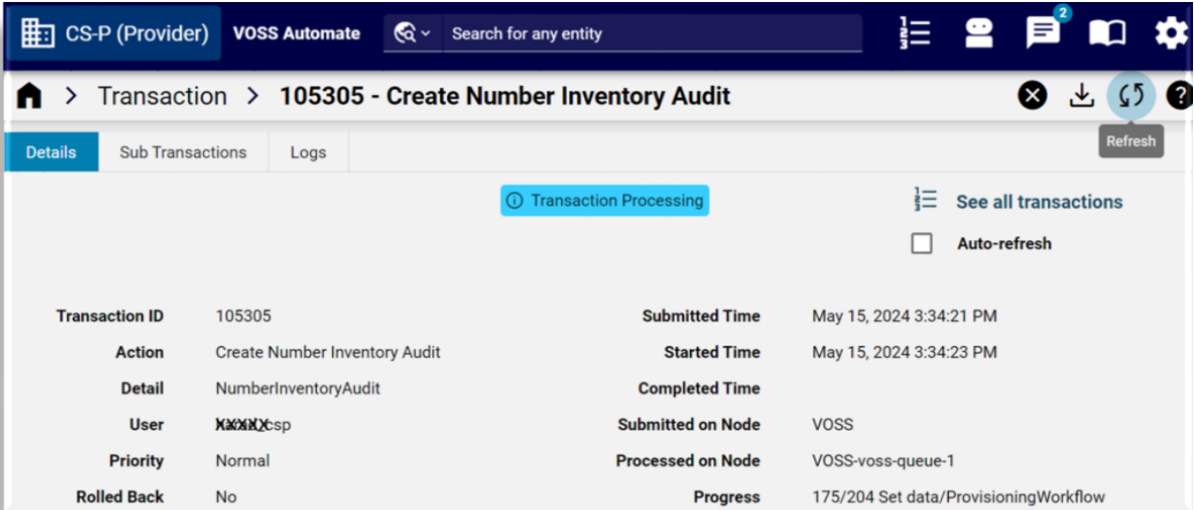
---

**Note:** If the transaction queue service stops and is restarted, any queued transactions will resume processing, while processing transactions will fail and displays the following message: Transaction aborted due to queue service restart.

---

Details

This tab provides high level transaction details, such as the transaction ID, the user who initiated the transaction, duration, and so on.



The table describes the details available for transactions:



Field	Description
Transaction ID	Unique identifier for the transaction.
Action	The type of action recorded in the transaction, for instance Execute, Create, Modify, Data Import and so on.
Detail	A brief description of the processed transaction.
User	The user who initiated the transaction.
Priority	The priority of the transaction, for example Normal.
Status	For transactions to process, this is Queued. For running transactions, this is In Progress; for completed transactions it is Fail or Success.
Message	The message displayed upon completion of the transaction.
Submitted Time, Started Time and Completed Time	The date and time indicating the transaction progress.
Submitted on Node	The host name of the application node that scheduled the transaction. On a clustered system, this can differ from the 'Processed on Node' name below.
Processed on Node	The host name of the application node that processed the transaction (this value will only be set once the transaction is processed). On a clustered system, this can differ from the 'Submitted on Node' name above.
Rolled Back	Indicates whether the transaction was rolled back or not.
Duration	The duration of the selected transaction. If there are sub-transactions, this parent transaction duration is the total duration of the transaction. This includes the total duration of import transactions that carry out provisioning workflows asynchronously.

## Sub-transactions

Sub-transactions display in a list for transactions that have sub-transactions:

On the Admin Portal, the sub-transaction list will show below the transaction details if there are 10 or less sub-transactions. Otherwise, sub transactions display on a new tab on the page.

ID	Action	Status	Submitted Time	Detail
53143	Create Hcs Dp Link Def	Success	Dec 14, 2023, 1:37:01 PM	857a135a2246c125900012
53142	Create Cuum Device Pool	Success	Dec 14, 2023, 1:37:00 PM	Cu1531-DevicePool
53141	Create Cuum Region	Success	Dec 14, 2023, 1:37:00 PM	Cu1531-Region
53140	Create Cuum Location	Success	Dec 14, 2023, 1:36:59 PM	Cu1531-Location
53139	Update Site Defaults Doc	Success	Dec 14, 2023, 1:36:59 PM	NewSite01
53138	Create Cuum Calling Party Transformation Pattern	Success	Dec 14, 2023, 1:36:58 PM	911Fail
53137	Create Cuum Calling Party Transformation Pattern	Success	Dec 14, 2023, 1:36:57 PM	911Fail
53136	Create Cuum Route Pattern	Success	Dec 14, 2023, 1:36:57 PM	910d41
53135	Create Cuum Trans Pattern	Success	Dec 14, 2023, 1:36:56 PM	911
53134	Create Cuum Trans Pattern	Success	Dec 14, 2023, 1:36:56 PM	9.9111
53131	Create Hcs Dp Class Of Service Rel	Success	Dec 14, 2023, 1:36:54 PM	Cu1531-amaiaOnlyCSS
53128	Create Hcs Dp Class Of Service Rel	Success	Dec 14, 2023, 1:36:53 PM	Cu1531-LBRE@hinet@hmc@clp@fom@fac@css
53125	Create Hcs Dp Class Of Service Rel	Success	Dec 14, 2023, 1:36:52 PM	Cu1531-LBRE@hinet@hmc@clp@fom@fac@css
53122	Create Hcs Dp Class Of Service Rel	Success	Dec 14, 2023, 1:36:50 PM	Cu1531-LBRE@hinet@hmc@clp@fom@fac@css

Sub-transactions contain links to their details and the sub-transaction form displays a link to its parent transaction.

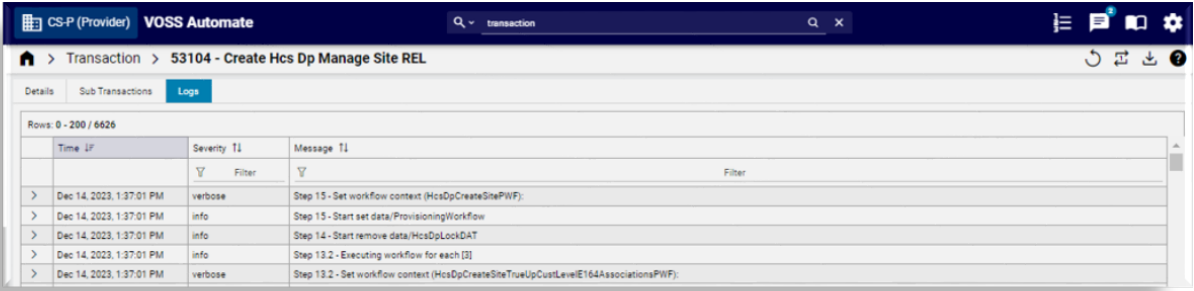
Failed transactions show a Message of the error. However, a sub-transaction with a Create action that has a

“fail on error” workflow condition for *duplicates*, may show its Status as Fail when not creating a duplicate, while the parent transaction then shows its Status as Success.

For asynchronous transactions and sub-transactions, refer to Parent and Sub-transactions for Asynchronous Transactions.

### Logs

The Logs tab displays a time stamp, Message and Severity details of transactions.

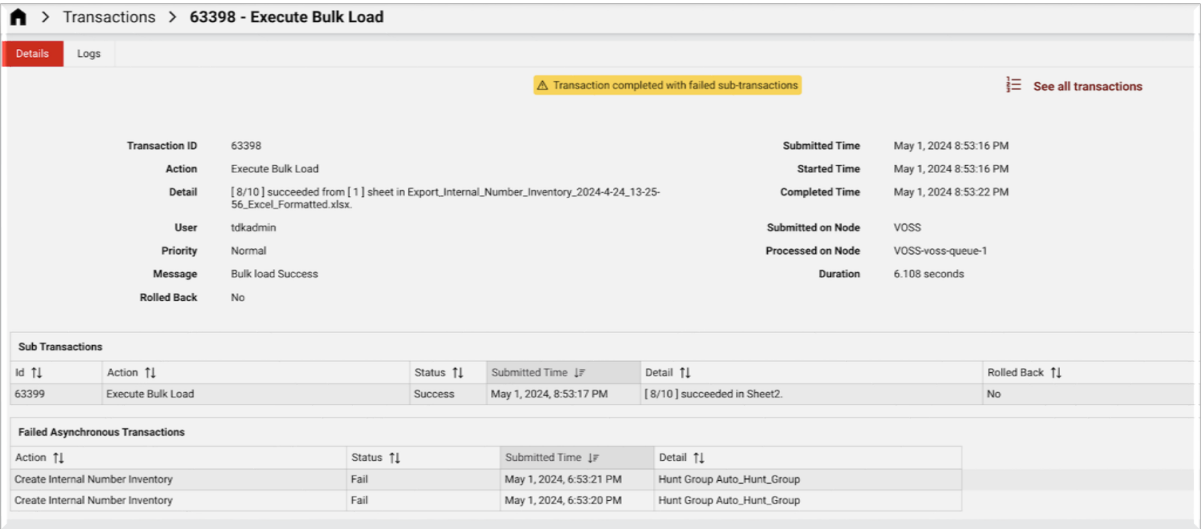


If the Severity has the status of error, the Message section can be expanded to inspect the error, and optionally copy it and send it to Support.

If a workflow is inspected, a separate log entry provides details of each step with a log message as *Step n*, starting with Step 0.

### Failed Async Transactions

Failed asynchronous transactions display below the sub transactions.



If there are more than 10 failed async transactions, these details display on a new tab on the page.

Id ↑↓	Action ↑↓	Status ↑↓	Submitted Time ↑↓	Detail ↑↓
Filter	Filter	Filter		Filter
	Create Quick Subscriber	Fail	Feb 18, 2018, 7:23:10 PM	skrauss60
	Create Quick Subscriber	Fail	Feb 18, 2018, 7:23:10 PM	omyklebost60
	Create Quick Subscriber	Fail	Feb 18, 2018, 7:23:10 PM	ilangmoen60
	Create Quick Subscriber	Fail	Feb 18, 2018, 7:23:10 PM	elundanes60
	Create Quick Subscriber	Fail	Feb 18, 2018, 7:23:10 PM	tgreibrokk60
	Create Quick Subscriber	Fail	Feb 18, 2018, 7:23:11 PM	swilson60

### Resource or Record

Depending on the transaction type, an option is available to navigate to the original record where a resource changed.

### Parent and Sub-transactions for Asynchronous Transactions

Parent and sub-transactions for asynchronous transactions are shown in the transaction logs as follows:

- Parent transactions are in a “Processing” state until the last asynchronous child transaction completes (with either “Success”, “Success With Async Failures”, or “Fail”). These include:
  - Asynchronous workflows triggered by Device Import
  - Asynchronous operations triggered by Bulk Load (with parallel = true)
  - Asynchronous workflow steps
- Asynchronous transactions for non-bulk operations are not grouped under the parent transactions. These include:
  - Asynchronous device import triggered by DataSync execute
  - Asynchronous event execute triggered by another operation
- The status of top level transactions with failed asynchronous at any level of sub-transactions is “Success With Async Failures”. The detail view of the top-level transaction also shows the list of failed async transactions below the list of sub-transactions. This list allows for easy access to all failed async transactions. The Detail column of the sub-transactions also show the number of failed async transactions.
- The details of parent transactions with the status “Success” also show the number of failed sub-transactions for the following:
  - Device Import
  - Workflows

## 28.4.2. View a Transaction

You can only view transactions that are relevant to your specific hierarchy level. For instance, if you're logged into the system as a Customer administrator you'll be able to view all transactions that were performed at the customer for which you're the administrator. This includes transactions that were performed at any of the sites that belong to the customer.

If you're logged in as a Site administrator you'll be able to view only the transactions that were performed at your specific site.

---

**Note:** See the topic on Data Partitioning in the Core Feature Guide and to the API Guide to view transactions by means of the API.

---

### To view transactions in the Admin portal:

1. Choose **Administration Tools > Transaction**.

By default, the **Transaction** list view shows all parent transactions in progress or executed. This is indicated in the **Status** column of the list.

To view the child transactions (sub-transactions) in the list view, select the parent transaction.

The list view shows both parent and sub-transactions.

For completed transactions, the **Status** column displays either **Success**, **Success With Async Failures**, or **Fail**.

Failed transactions are highlighted in red by default, but this can be overridden in the Theme if required. An exclamation icon is also displayed next to the word **Fail**.

The **Detail** column provides additional details on the transaction if available. See "Transaction Details" for more information.

The **Rolled Back** column displays either **No** or **Rolled Back** - the latter for any failed transactions (with **Status** is **Fail**) that have been rolled back.

2. Click an individual transaction or sub-transaction (if required) to show a detailed view.

For top-level transactions with status **Success With Async Failures**, the list of failed async transaction display below the sub transactions. If there are more than 10 failed async transactions, these display on a separate tab on the page.

Failed async transactions can be at any level below the top-level transaction. Click the transaction to see the details of the failed async transaction(s).

The **Detail** also shows the number of failed async transactions.

## Related Topics

- Transaction Logging and Audit in the Core Feature Guide.

### 28.4.3. Transaction Log Levels

Automate users with access to the `data/Settings` model or `view/DataSettings` can manage global transaction logging levels. These logging messages display below a selected transaction on the **Transactions** page, and have no impact on the transaction or sub-transaction action or detail information.

Log levels are *cumulative*, that is, more detailed levels include all details from less detailed levels.

The table describes the transaction log levels and their severity values:

Level	Description	Severity
Disabled	Disables all transaction log messages	999
Error	Only displays error messages	40
Warning	Also adds warning messages to above	30
Info	Also adds informational messages to above	20
Verbose	Also adds messages used for diagnostic purposes to above	15
Debug	Also adds advanced diagnostic messages - for future use	10

- Severity values are referenced (from value - to value) in transaction details when the log level is changed on this setting or changed by lower level administrators from the **System Settings** menu. See: [Settings](#).
- If a transaction fails, the Log block includes all entries with severity values larger than that of the default or selected level of logging.
- The log levels of data syncs can be set to override these global levels.

The transaction log level used for data sync and its immediate sub-transactions is by default set to Warning when it is not set.

For details, refer to the Create a Custom Data Sync topic in the Core Feature Guide.

Transaction log levels are configurable based on your needs, for example, set to `Verbose` to include greater details for immediate troubleshooting and customization work:

1. Toggle the log level to `Verbose`.
2. Reproduce the issue causing the problem.
3. Export the logs and forward them to VOSS support.
4. Toggle the log level back to `Info`.

---

**Note:** When setting transaction log level to `Verbose` or `Debug`, notes and warnings are shown to remind admins that the retention period of such logs is due to their increased size, which consequently reduces the date range of available logs for troubleshooting.

---

### 28.4.4. Transaction Details

This Detail column of the list of transactions in the transaction log user interface shows information according to the type of entity and the operation carried out by the transaction.

The rules listed below should be considered when creating a transaction filter and specifying the value of the filter text.

The following conditions apply to content in the Detail column:

Action	Entity	Comment
Create, Update, Clone and Delete	all models	Detail will only contain the name on the model
Execute	DataSync, Workflow, Event, Scheduler	Detail will contain the instance name
Bulk operations on Modify, Delete, Move	all models	<ul style="list-style-type: none"> <li>The parent transaction detail contains: “[ no. of succeeded / no. of total ] were [updated / deleted / moved to destination_hierarchy] successfully.”</li> <li>Bulk move from different hierarchies to one hierarchy show the destination hierarchy name in the parent transaction detail.</li> <li>Each child transaction detail will contain the name of instance that is deleted.</li> </ul>
Data Import	all models	Detail shows only the imported file name.
Device Import	all devices	Detail shows host name or device address
All operations	all models	The following attribute values are considered first for inclusion in the Detail column: country_name, DialPlanName, name, ip, host, address, description, username, type, entity_id, userid, pattern, RoleCurrent. Otherwise, the Detail column will be empty.

Note that the contents of the Detail column of transaction lists are not localized.

### 28.4.5. Filter Transactions

#### Overview

A transaction filter is a logical *AND* operation based on column values in the **Transaction** log (list view), defined as search criteria in the **Filter Transactions** dialog.

## Using Filters to Search for Transactions

1. Log in to the Admin Portal.
2. Go to (default menu) **Administration Tools > Transaction** (or click the **Transaction Log** toolbar icon) to open the **Transaction** list view.

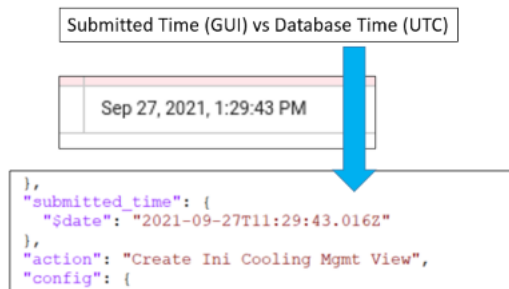


3. In the **Transaction** list view, inspect the list of parent transactions. You can click on a parent transaction to view details of the parent and its sub transactions.
4. Click the toolbar **Filter** icon to open the **Filter Transactions** dialog.
5. Specify filter criteria for the transactions you wish to view:

Field	Description
Transaction ID	<ul style="list-style-type: none"> <li>• <b>Equals</b> (default): Filters only for an exact ID, and disables all other criteria.</li> <li>• <b>Range</b>: Filters for a range of IDs that match a <b>Start</b> and <b>End</b> value.</li> </ul> <p>Leave this input empty if a search is carried out using other matching criteria.</p>
Include Sub Transactions	Apply filter criteria also to first level child transactions. Children of child transactions (sub-transactions directly below the parent) are excluded. By default, results show sub transactions above the parent (latest data on top)
Exclude System Transactions	Defines whether to exclude system-generated transactions (included by default); that is, where the <b>Username</b> column value is <b>system</b> .
Status	Filter by transaction status. Options are: Any, Failed, Success, Processing, Queued, or Success with Async Failures.

Field	Description
Date	Filter by date. Options are All, Last Day, Last Week, Last Month, or Custom (which allows you to select a date from a calendar date picker to specify a date range. When choosing one of the quick filters (Last Day, Last Week, Last Month), the next time the filter opens, the date selection displays as a Custom date range, since the range is then less than the selected interval. The filter date/time is based on the browser local timezone, for example GMT+0200. This time is converted to the UTC standard as used in the database. (Time Conversion)
Date Range	Displays when you select <i>Custom</i> from the <b>Date</b> field, and allows you to select a date from a calendar date picker.
Action	The action to filter on, for example, Create Subscriber, or start typing to filter values in the drop-down.
Rolled Back	Filter by transaction rolled back status. Options are Any, Yes, No.
Username	Case-insensitive field to filter on values in the <b>Username</b> column.
Detail	Case-insensitive field to filter on values in the <b>Detail</b> column.
Message	Case-insensitive field to filter by text values in the <b>Message</b> column. <ul style="list-style-type: none"> <li>Hover over the <b>Status</b> column to see a transaction message, or inspect it in the transaction detail view.</li> </ul>

(Time Conversion)



**Note:** A filter timeout limits the filter search to 2 minutes. Try reducing the criteria to speed up filtering.

Once you've viewed filtered results, remember to cancel or clear the filter to display all transactions in the log. Filters are also cleared when you log out.



### 28.4.6. Filter Sub-Transactions and Logs

Some transactions have sub-transactions as well as a log list on the transaction detail view. The filtering of sub-transactions and logs works like the list view filter, in other words, a range of matching operators are available.

If a sub-transaction has further sub-transactions, click the Link in its Transaction column to carry out any filtering on nested sub-transactions. To navigate up the sub-transaction hierarchy, click the parent Link.

- In the Admin Portal, sub-transaction lists can be filtered by entering the filter value in the column header filter boxes of the list:
  - **Id**
  - **Action**
  - **Status**
  - **Submitted Time**
  - **Detail**

More than one filter can be added - this will result in a logical AND of the filters. Filter values are matched case-insensitive and with match operator CONTAINS. To clear a filter, click the “x” in the column header filter box.

- In the Legacy Admin GUI, use the **Filter** button below the list of sub-transactions to add a filter in the pop up form. The following columns can be filtered:
  - **Action**
  - **Status**
  - **Detail**

The following match operators are available: Contains, Does Not Contain, Starts With, Ends With, Equals, Not Equal. In addition, an **Ignore Case Value** check box is available to apply to each value. Multiple filters will result in a logical AND of the filters. When a filter is applied to a list, an “X” will show next to the **Filter** button to clear the filter.

The log columns to filter by, are:

- Severity
- Message
- Duration (some logs - only equals and not equals)

For more details on matching operators when filtering sub-transactions and logs, also refer to “Filtering Lists”.

### 28.4.7. Transaction Behavior

The VOSS Automate transaction engine ensures that configuration changes are made efficiently and reliably. In the event of a transaction failure or error, VOSS Automate allows for transactions to be rolled back to a state preceding the failed transaction.

For example, where a workflow step fails, all successful steps prior to a failed step are rolled back.

Transactions are hierarchical and have parent-child relationships with other transactions. Sub-transactions are always executed sequentially and synchronously, in other words the child transactions of a workflow parent transaction are executed one after another.

Transaction behavior is different for the following actions in the system:

- API

The API supports executing transactions in both synchronous and asynchronous modes. When executed in synchronous mode the API responds only once the transaction has completed. When executed asynchronously, the API responds immediately with a transaction ID so that the progress and status of the transaction can be polled.

- Bulk Loaders

With bulk loading, the load of each row on a sheet is a separate transaction. These transactions are run in series. There is no rollback of rows that have loaded successfully prior to, or subsequent to, a failed transaction (a failed row on a sheet). Multiple bulk load sheets can be loaded in parallel.

- Data Import

A single transaction is created for each record in the import file. If a single transaction fails, the import continues and does not roll back the preceding successful transactions.

- Data Sync

A single parent transaction is created for a data sync action. The subsequent device API requests are not handled as sub transactions but are executed in-line.

- Events

Events can be triggered as part of data sync operations or as triggers on operations performed on certain model types. The provisioning workflow executed when the event triggers is executed as a new parent transaction. Transaction failures with the workflow executed after an event do not affect the original transaction that triggered the event.

All transactions are placed on a queue before they are actioned. If the system queue service is restarted while a long-running transaction such as data sync or bulk load is running, all running transactions that are a part of this transaction will be marked as failed and finalized.

Parent transactions can run concurrently, but their subtransactions run serially. There is priority in parent transactions so that user input such as adding on a Admin Portal form will be prioritized over a running import or bulk load process.

### 28.4.8. Transaction Priority

Transactions can currently have two levels of priority: normal and low.

Normal priority transactions will be processed ahead of any low priority task in the queue.

Low priority transactions have a time limit associated with them. This means that if a low priority transaction is in the queue for more than a day, it will be processed as a normal priority transaction.

The following transactions have a low priority:

- Data sync
- Bulk load
- Data import (JSON import)

Any sub-transaction of these transactions also have a low priority.

### 28.4.9. Transaction Log Example

This section aims to examine the transactions, sub-transactions and logs that are displayed when an example wizard is executed.

The aim of the wizard is to provide the user with a series of steps to allow input and choices. When the wizard is executed, a Workflow is run and this is displayed as an Action on the Transaction list.

The workflow executes tasks to:

- Add a hierarchy.
- Add devices at the created hierarchy if selected.
- Add a user to the system and if selected, add a user to devices and also LDAP and SSO users if selected.

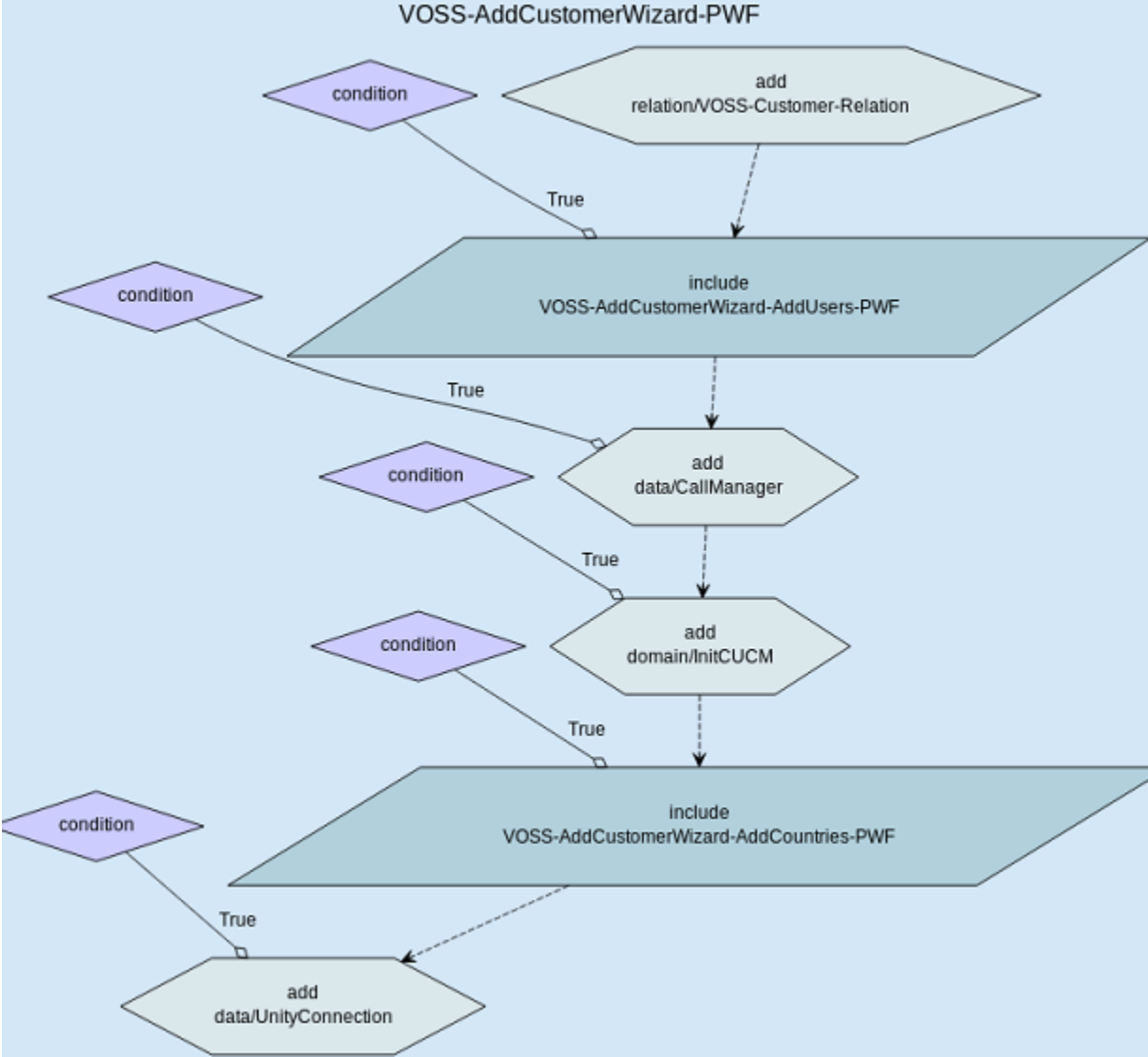
After the wizard is run, the sub-transactions show the actions of the workflow. In the example, only the Unified CM is selected. The first action in the wizard is to execute a workflow, that results in three sub-transactions. The first sub-transaction is itself a workflow that carries out three actions:





























Execute : VOSS-AddCustomerWizard-PWF


1. Create Voss-Customer-Relation Execute : VOSS-Relation-Add-Customer-PWF
  - a. Create Hierarchy Node
  - b. Create Base Customer Dom
  - c. Create Voss Cust Dp
2. Create User
3. Create Call Manager

The transaction log shows all the steps of all the workflows that are executed. The first log entry of the wizard is at the bottom of the log list. The first step of each workflow is marked as Step 0.

The figures below show the example wizard flow and the corresponding logs.



Transaction		
Mar 27, 2014 15:26:1 SAST	info	Step 5 - Start include VOSS-AddCustomerWizard-AddCo 
Mar 27, 2014 15:26:1 SAST	info	Step 4 - End 
Mar 27, 2014 15:26:1 SAST	info	Step 4 - Condition unmet, skipping step. 
Mar 27, 2014 15:26:1 SAST	info	Step 4 - Start add domain/InitCUCM 
Mar 27, 2014 15:26:1 SAST	info	Step 3 - End 
Mar 27, 2014 15:26:1 SAST	info	Step 3 - Template (AddCustomerWizard_CUCM_CFT) aft 
Mar 27, 2014 15:26:1 SAST	info	Step 3 - Template (AddCustomerWizard_CUCM_CFT) be 
Mar 27, 2014 15:26:1 SAST	info	Step 3 - Template after merging AddCustomerWizard_CI 
Mar 27, 2014 15:26:1 SAST	info	Step 3 - Start add data/CallManager 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - End 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - End 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Template (AddCustomerWizard_User_CFT) after 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Template (AddCustomerWizard_User_CFT) befo 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Template after merging AddCustomerWizard_U: 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Start add data/User 
Mar 27, 2014 15:26:1 SAST	info	Step 0 - Executing workflow (dynamic_workflow) with thi 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Executing workflow for each [1] 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Start add data/User 
Mar 27, 2014 15:26:1 SAST	info	Step 0 - Executing workflow (VOSS-AddCustomerWizard: 
Mar 27, 2014 15:26:1 SAST	info	Step 2 - Including_workflow, name: VOSS-AddCustomer) 
Mar 27, 2014 15:26:1 SAST	info	Step 2 - Start include VOSS-AddCustomerWizard-AddUs 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - End 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Template (AddCustomerWizard_VOSS-Custome) 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Template (AddCustomerWizard_VOSS-Custome) 
Mar 27, 2014 15:26:1 SAST	info	Step 1 - Template after merging AddCustomerWizard_W 
Mar 27, 2014 15:25:56 SAST	info	Step 1 - Start add relation/VOSS-Customer-Relation 
Mar 27, 2014 15:25:56 SAST	info	Step 0 - Executing workflow (VOSS-AddCustomerWizard 
Mar 27, 2014 15:25:56 SAST	info	Step 0 - Executing workflow (VOSS-AddCustomerWizard 



Direction

### 28.4.10. Device Data Sync Errors in Transactions

The data sync from a device has two steps:

1. A list request for all the resources of a specific type is made, for example for a user or a phone.
2. Requests for detailed information of each resource of the specific type.

The tables below show errors raised by devices and how these are handled or written to the transaction log by VOSS Automate. In the case of failed transactions, the tables point to possible causes of some errors.

**Note:**

- A number of CUCM device model errors are non-critical and will not fail data sync transactions.
- CUCM AXL handled by VOSS Automate (DataSync transaction final status is not failed)

Model	Operation	Device Error Message Match	VOSS Automate Data-Sync Action and/or error log
LocalRouteGroup	GET	No Search Criteria Defined	Ignored known error
LdapDirectory	GET	Item not valid: The specified LdapDirectory was not found	Ignored known error
UniversalDeviceTemplate	GET	Item not valid: The specified UniversalDeviceTemplate was not found	Ignored known error
LicensedUser	GET	Item not valid: The specified LicensedUser was not found', 'The endpoint reference (EPR) for the Operation not found is No License found for the specified user: Could not open database table	Ignored known error
LdapSyncCustomField	GET	Invalid LdapConfigurationName	Ignored known error
EndpointReleaseKey	GET	Column (name) not found in any table in the query (or SLV is undefined)', 'The endpoint reference (EPR) for the Operation not found is	Ignored known error
DirNumberAliasLookupan dSync	GET	Item not valid: The specified DirNumberAliasLookupandSync was not found	Ignored known error
DeviceSerialNumber	GET	endpoint reference (EPR) for the Operation not found is	Ignored known error
LicenseCapabilities	GET	The endpoint reference (EPR) for the Operation not found is	Ignored known error
PhoneTypeDisplayInstance	GET	Wrong value for Protocol. Please enter a valid value.	Not all Phone Types have Vendor Config Rules. Ignored.

- CUCM Device errors not handled by VOSS Automate (DataSync transaction final status is failed)

Model	Operation	Model Error	Possible Cause
(All model types)	GET	Resource not found	A workflow in VOSS Automate deleted an item between the DataSync LIST operation and the GET operation
(All model types)	GET	AXL Error [-1]	This is a non-specific error raised by CUCM. Follow up with the CUCM team.

- CUC Device errors not handled by VOSS Automate (DataSync transaction final status is failed)

Model	Operation	Model Error	Possible Cause
(All model types)	GET	Resource not found	A workflow in VOSS Automate deleted an item between the DataSync LIST operation and the GET operation
ImportUser	GET	Resource not found	<ol style="list-style-type: none"> <li>1. A sync between CUC and LDAP is running at the same time as the VOSS Automate sync to CUC. If the User is disabled or deleted on LDAP, then the User would be removed as an Import User on CUC.</li> <li>2. A workflow on VOSS Automate promoted a user from Import User to User by creating a Voicemail Box for that User, which also causes the user to be removed as Import User and created as a full User.</li> </ol>

### 28.4.11. Export a Transaction

Administrators can export upper level parent transactions. This will include their child sub-transactions as well as the associated transaction log entries in JSON format.

The exported files may also be requested by VOSS support operators for troubleshooting purposes.

1. From the **Transaction** list view (default menu **Administration Tools > Transaction**), select a parent transaction.
2. From the transaction details view, choose **Export** from the button bar. A .zip archive file is downloaded by the browser.

## Transaction Export Files and Format

The .zip archive filename format:

```
export-tx-<Transaction ID>_<YYYY>-<MM>-<DD>T<HH_MM_SS>.json.zip
```

Example: export-tx-20705\_2019-01-22T06\_18\_15.json.zip for parent transaction ID 20705.

The .zip archive contains two files in JSON format:

- The Transaction Detail file - containing transaction (parent and sub-transaction) details as on the Admin Portal - upper level and **Sub Transactions** table entries (maximum 20000 entries) in JSON format:

```
export-tx-<Transaction ID>_<YYYY>-<MM>-<DD>T<HH>:<MM>:<SS>.json
```

- The Transaction Log file - containing entries as on the table of **Log** entries of a transaction on the Admin Portal (maximum 10000 entries) in JSON format:

```
export-tx-logs-<Transaction ID>_<YYYY>-<MM>-<DD>T<HH>:<MM>:<SS>.json
```

## Transaction Detail File Format

The example snippet below shows transaction details data of the upper level parent.

- Upper level parent entries are identified by the same pkid and top\_level values, with "parent\_pkid": null.
- Child and descendant entries show different pkid and parent\_pkid values. The tree of parent and child entries can be determined by inspecting these values.

```
"processor_host_name": "VOSS-voss-queue",
"pkid": "c0a03e99-0c93-4d85-8736-f05b54f8fe55",
"hierarchy": "5c46a8efce894e001453b2a8",
"submitted_time": "2019-01-22T06:18:15.804000Z",
"started_time": "2019-01-22T06:18:15.839000Z",
"detail": "[ 9\\9 ] succeeded from [ 1 ] sheet in H2-5-VOSS4...",
"top_level": "c0a03e99-0c93-4d85-8736-f05b54f8fe55",
"priority": "Normal",
"duration": 3.187191,
"submitter_host_name": "VOSS",
"txn_seq_id": "20705",
"parent_pkid": null,
"action": "Execute Bulk Load",
"message": null,
"completed_time": "2019-01-22T06:18:19.026000Z",
"operation": "execute"
```



## Transaction Log File Format

The snippet below has been formatted for readability. The `transaction_id` in the two entries shown will correspond with `pkid` entries in the Transaction Detail file, so that the Log entries can be associated with the transactions and sub-transactions.

```
{
  "severity": "info",
  "format": "text",
  "log_id": "5c46b5a7ce894e0014569a0b",
  "time": "2019-01-22T06:18:15.871000",
  "message": "H2-5-VOSS4UC-HCS-Customer_Data_ClassOfService...",
  "transaction_id": "c0a03e99-0c93-4d85-8736-f05b54f8fe55"
},
{
  "severity": "info",
  "format": "text",
  "log_id": "5c46b5abce894e0014569ab3",
  "time": "2019-01-22T06:18:19.012000",
  "message": "Summary for sheet: Sheet1, No errors",
  "transaction_id": "d7aa7333-f692-40b4-a637-80cf456c1f70"
},
```

## 28.5. Northbound Notifications

### 28.5.1. Northbound Notification

The VOSS Automate Northbound Notification (NBN) provides a mechanism to notify an Operations Support System (OSS) or Business Support System (BSS) when user data in VOSS Automate is created, updated, or deleted. The Northbound Notifications can be customized to specify which events trigger notification and the destination of notifications.

The supported model types are:

#### **data/User**

Essential user information. Changes occur either from LDAP sync or manually in VOSS Automate.

#### **relation/Subscriber**

Subscriber information, such as assigned devices and services. Only changes made in VOSS Automate via Subscriber Management generate notifications. Changes to subscribers made in VOSS Automate do not generate notifications.

All NBN events are post-execution so the notification is sent immediately after the data is changed in VOSS Automate.

---

**Note:** Failing changes to user data result in a pair of notifications, one for the attempted change and an opposite one for the rollback of the change. For example, a failing user add generates a create notification and a delete notification.

---

To suspend notifications for a given model type and operation, mark the event as 'inactive' and notifications will neither be sent nor stored while the event is inactive. Once the event is marked as 'active', subsequent

notifications will be sent.

## 28.5.2. Notification Format

The Northbound Notifications are sent to a destination as HTTP or HTTPS POST requests. The message body is a JSON map that contains the notification data. The JSON map is in this format:

Key	Datatype	Operation
model_type	String	All
operation	String	All
pkid	String	All
hierarchy	String	All
new_data	Map	Create/Update
previous_data	Map	Update/Delete

The keys in the new\_data and old\_data maps are the attribute names for the given model type.

### Example

See this example of a notification's message body triggered by updating a user:

```
{
  'model_type': 'data/User',
  'operation': 'update',
  'pkid': '5445310900698a11d83164e3',
  'hierarchy': '543c57ea00698a11d8305815',
  'new_data': {
    'username': 'jdoe',
    'email': 'jdoe@provider.com',
    'department': 'Finance'
  },
  'previous_data': {
    'username': 'jdoe',
    'email': 'jdoe@provider.com',
    'department': 'Admin'
  }
}
```

### 28.5.3. NBN Transaction Processing

Once an NBN event is triggered, it is handled in a new transaction independent of the original transaction that triggered the event. These transactions can also be queried through the transaction log. The result of the NBN transaction will be successful if a positive HTTP or HTTPS response code is received from the OSS/BSS. If no response is received (timeout) or a negative response code is received, the transaction will show as failed.

### 28.5.4. Northbound Notification Workflow

Perform the following procedures to configure northbound notification.

**Perform these steps:**

1. Configure Northbound Notification Destination to specify the destination for northbound notifications.
2. Configure Northbound Notification Event to specify an event to trigger the northbound notification.
3. Configure Northbound Notification Event Attributes to specify the list of attributes to be received in a notification for a specific event.

Note:

Steps 2 and 3 can be performed in either order, but after the list attributes are defined in Step 3 you will need to edit the event (Step 2) to add or update the Attribute Selector field.

### 28.5.5. Configure Northbound Notification Destination

Use this procedure to set the destination for Northbound Notifications of VOSS Automate events. Only one NBN destination can be configured.

---

**Note:** You cannot delete a destination until it is removed or disassociated from all events.

---

**Perform these steps:**

1. Log in as provider administrator.
2. Choose **Administration Tools > Northbound Notifications > Destination**.
3. Click **Add**.
4. Provide the following information for the destination:

Field	Description
Hostname/IP Address	Hostname or IP address of the OSS/BSS http server. This field is mandatory.
Port	The destination port. This field is mandatory.
Username	If the OSS/BSS http server has authentication enabled, specify the username to use.
Password	The password for the above username.
Secure	Use HTTPS send method for secure transport of the notification. Default = Selected. Clear the check box to use HTTP instead.

5. Click **Save**.

### 28.5.6. Configure Northbound Notification Event Attributes

You can use attribute selectors to define the attributes to be received in a notification for a particular event. Notifications contain only the specified fields and are not sent if none of the fields are chosen.

**Note:** You cannot delete an attribute selector until it is removed or disassociated from all events.

**Important:** It is possible to create an attribute selector through the API with 'invalid' attributes as there is no API validation on the list of attributes. We recommend using the Admin Portal or API to retrieve the list of attributes prior to creating an attribute list through the API. Refer to the API Reference Guide. If an invalid attribute is added to an attribute filter, the transaction will succeed but notifications will not contain the chosen field.

#### Perform these steps:

1. Log in as provider administrator.
2. Choose **Administration Tools > Northbound Notifications > Attributes**.
3. Click **Add**.
4. Enter a unique name.
5. Choose a model type: either data/NormalizedUser or relation/Subscriber.
6. Highlight one or more attributes and perform the following:
  - Click **Select** to add an attribute to the list of chosen attributes. You can also select multiple attributes at a time by highlighting them and clicking **Select**. The attributes move from the **Available** box to the **Selected** box.
  - Click **Remove** to remove an attribute from the list of chosen attributes. You can also remove multiple attributes at a time by highlighting them and clicking **Remove**. The attributes move from the **Selected** box to the **Available** box.

Example: For the data/User model, you could select Username, First Name, Last Name, Phone Number, and Mail. Notifications are then sent when an event occurs that includes one or more of these attributes.

7. Click **Save**.

Apply the event attributes to an event by adding or updating the event and choosing the desired attribute selector.

### 28.5.7. Configure Northbound Notification Event

You must set the Northbound Notification Destination before you can configure events.

Use this procedure to specify an event to trigger Northbound Notifications.

1. Log in as provider administrator.
2. Choose **Administration Tools > Northbound Notifications > Events**.
3. Click **Add**.
4. Provide the following information for the triggering event:

Field	Description
Name	Event name. Must be unique. This field is mandatory.
Description	A description of the event
Active	Select to turn on notification.
Model Type	Choose either data/User or relation/Subscriber as the model type of the data that triggers the event. This field is mandatory.
Operation	Choose from the operations applicable to the selected model type. This field is mandatory.
Attribute Selector	Set an attribute selector to restrict (filter) the list of attributes sent in notifications for this event. This field is optional. To remove an existing attribute selector, backspace and delete it from the Attribute Selector field. If you do not specify an attribute selector, all possible attributes are sent in notifications for this event.
Destination	The provider's NBN destination. This field is read-only.

5. Click **Save**.

## 28.6. Schedules

### 28.6.1. Scheduling

Single or Multiple actions can be executed on one or more resources. The actions can be scheduled to take place at a specified time or to repeat.

Currently, the action is to *execute*.

The resources that can be executed are:

- **Data Sync**
- **Script**
- **Provisioning Workflows**

- A schedule can be created during the Bulk Load process. Bulk loaded files that are not set to Execute Immediately can be scheduled by Execution Date, -Time and -Timezone. A scheduled bulk load is shown on the Schedule as a **Single Execution** schedule type and with the Resource Type as **data/BulkLoad**.

Care should be taken when transactions are scheduled. For example, data synchronization should be scheduled outside of peak times. The size and scope of the transactions that run determine the length of the time that they need to run. This therefore impacts on the start time. The number of clusters on the system and their size need to be considered as part of a data sync approach.

## 28.6.2. Add or Update a Schedule

This procedure displays and edits existing schedules, and adds a new schedule.

**Note:** VOSS Automate also provides a tool to deactivate and reactivate schedules in bulk, if required. See [Deactivate and Activate Schedules](#).

1. Log in to the Admin Portal and select the relevant hierarchy.
2. Go to (default menus) **Administration Tools > Scheduling** to open the **Scheduling** list view.
3. View existing schedules in the summary list view, which include a number of attributes for each schedule.

**Note:** Resource attributes are used for filtering when you want to choose a resource.

4. Choose an option:
  - To edit a schedule, click on the relevant schedule to open its configuration page. Make the changes you require, then click **Save**.
  - To add a new schedule, click the Plus (+) icon to add a new record. Go to the next step to configure the schedule.
5. Mandatory. At **Schedule Name**, fill out a name for the schedule.
6. Optional. At **Owner**, fill out the name of the schedule owner.
7. Mandatory. At **Schedule Type**, choose an option, either **Multi Execution** or **Single Execution**.

A new tab/panel displays on the page, either Multiple Executions or Single Execution, depending on the option you choose for **Schedule Type**.

Fill out relevant schedule execution details:

Single Execution	<ul style="list-style-type: none"> <li>• At <b>Execution Date and Time</b>, choose a date and time from the calendar date/time picker.</li> <li>• Choose the execution timezone.</li> </ul>
Multiple Executions	<p>Choose one or more of the following options:</p> <ul style="list-style-type: none"> <li>• Use Specific Executions</li> <li>• Use Calendar Executions</li> <li>• Use Timed Executions</li> </ul> <p>Fill out the fields for the option/s you selected. When choosing two or more options, the first scheduled time takes priority. If a schedule is in a state where the last executed and next execution time are equal, the next execution time is recalculated to ensure its execution.</p>

8. At the **Active** checkbox, define whether to activate scheduled syncs. Clear the checkbox to disable the schedule.

**Note:** When enabling the schedule in this step, and there is a “next execution” in the past, the sync executes immediately, once you save.

However, if **Skip execution on activation** is enabled, the sync executes on the newly calculated next scheduled execution date and time.

When **Active** is selected, you can (optionally) add one or more scheduled resources. In this case, at **Scheduled resources**, configure the following:

- Click the Plus icon (+) to configure an action to execute on a resource.

**Note:** You can schedule one or more actions or one or more resource types, and choose resource attributes for each.

- At **Action**, choose an action (e.g. Execute).
- Choose a **Resource Type** (resources that can be executed, for example, data/DataSync).
- For the selected resource type, at **Resource Attribute**, choose a unique identifier (the resource attribute, which is used for filtering when choosing the resource type, which is typically name).
- At **Resource**, select the value of the resource attribute. For example, if the attribute is name, then the name of the resource.
- At **Perform Action**, select or clear the checkbox to enable or disable the resource scheduled action.
- Repeat this step to add additional scheduled resources.

9. At **Skip execution on activation**, define whether to skip the immediate execution of a pending scheduled sync when activating the schedule (via the **Active** checkbox in the previous step).

---

**Note:** Selecting **Skip execution on activation** prevents a situation where, for example, you wish to pause the execution of scheduled syncs for a period, perhaps to perform an upgrade. Post-upgrade, when activating the schedule, a number of pending syncs may execute immediately. This setting clears pending scheduled syncs so that the schedule executes again only at the next scheduled execution time, after the schedule is set to active.

---

10. Click **Save** to create (or update) the schedule.

The schedule you added (or updated) displays in the **Scheduling** list view.

### 28.6.3. Deactivate and Activate Schedules

sys-admin

VOSS Automate provides a bulk schedule tool for creating a catalog of active and inactive schedules, and for activating and de-activating these schedules. For systems with many schedules, this facilitates simpler activation and de-activation of scheduled tasks when downtime is needed, for example, when upgrading.

#### Exposing the utility

The bulk schedule tool is comprised of a set of data models, views, configuration templates, and workflows.

High level administrators with access to the following data models can expose the utility on an administrator menu:

Data model	Description
data/ BulkScheduleToo	A data model that stores the list of created schedule catalogs. Each entry is identified by the entered catalog name and contains a list of schedules that were active on creation.
view/ BulkScheduleToo	A form allowing the admin to create catalogs of schedules to deactivate and re-activate a selected catalog of schedules.

---

**Note:** The administrator's access profile should also allow create permissions on these models.

---

#### Using the Bulk Schedule Tool

Administrators with access to the bulk schedule tool from their menu can perform the bulk schedule deactivation and reactivation task, which is typically done before and after a system upgrade. This will allow better management of scheduled tasks during upgrades.

On the view interface:

1. To create a new catalog of schedules and deactivate these:

From **Choose Action**, select **Catalog and Deactivate Schedules**, enter a catalog name in **New Catalog Name** and click **Save**.



A workflow will collect the name of all active schedules and add this list along with the catalog name to be stored in the data model. The list of schedules are also deactivated. This can be verified from the **Administration Tools > Scheduling** menu. See [Add or Update a Schedule](#).

- To reactivate a catalog of schedules:

From **Choose Action**, select **Activate Deactivated Catalog**, select the **Restore catalog Name** and click **Save**.

A workflow will reactivate all deactivated schedules in the catalog.

---

**Note:** If any schedules in the selected catalog are not available or have already been activated, these are ignored.

---

## 28.7. File Management

### 28.7.1. File Management

#### Upload a Certificate to use for App Registration

Microsoft

This procedure uploads a *.PFX* file into VOSS Automate so that it can be used for application registration.

---

**Note:** Certificates are required for authentication. Although you can generate a certificate in Automate and upload that certificate to Microsoft Entra. In some cases, customers prefer to use their own certificate. Once the certificate is uploaded to Automate, Automate can manage it on itself and on the PowerShell proxy.

---

- In the Automate Admin Portal, choose the relevant customer hierarchy, then go to (default menus) **Administration Tools > File Management**.
- Click the Plus icon (+) to add a new record.

The screenshot shows a web interface for adding a new record. The breadcrumb navigation is 'File Management > New Record'. Below the breadcrumb is a 'Details' header. The main form area contains two fields: 'Filename \*' and 'Description'. The 'Filename \*' field has a '+ Choose File' button next to it. The 'Description' field is a simple text input box.

- Click **Choose File**, then browse to the location where you have the file stored on your computer or network.

---

**Note:** The file you're adding **must** be a *.PFX* file that is signed and has the required encryption.

---

- Optionally, add a description, then click **Save**.
- Choose the relevant customer, then go to **Administration Tools > Certificate Management**, and click the Plus icon (+) to add a new record.

7. Add the new certificate, using the *.PFX* file you added:

- Add a name and a description.
- At **PFX File**, in the drop-down, select the *.PFX* file you uploaded.
- Add the PFX file password.

---

**Note:** This is the password that is generated when converting the certificate into *.PFX* format outside of Automate.

---

- Save your changes.

Automate creates the certificate file and deletes the *.PFX* file from Automate. The certificate will now be available to use in the tenant for application registration. See [Configure Microsoft Tenant Connection Parameters](#).

There is no need to upload this certificate into Microsoft Entra because this certificate already exists there. If your certificate does not yet exist in Microsoft Entra, you'll need to export the public key via the **Certificate Management** page, then upload the certificate into Automate in order to use it in the tenant connection parameters.

### Related Topics

- [Microsoft Quick Start Guide for VOSS Automate](#)
- [Configure Microsoft Tenant Connection Parameters](#)

## 28.8. Line Reports

### 28.8.1. Create Line Reports for a Site

This procedure creates a report of all lines configured at a site.

**Note:** You can use the report information to determine which lines you must move before deleting the site.

The report shows:

- The hierarchy node of the line's corresponding DN inventory
- Whether the line is shared within the site
- A list of all the phones that reference the line
- The owner and hierarchy node of each phone that references the line

#### Perform these steps:

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the customer for which you want to create a site line report.
3. Choose **Administration Tools > Reports > Create Line Report**.
4. From the **Site Hierarchy** drop-down, choose the site for which you want to create the line report.

5. Click **Save**.

A line report for each line in the selected site is generated.

### Next Steps

View line reports.

## 28.8.2. View Line Reports

This procedure displays the line reports.

### Perform the following steps:

1. Log in as provider, reseller, or customer administrator.
2. Set the hierarchy path to the customer for which you want to view line reports.
3. Choose **Administration Tools > Reports > Line Reports**.

A list of line reports is displayed containing this information:

Column	Description
Pattern	Directory Number of the line.
Partition	The route partition of the line. The pattern combined with the partition defines the uniqueness of the line in CUCM.
Line Hierarchy	Hierarchy where the CUCM line with this pattern and partition is defined.
DN Inventory Hierarchy	Hierarchy where the DN inventory for the pattern is defined. If empty, no DN inventory exists for this pattern.
Device Count	Number of Phones, Device Profiles, and Remote Destination Profiles remote across all sites that are referencing this line.
Used Across Sites	Indicates whether at least one phone which exists in a different site references this line.
Shared Within Site	Indicates whether this line is shared between multiple phones within the site where the line exists.
Timestamp	Time when the report was generated.
Hierarchy	Hierarchy of the customer for which the report was generated.

4. To see additional information about Phones, Device Profiles, and Remote Destination Profiles related to a line, click the required line report. The **Line Reports** screen displays this information about Phones, Device Profiles, and Remote Destination Profiles:

Phones

Column	Description
End User	The user ID of the CUCM user who owns this phone.
Phone Name	Device name of the phone which references the line.
Hierarchy	Hierarchy where the phone exists which references the line.

### Device Profiles

Column	Description
End User	The user ID of the CUCM user who owns this Device Profile.
Device Profile Name	Name of the Device Profile which references the line.
Hierarchy	Hierarchy where the Device Profile exists which references the line.

### Remote Destination Profiles

Column	Description
End User	The user ID of the CUCM user who owns this Remote Destination Profile.
Remote Destination Profile Name	Name of the Remote Destination Profile which references the line.
Hierarchy	Hierarchy where the Remote Destination Profile exists which references the line.

### Next Steps

To avoid letting too many line reports accumulate, delete them individually or select the check boxes on the **Line Reports** list view and click **Delete** to delete multiple reports.

## 28.9. Customization Reports

### 28.9.1. Audit Template Customizations

#### Overview

You can run the template customization audit tool on a selected hierarchy node to identify template definitions and instances that were not delivered in the standard template packages during an installation or upgrade.

The audit report includes custom model schema definitions as well as data, domain, and view instances created on the hierarchy node as a result of workflow execution.

Use the report to verify that there are no unexpected instances at the specified hierarchy node.

### Run the Template Customization Audit Tool

1. Log in as a customer administrator or higher.
2. Set the hierarchy path to the level from which you want to run your audit.  
From a given hierarchy node, you can audit customized templates at the node, and at nodes directly above or below the node in the hierarchy tree.
3. Choose **Administration Tools > Reports > Audit Template Customization**.
4. Choose the hierarchy node for which you want to audit customized templates.
5. Click **Save**.

### Next Steps

View the audit report. See “View Template Customization Audit Reports”.

## 28.9.2. View Template Customization Audit Reports

### Procedure

1. Log in as provider, reseller, customer, or higher level administrator.
2. Choose **Administration Tools > Reports > Template Customization Reports**. A list of template customization audit reports is displayed.
3. Click a report to view the details. The message field shows how many customized templates were found at the hierarchy node. The details fields lists the model type and instance of each customized template.

## 28.9.3. Example Template Customization Audit Reports

The purpose of a Template Customization Audit Reports is to provide a record of changes as a result of workflow execution at a particular hierarchy, in particular:

- data, relation, and view instances of standard models that include for example Configuration Templates, Field Display Policies, Macros.
- custom model schema definitions that may have been created at the site (for example, instances of data/DataModel) as a result of a custom adaptation.

Consider an example customization report that was created at a Site hierarchy called: LOC001.

After the report is created from the **Administration Tools > Reports > Audit Template Customization** menu, it shows as an item in the list of reports on the **Administration Tools > Reports > Template Customization Reports** menu.

The report can be identified by checking the creation Timestamp and Message columns of the list. The message would contain the number of templates and the phrase that shows the Site hierarchy, for example:

```
544 customized templates were found at sys.hcs.CS-P.CS-NB.AAAGlobal.LOC001
```

The Details list in the report shows entries of the format:

```
Model Type: data/User, \
Instance: bkey(["QAS0003", "hcs.CS-P.CS-NB.AAAGlobal.LOC001"], \
pkid(5949dd115da9aa9559aa2386)
```

```
Model Type: data/ConfigurationTemplate, \
Instance: bkey(["Reference CUCM User Template", \
               "device/cucm/User", \
               "hcs.CS-P.CS-NB.AAAGlobal.LOC001"]), \
pkid(5949dcd15da9aa9559aa1b2d)
```

```
Model Type: data/Macro, \
Instance: bkey(["CUSTOMER_INI_ENABLED", \
               "hcs.CS-P.CS-NB.AAAGlobal.LOC001"]), \
pkid(5949db2a5da9aa9559aa01d9)
```

From the list details, it is possible to see the model instances created at the site - defined by type, business key and pkid.

This provides administrators with information when inspecting data at a hierarchy for troubleshooting or for reference when contacting support operators.

## 28.10. System Settings

### 28.10.1. Settings

sys-admin

#### Overview

sys-admin

This topic describes the system level settings configurable via the **Settings** page, where a sysadmin user with access to the data/Settings model can view and modify the following global system level settings for Automate:

- Configuring transaction log levels (See [Configure Transaction Log Levels](#))
- Adding or removing supported file extensions (See [Supported File Extensions](#))
- Enabling or disabling device logging (See [Disable Device Logging](#))
- Enabling or disabling the phone status active service (the service to periodically fetch Call Manager phone status). See [Activate Phone Status Service](#)
- Enabling or disabling role access profile validation (See [Additional Role Access Profile Validation](#))
- Specifying the maximum file upload size (See [File Upload Limitations](#))
- Specifying the time to live for uploaded files, in hours (See [Time-To-Live for Uploaded Files](#))
- Configuring controls for data sync workflows on certain models via allowlist and denylist attributes (See [Data Sync Workflow Execution Control](#))

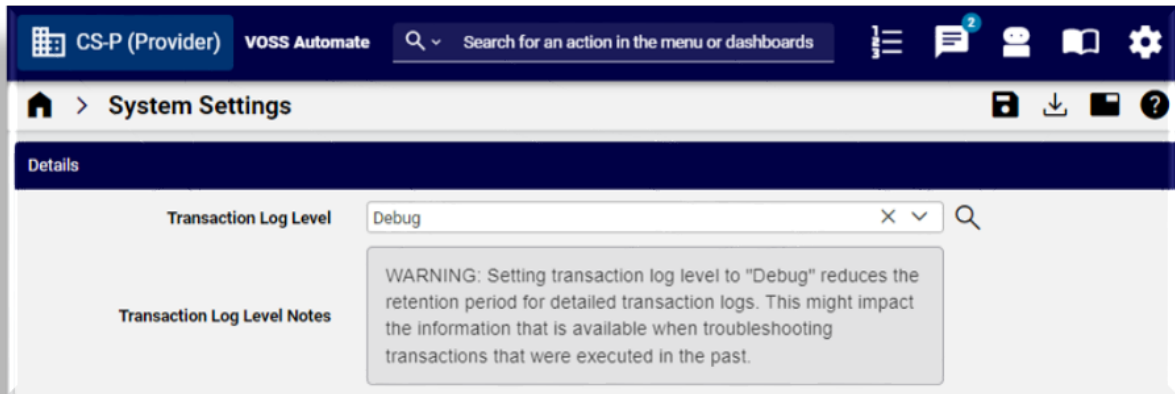
- Configuring device overwrite check exemptions on certain models via attributes (See [Device Overwrite Check Exemptions](#))
- Enabling or disabling Wingman at the system level (the Automate chat co-pilot)

The screenshot shows the 'Global' settings page in the VOSS Automate system. The page is titled 'Details' and contains the following configuration options:

- Name:** Global
- Transaction Log Level:** Debug
- Supported File Extensions:** A list of file extensions with expand/collapse and delete icons:
  - .cer
  - .crt
  - .der
  - .gzip
  - .json
  - .key
  - .pem
  - .xlsx
  - .xml
  - .zip
  - .png
  - .jpg
  - .jpeg
  - .wav
  - .csv
  - .ico
  - .wma
  - .mp3
  - .pfx
- Disable Device Logging:**
- Activate Phone Status Service:**
- Additional Role Access Profile Validation:**
- Maximum Upload File Size:** 209715200
- Time-To-Live for Uploaded Files:** 24
- Data Sync Workflow Execution Control:**

**Note:** Provider admins and admins at `hcsadmin` have access to the **System Settings** page (`view/DataSettings`) for managing transaction log levels only - this page is available via the default menus,

**Administration Tools > System Settings**, and is a limited version of data/Settings.



### Configure Transaction Log Levels

System transaction log levels refer to the configured verbosity level of the transaction logs in Automate. Available transaction log levels for Automate are as follows:

- Debug
- Verbose
- Info (default)
- Warning
- Error
- Disabled

**Note:** See [Transaction Log Levels](#) for details.

The following Automate admin users can view and modify transaction log levels in Automate:

- Provider admins and hcsadmin admins with access to the view/DataSettings model (default menus, **Administration Tools > System Settings**)
- High level admins (sysadmin) with access to the data/Settings model (default menus, **Administration Menu > Settings**)

### Supported File Extensions

Users with system administrator privileges to the data/Settings model, typically, sysadmin, can manage valid file extensions in Automate.

By default, the following file extensions are specified as supported in the Global instance of data/Settings, which means that files with these extensions can be uploaded to Automate.

- .cer
- .crt



- .der
- .gzip
- .json
- .key
- .pem
- .xlsx
- .xml
- .zip
- .png
- .jpg
- .jpeg
- .wav
- .csv
- .ico

The `sysadmin` user can add or remove file extensions. Unsupported files can't be uploaded or imported, and will trigger a system error.

### Disable Device Logging

Users with system administrator privileges to the `data/Settings` model, typically, `sysadmin`, can enable or disable device logging.

When setting **Disable Device Logging** to enabled (on the **Settings** page). then CUCM AXL (and other external calls) requests and responses aren't written to the transaction log, and neither are generic driver requests, responses, template evaluations, and macro evaluations. These details won't display for the relevant transactions under **Administration Tools > Transaction Log**.

### Activate Phone Status Service

High level admins (`sysadmin`) with access to the `data/Settings` model (default menus, **Administration Menu > Settings**) can view and update the **Activate Phone Status Service** checkbox, which is enabled by default.

When enabled, this setting indicates that the real-time information (RIS) data collector service is enabled and is polling the CUCM to obtain the latest phone registration status information for phone instances stored in the Automate database. The polling default interval is 43200 seconds (12 hours).

For details, see the *\*System Monitoring Configuration\** (Metrics Collection) topic in the Advanced Configuration Guide.

However, When viewing a list of phones, the **status** action can be carried out by an administrator who has been assigned a role that has an access profile to enable this action. By default, an administrator *above* provider level can carry out this task from the **Role Management > Access Profiles** menu - in this case, for `relation/SubscriberPhone`.



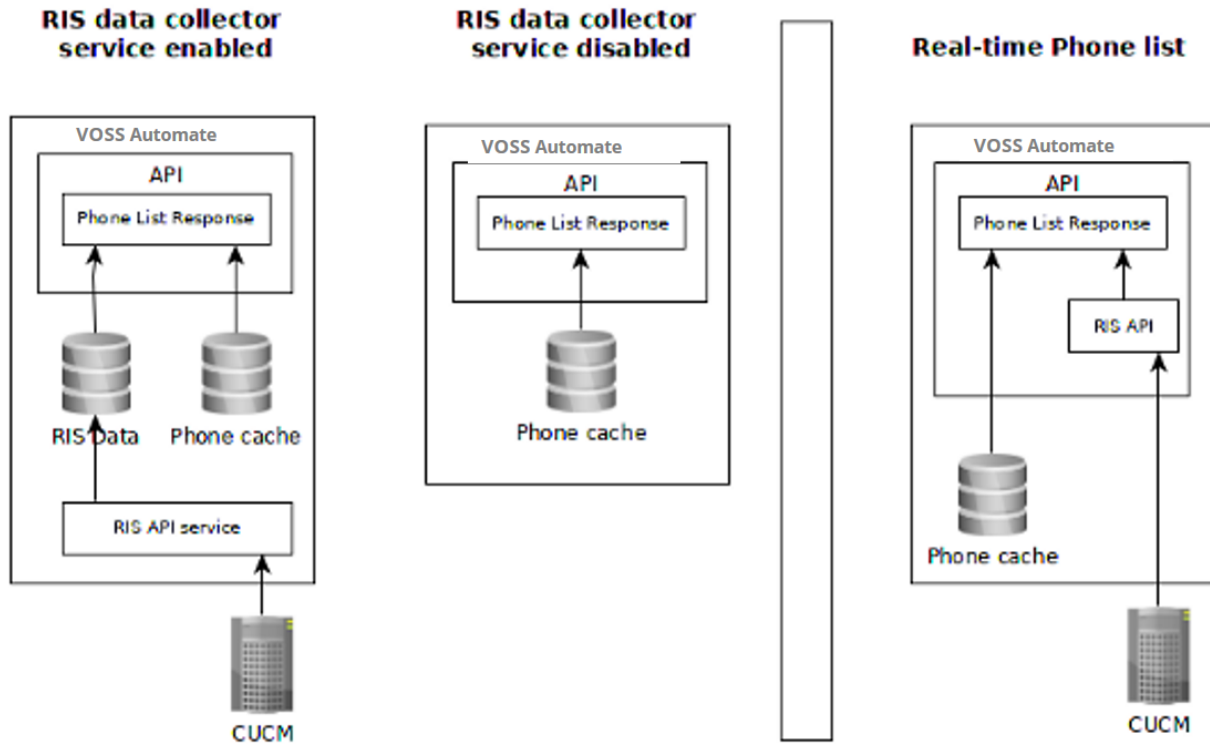
Carrying out this operation fetches the Unified CM phone IP address and status *directly* from the Unified CM and displays the data on the **Phones** list view **Registration Status** and **IP Address** columns, updating any existing data shown.

**Important:** Since the result of the **status** action is in real time, the current status of the list requires that the action carried out in order to see the latest values.

There is no caching of data resulting from this action. If any values show in the columns before carrying out this action, these would not be current, but are the cached values from the RIS data collector if it is enabled.

When carrying out the **status** action, the data in the **Registration Status** and **IP Address** columns can only be viewed.:

- The latest data only shows for the *current* list of phones on the GUI.
- The data in these columns is not stored in the database and *cannot be exported*.

**Note:**

- Whether the real-time information (RIS) data collector service is enabled or disabled, if the **status** action is carried out from the phones list view, the operation will *always* fetch and display the current information for the displayed phones directly from the device.
- The administrator's access profile associated with the role needs to allow the administrator to carry out the **status** action.
- The carrier-integrated Mobile device type is automatically added to the **RIS API Excluded Device Types** and therefore not fetched by the service.

When clearing or enabling the check box on data/Settings, log in on the platform command line interface (CLI) and restart the service:

```
$ cluster run application app start voss-risapi_collector
```

**Phone Status Service in the Logs**

When clearing this setting and then restarting the (RIS) data collector service, an `app.log` entry will show: "message": "RIS API service disabled".

Refer to the Platform Guide for commands to inspect log files.

Example log entry below (line breaks added):

```

2020-03-26T20:06:00.346577+00:00 VOSS-UN-2 deviceapi.background.risapi INFO
{"process_id":24,
 "hostname":"VOSS-UN-2-voss-risapi-collector",
 "name":"deviceapi.background.risapi",
 "level":"INFO",
 "utc_iso_timestamp":"2020-03-26T22:06:00.346268",
 "request_uuid":null,
 "user_hierarchy":null,
 "user":null,
 "message":"RIS API service disabled",
 "line":330,
 "parent_process_id":1
}

```

### Additional Role Access Profile Validation

High level admins (sysadmin) with access to the data/Settings model (default menus, **Administration Menu > Settings**) can view and update the **Additional Role Access Profile Validation** setting to manage the available roles when an administrator creates access profiles.

The table describes how the system works when the **Additional Role Access Profile Validation** setting is enabled or disabled:

En- ablec	An admin can only assign a role to a user if it is linked to an access profile with permissions that are ablec in the subset of the admin's own access profile. Role drop-down lists will therefore be restricted. If the macro function <code>fn.filter_roles_by_user_access_profile</code> is used, the setting needs to be enabled for roles to be filtered. This validation check also applies when admins manage multi-role admin users - where the role is associated with an Authorized Admin Hierarchy.
Dis- ablec	(Default) An admin can assign any role to a user, regardless of the admins own access profile. Role drop-down lists will therefore not be restricted. If the macro function <code>fn.filter_roles_by_user_access_profile</code> is used, the roles will <i>not</i> be filtered. This validation check also applies when administrators manage multi-role admin users - where the role is associated with an Authorized Admin Hierarchy.

**Note:** See the macro topic Filter Role Functions for details on the use of the `fn.filter_roles_by_user_access_profile` function.

## File Upload Limitations

High level admins (`sysadmin`) with access to the `data/Settings` model (default menus, **Administration Menu > Settings**) can view and update file upload size limitations and file time to live on the database.

By default, the following file limitations apply:

- Maximum Upload File Size: 209715200 bytes (200MB)
- Time-To-Live for Uploaded Files: 24 (clean up every 24 hours)

---

**Note:**

- Extending the Maximum Upload File Size to greater than the default can impact the platform system operation.
  - The minimum setting for time-to-live hours is 1 hour
- 

Files are uploaded to the system database during activities such as:

- Bulk Load
- JSON import
- Theme upload
- Any other file upload activity, *excluding*:
  - Themes
  - SSO certificates
  - SSO service provider metadata
  - Audio files (MoH)

The time-to-live value applies to uploaded files that have not been used, in other words, imported or processed. By default, a check is done every 24 hours for such files, after which time they are removed.

## Time-To-Live for Uploaded Files

High level admins (`sysadmin`) with access to the `data/Settings` model (default menus, **Administration Menu > Settings**) can view and update the time-to-live for uploaded files.

---

**Note:** Files uploaded from file management menus on the Automate GUI and listed as instances of `data/File` are not affected.

---

Uploaded bulk load files and imported JSON files are affected; however:

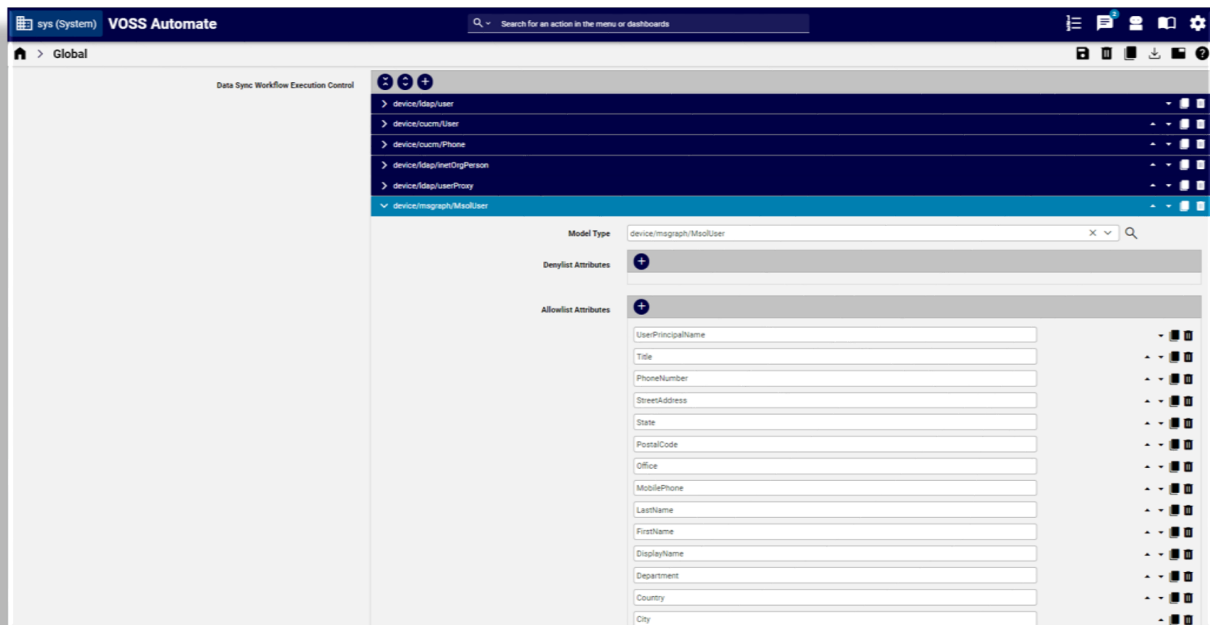
- For bulk load files, the file is kept for as long as there is an instance of `data/BulkLoad` attached to it. So a schedule that is more than 24 hours in the future is not impacted, because when we schedule a bulk load for the future, we create a `data/BulkLoad` instance. The instance is cleared when the bulk load is executed.
- Monthly license reports that are uploaded to the database by the internal schedule are not removed. For more details, refer to the License Guide.

## Data Sync Workflow Execution Control

High level admins (`sysadmin`) with access to the `data/Settings` model (default menus, **Administration Menu > Settings**) can view and update lists of device attributes affected by data sync in the **Data Sync Workflow Execution Control** settings (allowlist and denylist attributes):

**Allowlist** When this list contains a field, then *only* a change in that field and not any other field will trigger data sync workflows, regardless of the list of the **Denylist Attributes**. In other words, this list takes precedence over the existing list of **Denylist Attributes**.

**Denylist** Items in this list will *not* trigger any update workflows that may have been defined to execute during the data sync. These attributes are therefore excluded from data sync considerations. The reason for this list of attributes is that while data sync operations can have a performance impact, some data sync attribute changes do not require data sync workflows to be carried out. Note however that *the local device cache will still be updated with the updated attribute data*. No update workflows will be run, though. The transaction logs will indicate the updated device cache, but the transactions for these attributes instances will show as:  
*Device changes on denylisted attributes only. Updating cache, skipping workflows.*



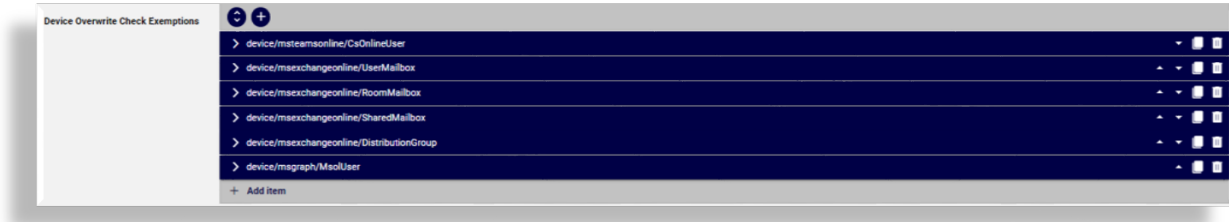
## Related Topics

- Allowlists and Denylists in the Core Feature Guide.
- Microsoft Sync Overview in the Best Practices Guide.

## Device Overwrite Check Exemptions

High level admin users (`sysadmin`) with permissions to access the Global instance of the settings in the `data/Settings` model can create a list of fields to be excluded from device overwrite checking.

This means that if the field changes on the device, it will *not* be overwritten by data in VOSS Automate. The most common situation where this might be necessary is where a device field changes, but does not affect the data on VOSS Automate, because the data is treated as read only in VOSS Automate.

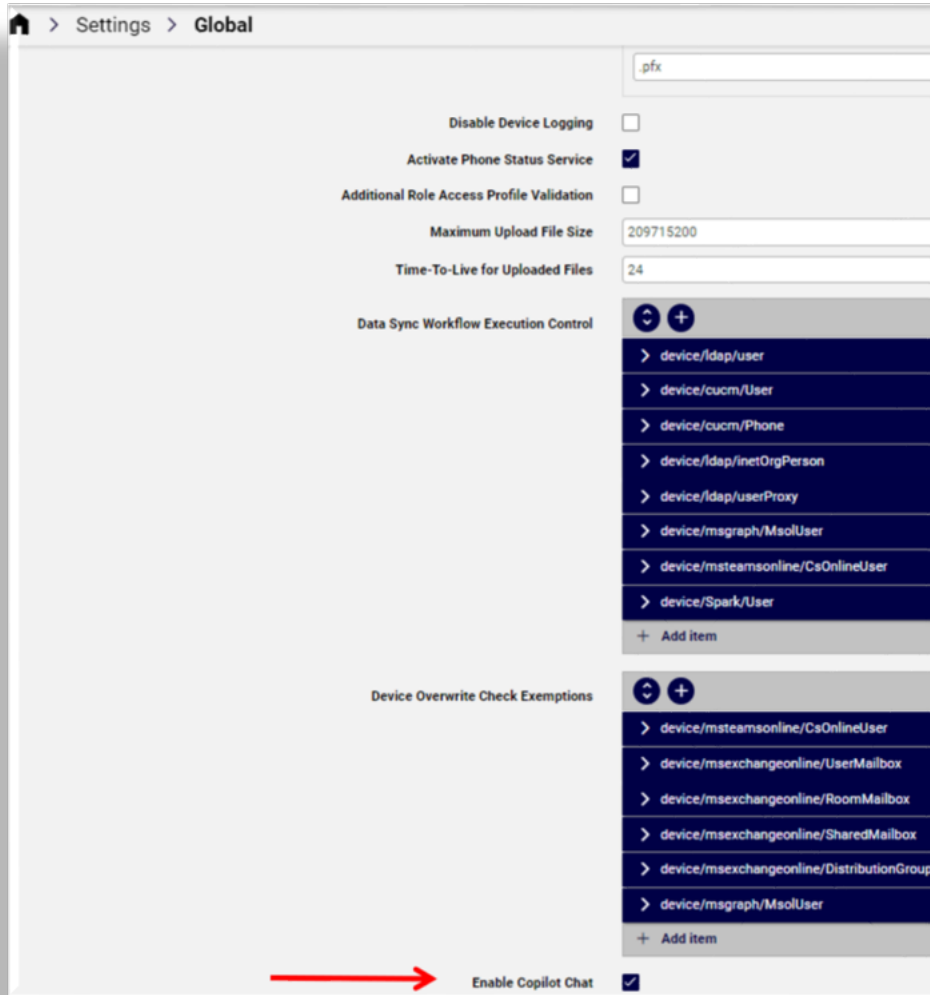


## Enable Wingman Chat

High level admin users (`sysadmin`) with permissions to access the *Global* instance of the settings in the `data/Settings` model (default menus, **Administration Menu > Settings**) can enable or disable the **VOSS Wingman** AI assistant or copilot.

By default, **Enable Copilot Chat** is enabled, and the **Wingman** icon displays on the Admin Portal toolbar, if the user role is associated with an access profile that has **Copilot Chat** enabled under the **Miscellaneous Permissions**.

Refer to the *VOSS Wingman* topic in the Core Feature Guide.



## 28.11. Certificate Management

### 28.11.1. Certificate Management for SSO

#### Create a self-signed or 3rd party certificate for SSO

This procedure creates a self-signed or third-party-signed system certificate to use when setting up Single Sign-On (SSO) on the web proxy node on VOSS Automate.

#### Note:

- Web server certificate management is carried out on the VOSS Automate command line. Refer to the CLI documentation for details.
- During customer onboarding, SSO certificate creation is customer-specific.



1. Log in as system administrator.
2. Go to (default menus) **Administration Tools > Certificate Management**.
3. Click **Add**.
4. Fill out the fields on the **Base** tab:
  - Fill out a **Name** and **Description** for the certificate.
  - At **Generate Certificate Signing Request**:
    - Clear the checkbox for a self-signed certificate.
    - Select the **Generate Certificate Signing Request** checkbox for a third-party-signed certificate.
    - If this is a self-signed certificate, define the certificate validity period. This is measured in seconds and defaults to 0 (now) and 315360000 (10 years), respectively.
  - (Optional) Change the **Key Length** from the default of 1024.
5. Fill out the fields on the **Certificate Information** tab:

Field	Description
Common Name *	Enter the FQDN for your server.
Country Code *	A two-digit country code
State *	An appropriate country subdivision
City *	Your city
Organization *	Your organization
Organization Unit *	Your organization subunit

6. Click **Save**.

---

**Note:** If you created a self-signed certificate, you can exit this procedure. If you requested a third-party-signed certificate, continue with the next steps.

---

7. On the **Certificate Management** list view, click on the third-party-signed certificate you created.
8. Choose **Action > Export Certificate Request**.
9. Follow your organization's procedures to obtain the third-party signature for the certificate.
10. Click the certificate.
11. Choose **Action > Upload Signed Certificate**.
12. Browse to the signed certificate, then click **OK**.

## Renew Single Sign-On Certificate for VOSS Automate

If a customer's Single Sign-on certificate expires, then to renew the certificate for VOSS Automate:

1. Follow the steps to regenerate the certificate (either self-signed or CA signed) as described in [Certificate Management for SSO](#).
2. Follow the steps to regenerate and upload SP metadata to the IdP described in [SSO SP Settings](#).

Note:

If an expired SSO certificate is being renewed and the IdP metadata has *not* changed, then the download, configure and upload of the IdP metadata is not required and these steps can be ignored.

### 28.11.2. Generate a Certificate for Application Registration

#### Microsoft

This procedure generates a certificate in VOSS Automate that you can use for application registration for Microsoft tenants.

1. Go to (default menus) **Administration Tools > Certificate Management**.
2. Select the relevant Customer hierarchy.
3. Click the Plus icon (+) to add a new certificate.
4. On the **Certificate Management > New Record** page, fill out at least the mandatory fields:
  - Fill out a name and a description for this certificate.
  - Fill out certificate details, including a common name, which must match the host being authenticated.

The screenshot shows the 'New Record' page in the VOSS Automate interface. The breadcrumb navigation is 'Certificate Management > New Record'. The page is split into two columns: 'Base' and 'Certificate Information'.  
 In the 'Base' column, the following fields are visible:  
 - Name \*: mycertname  
 - Description \*: my new certificate  
 - PFX File: [dropdown]  
 - PFX File Password: [input] Show  
 - Generate Certificate Signing Request: [checkbox]  
 - Generated On: [input]  
 - Valid To: 315360000  
 - Serial Number: [input]  
 - Key Length: 2048  
 - Hashing Algorithm: sha256  
 In the 'Certificate Information' column, the following fields are visible:  
 - Common Name \*: [input]  
 - Country Code \*: [input]  
 - State \*: [input]  
 - City \*: [input]  
 - Organization \*: [input]  
 - Organization Unit \*: [input]

5. Save your changes to create the new certificate. A number of fields are auto-populated when the certificate is generated. The image shows an example:

The screenshot shows a web interface for managing certificates. The main area is divided into two panels: 'Details' on the left and 'Certificate Information' on the right. The 'Details' panel contains fields for Name, Description, Thumbprint, Generate Certificate Signing Request (checkbox), Generated On, Valid From, Valid To, Expires, Serial Number, Key Length, and Hashing Algorithm. The 'Certificate Information' panel contains fields for Common Name, Country Code, State, City, Organization, and Organization Unit.

Field	Value
Name *	DOCDEMO
Description *	DOCDEMO
Thumbprint	74A5482C5324355E4124CE50F88996DA097880CB
Generate Certificate Signing Request	<input type="checkbox"/>
Generated On	2024-07-10 09:31:00.731040 (UTC)
Valid From	0
Valid To	315360000
Expires	2034-07-08T09:31:00Z
Serial Number	4161279168388239621
Key Length	2048
Hashing Algorithm	sha256
Common Name *	DOCDEMO
Country Code *	ZA
State *	DOCDEMO
City *	DOCDEMO
Organization *	DOCDEMO
Organization Unit *	DOCDEMO

6. Once the transaction completes, view your new certificate in the list view of the **Certificate Management** page.
7. Select the certificate, then in the toolbar overflow menu (More Actions), click the vertical ellipsis and select **Export Public Key**, then save the exported file to your local computer or to a network location.
8. Upload the certificate you saved, to Microsoft Entra.
  - The certificate file will now be available for selection on the tenant, and will automatically populate the tenant **Certificate Thumbprint** field once you select the certificate. See *Configure Microsoft Tenant Connection Parameters* in the Core Feature Guide
  - When saving the tenant with the selected certificate, Automate pushes the certificate to the Windows PowerShell proxy. You can verify that the certificate has been added to the PowerShell proxy.

The screenshot shows the Windows Certificate Manager window. The 'Certificates - Local Computer' tree is expanded to show the 'Personal' folder. The main pane displays a table of certificates. The 'DOCDEMO' certificate is selected and highlighted in blue.

Issued To	Issued By	Expiration Date	Intended Purposes	Friendly Name	Status	Certificate Te...
AutoBuildCert218	AutoBuildCert218	6/18/2034	<All>	<None>		
Automation	Automation	6/24/2025	<All>	<None>		
AutomationCertificate	AutomationCertificate	6/11/2034	<All>	<None>		
DevelopmentCert	DevelopmentCert	6/12/2034	<All>	<None>		
DOCDEMO	DOCDEMO	7/8/2034	<All>	<None>		
mywebsite.com	mywebsite.com	3/6/2022	Client Authenticati...	<None>		
mywebsite.com	mywebsite.com	3/6/2022	Client Authenticati...	<None>		
SSO_Certificate	SSO_Certificate	6/19/2034	<All>	<None>		

## 29. Single Sign On (SSO)

### 29.1. Single Sign On (SSO) Overview

VOSS Automate supports Single Sign-on (SSO) through the SAML v2 standard for SSO. The system acts as a service provider in the SAML authentication architecture and supports service provider initiated (SP-initiated) authentication of users against a SAMLv2 Identity Provider (IdP).

Authentication settings on an IdP server include:

- Authentication Scope
- User sync Type\*\*

For details, see [SSO SP Settings](#).

Users accessing VOSS Automate using SSO authentication are required to access the system using a URL that is specific to the IdP setup in VOSS Automate. This ensures that the SAML interaction is with the correct IdP, since VOSS Automate supports multiple IdPs to be set up in the system.

---

**Note:** SSO for end-user Self-service is supported when using a shared VOSS web proxy for Admin and Self-service, when using the Admin URL in the SSO setup. Once authenticated in the IdP via that URL, the user is dropped into the end-user Self-service interface (if they are an end user) and access via their role. SSO is not supported when using a dedicated Self-service proxy.

---

When accessing the URL, the user is presented with the login challenge via the Identity Provider (outside of VOSS) if they do not already have a session active on the IdP. Once authenticated with the IdP, the assertion from the IdP is sent to VOSS Automate from the IdP and the user is given access and presented with the appropriate interface in VOSS Automate (Admin or Self-service). If users already have an authentication session with the IdP, they do not see the IdP login page and will be directed straight to VOSS Automate.

---

**Note:**

- Credential policy features, such as password rules or session length, are all managed by the IdP outside of VOSS Automate.
  - SSO support is for authentication only and does not apply the user's permissions within VOSS Automate.
  - No logout is supported when using SSO. VOSS Automate will not initiate the termination.
- 

To read through an example for configuring VOSS Automate and Microsoft Entra for SSO, see the following reference document:

VOSS Automate Technote - Single Sign On (SSO) with Microsoft Entra PDF (available on the VOSS Automate Documentation Portal)

## 29.2. SSO SP Settings

hcs-admin

### 29.2.1. Configure SSO for VOSS Automate

This procedure configures self-service Single Sign-On (SSO) for VOSS Automate.

**Note:**

- The configuration applies to customers and customer administrators associated with the identify provider (IdP).
- Administrators are configured for SSO use via the **Users** form (default menu, **User Management > Users**).
- Administrators can also be configured with multiple user roles, that is, have a user type “End User + Admin” (see: [Add Admin Users](#)).

While the role of such an administrator user is “selfservice”, the user’s association with an Authorized Hierarchy model instance redirects such an administrator to the *same* interface as a single role administrator when using the SSO URLs for login. See *Integrating with an SSO Identity Provider*.

Administrators with multiple user roles who wish to access the *Self-service* interface, need to explicitly switch to the Self-service portal URL upon login:

```
https://<Hostname>/selfservice/#/
```

**Prerequisites:**

- Create a self-signed or third-party-signed system certificate. See [Certificate Management for SSO](#).
- The VOSS Automate server and the IdP server must be configured so that their clocks are synchronized.  
You can define the number of seconds of permitted clock drift between VOSS Automate and the IdP. The number of seconds for tolerance is customizable, and this value must be set in accordance with the deployment’s security policy. By default, VOSS Automate uses a value of 0 for clock drift; that is, assume clocks are exactly in sync.
- You must be a high-level administrators logging in above the *Provider* admin level to perform this procedure.

---

### To configure self-service Single Sign-On (SSO) for VOSS Automate:

1. Log in to VOSS Automate as *hcsadmin*.
2. Go to (default menus) **Single Sign On > SSO SP Settings**.
3. Click **Add**.

---

**Note:** Configure only one instance of SSO SP Settings.

---

4. On the **Base** tab (or pane):
  - (Mandatory). From the **System Certificate** drop-down, choose the signed third-party system certificate to use.

---

**Note:** Choosing an unsigned third-party-signed certificate will result in an error. For details around renewing an expired certificate, see [Renew Single Sign-On Certificate for VOSS Automate](#).

---

- At **Validity (Hours)**, to allow the SSO SP setting to expire, enter a number of hours. This is the validity period (in hours) that the metadata is valid for.
5. On the **SAML SP Settings** tab (or panel):
    - (Mandatory). At **FQDN of the Server**, fill out the server FQDN.

---

**Note:** The FQDN that will be embedded in the SP metadata for this IdP for URLs that refer back to the Service Provider. The FQDN of the server is stored in the SP metadata that is uploaded to the IdP. The SSO login URL then contains the fully qualified domain name (FQDN):

`https://<FQDN of the Server>/sso/<login_URI>/login`

If you have configured a custom hostname for SSO user login, enter it here. Upon login, the IdP will redirect you to this FQDN.

---

- Select the relevant checkboxes, based on your security environment and requirements:
  - **Sign Authn Requests**  
Defines whether outgoing authentication messages will be signed. If yes, the specified private key will be used. By default, this is False (unchecked). If one of your identity providers has *WantAuthnRequestsSigned* set in its metadata, then select this checkbox (set to True).
  - **Want Assertions Signed**  
Defines whether assertions should be signed. Only select **Want Reponse Signed** if you're sure that all IdPs sign responses.

---

**Note:** If a secure connection is required with the secure attribute set on the cookies, the URL values for bindings of end points must be specified with `https`.

The **Assertion Consumer Service** fields define how SAML requests and responses map on to standard messaging and communications protocols.

---

6. Save your changes.

---

**Note:** Saved SSO settings are published by the VOSS Automate service provider and are available from metadata URL, for example: <http://mydomain/sso/metadata/>. SSO service provider configuration requests to this URL automatically trigger an xml file download of the specified SSO service provider configuration.

---

7. View the location of the VOSS Automate SP metadata that you will upload to the IdP:

- Go to (default menus) **Single Sign On > SSO SP Metadata**.
- Point your browser to the URL shown here.
- Save a copy of the SP metadata.

8. Upload SP metadata to the IdP:

Refer to your IdP documentation for details on configuring SSO on your IdP.

The IdP must release the UID and map it to an appropriate attribute. For example, an IdP that authenticates with Active Directory can map the UID SAML attribute to sAMAccountName in the Active Directory server.

9. Download IdP metadata from the IdP server.

Refer to your IdP documentation for details on downloading IdP metadata.

If an expired SSO certificate is being renewed and the IdP metadata has *not* changed, then the download, configure, and upload of the IdP metadata is not required.

## 29.3. SSO Identity Provider

### 29.3.1. Integrating with an SSO Identity Provider

This procedure configures integration with a SSO identity provider (IdP).

---

**Note:** These steps include the default menus paths that ship with the system. You can also search for a page via the toolbar **Search** field.

---

1. Log in as Provider, Reseller, or Customer administrator (depending on your IdP configuration level).
2. Go to (default menus) **Administration Tools > File Management** and upload the IdP metadata.
3. Go to (default menus) Choose **Single Sign On > SSO Identity Provider**.
4. Click **Add** to add the SSO Identity Provider configuration.

---

**Note:** Only one instance of an SSO Identity Provider can be configured for a hierarchy node.

---

5. On the **SSO Identity Provider** screen, complete at least the mandatory fields (Entity ID, Login URI, Local Metadata File, User lookup field at minimum, the mandatory **SSO Identity Provider** fields (see **SSO Identity Provider** fields).

If custom attribute is used as the UID from Identity Provider, enter this attribute as the **UID Attribute Name**. This value is then evaluated first by VOSS Automate as the UID to identify the user and is for

example used as an alternative user identifier when the default UID record is not present. If this value is *not* present, the default UID record is used to identify the user.

For example, if the UID attribute is not mapped on the Identity Provider and an attribute `ElectronicMail` is mapped to `mail` on the Identity Provider, the User Lookup Field on SSO Identity Provider should be `email` (the field in VOSS Automate) and the **UID Attribute Name** should be `ElectronicMail` (the attribute returned by IdP).

If a customer is using a *custom domain*, the **Service Provider Domain Name** is filled in at the hierarchy level and the login and metadata URLs used will be tied to the IdP as follows:

```
SSO Login URL:      ``https://<Service Provider Domain Name>/sso/<Login URI>/
↳login``
Admin Portal:      ``https://<Service Provider Domain Name>/admin/sso/<Login
↳URI>/login``
```

The metadata is obtained from: `https://<Service Provider Domain Name>/sso/<Login URI>/metadata`

If the Service Provider Domain Name is specified, the metadata XML file from VOSS-4UC then contains `Service.Provider.Domain.Name` in the assertion consumer service URL as shown in the example below:

```
<md:AssertionConsumerService
  Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
  Location="https://Service.Provider.Domain.Name/sso/acs/"
  index="1"/>
```

This metadata needs to be uploaded to the IdP (not the generic metadata obtained from SSO Service Provider Configuration).

---

**Important:** If you have previously uploaded metadata to the IDP and you subsequently complete this **Service Provider Domain Name** field, you need to remove the previous record from the IDP and re-upload the metadata so that it contains this field.

---

- Click **Save** to save the SSO Identity Provider Configuration and enable SSO if selected.
- Choose **User Management > Users** and filter on **Auth Method** equals SSO to display enabled SSO users.

When the **Service Provider Domain Name** is not specified for a given IDP, these URLs are used for SSO login:

```
SSO Login URL:      ``https://<FQDN of the Service Provider>/sso/<login_URI>/login``
Admin Portal:      ``https://<FQDN of the Service Provider>/admin/sso/<Login URI>/
↳login``
```

See **SAML SP Settings FQDN** in [SSO SP Settings](#).

The IdP redirects to this FQDN on login.

---

**Note:** While an IdP may exist at more than one hierarchy in VOSS Automate, a user will only be permitted to log in if the user exists at or below the hierarchy of a single IdP.

---



### 29.3.2. SSO Identity Provider: Field Reference

Field	Description
Entity Id	Mandatory. Entity ID of the IDP. This field must exactly match the entity ID in the IdP metadata file.
Login URI	Mandatory. Login URI for the IDP. This is the URI that will be embedded in SSO Login URL. It can contain only alphanumeric characters and forward slashes.
Service Provider Domain Name	The FQDN that will be embedded in the SP metadata for this IdP for URLs that refer back to the Service Provider.
Local Metadata File	Mandatory. Choose the IdP metadata file. This field must be unique across the system.
SSO Enabled	Select the check box to enable SSO for users synced in or created at the current hierarchy level. Clear this check box to disable SSO for the users associated with the defined IDP.
Note	Reminder to upload the IdP metadata file
SSO Login URL	Read-only field displays the SSO Login URL to use. Users with <code>selfservice</code> role and no Authorized Admin Hierarchy will be redirected to Self-service.
Admin SSO Login URL	Read-only. Displays the new Admin Portal SSO Login URL to use.
Business Admin SSO Login URL	Read-only. Displays the new Business Admin Login URL to use. From release 21.4, this will <i>always</i> redirect to the new Admin Portal.
User lookup field	Mandatory. Select the field to bind the VOSS and SSO user - typically <code>username</code> .
UID Attribute Name	An optional attribute name string value configured on the Identity Provider to be used as UID for authentication. If present, this value is evaluated first by VOSS Automate as the UID and used as an alternative user identifier when the default UID record is not present. If this value is not present, the default UID record is used to identify the user.
Authentication Scope	Hierarchical scope this server applies to. <ul style="list-style-type: none"> <li>• Full tree authentication (default): All nodes at and below this node in its tree can authenticate against this server.</li> <li>• Local authentication: Only users at this node can authenticate against this server.</li> </ul>
User sync type	Type of users that can authenticate against this server. <ul style="list-style-type: none"> <li>• Synced users only: Only users synced in from LDAP can authenticate against this server.</li> <li>• All users</li> </ul>

For Authentication Scope, also see [User Login Options by Auth Method and Server Auth Scope](#).

### 29.3.3. SSO Scenarios for User Roles

The table maps user roles to the log in URLs - single role or multiple role (includes Authorized Admin Hierarchy):

User Role	Auth Admin?	URL used	UI (Session Limiting)	Expected Behavior
selfservice	Yes	<a href="https://&lt;hostname&gt;/sso/&lt;login-uri&gt;/login">https://&lt;hostname&gt;/sso/&lt;login-uri&gt;/login</a>	administrator	Redirect to Admin Portal
selfservice	Yes	<a href="https://&lt;hostname&gt;/admin/sso/&lt;login-uri&gt;/login">https://&lt;hostname&gt;/admin/sso/&lt;login-uri&gt;/login</a>	administrator	Redirect to Admin Portal
selfservice	No	<a href="https://&lt;hostname&gt;/sso/&lt;login-uri&gt;/login">https://&lt;hostname&gt;/sso/&lt;login-uri&gt;/login</a>	selfservice	Redirect to Self-service
administration	Yes	<a href="https://&lt;hostname&gt;/sso/&lt;login-uri&gt;/login">https://&lt;hostname&gt;/sso/&lt;login-uri&gt;/login</a>	administrator	Redirect to Admin Portal
administration	Yes	<a href="https://&lt;hostname&gt;/admin/sso/&lt;login-uri&gt;/login">https://&lt;hostname&gt;/admin/sso/&lt;login-uri&gt;/login</a>	administrator	Redirect to Admin Portal
administration	No	<a href="https://&lt;hostname&gt;/sso/&lt;login-uri&gt;/login">https://&lt;hostname&gt;/sso/&lt;login-uri&gt;/login</a>	administrator	Redirect to Admin Portal
administration	No	<a href="https://&lt;hostname&gt;/admin/sso/&lt;login-uri&gt;/login">https://&lt;hostname&gt;/admin/sso/&lt;login-uri&gt;/login</a>	administrator	Redirect to Admin Portal

Administrators set up with SSO but who have multiple user roles and who wish to access the *Self-service* interface must navigate to the Self-service portal URL upon login:

```
https://<Hostname>/selfservice/#/
```

## 29.4. SAML Elements in Assertions

The following list provides details for designers on the correct handling of Security Assertion Markup Language (SAML) elements in assertions:

1. When using the SubjectConfirmation element in a SAML assertion, the NotOnOrAfter condition shall be used.
2. When using the Conditions element in a SAML assertion, both the NotBefore and NotOnOrAfter elements or the OneTimeUse element shall be used.
3. If a OneTimeUse element is used in an assertion, there shall only be one used in the Conditions element portion of an assertion.

The VOSS Automate system will inspect SAML messages and raise error messages if the elements do not follow the rules for SAML assertions specified above.

The list below shows the respective error numbers and messages as they will show in the logs, as well as example error SAML snippets:

1. NOTONORAFTER\_SUBJECTCONFIRMATION\_ERROR (14010)

“SubjectConfirmation is used but there is no NotOnOrAfter attribute”

```
<saml2:SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:bearer">
  <saml2:SubjectConfirmationData/>
</saml2:SubjectConfirmation>
```

2. a) CONDITION\_NOT\_BOTH (14012)

“NotBefore and NotOnOrAfter should be present when using either in Condition”

```
<saml2:Conditions NotOnOrAfter="2015-11-20T12:32:23.645Z">
  <saml2:AudienceRestriction>
    <saml2:Audience>http://functional.fedrampfail.plain/sso/metadata/</
  ↪saml2:Audience>
    </saml2:AudienceRestriction>
</saml2:Conditions>
```

2. b) CONDITION\_ONETIMEUSE (14013)

“OneTimeUse element should be present when neither NotBefore nor NotOnOrAfter attributes in Condition”

```
<saml2:Conditions>
  <saml2:AudienceRestriction>
    <saml2:Audience>http://functional.fedrampfail.plain/sso/metadata/</
  ↪saml2:Audience>
    </saml2:AudienceRestriction>
</saml2:Conditions>
```

3. CONDITION\_MULTIPLE\_ONETIMEUSE (14014)

“Only one OneTimeUse element should be present in Condition”

```
<saml2:Conditions>
  <saml2:AudienceRestriction>
    <saml2:Audience>http://functional.fedrampfail.plain/sso/metadata/</
  ↪saml2:Audience>
    </saml2:AudienceRestriction>
    <saml2:OneTimeUse/>
    <saml2:OneTimeUse/>
</saml2:Conditions>
```

## 30. Data Sync

### 30.1. Introduction to Data Sync

#### 30.1.1. Overview

Data syncs can be performed from within Automate or directly on a device. For this reason, cached Automate data should be periodically synced with data on devices.

Examples:

- When an instance of a CUCM is added to the system, its data is imported and cached.
- When instances are added, updated, or deleted from the CUCM, the cached data in Automate becomes out of sync with data on the device.
- When deleting data from CUCM before deleting it from Automate, the system displays the following error: "The specified resource could not be found"

This means the resource is out of sync, and Automate may need to re-sync with CUCM in order to delete it or update it.

Automate data syncs allow you to dynamically synchronize cached Automate data with data on devices. The data sync instance is associated with the connection parameters of a device type in Automate.

Supported devices include:

- Cisco Unified CM (CUCM)
- Cisco Unity Connection (CUC)
- LDAP
- WebEx
- MTeamsOnline (Microsoft Teams)
- MSGraph

Individual add, update, and delete operations carried out by a data sync instance can be disabled on the user interface. If no operation is selected, the default behavior is maintained.

## Related Topics

- Sync Overview in the Best Practices Guide
- Data Sync Types in the Core Feature Guide
- Model Instance Filter in the Core Feature Guide

### 30.1.2. Data Sync Settings

To view the summary list of configured data syncs in Automate, go to (default menus) **Administration Tools > Data Sync**. The list view displays basic details for each available data sync, including a number of summary attributes that provide additional details about the data sync.

Name	Description	Device Type	Sync Type	Model Type List	Synchronization Order	Model Instance Filter	Force Refresh Of Data	Refresh Existing (Changed) Data	Quick Import
CMCCS-10.120.9.245-MohFile	Perform a sync of Call Manager Control Center Services.	data/CmCcs	pull	CMCCS_MohFile			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CMCCS-192.168.100.15-MohFile	Perform a sync of Call Manager Control Center Services.	data/CmCcs	pull	CMCCS_MohFile			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CMCCS-192.168.100.16-MohFile	Perform a sync of Call Manager Control Center Services.	data/CmCcs	pull	CMCCS_MohFile			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CMCCS-192.168.100.17-MohFile	Perform a sync of Call Manager Control Center Services.	data/CmCcs	pull	CMCCS_MohFile			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
HcsLdapSchemaImport-1		data/Ldap	pull				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HcsLdapSchemaImport-4		data/Ldap	pull				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

To view data sync settings, click on a data sync in the list to open the configuration page.

**Details**

Name: HcsPhoneSyncDS-192.168.100.16--AAAGlobal-CL2

Description: Required DataSync, do not change or delete. Syncs users an

Device Type: Cisco Unified CM

Sync Type: Pull from Device

Dependency Resolution: Default

Quick Import (Warning: Summary Data Only):

Import Schema Only:

Import Data Only:

Execute Asynchronously:

Refresh Existing (Changed) Data:

Force Refresh Of Data:

Model Type List: HcsCucmIncludeUsersPhonesMTL

Synchronization Order: HcsCucmIncludeUsersPhonesMTL

Model Instance Filter:

Device Filters: host: 192.168.100.16

Workflows:

- device/cucm/User - Operation: add - Phase: postexecution - Workflow: UserCucmSyncAdd
- device/cucm/User - Operation: update - Phase: postexecution - Workflow: UserCucmSyncUpdate
- device/cucm/User - Operation: delete - Phase: postexecution - Workflow: UserCucmSyncRemove

**Disabled Operations**

Add:

Update:

Remove:

The table describes a number of key settings that are available for data syncs:

Settings	Description
Model Type lists	Define the entities to pull in a given sync. For example: <ul style="list-style-type: none"> <li>Only pull in <code>device/cucm/User</code> records from CUCM.</li> </ul>
Model Instance filters	Limit a sync to a subset of entities in a sync. For example: <ul style="list-style-type: none"> <li>Pull in users with a primary extension starting with <code>1</code>.</li> </ul> A system-level administrator will need to expose this setting in the Admin Portal.
Disabled Operations	Choose which operations are enabled for a sync (Add/Update/Remove). <ul style="list-style-type: none"> <li>Update requires more effort to run because this typically involves a GET API call for each record, which must then be compared to Automate data.</li> <li>Add/Remove can be determined from the initial list API calls.</li> </ul> To save time on the sync, you may wish to disable <i>Update</i> if you only require Add/Delete. From the list view of <b>Data Sync</b> entries, these fields are also available as columns (summary attributes) and can for example be used to filter the list of data syncs by the operations. <hr/> <p><b>Important:</b> <i>Remove</i> is disabled by default if you've selected a model instance filter for the sync. You'll need to enable <i>Remove</i> if you intend for the sync to purge (remove) cache records that are excluded in the model instance filter.</p> If you're upgrading to 21.4-PB4 from an earlier version of Automate, a migration script disables <i>Remove</i> for any syncs that have a model instance filter applied. This is to prevent the sync from unexpectedly removing a large number of records after the upgrade. <hr/>
Quick Import	Uses the list API responses to update the Automate cache, and won't perform individual GET calls for each entity for the update. Recommended when the list response contains all values for the entity, or where only the key settings must be updated. Removing individual GETs speeds up the sync, since Automate is not waiting for the API responses when there are a many entities to update. This is useful if the list and GET responses are required, or if you only need the summary data from the list view. This setting is disabled by default for syncs related to <code>device/spark/user</code> syncs ( <i>SyncSparkUsers</i> and <i>SyncSpark</i> ).

**Note:** *Quick Imports* can improve sync performance but must be used with extreme caution to avoid unintended changes. Typically, Quick Import is recommended only for Microsoft-related data syncs (MSOperatorConnect, MSGraph, MSTEamsOnline, MSExchangeOnline) and for Webex App/Teams-related syncs that do not include the Webex App/Teams user (`device/Spark/user`).

The default Full Sync instance provided for CUC also does not have **Quick Import** enabled.

### 30.1.3. Synchronous and Asynchronous Data Sync

By default, a data sync is asynchronous; that is, other tasks can be carried out while the sync is in progress. However, a data sync can be set to be synchronous so that a workflow step can, for example, wait for the sync process to complete.

Asynchronous imports initiated by a data sync are standalone transactions; that is, they aren't child transactions of the data sync execute transaction. Synchronous imports initiated by a data sync are children of the data sync execute transaction.

## 30.2. Default Cache Control Policy

A default Cache Control Policy is applied to manage the caching behavior of the system, in other words, it controls how data is read.

The defaults are set as follows:

- Cache Policy for Reads: read from cache then device
- Read Before Write: On Update
- Read After Write: On Add
- Read After Write: On Update
- Model specific overrides:
  - Model Type: device/notification\_service/\*
    - \* Cache Policy for Reads: Cache

The following concepts apply:

- Cache only: Unless overridden within the request, instance reads via the API always return the cached version of data. There is no need for the client to query the uncached instance data.
- Cache then device: The API will return the cached data, the Admin Portal will indicate that the data shown is cached and will automatically make an API call requesting non-cached data. It is up to external clients to query the data requesting non-cached data. If this option is selected, data is loaded into the system in two steps:
  1. Load cached data
  2. Load device data

The 'cached' visual indicator is displayed until the second step is complete.

The device data overrides the previously displayed data unless the user has made an input:

- a. The fields changed by the user will reflect the user's input and not the device data.
- b. Arrays are blocked for the duration of the device data loading (while the 'cached' flag is displayed) and the user can not add or remove elements until the device data loading completes.

Data is validated constantly as displayed values change, and validation status always reflects the very latest state.

- Manual: Unless overridden within the request, instance reads via the API always return the cached version of data. An external client using the API needs to provide a button to allow the user to manually retrieve non-cached data.

- No cache: Unless overridden within the request, instance reads via the API always return the uncached version of data that is queried from the device. In this mode the Admin Portal will not show any data until it is retrieved from the device.

For Relation model types, the relation's cache control policy will filter down to the joined device models. For example:

- If the cache control policy of a Relation is Cache then Device, any GET operations that do not specify the cached parameter will return a cached result. It then becomes the client's responsibility to make another request with `cached=false`.
- If the cache control policy of a Relation is Cache only or Manual, then any GET requests that do not specify the cached parameter, return cached data for all joined models.
- If the cache control policy on read is No cache, the Relation will always fetch the latest device data.

## 30.3. Data Sync Types

VOSS Automate provides the following data sync types:

Data sync type	Description
Pull from Device	Available to all device types. <ul style="list-style-type: none"> <li>• Pull all data from the device</li> <li>• Pull only the schema from the device (used for LDAP)</li> <li>• Pull data from the Change Notification Feature local data collection</li> </ul>
Purge Local Resources	Available to all device types. <ul style="list-style-type: none"> <li>• Purge data from the cache</li> </ul>
Push to Device	Available only to Cisco Unified CM devices <ul style="list-style-type: none"> <li>• Push data in the cache to the device</li> </ul>
Change Notification Sync	Available only to Cisco Unified CM devices

**Note:** A quick import option is available to fetch only summary data that is contained in a list operation response and not the data for all instances/fields. See Data Sync Overview in the Core Guide for details.

Generally, for all sync types, VOSS Automate builds up the lists of entities from both VOSS Automate and the device, and compares them, using the key for the device entity. The key is typically the unique identifier (ID) for the record in the device we're syncing with. For example, for Unified CM, the ID is the *pkid*, which is the internal Unified CM database ID.

For subscribers, a sync builds up the list of `device/cucm/Users` in VOSS Automate and then requests from the Unified CM the lists of users it currently has for the comparison. Differences in the lists are handled according to each sync type.



## Related Topics

- Data Sync Overview in the Core Feature Guide
- Change Notification Feature Overview in the Core Feature Guide

### 30.3.1. Pull from Device

For sync type *Pull from Device*, the VOSS Automate resource is updated where the same key is present in both lists. In this case, the device data is the master and the VOSS Automate system model data is updated with the device data.

For example, let's say new data is added to the Unified CM, so that the VOSS Automate system data state for a Unified CM `device/cucm/User` does not show instances that are shown on the Unified CM.

In this case, a *pull* data sync synchronizes the system data with the Unified CM data. For example, a user's Department may be updated on the Unified CM, but the update only shows on the system after a *Pull from Device* sync. If a user resource is created in Unified CM but not in VOSS Automate, this adds the `device/cucm/User` instance into VOSS Automate at the level the *pull* sync was run from, for example, at the customer level.

When deleting a VOSS Automate resource from the device, so that the key is in the VOSS Automate list but not in the device list, a *pull* sync removes the resource in VOSS Automate. For example, if the resource is a user in VOSS Automate but not in Unified CM, the *pull* sync removes the `device/cucm/User` record in VOSS Automate.

To restrict the number of records removed in VOSS Automate, ensure you have the following named macro at the hierarchy where the sync takes place:

```
PULL_SYNC_DELETE_THRESHOLD_<device_type>
```

For details, see Pull Sync Delete Threshold topic in the Advanced Configuration Guide.

When pulling device data, for example LDAP users from an LDAP device, the results returned to VOSS Automate depend on the LDAP server configuration. For example, if the returned results exceed the LDAP server configured maximum, and if the server does not support paging, an appropriate error message is returned.

For Microsoft 365 syncs, a **Max page size** (default 1000) setting can be adjusted if the error "Template output exceeded memory limit" is shown.

For details, see the Configure Microsoft Tenant Connection Parameters topic in the Core Guide.

### 30.3.2. Push to Device

Sync type *Push to Device* is available only to Cisco Unified CM device types.

In a *Push to Device* sync type, devices are synchronized with the VOSS Automate system data state, which is the primary data state.

- When deleting device data from VOSS Automate so that the key is in the *device* list but not in the VOSS Automate list (for example, delete user in VOSS Automate), the user is removed from Unified CM. The user will not exist on the device or on VOSS Automate.
- When adding new device data to VOSS Automate so that the resource shows instances that are not shown on the device, a *push* data sync synchronizes the device data with the VOSS Automate data. For example, adding a `device/cucm/User` instance to VOSS Automate and running a *Push to Device* sync adds the user record to Unified CM.

Keys found in both lists are ignored. Existing records are not updated in either direction.

In the `device/cucm/User` example, if the same user exists on both VOSS Automate and on Unified CM, no update occurs in either direction. Detailed settings may still not match after a *Push to Device* sync.

---

**Important:** When performing a *push* sync, it is important to consider data dependencies between different models.

For example, data dependencies may exist between users and phones in the Cisco Unified CM. In this case, if a user is associated to a phone (via the associated devices on the user), you can't add the user if the phone does not yet exist in Cisco Unified CM.

On the other hand, for ownerID on the phone, pushing the phone first will fail since the user isn't in place.

This might mean running the *push* sync multiple times so it loads in the required order, or you may need to modify data (such as removing device association) to allow the *push* sync to succeed.

---

**Note:** The keys list sync logic described in this topic implies that in case of a reversion of the Unified CM to restores/inactive partitions, the end-state of the relevant pkids may differ to their state the last time VOSS Automate was in sync with Unified CM (before a restore), particularly if testing occurred in between. This means you may, for example, have a user with the same username in both VOSS Automate and Unified CM, but if that user's pkid in Unified CM now differs to the one in VOSS Automate from previous syncs or interactions, they will be seen as different users even though they have the same usernames.

---

### 30.3.3. Change Notification Sync

Sync type *Change Notification Sync* is available only to Cisco Unified CM device types.

A *Change Notification Sync* is a pull sync of changes stored in the local collection that is updated by the Change Notification Collector service.

For more details on Change Notification Sync, see the related topics in Data Sync section of the Core Feature Guide.

### 30.3.4. Purge Local Resources

In a *Purge Local Resources* sync type, all resources or instances of device information that exists in the system are deleted. Entities in the device are not deleted.

**Note:** The default *purge* syncs created when adding a CUCM, CUC, LDAP or CCX server type are disabled by default. To use the *purge* sync, the "Remove" check box must first be cleared on the "Disabled Operations" tab of the relevant sync.

---

This sync type is typically used when cleaning up the system. The system displays a warning before executing an enabled *purge* sync.

See the following sample device type syncs:

- `HcsPurge-{{CUCMHostname}}-{{CUCMClusterName}}-DS`
- `HcsUserPurgeDS-{{CUCMHostname}}-{{CUCMClusterName}}`

- HcsPhonePurgeDS-{{CUCMHostname}}-{{CUCMClusterName}}
- HcsPurge-{{CUCXHostname}}-{{CUCXClusterName}}-DS
- PurgeUccx-{{UCCXHostName}}
- HcsLdapUserPurge-{{UniqueID}}
- PurgeSpark{{CustomerName}}

## 30.4. Full Sync

A full pull sync, when it runs, empties the changes from the data collection as they don't need to be processed by the Change Notification Sync. Use the disabled operations and the model type list (MTL) of the full sync to filter the changes to remove. If a model instance filter is included, no changes are removed.

It is recommended to use the CUCXN Exclude ImportUser MTL on Cisco Unity Connection Data Syncs in order to avoid unneeded data and slowing the sync time.

### CUCM Models not synced by full sync (with no model type list)

- LicensedUser
- LicensingResourceUsage
- HcsLicense
- CiscoCloudOnboarding
- RegistrationDynamic
- RoutePlan

### CUC Models not synced by full sync (with no model type list)

- Handler
- GlobalUser
- LicenseStatus
- TenantUserLicense
- UserLicense
- SubscriberDependency
- ImportUser

## 30.5. Enable a Scheduled Data Sync

This procedure enables the scheduled data sync so that it executes regularly.

---

**Note:** Setting up a CUCM or CUC device in VOSS Automate:

- Creates a full pull data sync instance, which will perform the initial sync of all data from the device. It is recommended that you manually run the full pull data sync only when necessary. See [Manually Run the Default Data Sync](#)
  - Creates a Change Notification Sync type (on the Data Sync page). Manually running the change notification sync is not supported.
  - Creates a scheduled data sync (disabled by default) to execute a data sync every 14 days. This topic describes how to enable this regular sync.
- 

### Enable the scheduled data sync

1. Log in as provider administrator.
2. Go to (default menus) **Administration Tools > Scheduling**.
3. On the **Scheduling** page, choose the schedule instance that matches this naming convention:  
HcsSync-<ip\_address>-<device\_name>-SCHED. For example:  
HcsSync-192.0.2.24-CUCM01-SCHED
4. Select the **Active** check box.
5. Select the **Multiple Executions** tab, and update the interval, as required.
6. Click **Save**.

The full data sync executes immediately, and executes again according to the schedule.

## 30.6. Manually Run the Default Data Sync

You can always manually run the default data sync when there have been updates to Cisco Unified Communications Manager (CUCM) or Cisco Unity Connection (CUC) devices that need to be synced into VOSS Automate.

---

**Note:** Manually running the change notification sync is not supported.

---

### Perform these steps:

1. Log in as provider or reseller administrator.
2. Go to (default menus) **Apps Management > Advanced > Perform Publisher Actions**.
3. From the **Action** drop-down, choose **Import**.
4. From the **App Type** drop-down, choose **CUCM Device** or **CUC Device**.
5. From the Clusters **Available** box, choose the device, move it to the **Selected** box, and click **Save**.

## 30.7. Controlling a Data Sync with a Model Type List

Using a Model Type List (MTL), you can control the types of data that are synced into VOSS Automate from devices from vendors, such as:

- Cisco (Unified CM, Unity Connection)
- Microsoft
- Pexip
- Webex

and so on.

Controlling the types of data that are synced can greatly improve sync performance. The MTL is a list of device models associated with the device type, for example, Phone and Line device models that are associated with the Unified CM device.

These are the possible types of Model Type Lists:

- Include Selected Model Types - This list represents the device models to explicitly include in the data sync.
- Exclude Selected Model Types - This list represents the device models to explicitly exclude from the data sync.
- Ordered List - This list represents the device models to explicitly include in the data sync in the order they must be synced.

A data sync created with an empty Model Type List attribute results in the subsequent import(s) synchronizing all device models for the corresponding device.

Here is an example of an include MTL:

The screenshot shows a web interface for configuring a Model Type List. At the top, the title is "Model Type List [HCS CUCM Media MTL]" followed by buttons for "Save", "Delete", "Help", "Back", and "Action". Below this, there are two main input fields: "Name\*" with the value "HCS CUCM Media MTL" and "List Type\*" with a dropdown menu set to "Include Selected Model Types". Underneath, there is a section titled "Model Types" with a plus sign icon to add more items. This section contains a list of five device models, each with a set of navigation icons (minus, plus, up, down) and a text input field containing the model name: "device/cucm/MediaResourceGroup", "device/cucm/MediaResourceList", "device/cucm/MohServer", "device/cucm/MohAudioSource", and "device/cucm/Mtp".

A data sync using this MTL will sync all Media Resource Group, Media Resource Lists, Music on Hold servers and audio sources, and Media Termination Points. No other data will be synced from Unified CM.

It is recommended to define MTLs for sets of data that are being modified on the device directly. An example is Unified CM because this is where the bulk of the configuration data for each customer resides.

By defining MTLs that target specific data sets rather than doing a full sync, the performance of VOSS Automate can be maintained with better response times and quicker transaction execution.

---

**Note:** Some Unified CM device models to avoid unless needed are Users, Phones, and Lines, as there may be large numbers of these in the Unified CM and result in a lengthy data sync operation.

---

Data sync overhead can be further reduced if you want to sync only new and deleted instances of the device model and not updates to existing instances. This can be done by unchecking the Refresh Existing (Changed) Data check box on the Data Sync configuration page. This check box controls whether existing device model instances are updated in VOSS Automate in addition to importing new instances and removing deleted instances. If checked, all device model instances must be synced and examined. If unchecked, only new and deleted instances need to be imported and the data sync will run considerably faster.

## 30.8. Create a Targeted Model Type List

If you manage data on vendor devices directly on a regular basis, perhaps for configuration that is not orchestrated from VOSS Automate, such as media resources, it is recommended to create a Model Type List and Data Sync specifically targeting the data items you are managing. This ensures each data sync is highly optimized for the data being changed on the device directly and minimizing the load on VOSS Automate.

To create a targeted Model Type List:

**Perform these steps:**

1. Log in as Provider level admin or higher.
2. Access the **Model Type List** form (default menu **Administration Tools > Model Type List**) and click **Add**.
3. Specify the name of the Model Type List.  
It is recommended to use a naming convention that makes it easy to identify the MTL in a list view, for example "Unified CM Media Resources".
4. From the **List Type** drop-down, choose the list type:
  - Choose **Include Selected Model Types** if the list of device models you want to sync is relatively short.
  - Choose **Exclude Selected Model Types** if the list of device models you want to sync is relatively long. Exclude device models that tend to have lots of instances (like users, phones, and lines in Unified CM).
  - Choose **Ordered List** if the list of device models you want to sync is relatively short and the order in which they are synced matters.

---

**Note:** A data sync will fail if the **List Type** of the Model Type List does not match the **Device Type** of the Data Sync.

---

5. Add Model Types to the list of device models that are to be included or excluded according to the **List Type** selected.

See [View List of Device Models](#) for information on how to see a list of available device models for vendor devices.

6. Click **Save**.

## 30.9. Model Instance Filter

### 30.9.1. Overview

Model instance filters (MIF) allow the administrator to provide criteria to define a subset of model instances to sync in. This causes the sync to only sync in those instances matching the criteria instead of all the instances.

A data sync can be set up with reference to:

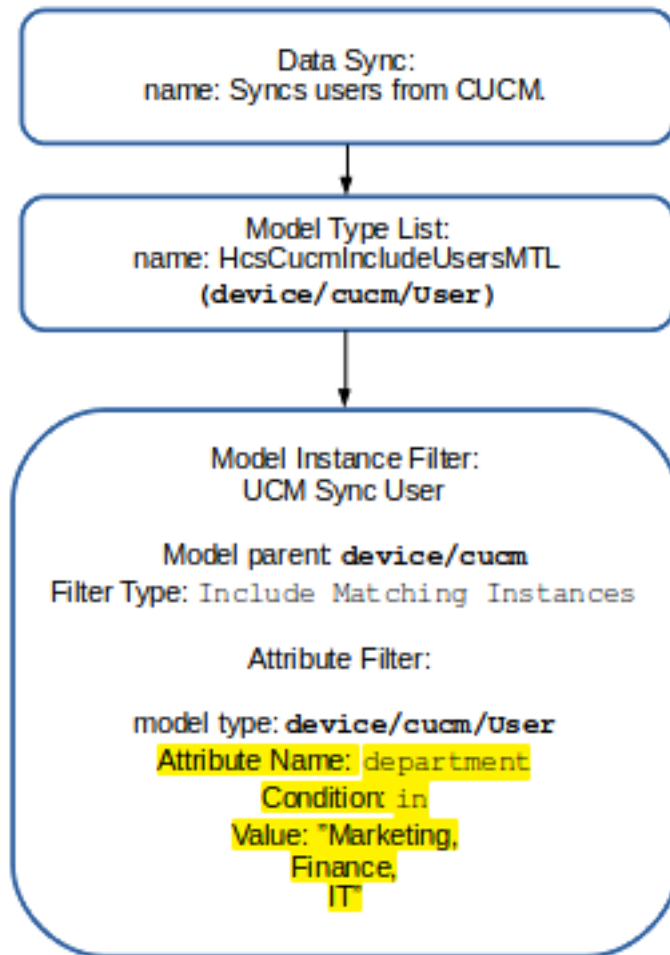
- The device that is the sync target
- A set of data in the form of a model type list, which also defines the sync sequence of the models in this list
- Model instance filters of the models in the list - to provide more specific filtering of specific instances of the models to sync

---

**Note:** When using a model instance filter with a data sync, the ability of the sync to remove (purge) records is disabled by default to prevent the unintentional removal of records that are excluded by the model instance filter. You'll need to enable *Remove* if you intend for the sync to purge cache records that are excluded by the model instance filter. See [Introduction to Data Sync](#)

If you're upgrading to 21.4-PB4 from an earlier version of Automate, a migration script disables *Remove* for any syncs that have a model instance filter applied. This is to prevent the sync from unexpectedly removing a large number of records after the upgrade.

---



### 30.9.2. Add a Model Instance Filter

1. Log in as a Provider level administrator, then go to (default menus) **Administration Tools > Model Instance Filter**) to open the list view of existing model instance filters at the corresponding administrator hierarchy.
2. Click the Plus icon (+) to add a new model instance filter.
3. Fill out a name for the new model instance filter.
4. From the **Model Parent** drop-down, choose the device or model type. The filter will be applied to it.

---

**Note:** A data sync will fail if the **Model Parent** of the Model Instance filter does not match the **Device Type** of the Data Sync.

---

5. Choose the type of filter - the inclusion or exclusion of attributes: **Include Matching Instances** or **Exclude Matching Instances**.
6. Add one or more filters in the **Model Filters** group:
  - a. Choose the **Model Type** that belongs to the **Model Parent**.
  - b. Add one or more attribute filters in the **Attribute Filters** group:



- The **Attribute Name** should be selected after inspecting list request responses in the Transaction log - refer to the note below.
- Choose its **Condition**.

For **In** and **Not In**, if the field specified turns out to be an array, then “in” means there is an overlap between the field value and the value it is being checked against. For example, “lines in <an array of lines>” is comparing an array to an array.

The **Like** condition is a regular expression match, so in any regex should work here, but a very basic usage of regex is a “contains” type functionality, for example, “username like fred”.

- Provide a **Value** to filter on.

It is often better (frequently faster) to try and use a built-in **Condition** rather than resorting to macros in the **Value** that needs to be matched on.

Filter criteria can be set up according to your purposes:

- Multiple **Model Type** entries are treated as an OR condition; creating a list of criteria. Any records matching any of the entries will result in a match. This is useful when defining criteria for different model types, for example, criteria for user records and different criteria for phone records. It is also useful for defining multiple criteria on the *same* model type and attribute, for example, multiple entries for device/cucm/User model type where the attribute of userid for example matches different macro-based conditions.
- Multiple **Attribute Filters** - attribute criteria for a model type are treated as a logical AND condition and entries need to match *all* the criteria in order to meet the condition. This is useful when creating criteria that match multiple different attributes of the model type, for example, match a user that has a matching userid as well as a matching department.

7. Click **Save**. The filter can be selected from the **Model Instance Filter** drop-down when creating or modifying a Data Sync.

---

#### Note:

- If the filter is added at a hierarchy level *below* that of the the Data Sync, executing the Data Sync will fail, displaying a message “Model type list <ModelTypeList> not found at or above the current hierarchy.”.
- In order to identify the **Attribute Name** of the model that can be used for a filter, inspect the transaction log for a list request of the model from the device.

For example, in order to find the available Model Instance Filter attributes of device/cucm/UserProfileProvision, inspect the response from a list request from the device.

From the RESPONSE snippet below, it can be determined that the attributes available for filtering are:

- name
- description
- allowProvision
- limitProvision

```
</ns0:listUserProfileProvision>
</soapenv:Body>
</soapenv:Envelope>
```

RESPONSE:

(continues on next page)

(continued from previous page)

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Body>
    <ns:listUserProfileProvisionResponse xmlns:ns="http://www.cisco.com/AXL/API/11.5">
      <return>
        <userProfileProvision uuid="{96FA39CD-8A29-4B26-A3F5-0FF683326134}">
          <name>Standard (Factory Default) User Profile</name>
          <description>Standard (Factory Default) User Profile</description>
          <allowProvision>>false</allowProvision>
          <limitProvision>10</limitProvision>
        </userProfileProvision>
      </return>
    </ns:listUserProfileProvisionResponse>
  </soapenv:Body>
</soapenv:Envelope>
```

### 30.9.3. Common Use of Model Instance Filters

While model instance filters can be used on any sync type, their common uses are:

- Add syncs - to retrieve a subset of records from the underlying device into VOSS Automate. For example, to limit the users pulled from LDAP, from UCM, and so on.
- Remove/purge sync - to target specific records for removal in a purge or delete sync. For example, to purge a subset of users from VOSS Automate that were inadvertently pulled in.

**Note:** When using a model instance filter with a data sync, the ability of the sync to remove (purge) records is disabled by default to prevent the unintentional removal of records that are excluded by the model instance filter. You'll need to enable *Remove* if you intend for the sync to purge cache records that are excluded by the model instance filter. See [Introduction to Data Sync](#)

**Note:** Model Instance filters do not work with CUCM Change Notification sync types. If a model instance filter is needed for a CUCM element, this model type should be excluded from the change notification sync and a separate sync should be set up for this.

### 30.9.4. Macro Functions in Model Instance Filters

Macro functions can be used in the **Value** field to define matching criteria. This is particularly useful for "contains" matching, for example, using `fn.contains` or `fn.containsIgnoreCase`.

The value read in from the device API call can be referenced using the input context and the field name from the API call (for example, `input.telephoneNumber`).

For example, the **Value** field can have:

- for `fn.contains`:

```
((fn.contains Dublin, input.description == True)) <{{input.description}}>
```

This `fn.contains` function will search as *case sensitive*, and in the example will only match where the description field contains the word "Dublin".

- for `fn.containsIgnoreCase`:

```
((fn.containsIgnoreCase +27,input.telephoneNumber == True)) <{{input.telephoneNumber}}
↔}>
```

You can also use a named macro (e.g. macro.ZA-number), that has the macro above in the **Value** field instead, so that:

- **Model Type:** device/cucm/User
- **Attribute Name:** telephoneNumber
- **Value:** macro.ZA-number

This condition will sync every user with a telephone number that includes +27.

Macros cannot be used in the **Value** field in conjunction with the “in” **Condition**.

### 30.9.5. Model Instance Filter Examples

This section describes a few examples for using model instance filters.

**Model instance filter with multiple model filter entries to match criteria on different model types:**

Name*	UCM Sync User and Phone Criteria	
Model Parent	device/cucm	
Filter Type*	Include Matching Instances	
Model Filters	+	
	- +	
Model Type*	device/cucm/User	
Attribute Filters	+	
	- +	
Attribute Name*	department	
Condition*	In	
Values	+	
	- + ▲ ▼ Marketing	
	- + ▲ ▼ Finance	
	- + ▲ ▼ IT	
	- + ▲	
Model Type*	device/cucm/Phone	
Attribute Filters	+	
	- +	
Attribute Name*	product	
Condition*	Equals	
Value	Cisco 7940	

This model instance filter will result in: looking at device/cucm/User records it will match users that have a department of Marketing, Finance, or IT (due to the IN condition). When looking at device/cucm/Phones it will match phones of the type "Cisco 7940".

**Model instance filter with multiple model filter criteria entries with the same model type and macros to create a list of records to match**

The image displays two screenshots of a configuration interface for a model instance filter. Both screenshots show the 'Model Type\*' dropdown set to 'device/cucm/User'. Below this, the 'Attribute Filters' section is expanded to show a single filter entry.

**Top Screenshot:**

- Model Type\*: device/cucm/User
- Attribute Filters:
  - Attribute Name\*: telephoneNumber
  - Condition\*: Equals
  - Value: `{{ fn.containsIgnoreCase +1,input.telephoneNumber == True}} <{{input.tel`

**Bottom Screenshot:**

- Model Type\*: device/cucm/User
- Attribute Filters:
  - Attribute Name\*: telephoneNumber
  - Condition\*: Equals
  - Value: `{{ fn.containsIgnoreCase +27,input.telephoneNumber == True}} <{{input.tel`

For this example, when looking at the device/cucm/User records it will match users that have a telephone number containing +1 OR +27. The macro in the value field is cut short but it's using the macro in the notes above for reference. Due to the macros in use in the value, this had to be done as multiple model filter entries instead of a attribute filter using the IN condition.



### 30.10.1. Overview

VOSS Automate supports allowlists and denylists to specify parameters that cause the workflows attached to your data sync to run. These are defined via the system **Global Settings**; typically available to sysadmin users in the system.

Allowlists and denylists specify the fields on the device model that trigger workflows attached to a sync, when they change. The allowlist defines the fields that will trigger the workflow when they change, while all other fields are ignored. The denylist indicates the fields that will be ignored if they change, and won't trigger the workflow.

---

**Note:** Allowlists and denylists affect "Update" workflows only, and are used to prevent unnecessary "Update" workflows from triggering on data syncs.

Workflows for "Add" or "Delete" are triggered regardless of any allowlist or denylist entries.

---

The allowlist takes priority over the denylist if both are defined for the model; thus, choose one approach or the other. The recommendation is to use allowlists, as these are more explicit regarding the fields that will trigger the change. Regardless if a workflow is running or not, the model is updated in Automate, so the changed field is pulled in - it just will not initiate a workflow to do anything further (e.g update data/User).

The system ships with a number of predefined allowlists and denylists, which provide a starting point for optimized syncs. See the Best Practices Guide for more guidance on using the lists for given technologies and the default behavior.

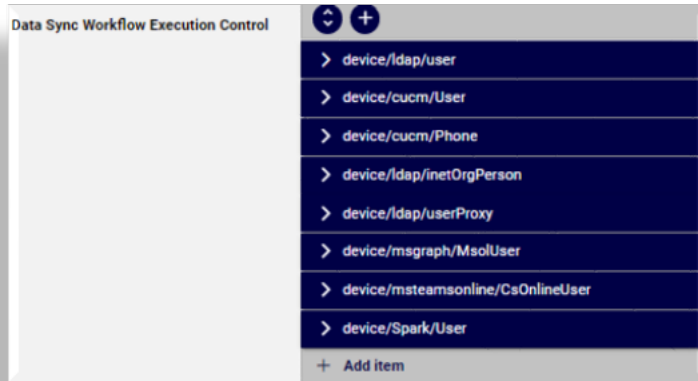
Allowlists and denylists are typically used to keep syncs efficient, particularly for high volume elements (such as users). There are a number of fields pulled in from the devices that are useful to view, but do not require any specific processing (for instance fields like last login time, etc). So the default lists are based on a typical setup and help provide out-of-the-box optimization. For the most part, these will not need to be adjusted, but can be if required to meet a specific need in a deployment.

#### Related Topics

- Settings (Data Sync Workflow Execution Control) in the Advanced Configuration Guide.
- Microsoft Sync Overview in the Best Practices Guide.

### 30.10.2. Global Allowlist and Denylist Attributes

A sysadmin user can review the default system-level allowlist and denylist attributes currently set up for their environment via the data/Settings model (default menus, **Administration Tools > Settings**).



**Note:** Allowlist and denylist attributes for any of these model types may be added or removed in future releases. For example:

- At release 20.1.1, or after applying patch EKB-4362-19.2.1\_patch, the previously denylisted LDAP attributes were no longer imported during LDAP synchronization:

Model type: device/ldap/user

Denylist attributes:

- logonCount
- adminCount
- lastLogonTimestamp
- whenCreated
- uSNCreated
- badPasswordTime
- pwdLastSet
- lastLogon
- whenChanged
- badPwdCount
- accountExpires
- uSNChanged
- lastLogofflastLogoff

- At 21.4-PB2, the following allowlist model attributes were added:

Model type: device/msteamsonline/CsOnlineUser

Allowlist attributes:

- UserPrincipalName
- DisplayName
- Department
- City



- FeatureType
  - EnterpriseVoiceEnabled
  - LineURI
- 

### Default Allowlist and Denylist Attributes

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**Note:** The attributes listed in this section of the guide are correct at the time of writing (for Automate 24.1-PB2).

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- device/ldap/user
  - Denylist:
    - \* logonCount
    - \* adminCount
    - \* lastLogonTimestamp
    - \* whenCreated
    - \* uSNCreated
    - \* badPasswordTime
    - \* pwdLastSet
    - \* lastLogon
    - \* whenChanged
    - \* badPwdCount
    - \* accountExpires
    - \* uSNChanged
    - \* lastLogoff
    - \* userPassword
- device/cucm/User
  - Denylist:
    - \* status
    - \* primaryDevice
    - \* attendeesAccessCode
    - \* displayName
    - \* enableUserToHostConferenceNow
    - \* pinCredentials
    - \* passwordCredentials
    - \* associatedRemoteDestinationProfiles
- device/cucm/Phone

- Allowlist:
  - \* lines
  - \* ownerUserName
- device/ldap/inetOrgPerson
  - Denylist:
    - \* userPassword
- device/ldap/userProxy
  - Denylist:
    - \* accountExpires
    - \* adminCount
    - \* badPasswordTime
    - \* badPwdCount
    - \* bind\_dn
    - \* dSCorePropagationData
    - \* distinguishedName
    - \* employeeID
    - \* homeMDB
    - \* instanceType
    - \* lastLogon
    - \* lastLogoff
    - \* lastLogonTimestamp
    - \* legacyExchangeDN
    - \* logonCount
    - \* mDBUseDefaults
    - \* mailNickname
    - \* manager
    - \* msExchArchiveQuota
    - \* msExchArchiveWarnQuota
    - \* msExchBlockedSendersHash
    - \* msExchCalendarLoggingQuota
    - \* msExchDumpsterQuota
    - \* msExchDumpsterWarningQuota
    - \* msExchELCMailboxFlags
    - \* msExchHomeServerName
    - \* msExchMailboxGuid
    - \* msExchMailboxSecurityDescriptor

- \* msExchMobileAllowedDeviceIDs
  - \* msExchMobileBlockedDeviceIDs
  - \* msExchMobileMailboxFlags
  - \* msExchPoliciesIncluded
  - \* msExchRBACPolicyLink
  - \* msExchRecipientDisplayType
  - \* msExchRecipientTypeDetails
  - \* msExchSafeSendersHash
  - \* msExchTextMessagingState
  - \* msExchUMDtmfMap
  - \* msExchUserAccountControl
  - \* msExchVersion
  - \* msExchWhenMailboxCreated
  - \* objectCategory
  - \* objectClass
  - \* objectGUID
  - \* objectSid
  - \* physicalDeliveryOfficeName
  - \* primaryGroupID
  - \* protocolSettings
  - \* proxyAddresses
  - \* pwdLastSet
  - \* sAMAccountType
  - \* showInAddressBook
  - \* textEncodedORAddress
  - \* uSNChanged
  - \* uSNCreated
  - \* userAccountControl
  - \* whenChanged
  - \* whenCreated
  - \* userPassword
- device/msgraph/MsolUser
    - Allowlist:
      - \* UserPrincipalName
      - \* Title
      - \* PhoneNumber

- \* StreetAddress
- \* State
- \* PostalCode
- \* Office
- \* MobilePhone
- \* LastName
- \* FirstName
- \* DisplayName
- \* Department
- \* Country
- \* City
- device/msteamsonline/CsOnlineUser
  - Allowlist:
    - \* UserPrincipalName
    - \* LineURI
- device/spark/User
  - Allowlist:
    - \* department
    - \* email
    - \* firstName
    - \* lastName
    - \* locationId
    - \* manager
    - \* phoneNumbers
    - \* title

## 30.11. View List of Device Models

This procedure displays the device models available to use in *Model Type Lists* for custom data syncs from vendor devices.

### Perform these steps:

Option A:

1. Log in on the VOSS Customer Portal [<https://voss.portalshape.com>].
2. Select the **Documentation & Resources** menu.
3. Access the API Reference from the documentation release landing page.
4. Inspect the list of devices available from the *Model Index* link in the reference to obtain device model names.

Option B:

1. On your system, open the URL: `https://<IP>/api/choices/?format=json`
2. From the returned list, identify the device model with `device/` in the endpoint, for example `device/cucm/BillingServer`.

### Next Steps

When including the device model in a Model Type List, use the format: `device/<device_type>/<device_model>`, for example, `device/cucm/BillingServer`.

## 30.12. Create a Custom Data Sync

Create a custom data sync to use a targeted Model Type List.

### Perform these steps:

1. Log in as provider admin or higher.
2. Choose **Administration Tools > Data Sync**.
3. Click **Add**.
4. Enter the name of the Data Sync in the **Name** field.

It is recommend to use a naming convention that makes it easy to identify the data syncs in the list view, such as C1Pull-CUCM01-DS where C1 is the customer name, Pull is the data sync type, CUCM01 is the name of the Cisco Unified Communications Manager, and DS stands for Data Sync. You could also include the type of data included in the sync, such as C1Pull-CUCM01-MediaResources-DS.

5. From the **Device Type** drop-down, choose the Device Type you are syncing from.
6. From the **Sync Type** drop-down, choose **Pull from Device**.
7. From the **Dependency Resolution** drop-down, choose **Default**.
8. Select the **Execute Asynchronously** and **Refresh Existing (Changed) Data** check boxes.
 

Execute Asynchronously means that the sync request will return a reply before its complete when executed from the API. Refresh Existing (Changed) Data means that all instances of the device models specified in the Model Type List will be updated.
9. Select the **Force Refresh of Data** check box if a data update is required regardless of whether data has changed on the device. This option would for example be used if it is required that update workflows be run upon a data sync.
10. From the **Model Type List** drop-down, choose the targeted Model Type List you defined earlier.
11. Leave **Synchronization Order** and **Model Instance Filter** blank.
12. Click + next to **Device Filters** to add an entry to the list.
  - a. From the **Attribute Name** drop-down, choose **host**.
  - b. From the **Condition** drop-down, choose **Equals**.
  - c. From the **Value** drop-down, choose the hostname/IP address of the device.

---

**Note:** Workflows can be added to, and executed by a custom data sync to perform specific data sync operations.

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13. In the **Workflows** section, include workflows in the custom data sync if you want to perform specific data sync operations, otherwise leave the **Workflows** section empty. For example, if you want to move remote destinations from the Customer hierarchy level to the Site level, choose the **RD\_Overbuild\_PWF\_wrapper** workflow from the **Workflow** drop-down.

If the **Synchronous** check box is enabled, the workflows will execute in sync with Data Sync transaction, so that the parent pre- and post workflow steps are honoured. If disabled, the workflows will not be child transactions of the Data Sync execute transaction.

14. From the **Transaction Log Level** drop-down, choose the log level for the data sync. For a description of the list of log levels, see [Transaction Log Levels](#). The default log level is *Warning*.

You can for example reduce the log level for PULL device syncs in order to reduce the size of transaction logs. This is useful where large numbers of transactions are archived regularly.

15. Click **Save**.

### Next Steps

To run the custom data sync, click the data sync from the **Data Sync** list and click **Execute**.

## 30.13. CUCM Change Notification Alerts

### 30.13.1. Overview

The Cisco Unified Communications Manager (CUCM) change notification (CNF) feature is enabled to display alerts. There is no need to configure CNF alerts manually in Automate - admin users receive alerts when the collector process is in an error state.

Administrators can view and delete alerts at the hierarchy they log in at, and at lower hierarchies. For example, Provider, Reseller, and Customer administrators can view alerts raised at the Customer level (sys.hcs.provider.reseller.customer), but a Site admin cannot view such alerts.

When a CNF alert is raised, you're notified of the alert via the toolbar Messages icon in the Admin Portal. Click the **Messages** or **Notifications** toolbar button to view the alerts, or go to (default menus) **Administration Tools > Alerts**.

### 30.13.2. Properties of CNF Alerts

Change notification (CNF) alerts have the following properties:

ID	A generated unique identifier of the target device of the collector. For CUCM, the ID displays the host name, port, and hierarchy.
Code	An error or warning code associated with the alert.
Cat- e- gory	The alert category - Device Change Notification Collector
Seve ity	VOSS Automate displays severity codes and messages as follows (“{}” indicate device or number placeholders in the messages). Each alert has some properties, for example, severity (Error, Warning or Info), the number of times that the same alert has been raised, and the time stamp of the last alert instance.
Mes- sage	Displays error message description and the statement to fix the error.
Cour	Displays the number of times the alert has occurred for a specific device.
Lat- est Alert	The last time this alert occurred.

**Note:** Administrators can filter alerts by any of the alert fields.

### 30.13.3. CNF Error Scenarios

VOSS Automate displays change notification (CNF) alerts for the following error scenarios:

- Warning:
  - 45000: Unprocessed changes at 75% of limit for device {}. Please configure and run the necessary data syncs.
- Error:
  - 40000: Device change notifications are not supported for device {}.
  - 40001: Device change notification data for device {} has been lost. Tracking data has been repaired and collector process will continue. Some changes may have been lost, please run a full sync on the device.
  - 40002: Device change notification tracking data for device {} has become corrupted. Tracking data has been repaired and collector process will continue. Some changes may have been lost, please run a full sync on the device.
  - 40003: Device change notification tracking DB write for device {} failed. The collector process will continue to attempt DB writes. Please investigate the database write failure.
  - 40004: Device change notification data DB write for device {} failed. The collector process will continue to attempt DB writes. Please investigate the database write failure.
  - 40005: Unable to repair device change notification tracking data for device {}.
  - 40006: Too many unprocessed changes recorded for device {}. No new changes will be recorded until at least {} changes are processed. Please configure and run the necessary data syncs.
  - 40008: Could not update pending changes data for device {}. {}.

The administrator reads, inspects, acts on (for example, run a full sync on the device), and then manages alerts of the CNF collection service. The administrator can delete the alert from the list only when the issue that raised the alert has been resolved.

**Note:** If the Administrators forget to remove the CNF alert after resolving it, the alert will still be shown when they log in to VOSS Automate. We strongly recommend removing the alert after resolving it.

## 30.14. Change Notification Sync

### 30.14.1. Introduction to Change Notification Sync

#### Overview

VOSS Automate's interaction with the Cisco Unified Communication Manager (CUCM) change notification (CNF) sync has two primary components:

Data Collector	Collects changes from CUCM and updates the VOSS cache on the predefined frequency (defaults to every 300 seconds). This collector must be enabled to collect the changes, otherwise the sync won't process any changes.
Change Notification Sync	A change notification (CNF) sync type that processes the changes the data collector places in the VOSS cache. A scheduled sync must be set up and enabled so that the changes are processed within a reasonable period. The CNF sync can also be run adhoc, if required, around the schedule.

The VOSS Automate data collector retrieves change records from CUCM based according to the predefined interval. By default, this is every 300 seconds (3 minutes).

When running a CNF sync, VOSS Automate processes the change records that are collected, as follows:

Add	Performs a GET API call to retrieve the full record, and adds it to VOSS Automate.
Update	Performs a GET API call to retrieve the full record, and updates the record in VOSS Automate.
Del	Removes the record from VOSS Automate.

Update syncs perform GET API calls only for changed records, which reduces the time it takes to run the sync. This is particularly beneficial for large UC installations.

With a data collector polling period of 300 seconds and a CNF sync scheduled for every 24 hours, the process is as follows:

- Every 300 seconds (5 minutes) the polling collector retrieves all current changes from CUCM.
- The polling repeats every 5 minutes, and updates the VOSS Automate cache.
- After 24 hours, the CNF sync runs, and processes all the changes that VOSS Automate stored over that 24hr period.



The sync duration depends on the number of changes to process, since each changed object requires an AXL GET API request. A GET AXL request is only required for objects changed in the time between syncs.

For example, on a system with 10 000 users, if 100 of these users are changed, then only 100 GET AXL request are required in a CNF sync. By contrast, a non-CNF sync would require 10 000 GET AXL requests to update these 100 users.

The VOSS Automate data collection can store up to 200,000 changes from a single CUCM cluster.

- A system warning is triggered when the data collection storage reaches 75% of capacity
- A sync error is triggered when the 200 000 changes capacity is reached - see [Troubleshooting Change Notification \(CNF\)](#)

To prevent the sync error, it is recommended that you have a regular, scheduled CNF sync running.

### CUCM and Change Notification (CNF)

The change notification (CNF) capability supports all the objects that are available via AXL. Typically, this means that everything VOSS Automate can manage in CUCM is available via change notification.

Data that VOSS Automate pulls from CUCM that is *not* via AXL, includes:

- `device/cucm/PhoneType` - this is a combination of thinAXL so would not auto-update. This includes when you add or update phone types in Cisco Unified CM with COP files or via Cisco Unified CM upgrades. So a non-CNF sync is still required for this model.
- Phone Status and IP Address - this is pulled into the system when the phones are viewed in VOSS Automate (list view or individual phone). This is not via AXL so would not be updated via change notification or even a normal sync at this point.

In CUCM, the change queue cache is stored in memory and is limited to 100,000 changes. The cache can fill quickly depending on the types of changes performed. For example, if an XSI (IP Phone) Service has been configured for 10,000 phones and the service is deleted, the cache will include one entry representing the deletion of the service plus 10,000 phone updates indicating the service was removed from each device. The polling period from the Cisco Unified CM is configurable and the timing should be considered based on how frequent configuration changes are being made in Cisco Unified CM. The default in VOSS Automate when polling is enabled is 300 seconds but it can be modified to be longer (up to 7200 seconds) as desired.

### CUCM Setup to use CNF

There are two settings in the Cisco Unified Communications Manager (CUCM) to check and update to ensure change notification (CNF) is enabled and set up for the right queue size (accessed via service parameters: - **System > Service Parameters > Cisco Database Layer Monitor** then click the **Advanced** button):

Service Parameter Name	Setting
AXL Change Notification	This should be set to "On"
AXL Change Notification Queue Size	This has a default of 20000. For a typical system, it is suggested this is changed to the maximum of 100000 to reduce the chance of changes being missed under heavy provisioning tasks.

### 30.14.2. Enabling / Disabling CNF Syncs for a CUCM cluster

This section describes the high level steps for enabling change notification (CNF) syncs for a Cisco Unified Communications Manager (CUCM) cluster in VOSS Automate:

**Note:** Perform these steps in reverse order to disable change notification for the cluster.

1. Enable and configure the service in CUCM - see [CUCM Setup to use CNF](#)
2. Enable change notification on the CUCM cluster in VOSS Automate - see [VOSS Automate Change Notification Functionality](#)
3. Review the change notification settings for the cluster - see [VOSS Automate Change Notification Functionality](#)
4. Review or create the required data sync instances for change notification, for the cluster - see the topics on data sync, from [Introduction to Data Sync](#).

**Note:** The actual number of syncs and their setup will depend on the needs for your system and the design.

See the Best Practices Guide for guidance on sync logic and recommended setups. If further recommendations or guidance is needed, contact your VOSS account team or VOSS support.

5. Review or create required schedules for the data sync(s) created in the previous step, and activate the schedule(s) - see [Enable a Scheduled Data Sync](#)

**Note:** Follow the guidance for scheduling around syncs to ensure the load on the system is optimized. At least one sync schedule should be activated for the CNF sync setup to be complete.

### 30.14.3. VOSS Automate Change Notification Functionality

This section provides more details on the functionality of the Change Notification Feature (CNF) components in VOSS Automate.

#### Change Notification Collector

The data/DeviceChanges model has an instance per UCM cluster and will provide the data collector status and pending changes in the cache for that cluster. An instance of the model will appear for all UCM clusters whether change notification is enabled or not. It gives you access to:

- **Base tab**
  - **Last Collection Time** - time the changes were last collected from the device
  - **Pending Change Notifications** - a view of pending changes collected for different types of models and by type of change (Add/Update/Delete). By default, this is device/cucm/User, device/cucm/Line and device/cucm/Phone. However, these models are adjustable on the **Settings** tab. If additional model types to the defaults above are added to the list, these are also shown. The remaining model types are all grouped in a single row called Other.

- **Settings** tab
  - **Polling Interval (seconds)** (300-7200 seconds with default 300) - the duration for collection of changes from the device
  - **Enable Change Collection** - enable or disable the change collector for that device.
  - **Ignored Operations** - you can select certain operations (Add/Mod/Del) to not be collected. Typically you want to collect all changes; however this option can be used to ignore some changes for specific scenarios if needed (for example, you will only handle updates via the CNF sync).
  - **Displayed Model Types** - here you can configure which models you want to see summary stats for on the **Base** tab. You can add, remove or change models to meet specific needs (for example, `deviceProfile` for extension mobility profiles, `remoteDestination` for SNR remote destinations, and so on).

The `data/DeviceChanges` model should be included in menu layouts for roles that need access to this level of detail for the CNF syncs.

### Change Notification Sync Type

When a Change Notification Sync type is used in a data sync, there are a number of differences in the sync behavior in comparison with a normal pull sync:

- A GUI portal rule on the Data Sync interface will change some of the settings visible on the Data Sync GUI interface when the **Sync Type** is set to Change Notification Sync. This selection hides settings that are not relevant and exposes new settings for this type only.
- **Number of Changes to Process** - This input field becomes available from the Data Sync interface. Leaving the input box blank or typing in 0 will mean the sync will process all the pending changes collected - subject to the selected model type list and Disabled Operations set up on the sync. If you enter a number, the sync will process that number of changes only and leave any additional changes in the change collection for the next sync.

Typically this value should be 0 or blank, unless there is a specific reason to limit the number of changes to process, for example when managing how long the sync may run.

- A **Model Type List** (MTL) can be set up and selected to be associated with CUCM change notification collection. This list allows a user to whitelist/blacklist certain model types from the Call Manager change notification collector service so that change notifications which are not in the MTLs do not accumulate and possibly trigger the maximum changes counter which prevents any new changes from being collected.

All other visible settings are the same as with a normal pull sync, for example, device filters, workflows, and so on.

When a sync runs (either a normal pull sync or a change notification sync), it will clear out the change notification collection of any model types and changes processed for that cluster.

The model type lists and disabled operations define which models and types of actions are processed in either a pull or a change notification sync:

- The model type list (if one is assigned) assigned to the sync will determine which model type changes will be processed from the collected changes (for example, `device/cucm/User` for user entities only).
- The **Disabled Operations** tab defines if any of the types of changes are ignored. For example, selecting **Remove** will ignore delete changes.

Pull Sync and Change Notification Sync details:

- A pull sync does not utilize the change notification collection as a source of data. However, it will clear the collection for the models types it processes.
  - A *full* pull sync (a pull sync without a model type list) will clear the change collection as part of the sync process since it is pulling *all* the latest information from the UCM.
  - A pull sync with a model type list defined (for example one that contains `device/cucm/User`) will clear the change collection of any `device/cucm/User` changes, since it is syncing all the user information anyway. All other model types and changes will be left in the collection.
  - If a pull sync is run with **Disabled Operations** selected (for example, **Add** is selected) this will process the pending changes for Update and Delete actions for any matching models. However, *all* actions for the matching model will be cleared from the cache, *including Add actions*.
- A Change Notification Sync utilizes the change collection as its source of information and will clear that changes from the change collection for any model types it is processing.
  - A *full* Change notification sync (CNF sync without a model type list) will process *all* the pending changes and clear the change collection (unless limited by a value in the **Number of Changes to Process** setting on the sync. Then only that number of changes will be processed and cleared).
  - A change notification sync with a model type list defined (for example contains `device/cucm/User`) will process all the pending changes for the `device/cucm/User` model type and clear those from the change collection.
  - If a change notification sync is run with **Disabled Operations** (for example, **Add** is selected), it will process the Update and Delete changes for the matching models. However, *all* actions for the matching model(s) will be cleared from the cache, *including Add actions*.

This sync behavior means that you may wish to set up multiple syncs for a cluster to handle different types of sync and sync schedules to meet your needs. Ensure that you generally have all the model types covered in your scheduled syncs if CNF is enabled, otherwise some changes may never be cleared from the change collection, thereby taking up space.

For additional considerations and information around sync setup best practices, see the Best Practices Guide.

### VOSS Automate Setup to enable Change Notification

Enabling the Change Notification capability is completed on a per UCM Cluster basis. This can be done on the UCM Server configuration page for a publisher via the publisher tab and selecting the **Enable Change Notification Sync** check box. When selected and saved, the system will:

- Enable the data collector for that cluster
- Create a CNF sync type for the cluster
- Create a schedule for the CNF sync. The schedule will be disabled by default.
- These settings should all be reviewed, adjusted, or additional instances created to meet your needs. See further information in:
  - The Best Practices Guide
  - The System Monitoring Configuration section in the Advanced Configuration Guide on sync best practices for different scenarios and other considerations.
- A full sync with the UCM Cluster should be executed just before or after enabling Change Notification for the cluster. This can be part of changing the setting for an existing cluster or adding a new publisher. Currently, both actions will invoke a full sync of the cluster. However, if the sync is not completed during the add/modify of the publisher, then one should be initiated.

When CNF is disabled on the Publisher configuration page (or if the cluster is removed from the system), the following will occur:

- The auto-generated schedule that was added during enabling will be removed. Any additional custom scheduled added will not be removed automatically and should be removed before disabling the change notification for the cluster to avoid unnecessary syncs running.
- The auto-generated CNF sync type that was added during enabling will be removed. Any additional custom CNF sync types for the cluster added will not be removed automatically and should be removed before disabling the change notification for the cluster to avoid unnecessary syncs being set up.
- The data collector for the cluster will be disabled.

---

**Note:** If the collector is only disabled via the `data/DeviceChanges` model, then the schedules and sync will remain. This is the best approach if you need to temporarily disable the CNF sync (for example, for a maintenance window).

---

### 30.14.4. Troubleshooting Change Notification (CNF)

#### Overview

A number of scenarios may result in error conditions in the change notification (CNF) process. In this case, VOSS Automate is able to display alerts automatically, which means it won't be necessary to configure change notification (CNF) alerts manually.

Administrators can view the alerts at the hierarchy level they log in at and all the levels below that hierarchy. For example, if an alert is raised at the customer level (`sys.hcs.provider.reseller.c1`), then the provider, reseller, and customer administrators can see that alert, but not the site administrators. All the administrators have read and delete permissions to the alerts.

When a CNF alert is raised, the Notifications indicator on the Admin Portal GUI displays the alert. Clicking the notifications launches a dialog and a message that alerts have been raised. Click on the message to be able to go to the list of alert messages, which are also accessible via (default menus) **Administration Tools > Alerts**.

#### Properties for CNF Alerts

CNF alerts have these properties:

- ID: A generated identifier of the target device of the collector For Unified CM, the ID shows the host name, port, and hierarchy.
- Code: An error or warning code associated with the alert.
- Alert category: The category of the alert - Device Change Notification Collector
- Severity: VOSS Automate displays severity codes and messages as follows (“{}” indicate device or number placeholders in the messages). Each alert has some properties, for example, severity (Error, Warning or Info), the number of times that the same alert has been raised, and the time stamp of the last alert instance.
- Message: Displays error message description and the statement to fix the error.
- Count: Displays the number of times the alert has occurred for a specific device.
- Latest Alert: Displays the last time this alert occurred.

**Note:** Administrators can also filter alerts by any of the alert fields.

---

### Error Scenarios for CNF Alerts

VOSS Automate displays change notification alerts for the following error scenarios:

**Important:** Errors codes not discussed in this section may be relevant for alerts that are more internal, and you may need to raise a support ticket for further investigation.

---

- Warning:
  - 45000: Unprocessed changes at 75% of limit for device {}. Please configure and run the necessary data syncs.
- Error:
  - 40000: Device change notifications are not supported for device {}.
  - 40001: Device change notification data for device {} has been lost. Tracking data has been repaired and collector process will continue. Some changes may have been lost, please run a full sync on the device.
  - 40002: Device change notification tracking data for device {} has become corrupted. Tracking data has been repaired and collector process will continue. Some changes may have been lost, please run a full sync on the device.
  - 40003: Device change notification tracking DB write for device {} failed. The collector process will continue to attempt DB writes. Please investigate the database write failure.
  - 40004: Device change notification data DB write for device {} failed. The collector process will continue to attempt DB writes. Please investigate the database write failure.
  - 40005: Unable to repair device change notification tracking data for device {}.
  - 40006: Too many unprocessed changes recorded for device {}. No new changes will be recorded until at least {} changes are processed. Please configure and run the necessary data syncs.
  - 40008: Could not update pending changes data for device {}. {}.

The administrator reads, inspects, acts on (for example, run a full sync on the device), and then manages alerts of the Change Notification collection service. The administrator can delete the alert from the list only when the issue that raised the alert has been resolved.

**Note:** If the Administrators forget to remove the change notification feature alert after resolving it, the alert will still be shown when they log in to VOSS Automate. We strongly recommend removing the alert after resolving it.

---

## Change Cache Full on CUCM

If the CUCM maximum number of stored change records is exceeded, the CUCM drops the oldest changes that have not been collected. This can happen if the polling time in VOSS Automate is set up to be too long or the CUCM is experiencing a very high level of changes. In this case, the system automatically attempts to recover once it receives the polling error. This activity is logged as an Alert in the system and provides the outcome, either of the following:

- recovery was successful (alert code 40001 or 40002)
- recovery was not successful (alert code 40005)

If recovery is successful, you may want to review and consider a full sync as some changes would have been lost (the oldest changes in the CUCM cache).

If recovery was not successful, a full sync is required to update and to get CNF functioning again. The full sync is needed as changes would have been missed from the CUCM, and a clean sync is required in order to start processing changes again. In this situation, application info log messages are logged as well - "Repaired change notification tracking data for device {}" or "Unable to repair change notification tracking data for device {}"

## Change Collection Full for a CUCM Cluster

If the VOSS Automate change collection for a given CUCM cluster exceeds the maximum changes - 200,000 - then an alert with code 40006 is raised. This alert means that no further changes are collected from the CUCM until some of the pending changes are processed. This can be carried out by an administrator executing a sync for that CUCM cluster to clear some of the changes. If the next scheduled sync is not too far ahead in time, then waiting for the next scheduled sync to run may be acceptable.

# 30.15. Shared Lines

provider

## 30.15.1. Shared Line Across Sites

### Overview

The Shared Lines Across Sites feature allows lines to be shared across sites, and is accomplished by introducing the concept of an "Inventory site" in addition to the normal real sites.

The Inventory site is used to provision the shared lines first, then the real sites make use of the shared lines by assigning them to phones. Devices are not provisioned in the Inventory site; they are only provisioned on the real sites.

This feature also supports Hunt Groups and Call Pickup Groups across sites by leveraging the Inventory site to provision all of the lines to be included in the Hunt Group or Call Pickup Group. The lines used in Hunt Groups and Call Pickup Groups that are provisioned in the Inventory site can span multiple real sites (in other words, they are used by devices on the real sites). The key requirement is that all the lines to be used by a given Hunt Group or Call Pickup Group must be configured in the Inventory site, along with the Hunt Group and Call Pickup Group itself.



The Shared Line Across Sites deployment model is 100% backward compatible with the previous directory number (DN) and line configuration. Existing deployments are not impacted when the system is upgraded, and all existing dial plan configuration procedures are supported. The deployment configuration shown in [Shared Line Across Sites Example](#) is optional and is only required when sharing lines across sites.

---

**Tip:** If a line is potentially shareable, we recommend that you create the line in the Inventory Site, even if it will not be shared across sites immediately. The system does not support the ability to move a line from a real site to an Inventory Site, so to convert a line from site-local to cross-site shared, the line would need to be deleted from the real site and recreated in the Inventory Site.

---

**Note:** See the Glossary for descriptions of the following terms related to the Shared Lines Across Sites feature:

- Directory Number (DN)
  - DN Inventory
  - E.164 Number
  - E.164 Inventory
  - Line / Line Relation
  - Line Appearance
  - Class of Service (CoS)
  - Directory Number Routing (DNR)
  - E.164 Associations
- 

## Limitations

The following summarizes some of the limitations concerning the Shared Lines Across Sites feature:

- A new Inventory Site is required for each new combination of NDL and Country (a “site group”). In other words, the lines configured at the Inventory Site are specific to the NDL and Country defined for that site.
- All real sites that reference lines in an Inventory Site must be defined with the same NDL and Country. Ensure that this requirement is met, as it is not enforced in VOSS Automate.
- Shared lines cannot span countries or NDLs. This is necessary because Cisco Unified Communications Manager doesn’t support shared lines across clusters. The country must be consistent so that line CoSs (defined in the Inventory Site) are correct for each device referencing the line (defined in the real site). Ensure that the correct association is made between Inventory Sites and real sites, as it is not enforced in VOSS Automate.
- When configuring a phone or subscriber at a real site, any reference to a DN that does not exist in the Inventory Site results in a new line being created at the real site as it did prior to this Cisco HCS release. In other words, if the Inventory Site doesn’t exist, or a line hasn’t been configured in the Inventory Site first, the system behaves as it did in previous Cisco HCS releases (backwards compatible).
- If a line can be potentially shared, create it in the Inventory Site before referencing it by any devices. If the DN is used in a device before it is configured in the Inventory Site, the line is created in the real site and may not have the desired CoS or other configuration desired for a shared line.



- When a line has been created (either at the Inventory Site or a real site), it cannot be moved. To move the line, delete the line and re-add it. For example, if you forget to define the line at the Inventory Site first and configure a device with a line, the line is created at the real site. You would need to delete the line from the real site and add it to the Inventory Site, then reassign it to the phone.
- An Site Administrator logged in to a real site is not able to see the line configuration that exists at the Inventory Site. A Customer Administrator or above can see the line configurations at all of the sites.
- The Shared Lines Across Sites feature only works when using a flat dial plan. The reason is that other dial plans have site location codes in the DN which won't make sense if the DN is shared by multiple sites. The default VOSS Automate template bundle includes a Type 4 flat dial plan, but other custom dial plans that are not site-specific can be used.
- Self-provisioning does not work for DNs defined at the customer level.
- Although an Administrator can delete Inventory Sites, we do not recommend it. If the Inventory Site is deleted, all hunt groups, call pickup groups, voice mail pilot associations, and lines that are part of the Inventory Site are deleted. If there are devices on the "real" sites that reference these lines, they will no longer reference these lines as they will have been deleted. The customer-level DN inventory is still intact, though no lines are associated with these DNs because they are deleted when the Inventory Site is deleted. The hunt groups and call pickup groups are self-contained to the Inventory Site and are therefore, deleted as part of the deletion of the Inventory Site.
- When the inventory site is deleted, this deletes all shared lines, Classes of Service, DNR, and any other configuration added at that site. The shared lines are removed from all devices on "real" sites which may have referenced them.
- If an emergency number is dialed from any shared line, the number displayed on the other end should be the Emergency Call Back Number of the corresponding site.

### 30.15.2. Shared Line Across Sites Example

Phones are always configured on the real sites, and can use both shared and site-local lines. For example, each phone can have one site-local line (for example, 1000), and one cross-site shared line (for example, 9000). The following is a summary of the configuration that resides at each hierarchy type:

a. Customer Hierarchy

- **DN inventory** - for the lines to be shared across sites.

Note:

The DN inventory is visible across all sites under the customer. Allowing DN Inventory to be configured at the customer hierarchy node is an enhancement for the Shared Line Across Sites feature. Note that DN inventory can only be created at the customer hierarchy node when a non-SLC-based customer dial plan has been deployed. A transaction error is sent if the administrator attempts to create customer level DN inventory with an SLC-based dial plan.

b. Inventory Site, includes

- **Line relations** - for the DNs to be shared across sites.
- **Directory Number Routing (DNR)** entry for the line relations configured at this site to make the DNs inter/intra-site dialable.
- **E.164 inventory** - for the line relations configured at this site.
- **E.164 associations** - for the line relations configured at this site.

- **Line Class of Service (CoS)** - for the lines configured at this site. CoS is discussed in more detail in [Class of Service for Shared Line Across Sites](#).
- **Short codes** - for the line relations configured at this site.

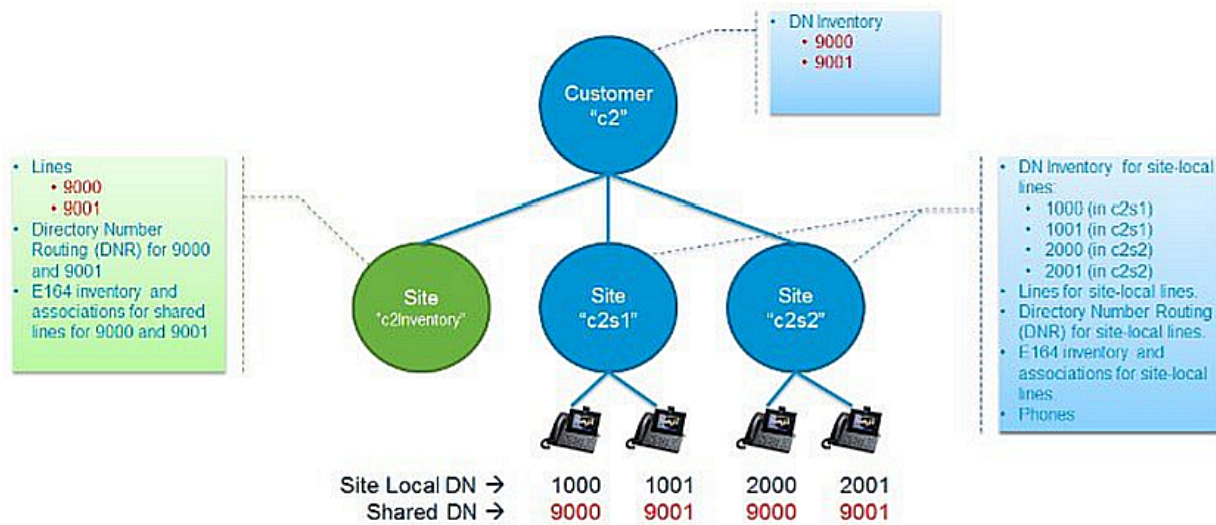
c. Real Site, includes

- **DN inventory** - for lines to be used only at this site. Note that these DNs can be shared by multiple phones within the site.
- **Subscribers** - configured from **Subscriber Management > Subscribers**, or **Subscriber Management > Quick Add Subscriber**.
- **Line relations** - for the DNs configured at this site. These line relations do not have to be configured first; they are configured automatically any time a phone, extension mobility profile, or remote destination profile references a line that doesn't exist in the inventory site.
- **Directory Number Routing (DNR)** - for each of the line relations configured at this site.
- **E.164 inventory** - for lines created at this site.
- **E.164 associations** - for lines created at this site.
- **Device Class of Service (CoS)** - to be used for the phones configured at this site.
- **Phones** - these phones can reference lines that were defined in the Inventory Site or the Real Site where the phone exists.
- **Extension mobility** - these profiles can also reference lines that were defined in the Inventory Site or the Real Site where the phone exists.
- **Single Number Reach** - these profiles can reference lines that were defined in the Inventory Site or the Real Site where the profile is defined.

Fields in VOSS Automate which reference DNs, such as the **Pattern** field in the **Line** tab of a Phone, are in a drop-down list of DN inventory. The drop-down list of DNs includes inventory defined at the customer level, combined with the inventory defined at the current site context. The administrator can choose either a cross-site shared DN or a site-local DN.

### 30.15.3. Shared Line Across Sites Example Diagram

The following figure provides a basic Shared Line Across Sites configuration using one Inventory site ("c2Inventory") and two real sites ("c2s1" and "c2s2"). In this example there are two shared DNs (9000 and 9001 shown in red) and four site-specific DNs (1000 and 1001 at c2s1, 2000 and 2001 at c2s2). The inventory for the shared DNs are provisioned at the Customer hierarchy level to make them visible to all the sites under the customer. This allows the sites to configure the associated line and assign the line to a device. The inventory for the non-shared-across-sites DNs is still configured at the real sites (in blue) as it was in previous Cisco HCS releases. Notice that both shared DNs and non-shared DNs can co-exist for the same customer.



### 30.15.4. Inventory Site

It is important to understand that an Inventory Site is only an Inventory Site by name, not by type. An Inventory Site is just a regular site, and is no different than any other site, except that it does not have an **Inventory Site** check box, and is deployed exactly the same as any other site. It is only by convention that we're calling this an Inventory Site and designating this site as the repository for lines to be shared across sites.

The Inventory Site is created from the **Site Management > Sites** menu. It requires an NDL and a Country, and requires a site dial plan to be deployed.

**Note:** There is no enforcement of configuration ensuring that, for example, only lines are configured at the Inventory Site and not phones. It is the responsibility of the administrator to ensure the proper procedures and conventions are followed as documented in this guide. Therefore, it is important to ensure a good understanding of how the Inventory Site is to be used, and how the Inventory Site configuration relates to the configuration of the "real sites".

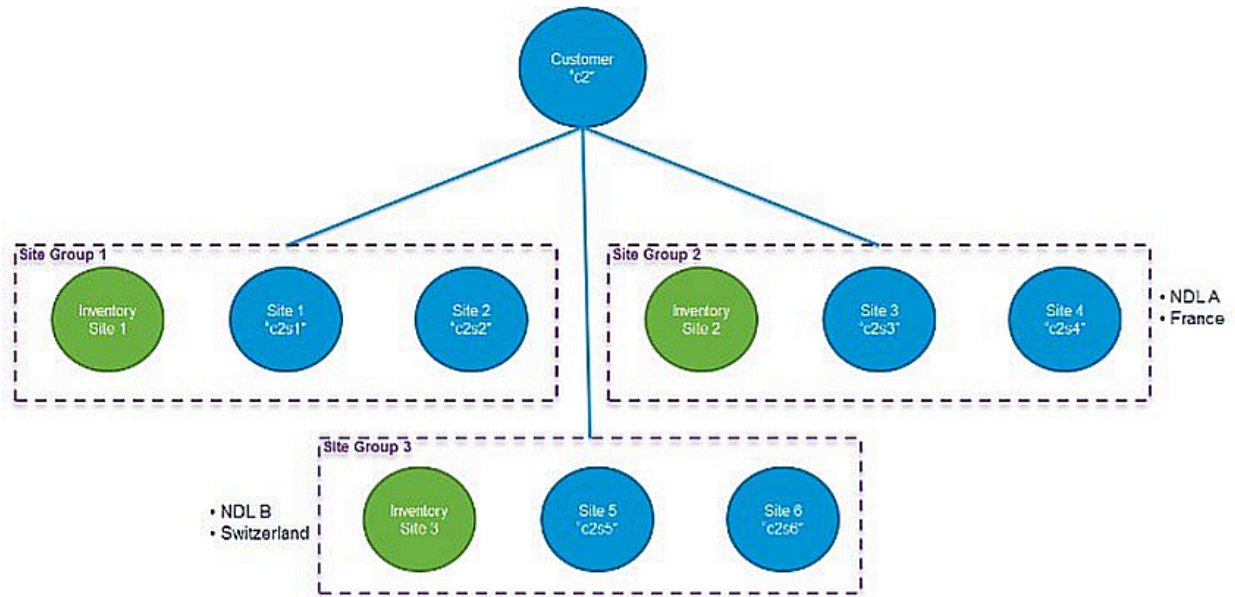
There are several caveats and restrictions that must be followed when using the Inventory Site as summarized below. Detailed configuration procedures are provided later in this document. For the purposes of this discussion, the term Site Group is used to describe an Inventory Site combined with the "real sites" which use the shared lines defined in the Inventory Site.

All sites in a site group must conform to the following rules:

- The sites must be configured with the same NDL and Country. Any site that has the same NDL and Country as the Inventory Site can participate in the same site group. In fact, the NDL and Country settings are what defines the site group.
- Shared lines configured in the Inventory Site of a site group can only be used by other sites in the same group, not in other groups. This means that shared lines cannot span NDLs, and cannot span countries.

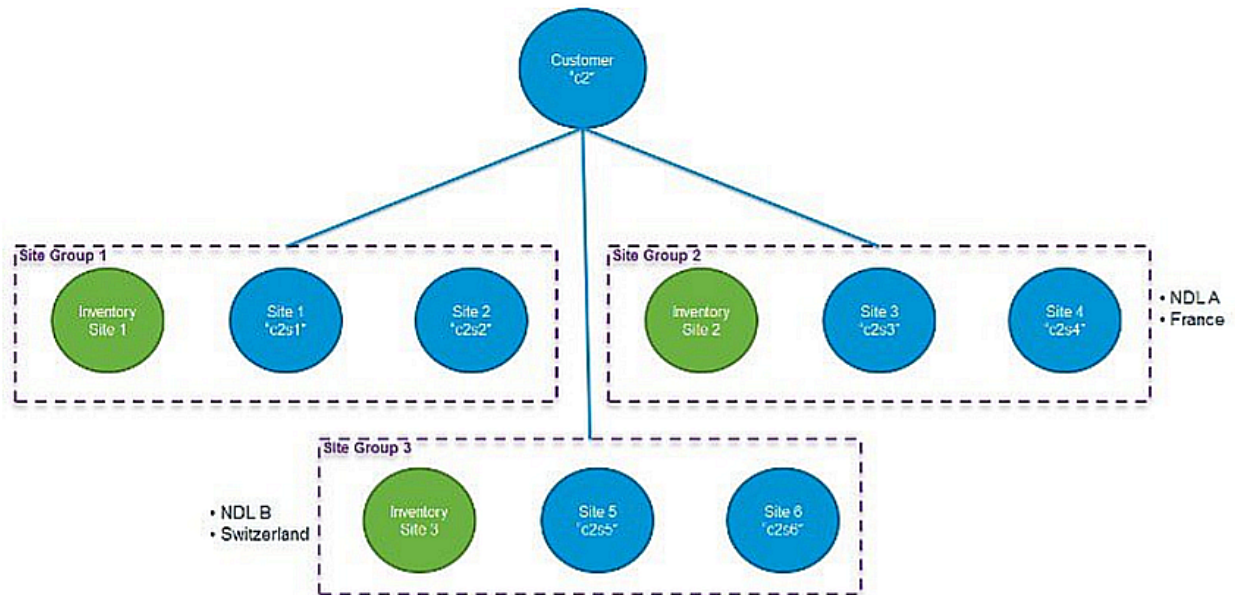
**Tip:** If a line is potentially shareable, we recommend that you create the line in the Inventory Site, even if it will not be shared across sites immediately. The system does not support the ability to move a line from a

real site to an Inventory Site, so to convert a line from site-local to cross-site shared, the line would need to be deleted from the real site and recreated in the Inventory Site.



### 30.15.5. Inventory Site Diagram

The following diagram shows a customer with three Site Groups.



### 30.15.6. Dial Plan Type for Shared Line Across Sites

The Shared Lines Across Sites feature only works if you are using a flat dial plan (Type 4), or a custom dial plan that is not site-specific). The reason is that the other dial plans (Types 1 to 3) have site location codes in the DN which do not work if the DN is shared by multiple sites.

If you're using the predefined dial plans, do not select the **Site Location Code** check box when deploying the Customer dial plan.

### 30.15.7. Class of Service for Shared Line Across Sites

Class of Service (CoS) refers to a Calling Search Space (CSS) that is specifically used to define call routing and feature processing for a line or a phone. There are a number of CSSs defined when a customer and site dial plan are deployed, and some of the CSSs are only used internally and should not be selected in the CSS drop-down list on a line or phone configuration page.

The Class of Service CSSs are listed in the **Dial Plan Management > Site > Class of Service** menu item. A few example CoSs are predefined when a site dial plan is deployed, but the intent is for the administrator to create their own CoSs to meet the desired call routing and feature processing behavior. Below is a summary of Class of Service as it pertains to Shared Lines Across Sites feature.

COS is used in two places:

1. **Line Calling Search Space** - which appears in VOSS Automate at **Subscriber Management > Lines > Directory Number Basic Information tab > Calling Search Space**
2. **Device Calling Search Space** - which appears in VOSS Automate at
  - **Subscriber Management > Phones > Phone tab > Calling Search Space Name**
  - **Subscriber Management > Subscribers > Phones tab > Calling Search Space Name**

Additionally, CoS can provide line-based routing (LBR) or device-based routing (DBR). For each call made from a phone, the device CSS of the phone is combined with the line CSS of the line from which the call is being made, and the features and routing for the call are processed based on the combined list of partitions of these two CSSs. The default set of CoSs provided when a site dial plan is deployed includes a device CoS for emergency dialing only, and several line CoSs for feature processing, national dialing, and international dialing and that support either DBR and LBR. The following table shows the default allocation of feature and routing duties between the two sets of CoSs.

Feature	Default Device CoS	Default Line CoS
Emergency call routing	yes*	-
Intrasite routing	-	yes
Intersite routing	-	yes
Local PSTN call routing	-	yes**
National PSTN call routing	-	yes
International PSTN call routing	-	yes
Feature processing	-	yes

Table: Default Class of Service for Shared Line Across Sites Feature

\* Emergency call routing is dependent on the country configured for the site. The country is used to route to the correct emergency number for that country (for example, 911 routes to 112 in the United Kingdom). Emergency call routing is assigned to the Device CoS because it is location-dependent, and must be tied to the site where the phone/user actually resides.

\*\* Local call routing is dependent on local area codes defined in the site dial plan. The local area codes configured in the site dial plan allow dialing local dialing (for example 7-digit dialing in the United States).

As shown in the table above, routing is weighted heavily toward the line CoS because when the CoS is assigned to the line, it applies equally to the phone, extension mobility, and single number reach, which all typically share the same line configuration and provide similar dialing behavior for a given user. However, this assumes that the lines and devices are all constrained to individual sites. When we open up lines to be shared across sites, the site-specific configuration becomes more important in order to determine what to put in the device CoS versus the line CoS.

Class of Service (CoS) management for Shared Lines Across Sites is heavily dependent on the customer's specific deployment scenario. The distribution of work between the device CoS and the line CoS depends on the type of country dial plan, and the dialing behavior the customer wants.

For example, if the country dial plan is flat and closed like the Swiss dial plan, meaning that the subscriber numbers are not variable length and there is no site-specific area codes (only national dialing), then most of the routing can occur in the line CoS because there is not much site-specific dialing behavior.

However, if the country dial plan uses area codes and the customer wants a local dialing experience (ability to dial a shorter number such as 7-digit dialing in the United States, and relying on the dial plan to fill in the local area code), then local call routing must be in the device CoS because the device context is needed to determine which area codes to apply to the dialed number. Feature processing partitions can almost always stay with the line CoS since there is usually no geographic dependencies for the feature processing. The exception to this is Time of Day (TOD) routing which may vary depending on the site.

In order to decide how to distribute routing and feature processing between the line CoS and the device CoS, refer to the table that follows.



Feature	Line CoS	Device CoS
Emergency call routing	-	Emergency routing should always be location-specific
Intrasite routing	Always using the PreISR route partition	-
Intersite routing	Always using the PreISR route partition	-
Local call routing	When full E.164 number is always dialed for offnet calls, for example, national dial plans with no local call routing	When site-specific area codes and/or variable length subscriber numbers (local dialing behavior) are defined
National call routing	If local dialing is line-specific, national dialing should be line-specific.	If local dialing is device-specific, national dialing should be device-specific.
Toll-free call routing	If local dialing is line-specific, toll-free dialing should be line-specific.	If local dialing is device-specific, toll-free dialing should be device-specific.
International call routing	If local dialing is line-specific, international dialing should be line-specific.	If local dialing is device-specific, international dialing should be device-specific.
Service call routing	If local dialing is line-specific, service number dialing should be line-specific.	If local dialing is device-specific, service number dialing should be device-specific.

Table: Routing and Feature Processing between Line CoS and Device CoS

To speed up the process of configuring lines and phones when you create new Classes of Service, set the site-specific default line CSS and site-specific default device CSS (**Site Management > Defaults**). These fields appear in the following tabs:

- **Device Defaults > Default CUCM Device CSS**
- **Line Defaults > Default CUCM Line CSS**

### 30.15.8. Call Forward Considerations for Shared Line Across Sites

As the administrator, you can create the Call Forward CSS as a CoS for a particular deployment scenario. Considerations must be made based on whether the local, national, and/or international dialing is configured on the device CoS or line CoS.

Be aware that if the Call Forward CSS allows national and local PSTN routing, you may need to consider call forward scenarios when a line is not associated to a device and PSTN dialing is in the device CoS.

### 30.15.9. Phone, Subscriber, and Quick Add Subscriber use for Shared Line Across Sites

Phones and Subscribers should only be created at real sites, not Inventory Sites. This is not enforced in the workflows, but will help facilitate ongoing management of the configuration data for the customer. Lines referenced in the **Phone** screen, the **Subscribers** screen, or the **Quick Add Subscriber** screen are created automatically if they have not already been provisioned in the Inventory Site and pushed to Cisco Unified Communications Manager. This is acceptable as long as you intend for these lines to be only referenced within one site. If a line gets created on a real site that you intended to share across sites, it is recommended that you delete the line, and recreate it in the Inventory Site.

The fields of interest on the **Phone** screen are on the **Phone** tab and the **Lines** tab. The **Phone** tab is where you specify the Calling Search Space Name; this is the device-based routing class of service (CoS). By default this is the emergency routing CSS. Depending on choices made above in the Class of Service section, you might choose a different CSS here.

The **Lines** tab is where you pick the DN (Pattern) from the drop-down list, and where you configure the E.164Mask used for line presentation. The DN drop-down list includes DNs from the Customer DN inventory combined with the current site DN inventory. The E.164Mask is a free-form field and is not tied to the E.164 inventory currently; it must be manually entered. These are the only fields that are pertinent to the Shared Line Across Sites feature.

The Route Partition Name is automatically populated with the correct directory number partition based on the Pattern (DN) that is selected. Similar fields exist in the **Subscribers** tabs.

### 30.15.10. Hunt Groups and Call Pickup Groups for Shared Line Across Sites

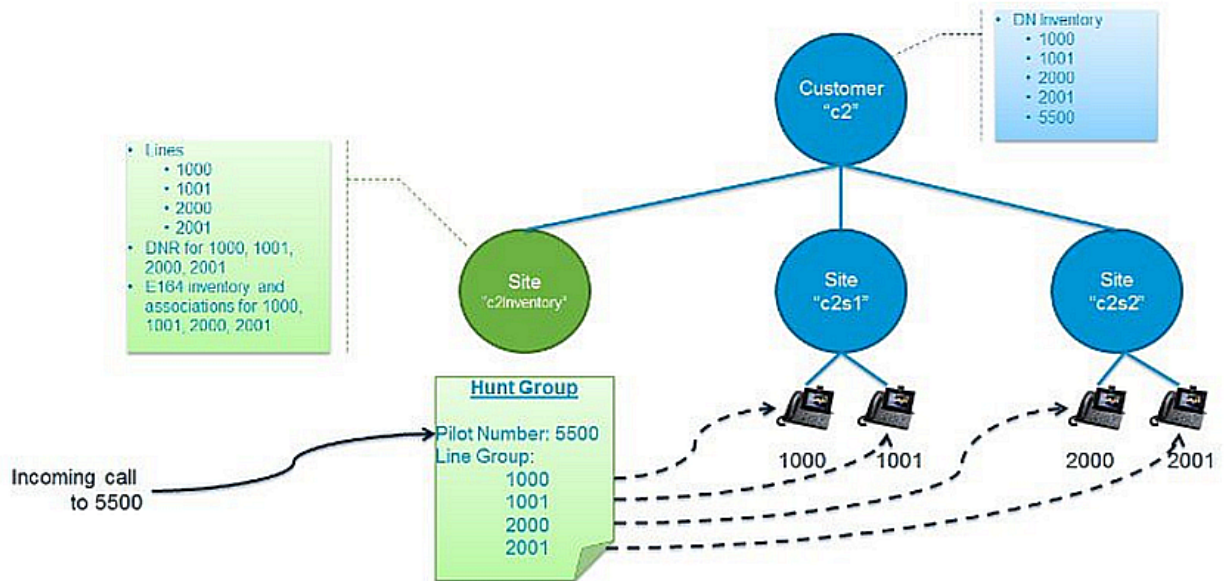
Hunt Groups and Call Pickup Groups can be configured in either the Inventory Site or the real sites. If configured in the Inventory Site, the Hunt Groups and Call Pickup Groups can include any line configured in the Inventory Site, but cannot include lines created in other sites. Likewise, if configured in the real site, the Hunt Groups and Call Pickup Groups can include any line configured in the real site but not other sites.

We recommend that you configure Hunt Groups and Call Pickup groups in the Inventory Site if they need to include lines that are not all isolated to one site.



### 30.15.11. Hunt Groups and Call Pickup Groups for Shared Line Across Sites Example

The following figure provides an example of a Hunt Group that uses lines spanning multiple sites.



Note that lines 1000, 1001, 2000, and 2001 are not themselves shared across sites. However, because all lines in one Hunt Group must exist at the same site, all four lines must be configured in the Inventory Site to be included in the one Hunt Group with Hunt Pilot 5500.

Also note that the Hunt Pilot DN inventory is at the customer level. Once the Hunt Pilot is assigned, that DN is marked as unavailable for any other usage (that is, it cannot be assigned to a device as a line, nor can it be used for another service pilot number).

### 30.15.12. Site Short Codes

Site short codes work the same for deployments that use shared lines across sites as they do for "real site" deployments. That is, short codes can be added to a site to allow shorter, convenient numbers to be dialed that are transformed into longer directory numbers. Normally, short codes are added to real sites that contain devices in order to allow users of those devices to dial shorter numbers to reach existing directory numbers.

Because the inventory site doesn't contain devices, but only line inventory, site codes don't need to be added to the inventory site. Short code translation patterns are created on a site's Allow Internal (AInt) route partition.

### 30.15.13. Handling Voice Mail to Secondary Shared Lines

To handle Voice Mail to secondary shared lines, create a separate user for each shared line at the Inventory Site level, then enable the voice mailbox for that user so that it can be managed by all shared lines.

This approach:

- Offers the ability to differentiate between voice mail deposited for primary and secondary lines
- Provides separate message waiting indication (MWI) notifications for voice mail in the phone's primary and secondary line
- Allows all configuration to be done in VOSS Automate. There are no separate manual configurations required in Cisco Unity Connection or Cisco Unified Communications Manager.

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**Note:** One additional license is required for the shared line user mailbox.

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### 30.15.14. Configure Shared Line Across Sites

#### Overview

Most of the configuration for Shared Lines Across Sites is the same as with conventional lines, but this section provides procedures to highlight the differences.

For conventional site-local lines, the lines can be configured automatically as part of the Phone, Subscriber, or Quick Add Subscriber workflows; the lines do not need to be configured separately first.

For lines to be shared across sites, they must be configured first in the Inventory Site, then referenced from Phone, Subscriber, or Quick Add Subscriber workflows.

#### Configure Shared Line Across Sites - Customer

The customer configuration is similar except that you create DN inventory at the customer hierarchy for lines you would like to share (or potentially share) across sites.

1. Configure the Cisco Unified Communications Manager and Cisco Unity Connection devices. These can be at the customer level (dedicated) or above (shared).
2. Configure the customer normally (for example, c2).
3. Configure the Network Device List (NDL) for the customer (for example, c2Ndl) that will be used for your site group (NDL/Country combination).
4. Deploy the customer dial plan. This must be a flat dial plan (for example, Type 4) because shared lines across site dictates that DNs cannot be site-specific. The Type 4 dial plan does not impose site-specific structure (in other words, site location codes). When configuring the customer dial plan, ensure that the Site Location Code check box is unchecked.
5. Configure the DN inventory to be used across sites for shared lines (**Dial Plan Management > Number Management > Directory Number Inventory**). Note that you should leave the site drop-down list empty to create the inventory on the Customer hierarchy node.

## Configure Shared Line Across Sites - Inventory Site

The “Inventory” Site is only needed if you want to configure Shared Lines Across Sites. If you do not have this requirement you do not need an Inventory Site and configuration is exactly as it is done normally. Most of the Inventory Site configuration is the same as configuration for a real site (for example, deploy site dial plan, configure DN inventory, and so on). The areas that are unique to the Inventory Site are provided in Steps 1, 3, and 5.

1. Configure the Inventory Site and specify the NDL and Country, for example, c2InventorySite. A different Inventory Site is needed for each NDL/Country combination (site group). If the customer only has one NDL and one Country, they only need one Inventory Site.
2. Deploy the site dial plan (Type 4 will automatically be used based on the customer dial plan that was deployed).
3. Create the new Classes of Service to be used as the default line CSS and update the Site Defaults procedure for the Inventory Site. Refer to *Class of Service for Shared Line Across Sites* for more information.
4. Configure Directory Number Routing (DNR) for the shared lines (**Dial Plan Management > Site > Directory Number Routing**).
5. Create line relations for each shared line (**Subscriber Management > Line**).
6. Create E.164 inventory (**Dial Plan Management > Number Management > Add E164 Inventory**).
7. Associate E.164 to DN (**Dial Plan Management > Number Management > E164 Associations (N to N)**).
8. Configure Hunt Groups that use shared lines (**Subscriber Management > Hunt Groups**).
9. Configure Call Pickup Groups that use shared lines (**Subscriber Management > Call Pickup Groups**).

## Configure Shared Line Across Sites - Real Site

Configuration at the real sites is almost exactly the same as in past Cisco HCS releases. The major difference is that the Shared Lines Across Sites exist at the Inventory Site and therefore any configuration associated with those lines (CoS, DNR, E.164 associations, and so on) exists at the Inventory Site.

1. Configure the real site (for example c2s1, c2s2, and so on). Use the same NDL and Country as the Inventory Site (same site group).
2. Deploy the site dial plan on each of the real sites (again, the customer dial plan enforces that the flat dial plan is used).
3. Create DN inventory for an DNs that will be used only at this site.
4. Create Directory Number Routing (DNR) for any DNs created at this site.
5. Create E.164 inventory and associations for an DNs created at this site.
6. Create Device Class of Service if needed. Refer to *Class of Service for Shared Line Across Sites*.
7. Create Line Class of Service if needed for your site-specific lines. Refer to *Class of Service for Shared Line Across Sites*.
8. Configure subscribers and phones (**Subscriber Management > Subscribers, Quick Add Subscriber, or Phones**).
  - a. When configuring normal lines (lines that are not shared across sites), select a line from the local site DN inventory, not the customer-level DN inventory. The line is created at the local site as

normal; you can configure line CoS, DNR, E.164 associations at this site as normal. Note that this includes shared lines that are only shared within the site.

- b. When configuring a shared line across sites, select a customer-level DN from the drop-down list. Remember, the line should be configured at the Inventory Site first.
9. Configure site-specific Hunt Groups that use lines local to the real site.
10. Configure site-specific Call Pickup Groups that use lines local to the real site.

# 31. Self-service Administration

## 31.1. Introduction to Self-service Administration

In addition to the administration and configuration of various components of the Self-service interface, an administrator also enables end user access to Self-service.

The items below provide an overview of this administration and configuration.

## 31.2. Self-service Feature Display Policy

The Self-service Feature Display Policy is used by an administrator to determine which features or services are available to the Self-service user on the Self-service UI. These are typically available on both the toolbar and dashboard.

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**Important:** The configuration templates that are selected on the **Phones**, **Personal Phones** tabs may not contain macro values for Line Settings (nested Line Array fields), since these are not supported in VOSS Automate Self-service.

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On the **Phones**, **Personal Phones** and **Voicemail** tabs, there are two similar check boxes (one associated with entitlement, the other not). For example, on the **Voicemail** tab, the first check box is labelled **User can enable Voicemail (Add a Voicemail Account)** and the second check box is labelled **User can enable Voicemail only if the user is entitled to Voicemail**.

If the Entitlement Feature is used, that is an Entitlement Profile is associated to the subscriber on the **Entitlement Profile** drop-down on the **Subscriber Management > Subscribers** screen, then select the second check box. If an Entitlement Profile is not associated to the subscriber, then select the first check box, as the second check box is no longer applicable.

In a similar way, select the appropriate check boxes on the the **Phones** and **Personal Phones** tabs.

Availability of features/services is configured using the following tabs on the **Self-service Feature Display Policy** screen:

- **Details**

Shows/hides the **My Availability** and **Speed Dials/Busy Lamp Fields** areas and associated functionality. This controls the ability to add and manage speed dials and busy lamps.

The **Enable (CFWD Only) Minimal Mode** checkbox controls the user Self-service UI. If enabled, the user is presented with a minimal interface suitable for mobile devices with *only* the functionality to set call forwarding. For details on the minimal interface, refer to the topic on Minimal Mode in the Self-service Guide.

- **Phones**

Shows/hides the **Your Company Phones** area and associated functionality. This controls the ability to add smart devices, as well as to manage company phones and associated lines.

- **Personal Phones**

Shows/hides the complete **Your Personal Phones** area and associated functionality, or hides selected functionality only, such as setting up ring schedules or advanced timer options. Also controls the ability to enable own personal phone management (add remote destination profile).

- **My Information**

Shows/hides one or more of the **My Information**, **My Credentials**, and **Webex Self-service** areas and the associated functionality.

- **Voicemail**

Shows/hides one or more of the **Voicemail Settings**, **Alternate Numbers and Notification Devices**, and **Caller Input** areas, as well as the associated functionality. Also controls the ability to add own Voicemail account if required.

- **Call Forward**

Shows/hides the complete **Call Forwarding** area and associated functionality, or selected advanced call forwarding functionality only, such forward calls to settings.

See [Self-service Feature Display Policy Field Reference](#) for field descriptions.

See also topics under:

- “Entitlement Management” - for more details about the Entitlement feature.
- “General Subscriber Management Tasks” - for more details about associating an Entitlement Profile to a subscriber.

## 31.3. Self-service Feature Display Policy Field Reference

Title	Field Name	Description
Details	details	Configure Base features.
Name*	name	The name of the Feature Group.
My Availability	my_availability	Turn my availability on/off.
Automatically update Presence Status from calendar	update_presence_from_calendar	Allow users to manage the setting that automatically updates their presence status based on their calendar. The user must have ‘IM and Presence’ enabled, and Self-service ‘My Availability’ settings must be in ‘Show’ state.
Speed Dials	speed_dials	Turn speed dials on/off.
FMC (Fixed Mobile Convergence)	fmc	Turn FMC on/off
CLI (Calling Line Identification)	cli	Turn CLI on/off
Enable (CFWD Only) Minimal Mode	enable_minimal_mode	Display Call Forward settings only minimal mode.

Title	Field Name	Description
Phones	phones	Configure Phone features.
User can add own smart devices	own_phone_add	User can add own smart devices. Default: false.
User can add own smart devices only if the user's Entitlement Profile includes 'Voice'	own_phone_add_if_entitled	Default : false.
Limit the user's total number of phones the number allowed by the user's Entitlement Profile	own_phone_add_limit_entitlement	Default : false.
Device Configuration Templates for User Phone Add	device_type_list.[n]	See below.
Phone Management	phone_management	Turn phone management on/off.
Phone Line Management	phone_line_management	Turn phone line management on/off.

Device Configuration Templates for User Phone Add	device_type_list.[n]	Smart Device configuration.
Device Name	devicetype	Choose from the drop-down list; either: iPhone, iPad, or Android Phone or Tablet.
Device Name Prefix	device_name_prefix	Automatically populated depending on the device name selected above; either TCT, TAB, or BOT.
Configuration Template	config_template	Select from the drop-down list. We recommend that you select the default configuration template for each device.

Title	Field Name	Description
Personal Phones	personal_phones	Configure Personal Phone features.
User can enable Personal Phone Management (add Remote Destination Profile)	user_add_rdp	Default: false
User can enable Personal Phone Management / SNR only if entitled to SNR	user_add_rdp_if_entitled	Default: false
Device Configuration Template for End User Remote Destination Profile Add	rdp_config_template	Choose from the drop-down list. Default = Default CUCM RDP Template.
Personal Phone Management	personal_phone_management	Turn personal phone management on/off.
Mobile Id Management	mobileid_management	Turn mobile id management on/off.
Ring Schedules	ring_schedules	Turn ring schedules on/off.
Advanced Timer Options	advanced_timer_options	Turn advanced timer options on/off.
Line Association	line_association	Turn line association on/off.

Title	Field Name	Description
My Information	my_information	Configure My Information features.
User Data	user_data	Turn user data on/off.
User Language	user_language	Turn user language on/off.
Password	password	Turn password on/off.
Pin	pin	Turn pin on/off.
Minimum Pin Length	pin_min_length	Minimum length of Pin (0 to 64 characters).
Link to Webex Self-service portal	webex_link	Toggle whether end user portal users can see a link to their Webex Self-service portal. The user must have an associated webex account in order to have the link.



Title	Field Name	Description
Voicemail	voicemail	Configure Voicemail features.
User can enable Voicemail (Add a Voicemail Account)	user_add_vm_account	Default: false
User can enable Voicemail only if the user is entitled to Voicemail	user_add_vm_account_if _entitled	Default: false
Device Configuration Template for End User Voicemail Account Add	voicemail_config_template	Choose from the drop-down list. Default = Default CUC User Template.
Voicemail Basic	voicemail_basic	Turn basic Voicemail on/off.
Voicemail Devices	voicemail_devices	Turn Voicemail devices on/off.
Phone Notification Device	phone_notification_device	Show/Hide Phone Notification Device management from end user.
SMS Notification Device	sms_notification_device	Show/Hide SMS Notification Device management from end user.
Voicemail Alternate Extensions	alternate_extensions	Show/Hide Voice Mail Alternate Extension management from end user.
Configuration Template for end user Alternate Extensions for Voicemail	cucalttext_config_template	Choose from the drop-down list. Default = cucalt-cft.
Configuration Template for end user add Phone Notification Devices	cucphonedevice_config_template	Choose from the drop-down list. Default = cucphone-cft.
Configuration Template for end user add SMS Notification Devices	cucsmsdevice_config_template	Choose from the drop-down list. Default = cucsms-cft.
Voicemail Caller Input	voicemail_callerinput	Turn Voicemail caller input on/off.
Voicemail Email Relay	voicemail_email_relay	Show/Hide Email Relay from end user.

Title	Field Name	Description
Call Forward	call_forward	Configure Call Forward features.
Call Forward Basic	call_fwd_basic	Turn basic call forwarding on/off.
Advanced Call Forward	call_fwd_adv	Turn advanced call forwarding on/off.

## 31.4. End User Access and Authentication

Users with a “system user entry” may log in to the Self-service interface. A “system user entry” is created automatically when a user is added as a subscriber. Refer to the topics under “Subscriber Management”.

You can grant a user access to Self-service by creating a user, with a **Self-service** role, directly in the system user interface. Such a user is not able to view devices or any services associated with the devices, nor can a manually added user view personal information such as first name, last name, address, department, and so on. Refer to [Add Admin Users](#).

Self-service authentication is controlled by the administration interface using the same three authentication methods: Standard, LDAP, and SSO.

Consolidated password and PIN management for end users is available as follows, based on the Self-service authentication method configured for the end user:

- Standard VOSS Automate authentication: end users can change their password and PIN from the Self-service interface.
- LDAP and SSO authentication: end users cannot change their password and PIN from the Self-service interface.

To ensure the best user experience, it is recommended that all applications (Self-service and the UC applications) use the same authentication method.

## 31.5. Themes and Branding

The Self-service interface can be branded by configuring cascading style sheets, images, and logos. The same theme upload and download interface used for the Admin Portal is used.

The theme itself differs between the Admin Portal and the Self-service interface (based on the user role).

The Login page theme is also loaded from the URL:

```
https://<host>/selfservice/#/login?theme=<mytheme>
```

Refer to the topic “Download and Update a Theme”.

## 31.6. Self-service Login Banner

The Self-service login banner corresponds with the administrator interface banner.

For details on banner configuration and specifications, refer to the topic on “Login Banner” in the “Advanced Configuration Guide”.

## 31.7. Personal Phones (Remote Destinations)

You must allocate a remote destination profile (RDP) to end users for them to manage their own personal phones and simultaneous ring settings.

If no RDP is associated to the end user, the Personal Phones management interface in the Self-service application is hidden.

Multiple RDP's per end user is not supported. The Personal Phones management interface in Self-service is also hidden if an end user has more than one RDP associated. Refer to the topics under "Subscriber Workflows".

## 31.8. Dual Mode Phones - Mobile ID

If users have a dual mode device associated, they can manage the phone number and simultaneous ring settings for the device.

If no dual mode device is associated, the relevant settings are hidden in the Self-service interface. Refer to the "Subscriber Workflows" topic.

## 31.9. Voicemail for Self-service

Voicemail settings are only visible in the Self-service interface if the user has a Voicemail box. Refer to the "Subscriber Workflows" topic.

## 31.10. Links Page

The contents of a user's Links page in the Self-service interface can be managed.

You can create one or more links to for example, Voicemail, WebEx, or downloadable content such as a User Guide.

Links on the page are associated to a user role and are managed using the Administration GUI Self-service Links interface.

Refer to "Create a Self-service Link".

## 32. Advanced Tools for System Administrators

### 32.1. Custom Variables

#### 32.1.1. Add Custom Variables

System administrators can create custom macros for use in for example custom Configuration Templates.

---

**Note:**

- The macro needs to be evaluated at the hierarchy that it is created.
- The same macro variable can be defined to have different values at different hierarchies.

- 
1. Choose **Advanced Tools > Custom Variables** and click **Add**.
  2. Enter the macro name, optional description and value. The name must be prefixed with CV\_. For details on macro syntax, refer to the “Advanced Configuration Guide”.
  3. Click **Save**.

To test the macro, enter it in the macro evaluator at **Administration Tools > Macro Evaluator**.

#### Example

Create:

```
CV_current_time  
Current time is: {{ fn.now }}
```

Invoke:

```
{{ macro.CV_current_time }}
```

Output example:

```
Current time is: 2017-03-31 13:20:18.509871
```

## 32.2. Model Report

### 32.2.1. Create Model Report

System admins and advanced admins can create and display reports on the data under a selected site hierarchy. The purpose of such a report is to show the model types: device and data models at a site as well as the number of instances of each model type.

You can create, list, view, and delete reports for a hierarchy.

---

**Note:** The relation data type is not displayed, but component data models are reported on.

---

1. Log in as system administrator.
2. Navigate to the hierarchy for which the report is to be created.
3. Go to (default menus) **Advanced Tools > Model Report > Create Model Report**
4. Verify that the hierarchy level value is the required hierarchy.
5. Choose the model types to be reported on:
  - DATA Models
  - CUCM Models
  - CUC Models
  - LDAP Models

6. Click **Save** to create the report.

The time stamp of the report at the hierarchy is recorded. To see the progress of the report creation, choose **Advanced Tools > Model Report > Model Reports** and from the list of reports, either inspect the value in the **Status** column or choose the report to see the status. The report is available when the status is **Done**.

### 32.2.2. Manage Model Reports

Reports can be viewed and deleted.

1. Log in as system administrator.
2. Choose **Advanced Tools > Model Report > Model Reports**
3. To view a report, click the report to view. Details for each model type are displayed on a tab.
4. The **Detail** tab shows:
  - the type of report
  - date of creation
  - hierarchy of the report

The model tabs show Count value for each model type, if these were selected. If a model type has no instances, in other words a zero count, this is not shown.

5. To delete a report, choose the report and click **Delete**.

## 33. Appendix: Optional Features

### 33.1. Custom Dial Plan Management

#### 33.1.1. Dial Plan Management Tool

The **Dial Plan Management Tool** menus provide access to enhanced dial plan management functionality:

---

**Important:** By default, the Dial Plan Management Tool and associated menus is visible in an Enterprise environment, and hidden on Provider deployments. To expose this feature on Provider deployments, set the Global Setting “Enforce HCS Dial Plan” to *No*. For details, see:

- [Configure Access Profile for Cisco Custom Dial Plans](#)
- [Configure the Cisco Custom Dial Plan Management Menu Layout](#)

- 
- **Dial Plan Maintenance** - this menu provides an interface for the dial plan you configured to be pushed to or removed from the selected, target CUCM cluster or Microsoft tenant.

The hierarchy on which you push or pull the dial plan filters the list of dial plans, based on the dial plan type created on the dial plan models (Cisco or Microsoft).

This utility can also be used to push a dial plan to the cluster for inspection and then to remove it again, provided no elements were added to the CUCM cluster or Microsoft tenant that rely on the dial plan elements. For example, adding phones on CUCM that would lock CSSs and partitions.

- **Dial Plan Viewer** - this menu provides a read-only view of all the dial plan elements of a selected dial plan you configured with the Dial Plan Management Tool. The contents of this view corresponds with the view of a dial plan schema, but in a format that is easier to inspect.

---

**Note:** Details in the Dial Plan Viewer are read-only.

---

- **Delete Dial Plan Model** - this menu allows you to delete an entire dial plan you configured. All dial plan model elements associated with the selected dial plan model are removed, as well as the dial plan model itself.

- **Dial Plan Input Data** (Cisco-only) - an interface allowing lower level administrators to easily set up data to be added to either global or site level dial plan types. Custom dial plan data can also be included.  
In the individual dial plan elements, the values entered here are then referenced with macros, so that shared dial plan data can be managed efficiently.
- **Cisco Dial Plan Models / Microsoft Dial Plan Models** - a list of menus to manage elements of dial plans created with the feature. Individual elements - such as route patterns, SIP trunks, and translation patterns - are accessible for management via their menus.
- **Dial Plan Log** - a read-only record of Push and Remove operations carried out from the **Dial Plan Maintenance** menu. Recorded details include time and hierarchy of operation, target CUCM or Microsoft tenant, and dial plan name.

## 33.1.2. Cisco Custom Dial Plans

### Overview

VOSS Automate provides support for Cisco HCS dial plans, and Cisco Custom dial plans. This section describes the Cisco Custom dial plans.

**Important:** Contact your dedicated VOSS support representative for details on how to set up and configure Cisco Custom Dial Plans.

By default, the Dial Plan Management Tool and associated menus is visible in an Enterprise environment, and hidden on Provider deployments. To expose this feature on Provider deployments, set the Global Setting “Enforce HCS Dial Plan” to *No*. For details, see:

- [Configure Access Profile for Cisco Custom Dial Plans](#)
- [Configure the Cisco Custom Dial Plan Management Menu Layout](#)

### Related Topics

- [Microsoft Dial Plan Models](#)

### Features of Cisco Custom Dial Plans

Cisco Custom dial plans:

- Allow you to manage dial plans independent of the hierarchy schema approach of Cisco HCS dial plans. However, you can also use Cisco Custom dial plans with schema-based dial plans.
- Can be used in place of or together with the schema or schema group approach, for example to add elements in an additional dial plan in an ad-hoc manner.
- Allows senior administrators to define complete complex dial plans and to provide access to these dial plans to lower level administrators, who won't need to understand the complete dial plan.
- Cisco Custom dial plan models use all functionality of schemas, as well as call routing via route filters.
- Provide additional configuration options, and a repeatable process for managing CUCM elements.
- Can be provisioned in a modular manner.
- Provide a structure for storing dial plan models.

### Deployment elements included with Cisco Custom dial plans:

The elements included in a Cisco Custom dial plan are collectively referred to as a Dial Plan Model.

Each dial plan element is broken into its own container or model for storage in VOSS Automate. This allows for simple management of the dial plan model as a whole.

Cisco Custom dial plan models may be bulk loaded into VOSS Automate and managed via the Admin Portal.

The following elements are included in Cisco Custom dial plan:

- Device Pools - Regions - Locations -SRST
- Transcoders



- Conference Bridge
- Media Resource Groups
- Media Resource Group Lists
- Route Groups
- SIP Trunks
- CTI Route Points *with Lines* (Lines are not supported in schemas)
- Time Periods
- Time Schedules
- Partitions
- CSSs
- Route Patterns
- Transition Patterns
- Called Party Transformation Patterns
- Calling Party Transformation Patterns
- SIP Route Patterns

#### Configure the Cisco Custom Dial Plan Management Menu Layout

1. Login as an administrator with sufficient rights to change menu layouts.
2. Go to (default menus) **Role Management > Menu Layouts**.
3. Click on the relevant menu to edit it.
4. Configure the **Dial Plan Management** menu as described in the table, then save your changes:

Title	Type	Display As
<b>Dial Plan Management Tool</b>		List
Dial Plan Maintenance	/api/view/DP_MaintenanceVIEW/add	Form
Multi-Cluster Dialplan Maintenance		Form
Dial Plan Viewer	relation/DP_REL	List
Delete Dial Plan	/api/view/DP_DeleteDialPlanModel/add	Form
Dial Plan Input Data		List
• Global Data	data/DP_GlobalDialPlanData	List
• Site Level Data	data/DP_SiteDialPlanData	List
<b>Cisco Dial Plan Models</b>		
• Device Pool-Region-Location-SRST	data/DP_DP-Reg-Loc	List
• Conference Bridge	data/DP_ConfBridge	List
• Media Resource Group List	data/DP_MediaResourceGroupList	List
• SIP Trunks	data/DP_SIPTrunk	List
• CTI Route Points	data/DP_CTIRoutePoint	List
• Route Groups	data/DP_RouteGroup	List
• Route Lists	data/DP_RouteList	List
• Route Patterns	data/DP_RoutePattern	List
• Translation Patterns	data/DP_TransPattern	List
• Called Party Transformations	data/DP_Called_Party_Transformation	List

Title	Type	Display As
Cisco Dial Plan Models (Continued)		
• Calling Party Transformations	data/DP_Calling_Party_Transformation	List
• SIP Route Patterns	data/DP_SIPRoutePattern	List
• Calling Search Space	data/DP_Css	List
• Transcoders	data/DP_Transcoder	List
• Time Periods	data/DP_TimePeriod	List
• Time Schedules	data/DP_TimeSchedule	List
• Media Resource Group	data/DP_MediaResourceGroup	List
• Partitions	data/DP_Partition	List
Dial Plan Log	data/DP_DialPlanLog	List

**Note:** If you have a Microsoft-only environment, or a multi-vendor or hybrid environment that includes Microsoft, the Dial Plan Management Tool menu also includes the **Microsoft Dial Plan Models** menus. See [Microsoft Dial Plan Models](#) for details.

### Configure Access Profile for Cisco Custom Dial Plans

1. Log in as HCS administrator or higher (you'll need sufficient rights to change access profiles).
2. Go to (default menus) **Role Management > Access Profiles**.
3. Select the required administrator name, for example ProviderAdminAP.
4. Configure the provider access profiles as shown in step 5.
5. Under **Type Specific Permissions** add the following new **Permitted Type** entries and **Permitted Operations**:
  - Permitted Type: view/DP\_MaintenanceVIEW
  - Permitted Operations: Create, Field Display Policy, Read

- Permitted Type: relation/DP\_REL
- Permitted Operations: Create, Read
- Permitted Type: view/DP\_DeleteDialPlanModel
- Permitted Operations: Create, Read
- Permitted Type: data/DP\_GlobalDialPlanData
- Permitted Operations: Create, Delete, Export, Export Bulk Load, Read, Tag, Update
- Permitted Type: data/DP\_SiteDialPlanData
- Permitted Operations: Create, Delete, Export, Export Bulk Load Template, Read, Tag, Update
- Permitted Types:
  - data/DP\_CalledParty\_Transformation
  - data/DP\_CallingParty\_Transformation
  - data/DP\_ConfBridge
  - data/DP\_Css
  - data/DP\_CTIRoutePoint
  - data/DP\_DialPlan
  - data/DP\_DialPlanLog
  - data/DP\_DP-Reg-Loc
  - data/DP\_MediaResourceGroup
  - data/DP\_MediaResourceGroupList
  - data/DP\_Partition
  - data/DP\_RouteGroup
  - data/DP\_RouteList
  - data/DP\_RoutePattern
  - data/DP\_SIPRoutePattern
  - data/DP\_SIPTrunk
  - data/DP\_TimePeriod
  - data/DP\_TimeSchedule
  - data/DP\_Transcoder
  - data/DP\_TransPattern
- Permitted Operations: Create, Delete, Export, Export Bulk Load Template, Read, Tag, Update

6. Click **Save**.

## Cisco Custom Dial Plan Checklist

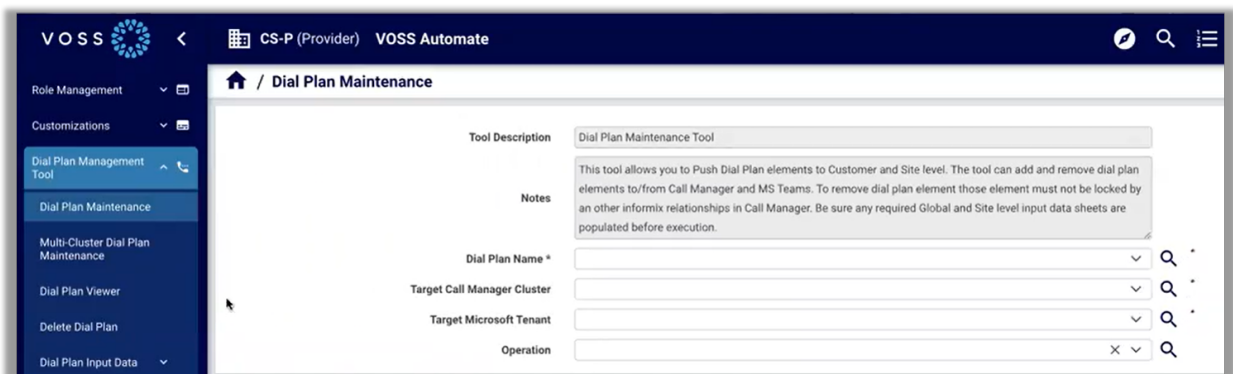
The high level task workflow for setting up Cisco Custom dial plans is as follows:

- Load Dial Plan Models for Global Values via bulk loader or JSON
- Load Dial Plan Models for Site Values via bulk loader or JSON
- Set Dial Plan Input Data for Global or Site level values. Only the fields that are referenced via Macro in the dial plan model must be populated.
- Push Global dial plan data to Cisco Unified Communications Manager (CUCM), using the Dial Plan Maintenance Tool. Be sure to check that the tool is run at the appropriate hierarchy level.
- Push Site level dial plan data at CUCM, using the Dial Plan Maintenance Tool. Be sure to check that the tool is run at the appropriate hierarchy level.
- Should any changes need to be made to the pushed dial plans, the tool does allow for removal in reverse order then a re-push once the dial plan models are updated.
- Set Site Defaults via the site default profile tool.

### 33.1.3. Dial Plan Maintenance

#### Overview

The **Dial Plan Maintenance** menu of the Dial Plan Management Tool allows you to push or remove dial plans to a selected target Cisco Unified Communication Manager (CUCM) cluster or to a Microsoft tenant.



You can use this tool at any hierarchy. The dial plan name should indicate at what level the dial plans may be used (customer or site).

**Important:** The Dial Plan Management Tool and associated menus is visible in an Enterprise environment, and hidden on Provider deployments. To expose this feature on Provider deployments, set the Global Setting “Enforce HCS Dial Plan” to *No*. For details, see:

- [Configure Access Profile for Cisco Custom Dial Plans](#)
- [Configure the Cisco Custom Dial Plan Management Menu Layout](#)

You can tag dial plans in the dial plan model with their type (Multi-tenant/Shared Architecture, Global, Intermediate, or Site) to introduce error checking into the tool.

The dial plan name allows only dial plans meant for a specific hierarchy use to be shown in the Dial Plan Maintenance tool. For example, If an administrator is at customer level in VOSS Automate and uses the dial plan drop-down, the list of available dial plans are only those tagged “Global”. We do this to ensure the dial plan models with hierarchy specific macros are executed at the correct hierarchy levels.

### Push or Remove Dial Plan

The Dial Plan Maintenance tool provides two operations:

- Push dial plan

The screenshot shows the 'Dp Maintenance View' interface. At the top right, there are buttons for 'Save', 'Help', 'Back', and 'Action'. The main content area contains the following fields:

- Tool Description:** Dial Plan Maintenance Tool
- Notes:** This tool allows you to Push Dial Plan elements to Customer and Site level. The tool can add and remove dial plan elements from Call Manager. To remove dial plan element those element must not be locked by an other informix relationships in Call Manager.
- Hierarchy level:** sys.hcs.VLS.Tenant1.Vancouver
- Dial Plan Name\*:** Site\_Level\_DP
- Target CUCM\*:** ["10.5.25.21", "8443"]
- Operation:** Push Dial Plan

- Remove dial plan

The screenshot shows the 'Dp Maintenance View' interface. At the top right, there are buttons for 'Save', 'Help', 'Back', and 'Action'. The main content area contains the following fields:

- Tool Description:** Dial Plan Maintenance Tool
- Notes:** This tool allows you to Push Dial Plan elements to Customer and Site level. The tool can add and remove dial plan elements from Call Manager. To remove dial plan element those element must not be locked by an other informix relationships in Call Manager.
- Hierarchy level:** sys.hcs.VLS.Tenant1.Vancouver
- Dial Plan Name\*:** Site\_Level\_DP
- Target CUCM\*:** ["10.5.25.21", "8443"]
- Operation:** Remove Dial Plan

Both push and remove operations work in the same manner:

1. A dial plan model is chosen from the **Dial Plan Name** drop-down.
2. A target CUCM or Microsoft tenant is chosen from the **Target Call Manager Cluster** drop-down.
3. Choose operation, **Push Dial Plan** or **Remove Dial Plan**.

### 33.1.4. Multi-Cluster Dial Plan Maintenance

In contrast with the *Dial Plan Maintenance* view, the **Multi-Cluster Dial Plan Maintenance** allows for a selected Dial Plan to be added to or removed from multiple Cisco Unified Communications Manager (CUCM) clusters in a single step.

Both modes of the tool work in the same manner:

1. Choose the **Dial Plan Name** to manage on the CUCM clusters.

The dial plan tag allows only dial plans meant for a specific hierarchy use to be shown. The **Chosen Dial Plan Type** shows this.

2. An operation is chosen from the **Operation** drop-down.
3. Select the CUCM clusters from the **Available** transfer box so these are shown in the **Selected** box.
4. Click **Save** to carry out the task.

---

**Note:**

- All dial plan elements are added to or removed from the selected clusters in accordance with the selected operation.
  - The operation's transaction log sub-transactions **Detail** column show dial plan, hierarchy and target cluster.
  - If for example a site level dial plan is selected, this tool will check the CUCM of the Network Device List (NDL) belonging to the site to verify if a dial plan is applied to this CUCM.
  - Sites cannot be excluded if a site level dial plan is applied in the cluster.
- 

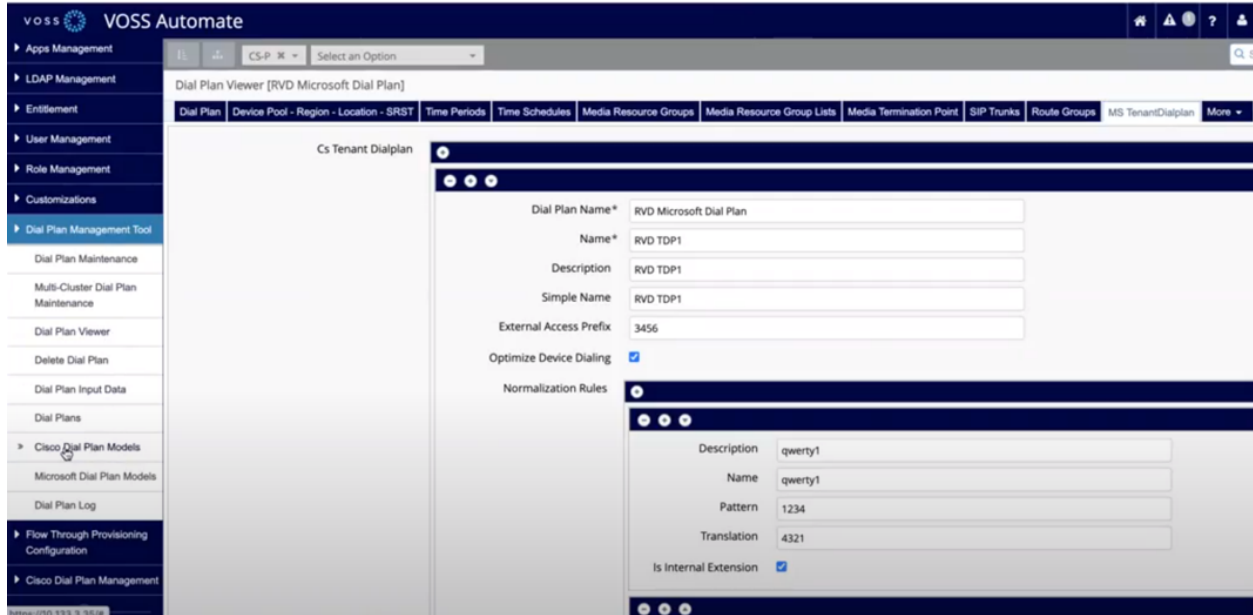
### 33.1.5. Dial Plan Viewer

The Dial Plan Viewer provides read-only details of all the dial plan elements of a selected dial plan.

The contents of this view corresponds with the view of a dial plan schema, but in a format that is easier to inspect.

Note that the viewer does not allow for any changes to be made to the dial plan.

See also "Dial Plan Models" for details of each specific dial plan element.



### 33.1.6. Dial Plan Input Data



#### Overview

The Cisco Custom dial plan **Dial Plan Input Data** menus (**Global Data** and **Site level Data**) simplify the update of Cisco Custom dial plans by exposing a set of values that can be provided to and then easily applied by lower level administrators.

The table describes the type of input data that can be defined, each corresponding to a dial plan type:

Global Data	Applies to Global dial plan type (customer)
Site level Data	Applies to Site dial plan type

All values are optional, and field display policies (FDPs) can be configured to hide unused fields, if required. For example, **Secondary SIP Trunk Destination IP** and **Secondary SIP Trunk Destination Port**.

You can also add custom values, and use macros to allow these values to be referenced in dial plan elements. In this case, you can use a FDP to rename the input field label, if needed.)

Input data may be used in combinations to build patterns dynamically, since the pattern itself is a macro. For example, site-level translation patterns for 7 or 10 digit dialing can use the Customer-level macro for PSTN access (or External Breakout Number), then followed by a ".", then the macro for Area Code or Exchange:

```
{{ macro.DP_Global_PSTNAccess }}.{{ macro.DP_AreaCode }}XXXXXXX
```

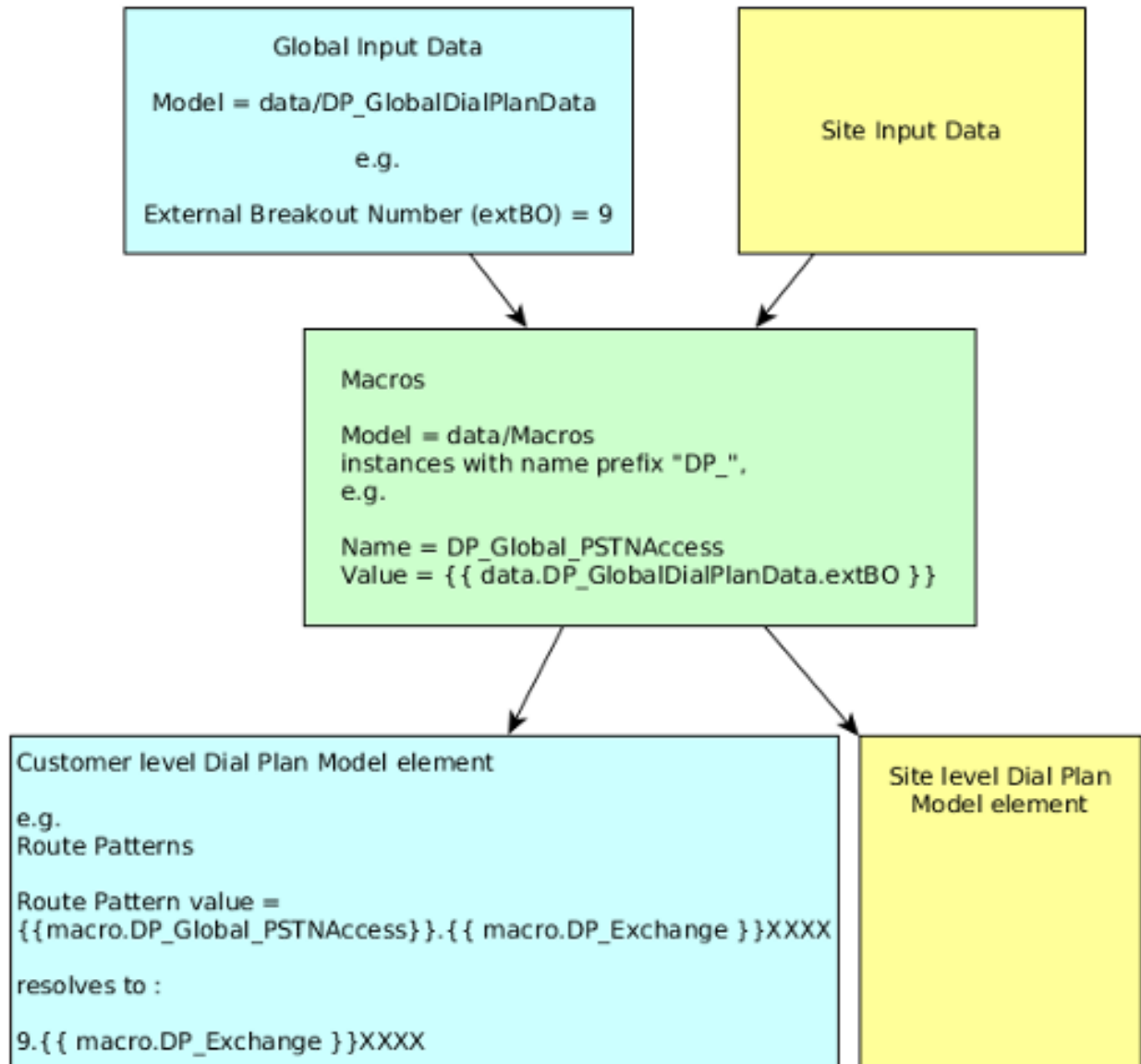
when applied, could be inserted to Cisco Unified Communications Manager (CUCM) as 9.214XXXXXXX for 10 digit dialing.



```
{{ macro.DP_Global_PSTNAccess }}.{{ macro.DP_Exchange }}XXXX
```

when applied, could be inserted to CUCM as 9.256XXX for 7 digit dialing.

The diagram below provides an example of the use of a macro in a Global (customer) level dial plan element: **Route Patterns**.



## Global Data

The Global Data page contains three tabs:

- Dial Plan Data
- Aggregation SIP Input Data
- Custom Dial Plan Data

### Dial Plan Data Tab (Global - Single Instance)

On this tab you can use the following macros:

- Custom Customer ID: `{{ macro.DP_Global_CustomCustID }}`
- External Breakout Number: `{{ macro.DP_Global_PSTNAccess }}`
- Published Number: `{{ macro.DP_Global_PNum }}`
- Emergency Call Back Number: `{{ macro.DP_Global_ENum }}`
- Area Code: `{{ macro.DP_AreaCode }}`
- Exchange: `{{ macro.DP_Exchange }}`

The screenshot shows the Voss Automate interface for the 'Global Data / New Record' page. The left sidebar contains navigation options like 'Dial Plan Management Tool', 'Dial Plan Maintenance', 'Multi-Cluster Dial Plan Maintenance', 'Dial Plan Viewer', 'Delete Dial Plan', 'Dial Plan Input Data', 'Global Data', 'Site level Data', 'Dial Plans', 'Cisco Dial Plan Models', 'Microsoft Dial Plan Models', 'Dial Plan Log', and 'Cisco Unity SIP Integration'. The main content area is titled 'Global Data / New Record' and has three tabs: 'Dial Plan Data', 'Aggregation SIP Input Data', and 'Custom Dial Plan Data'. The 'Dial Plan Data' tab is active, showing a form with the following fields:

- Name: Global Dial Plan Input Data
- Custom Customer ID: `{{ macro.DP_Global_CustomCustID }}`
- External Breakout Number: `{{ macro.DP_Global_PSTNAccess }}`
- Published Number: `{{ macro.DP_Global_PNum }}`
- Emergency Call Back Number: `{{ macro.DP_Global_ENum }}`
- Call Park Call Manager: (dropdown menu)
- Global Dial Plan Model: (dropdown menu)
- Local Area Codes: (list with '+', '-', and trash icons)
- Dial Plan Pattern Type: (dropdown menu)
- Choose Route Pattern Model: (dropdown menu)
- Choose Translation Pattern Model: (dropdown menu)
- Area Code: `{{ macro.DP_AreaCode }}`
- Exchange: `{{ macro.DP_Exchange }}`

### Aggregation SIP Input Data Tab (Global)

On this tab you can use the following macros:

- Primary SIP Trunk Destination IP: `{{ macro.DP_Global_PrimarySIPAddr }}`
- Primary SIP Trunk Destination Port: `{{ macro.DP_Global_PrimarySIPPort }}`
- Secondary SIP Trunk Destination IP: `{{ macro.DP_Global_SecondarySIPAddr }}`
- Secondary SIP Trunk Destination Port: `{{ macro.DP_Global_SecondarySIPPort }}`

The screenshot shows the VOSS Automate interface for 'Global Data / New Record'. The 'Aggregation SIP Input Data' tab is active. The form contains the following fields:

Field	Value
Primary SIP Trunk Destination IP	{{ macro.DP_Global_PrimarySIPAddr }}
Primary SIP Trunk Destination Port	5060
Secondary SIP Trunk Destination IP	{{ macro.DP_Global_SecondarySIPAddr }}
Secondary SIP Trunk Destination Port	5060

### Custom Dial Plan Data Tab (Global)

On this tab you can use the following macros:

- Dial Plan Custom Value 1: {{ macro.DP\_Global\_CVal01 }}
- Dial Plan Custom Value 2: {{ macro.DP\_Global\_CVal02 }}
- Dial Plan Custom Value 3: {{ macro.DP\_Global\_CVal03 }}
- Dial Plan Custom Value 4: {{ macro.DP\_Global\_CVal04 }}
- Dial Plan Custom Value 5: {{ macro.DP\_Global\_CVal05 }}
- Dial Plan Custom Value 6: {{ macro.DP\_Global\_CVal06 }}
- Dial Plan Custom Value 7: {{ macro.DP\_Global\_CVal07 }}
- Dial Plan Custom Value 8: {{ macro.DP\_Global\_CVal08 }}
- Dial Plan Custom Value 9: {{ macro.DP\_Global\_CVal09 }}
- Dial Plan Custom Value 10: {{ macro.DP\_Global\_CVal10 }}

The screenshot shows the VOSS Automate interface for 'Global Data / New Record'. The 'Custom Dial Plan Data' tab is active. The form contains the following fields:

Field	Value
Dial Plan Custom Value 1	{{ macro.DP_Global_CVal01 }}
Dial Plan Custom Value 2	{{ macro.DP_Global_CVal02 }}
Dial Plan Custom Value 3	{{ macro.DP_Global_CVal03 }}
Dial Plan Custom Value 4	
Dial Plan Custom Value 5	
Dial Plan Custom Value 6	
Dial Plan Custom Value 7	
Dial Plan Custom Value 8	
Dial Plan Custom Value 9	
Dial Plan Custom Value 10	

## Site Level Data

The Site level Data page contains three tabs:

- Dial Plan Data
- Aggregation SIP Input Data
- Custom Dial Plan Data

### Dial Plan Data Tab (Site - Single Instance)

Data from the provided fields may be referenced with the provided macros:

- Custom Site ID: `{{ macro.DP_Site_ID }}`
- External Breakout Number: `{{ macro.DP_Site_PSTNAccess }}`
- Site Location Code: `{{ macro.DP_Site_SLC }}`
- Published Number: `{{ macro.DP_Site_PNum }}`
- Emergency Call Back Number: `{{ macro.DP_Site_ENum }}`
- Area Code: `{{ macro.DP_AreaCode }}`
- Exchange: `{{ macro.DP_Exchange }}`

The screenshot displays the 'Site level Data / New Record' form in the VOSS Automate interface. The form is organized into three tabs: 'Dial Plan Data', 'Aggregation SIP Input Data', and 'Custom Dial Plan Data'. The 'Dial Plan Data' tab is currently selected and shows the following fields:

- Name:** CL1-AB-C-Berlin Dial Plan Input Data
- Custom Site ID:** `{{ macro.DP_Site_ID }}`
- External Breakout Number:** `{{ macro.DP_Site_PSTNAccess }}`
- Site Location Code:** `{{ macro.DP_Site_SLC }}`
- Published Number:** `{{ macro.DP_Site_PNum }}`
- Emergency Call Back Number:** `{{ macro.DP_Site_ENum }}`
- Call Park Call Manager:** (Dropdown menu)
- Dial Plan Model for Site:** (Dropdown menu)

Below these fields is a section for 'Local Area Codes' with a dropdown menu showing 'No value set'. At the bottom of the form, there are additional fields for:

- Dial Plan Pattern Type:** (Dropdown menu)
- Choose Route Pattern Model:** (Dropdown menu)
- Choose Translation Pattern Model:** (Dropdown menu)
- Area Code:** `{{ macro.DP_AreaCode }}`
- Exchange:** `{{ macro.DP_Exchange }}`

### Site Aggregation SIP Input Data Tab (Site)

Data from the provided fields may be referenced with the provided macros:

- Primary SIP Trunk Destination IP: {{ macro.DP\_Site\_PrimarySIPAddr }}
- Primary SIP Trunk Destination Port: {{ macro.DP\_Site\_PrimarySIPPort }}
- Secondary SIP Trunk Destination IP: {{ macro.DP\_Site\_SecondarySIPAddr }}
- Secondary SIP Trunk Destination Port: {{ macro.DP\_Site\_SecondarySIPPort }}

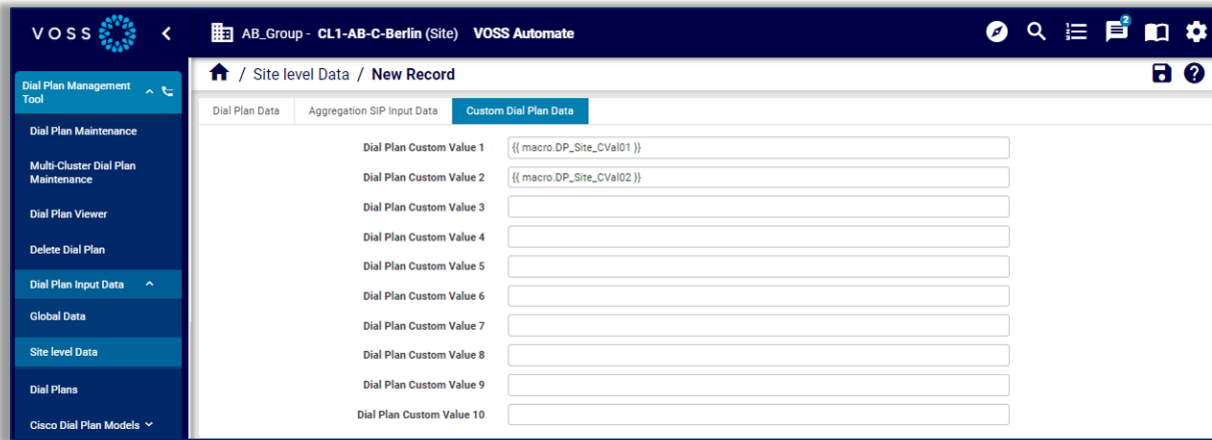
The screenshot shows the Voss Automate interface for 'AB\_Group - CL1-AB-C-Berlin (Site)'. The main content area is titled 'Site level Data / New Record' and contains a form with the following fields:

Dial Plan Data	Aggregation SIP Input Data	Custom Dial Plan Data
	Primary SIP Trunk Destination IP	<input type="text"/>
	Primary SIP Trunk Destination Port	5060
	Secondary SIP Trunk Destination IP	<input type="text"/>
	Secondary SIP Trunk Destination Port	5060

### Site Custom Dial Plan Data Tab (Site)

Data from the provided fields may be referenced with the provided macros:

- Dial Plan Custom Value 1: {{ macro.DP\_Site\_CVal01 }}
- Dial Plan Custom Value 2: {{ macro.DP\_Site\_CVal02 }}
- Dial Plan Custom Value 3: {{ macro.DP\_Site\_CVal03 }}
- Dial Plan Custom Value 4: {{ macro.DP\_Site\_CVal04 }}
- Dial Plan Custom Value 5: {{ macro.DP\_Site\_CVal05 }}
- Dial Plan Custom Value 6: {{ macro.DP\_Site\_CVal06 }}
- Dial Plan Custom Value 7: {{ macro.DP\_Site\_CVal07 }}
- Dial Plan Custom Value 8: {{ macro.DP\_Site\_CVal08 }}
- Dial Plan Custom Value 9: {{ macro.DP\_Site\_CVal09 }}
- Dial Plan Custom Value 10: {{ macro.DP\_Site\_CVal10 }}

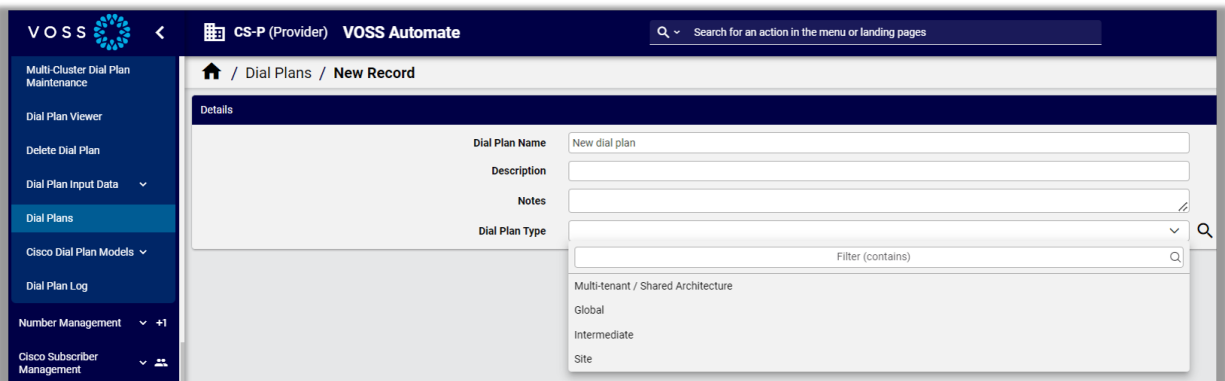


### 33.1.7. Dial Plans

This menu allows you to view, delete, and export existing dial plans, and add new dial plans.

**Important:** The Dial Plan Management Tool and associated menus is visible in an Enterprise environment, and hidden on Provider deployments. To expose this feature on Provider deployments, set the Global Setting “Enforce HCS Dial Plan” to *No*. For details, see:

- [Configure Access Profile for Cisco Custom Dial Plans](#)
- [Configure the Cisco Custom Dial Plan Management Menu Layout](#)



When adding a new dial plan via the **Dial Plans** menu, you can choose the dial plan type - either of the following:

- Multi-tenant / Shared Architecture
- Global
- Intermediate (allows you to push a dial plan at Intermediate node)
- Site

All dial plans you add can be viewed on the Dial Plans list view.

The Dial Plan Management Tool allows you to add dial plans at the site hierarchy, customer hierarchy, or at intermediate nodes, which is useful for multicluster/multicountry customers.

Intermediate node dial plans allows you to create country dial plans at the intermediate node, which use macros to pull input data from the global data at the intermediate node. This reduces the amount of hardcoded elements in the dial plan template; instead it is mostly driven by the global input data.

### 33.1.8. Cisco Dial Plan Models

#### Overview

Cisco custom dial plan models (default menu: **Dial Plan Management Tool > Cisco Dial Plan Models**) allow you to define the dial plan and to enter a name and type to group its elements.

The Dial Plan Type drop-down is used to tag it with its hierarchy, so that available dial plans to push or remove are filtered when using the Dial Plan Maintenance menu:

- Multi-tenant / Shared Architecture - provider hierarchy
- Global - customer hierarchy
- Site - site hierarchy

---

**Note:** If no Dial Plan Type tag is added to a dial plan, a new “in-progress” or “staging” dial plan can be created that will not show up to be pushed or removed on the Dial Plan Maintenance menu.

---

A description and notes for the Dial Plan Model definition can be added on the input form.

#### Related Topics

- [Microsoft Dial Plan Models](#)

#### Dial Plan Model Elements

The remaining list of menus manage elements of dial plans created with the feature. Individual elements such as Route Patterns, SIP Trunks, and Translation Patterns each have a menu item from which it can be associated with a Dial Plan Model and managed.

The feature provides menu items or input fields to extend schema based dial plan management functionality. When a dial plan created with the feature is pushed from the **Dial Plan Maintenance** menu, the transaction log can be inspected to see the extended functionality:

- Device Pools - Regions - Locations -SRST
- Transcoders
- Conference Bridge
- Media Resource Groups
- Media Resource Group Lists
- Route Groups
- SIP Trunks
- CTI Route Points *with Lines* (Lines are not supported in schemas)

When managing these dial plan elements, the installed named macros can be used to refer to data added from the **Dial Plan Input Data** menu.

Route Patterns [Tiered\_Cust\_Level\_DP]

Dial Plan Name*	Tiered_Cust_Level_DP
Local Dialing	<input checked="" type="checkbox"/>
Route Pattern	{{ macro.DP_Global_PSTNAccess }}-{{ macro.DP_AreaCode }}XXXXXX
Route Pattern Description	10 digit Digit Local
Route Partition	{{ macro.DP_CustomerName }}-LD-PT

The list view from each of these menus shows the Dial Plan Name - as defined from the **Dial Plan Model** menu - to which the element belongs. The feature structures the elements as instances of distinct data models.

There is an additional flexibility in the **Route Patterns** and **Translation Patterns** dial plan model elements so that a **Local Dialing** check box can be selected here if required when using a simpler or flat dial plan.

Dial Plan elements, such as Calling Search Space, can be cloned and edited to easily add another element to the dial plan by defining an “add-on” dial plan model, associating the cloned CSS element with it and pushing it to the required Call Manager cluster using the **Dial Plan Maintenance** menu. In this way the dial plan can be then be updated - functionality that is not possible in a schema based approach.

Additional workflows in the feature allow for values (for example MRGL) to be added from for example the **Device Pools - Regions - Locations -SRST** element input form, since the workflow will push to the these to the Call Manager cluster *only after* the prerequisite values become available. Inspect the transaction log to see the required sequence of data carried out with these workflows.

### Device Pools - Regions - Locations - SRST

The Device Pool, Region, Location and SRST Reference dial plan model have been combined into one coherent data model for ease of entry into a call manager since the elements are often related.



Dp Dp-Reg-Loc [Site_Level_DP]		Save	Delete	Help	Back	Action ▾
Device Pool	Region	Location	SRST Reference			
Dial Plan Name	Site_Level_DP ▾					
Device Pool Name*	{{ macro.SITENAME }}-DP					
Call Manager Group	Default					
Region	{{ macro.SITENAME }}-REG					
Location	{{ macro.SITENAME }}-LOC					
SRST Reference*	{{ macro.SITENAME }}-SRST ▾					
Date/Time Group	CMLocal					

- **Device Pool** tab fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Device Pool Name:** Free text field to add a device pool name or macro. In this example the name is built using a macro reference and a static extension of -DP.
- **Call Manager Group:** Free text field to add a call manager group name.
- **Region:** Free text field to enter a call manager existing region to the device pool or the field will automatically update with the name of the custom added region from the **Region** tab.
- **Location:** Free text field to enter a call manager existing location to the device pool or the field will automatically update with the name of the custom added location from the **Location** tab.
- **SRST Reference:** Free text field to enter a call manager existing SRST reference to the device pool or the field will automatically update with the name of the custom added SRST reference from the **SRST Reference** tab.
- **Date/Time Group:** Free text field to add a date time group name.

Dp Dp-Reg-Loc [Site\_Level\_DP] Save Delete Help Back Action ▾

**Device Pool** **Region** **Location** **SRST Reference**

Add Custom Region

Region Name\*

Related Region +

- +

Related Region Name

Codec Preference

Audio Bandwidth

Video Bandwidth

Immersive Video Bandwidth

Lossy Network

- **Region** tab fields:

- **Add Custom Region:** Check box to optionally add a custom region.
- **Region Name:** Free text field to add a region name. In this example the name is built using a macro reference and a static extension of -REG.
- **Related Region:** Ability to add related regions to the custom region.
  - \* **Related Region Name:** Free text field to add a related region.
  - \* **Codec Preference:** Drop-down with choices:
    - Use System Default
    - Factory Default lossy
    - Factory Default low loss
  - \* **Audio Bandwidth:** Drop-down with choices:
    - Use System Default
    - 7 kbps (GSM-HR, G.723.1)

- 8 kbps (G.729)
- 13 kbps (GSM-FR, AMR)
- 16 kbps (iLBC, G.728)
- 24 kbps (AMR-WB)
- 32 kbps (iSAC, G.722.1)
- 64 kbps (G.711)
- 128 kbps (AAC-LD [LATM])
- 256 kbps (L16, AAC-LD)
- \* **Video Bandwidth:** Drop-down to choose video bandwidth setting with choices:
  - Use System Default
  - Not Allowed
- \* **Immersive Video Bandwidth:** Drop-down to choose immersive video bandwidth with choices:
  - Use System Default
  - Not Allowed
- \* **Lossy Network:** Drop-down to choose lossy network setting with choices:
  - Use System Default
  - Keep Current Setting
  - Low Loss
  - Lossy

Dp Dp-Reg-Loc [Site\_Level\_DP] Save Delete Help Back Action ▾

**Device Pool** **Region** **Location** **SRST Reference**

**Add Custom Location**

**Location Name\***

**Within Audio Bandwidth**

**Within Video Bandwidth**

**Within Immersive Kbits**

**Between Location** +

- +

**Location Name**

**Audio Bandwidth**

**Video Bandwidth (kpbs)**

**Immersive Bandwidth**

**Weight**

- **Location** tab fields:
  - **Add Location:** Check box to optionally add a custom Location.
  - **Location Name:** Free text field to add a location name. In this example the name is built using a macro reference and a static extension of -LOC.
  - **Within Audio Bandwidth**
  - **Within Video Bandwidth**
  - **Within Immersive Kbits**
  - **Between Location** group of fields:
    - \* **Location Name**
    - \* **Audio Bandwidth**
    - \* **Video Bandwidth**
    - \* **Immersive Bandwidth**
    - \* **Weight**

Dp Dp-Reg-Loc [Site\_Level\_DP] Save Delete Help Back Action ▾

**Device Pool** **Region** **Location** **SRST Reference**

Add Custom SRST Reference

Name\*

Port

IP Address\*

SIP Network/IP Address

SIP Port

Is SRST Secure?

- **SRST Reference** tab fields:

- **Add SRST Reference:** Check box to optionally add a custom SRST Reference.
- **SRST Reference Name:** Free text field to add a SRST Reference name. In this example the name is built using a macro reference and a static extension of -SRST.
- **Port**
- **IP Address**
- **SIP Network/IP Address**
- **SIP Port**
- **SRST Secure?**

### Time Period Model

This allows the administrator to define an unlimited number of time periods.

Dp Time Period				Add	Delete	Help	Action ▼
<input type="checkbox"/>	Dial Plan Name	Time Period Name	Description	Hierarchy			
<input type="checkbox"/>	Site_Level_DP	AllTheTime	AllTheTime	sys.hcs.VLS			
<input type="checkbox"/>	Site_Level_DP	BusinessHours	BusinessHours	sys.hcs.VLS			
<input type="checkbox"/>	Site_Level_DP	MonthEnd	MonthEnd	sys.hcs.VLS			
<input type="checkbox"/>	Tiered_Cust_Level_DP	MonthEnd	MonthEnd	sys.hcs			
<input type="checkbox"/>	Tiered_Cust_Level_DP	BusinessHours	BusinessHours	sys.hcs			
<input type="checkbox"/>	Tiered_Cust_Level_DP	AllTheTime	AllTheTime	sys.hcs			

Dp Time Period [Site_Level_DP]		Save	Delete	Help	Back	Action ▼
Dial Plan Name*	<input type="text" value="Site_Level_DP"/>					
Time Period Name*	<input type="text" value="BusinessHours"/>					
Description	<input type="text" value="BusinessHours"/>					
Time of Day Start*	<input type="text" value="07:00"/>					
Time of Day End*	<input type="text" value="17:00"/>					
Start Day	<input type="text" value="Mon"/>					
End Day	<input type="text" value="Fri"/>					
Start Month	<input type="text" value="None"/>					
Start Day of Month	<input type="text" value="0"/>					
End Month	<input type="text" value="None"/>					
End Day of Month	<input type="text" value="0"/>					

**Time Period** fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Time Period Name:** The free text name for desired time period.
- **Description:** Meaningful description of the time period.
- **Time of Day Start:** Drop-down driven field to set start of time period in 15 minute increments.
- **Time of Day End:** Drop-down driven field to set end of time period in 15 minute increments.
- **Start Day:** Drop-down driven field to set start day giving “Mon”-“Fri” and “None” as options.
- **End Day:** Drop-down driven field to set end day giving “Mon”-“Fri” and “None” as options.
- **Start Month:** Drop-down driven field to set start month giving “Jan”-“Dec” and “None” as options.

- **Start Month:** Drop-down driven field to set start month giving “Jan”-“Dec” and “None” as options.
- **Start Day of Month:** Free text field to add integer of start day of the month
- **End Month:** Drop-down driven field to set end month giving “Jan”-“Dec” and “None” as options.
- **End Day of Month:** Free text field to add integer of start day of the month.

### Time Schedule Model

This allows the administrator to define an unlimited number of time schedules.

Dp Time Schedule					Add	Delete	Help	Action ▾
<input type="checkbox"/>	Dial Plan Name	Time Schedule Name	Description	Hierarchy				
<input type="checkbox"/>	Site_Level_DP	WorkHours	Work Hours	sys.hcs.VLS				
<input type="checkbox"/>	Site_Level_DP	AllPeriods	All Periods	sys.hcs.VLS				
<input type="checkbox"/>	Site_Level_DP	AfterHours	Work Hours	sys.hcs.VLS				
<input type="checkbox"/>	Site_Level_DP	BeforeHours	Work Hours	sys.hcs.VLS				
<input type="checkbox"/>	Tiered_Cust_Level_DP	AllPeriods	All Periods	sys.hcs				
<input type="checkbox"/>	Tiered_Cust_Level_DP	WorkHours	Work Hours	sys.hcs				
<input type="checkbox"/>	Tiered_Cust_Level_DP	AfterHours	Work Hours	sys.hcs				
<input type="checkbox"/>	Tiered_Cust_Level_DP	BeforeHours	Work Hours	sys.hcs				

Dp Time Schedule [Site_Level_DP]		Save	Delete	Help	Back	Action ▾
Dial Plan Name	<input type="text" value="Site_Level_DP"/>					
Time Schedule Name*	<input type="text" value="WorkHours"/>					
Description	<input type="text" value="Work Hours"/>					
Time Periods	<div style="border: 1px solid #ccc; padding: 5px;"> <div style="border-bottom: 1px solid #ccc; padding: 5px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <span>+</span> <span>-</span> <span>+</span> <span>▾</span> </div> <div style="margin-top: 5px;"> <p>Time Period Name <input type="text" value="BusinessHours"/></p> </div> </div> <div style="border-bottom: 1px solid #ccc; padding: 5px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <span>-</span> <span>+</span> <span>▲</span> </div> <div style="margin-top: 5px;"> <p>Time Period Name <input type="text" value="MonthEnd"/></p> </div> </div> </div>					

**Time Schedule** fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Time Schedule Name:** Free text field to enter a unique time schedule name.
- **Description:** Meaningful description of the time schedule.
- **Time Periods:** An array of time periods that provides drop-downs of time periods defined from the Time Period.

## Transcoder Model

The transcoder dial plan model allows the administrator to define an unlimited number of transcoders.

Dp Transcoder			Add	Delete	Help	Action ▼
■	Dial Plan Name	Conference Bridge Name	Hierarchy			
□	Site_Level_DP	{{ fn.sub_string macro.SITENAME, 3,4 }}_XCODE_R1	sys.hcs			
□	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}_XCODE	sys.hcs			

Dp Transcoder [Tiered_Cust_Level_DP]		Save	Delete	Help	Back	Action ▼
Dial Plan Name	Tiered_Cust_Level_DP					
Transcoder Type	Cisco IOS Media Termination Point					
Transcoder Name	{{ macro.DP_CustomerName }}_XCODE					
Description	{{ macro.DP_CustomerName }} Transcoder					
Device Pool	{{ macro.DP_CustomerName }}-DP					
Use Trusted Relay Point	Default					

### Transcoder fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type
- **Transcoder Type:** Drop-down field to set Transcoder Type. Currently only supports Cisco IOS Media Termination Point but will be expanded based on market input.
- **Transcoder Name:** Free Text field where a unique name should be entered. In the above example the macro will fill the VOSS customer name with \_XCODE suffix.
- **Description:** Meaningful description of the transcoder
- **Device Pool:** Free text field to identify the proper device pool.
- **Use Trusted Relay Point:** Drop-down with values:
  - Default
  - Off
  - On



## Conference Bridge Model

The Conference Bridge dial plan model allows the administrator to define an unlimited number of Conference Bridges.

Dp Conf Bridge				Add	Delete	Help	Action ▼
■	Dial Plan Name	▲	Conference Bridge Name	Hierarchy			
<input type="checkbox"/>	Site_Level_DP		{{ fn.sub_string macro.SITENAME, 3,4 }}_CFB_R1	sys.hcs			
<input type="checkbox"/>	Tiered_Cust_Level_DP		{{ macro.DP_CustomerName }}_CFB	sys.hcs			

Dp Conf Bridge [Tiered_Cust_Level_DP]		Save	Delete	Help	Back	Action ▼
Dial Plan Name	<input type="text" value="Tiered_Cust_Level_DP"/>					
Conference Bridge Type	<input type="text" value="Cisco IOS Conference Bridge"/>					
Conference Bridge Name	<input type="text" value="{{ macro.DP_CustomerName }}_CFB"/>					
Description	<input type="text" value="{{ macro.DP_CustomerName }} Conf Bridge"/>					
Device Pool	<input type="text" value="{{ macro.DP_CustomerName }}-DP"/>					
Location	<input type="text" value="{{ macro.DP_CustomerName }}-LOC"/>					
Use Trusted Relay Point	<input type="text" value="Default"/>					

### Conference Bridge fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Conference Bridge Type:** Drop-down field to set Transcoder Type. Currently only supports Cisco IOS Conference Bridge but will be expanded based on market input.
- **Conference Bridge Name:** Free Text field where a unique name should be entered. In the above example the macro will fill the VOSS customer name with \_CFB suffix.
- **Description:** Meaningful description of the Conference Bridge.
- **Device Pool:** Free text field to identify the proper Device Pool.
- **Location:** Free text field to identify the proper Location.
- **Use Trusted Relay Point:** Drop-down with values:
  - Default
  - Off
  - On

## Media Resource Group Model

The Media Resource Group dial plan model allows the administrator to define an unlimited number of Media Resource Groups.

Dp Media Resource Group				Add	Delete	Help	Action ▾
■	Dial Plan Name ^	Media Resource Group Name	Hierarchy				
☐	Site_Level_DP	{{ macro.SITENAME }}-MRG	sys.hcs				
☐	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-MRG	sys.hcs				

Dp Media Resource Group [Tiered_Cust_Level_DP]		Save	Delete	Help	Back	Action ▾
Dial Plan Name	Tiered_Cust_Level_DP ▾					
Media Resource Group Name	<input type="text" value="{{ macro.DP_CustomerName }}-MRG"/>					
Description	<input type="text" value="{{ macro.DP_CustomerName }} Media Resource Group"/>					
Devices for this Group	<div style="border: 1px solid #ccc; padding: 5px;"> <div style="border-bottom: 1px solid #ccc; padding: 5px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <span>+</span> <span>Media Resource</span> <input type="text" value="{{ macro.DP_CustomerName }}_CFB"/> </div> </div> <div style="border-bottom: 1px solid #ccc; padding: 5px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <span>+</span> <span>Media Resource</span> <input type="text" value="{{ macro.DP_CustomerName }}_XCODE"/> </div> </div> </div>					

**Media Resource Group** fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Media Resource Group Name:** Free text field to enter a unique name for the Media Resource Group.
- **Description:** Meaningful description of the Media Resource Group.
- **Devices for this Group:** Array of member media resources for the Media Resource Group. In this instance using macros to enter the two customer level Transcoder and Conference Bridge instances.

## Media Resource Group List Model

The Media Resource Group List dial plan model allows the administrator to define an unlimited number of Media Resource Group Lists.

Dp Media Resource Group List			Add	Delete	Help	Action ▾
Dial Plan Name	Media Resource Group List Name	Hierarchy				
Site_Level_DP	{{ macro.SITENAME }}-MRGL	sys.hcs				
Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-MRGL	sys.hcs				

Dp Media Resource Group List [Tiered_Cust_Level_DP]		Save	Delete	Help	Back	Action ▾
Dial Plan Name	Tiered_Cust_Level_DP					
Media Resource Group List Name	{{ macro.DP_CustomerName }}-MRGL					
Media Resource Groups	<div style="border: 1px solid #ccc; padding: 5px;"> <div style="border-bottom: 1px solid #ccc; padding: 2px 5px;"> <span style="float: right;">+</span> </div> <div style="padding: 2px 5px;"> <div style="border: 1px solid #ccc; padding: 2px 5px;"> <div style="border-bottom: 1px solid #ccc; padding: 2px 5px;"> <span style="float: right;">- +</span> </div> <div style="padding: 2px 5px;"> Media Resource Group: {{ macro.DP_CustomerName }}-MRG </div> </div> </div> </div>					

#### Media Resource Group List fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Media Resource Group List Name:** Free text field to enter a unique name for the Media Resource Group List
- **Media Resource Groups:** Array of media resource groups to assign to the Media Resource Group List. In this example binding the customer level MRG.

#### Route List Model

The Route List dial plan model allows the administrator to define an unlimited number of Route Lists.

Dp Route List			Add	Delete	Help	Action ▾
■	Dial Plan Name	▲ Route List Name	Hierarchy			
■	Site_Level_DP	{{ macro.SITENAME }}-AGGR-RL	sys.hcs.VLS			
■	Site_Level_DP	{{ macro.SITENAME }}-UNITY-RL	sys.hcs.VLS			
■	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-UNITY-RL	sys.hcs			
■	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-AGGR-RL	sys.hcs			

Dp Route List [Site\_Level\_DP] Save Delete Help Back Action ▾

Dial Plan Name: Site\_Level\_DP ▾

Route List Name: {{ macro.SITENAME }}-AGGR-RL

Route List Description: {{ macro.SITENAME }} AGGR Route List

Call Manager Group Name: Default

Route List Enabled:

Members

Route Group Name:

Selection Order:

Use Calling Party's External Phone Number:  ▾

Mask:

Calling Party Transform Mask:

Calling Party Prefix Digits (Outgoing Calls):

Called Party Discard Digits:  ▾

Called Party Transform Mask:

Called Party Prefix Digits (Outgoing Calls):

Run On Every Node:

#### Route List fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Route List Name:** Free text field to enter a unique name for the Route List

- **Route List Description:** Meaningful description of the Route List.
- **Call Manager Group Name:** Free text field to designate the proper Call Manager Group
- **Route list Enabled:** Check box to set the Route List Enabled field in Call Manager.
- **Members:** Array to enter member elements to the route list.
  - **Route Groups Name:** Free text field to assign a route group to the Route List.
  - **Selection Order:** The order in which the Route Groups will be placed in the Route List.
  - Use Calling Party's External Phone Number Mask: Drop-down providing Call Manager available options:
    - \* Default
    - \* On
    - \* Off
  - **Calling Party Transform Mask:** Free text field to enter common Call Manager Transform Mask data.
  - **Calling Party Prefix Digits (Outgoing Calls):** Free text field to enter common Call Manager Calling Party Prefix Digit data.
  - **Called Party Discard Digits:** Drop-down providing Call Manager available options:
    - \* None
    - \* PreDot
    - \* PreDot Trailing-#

Note that more discard instructions may be added at market demand.

- **Called Party Transform Mask:** Free text field to enter common Call Manager Transform Mask data.
- **Called Party Prefix Digits (Outgoing Calls):** Free text field to enter common Call Manager Called Party Prefix Digit data

### Route Group Model

The Route Group dial plan model allows the administrator to define an unlimited number of Route Groups.

Dp Route Group			Add	Delete	Help	Action ▼
■	Dial Plan Name	Route Group Name	Hierarchy			
■	Site_Level_DP	{{ macro.SITENAME }}-LRG	sys			
■	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-RG	sys			

Dp Route Group [Tiered_Cust_Level_DP]		Save	Delete	Help	Back	Action ▼
Dial Plan Name	Tiered_Cust_Level_DP					
Route Group Name	{{ macro.DP_CustomerName }}-RG					
Distribution Algorithm	Circular					
Route Group Devices	<div style="border: 1px solid #ccc; padding: 5px;"> <div style="border-bottom: 1px solid #ccc; padding: 2px 5px;"> <span style="float: right;">+</span> </div> <div style="border-bottom: 1px solid #ccc; padding: 2px 5px;"> <span style="float: right;">- + ▼</span> <div style="border: 1px solid #ccc; padding: 2px;">           Device <input type="text" value="{{ macro.CustomerName }}-AGGR-SIPTRK-P"/> </div> </div> <div style="padding: 2px 5px;"> <span style="float: right;">- + ▲</span> <div style="border: 1px solid #ccc; padding: 2px;">           Device <input type="text" value="{{ macro.CustomerName }}-AGGR-SIPTRK-S"/> </div> </div> </div>					

#### Route Group fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Route Group Name:** Free text field to enter a unique name for the Route Group
- **Distribution Algorithm:** Drop-down providing the Call Manager options:
  - Top Down
  - Circular
  - Longest Idle Time
  - Broadcast
- **Route Group Devices:** Array to add devices to the route group. In this example a primary and secondary SIP trunk to aggregation.

## SIP Trunk Model

The SIP Trunk dial plan model allows the administrator to define an unlimited number of SIP Trunks.

Dp Sip Trunk			
	Dial Plan Name	SIP Trunk Name	Hierarchy
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-SipTrunk	sys
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-SipTrunk	sys.hcs

Dp Sip Trunk [Tiered_Cust_Level_DP]									
	Save Delete Help Back Action								
Dial Plan Name	Tiered_Cust_Level_DP								
SIP Trunk Name	{{ macro.DP_CustomerName }}-SipTrunk								
Description	{{ macro.DP_CustomerName }} SIP Trunk								
Device Pool	{{ macro.DP_CustomerName }}-DP								
Call Classification	OffNet								
Media Resource Group List	{{ macro.DP_CustomerName }}-MRGL								
Location	{{ macro.DP_CustomerName }}-LOC								
Run On All Active Unified CM Nodes	<input checked="" type="checkbox"/>								
Inbound Call CSS	{{ macro.DP_CustomerName }}-PSTNInbound-CSS								
SIP Information	<table border="1"> <tr> <td>Destination Address is an SRV</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Destination Address</td> <td>1.2.3.4</td> </tr> <tr> <td>Destination Address IPv6</td> <td></td> </tr> <tr> <td>Destination Port</td> <td>5060</td> </tr> </table>	Destination Address is an SRV	<input type="checkbox"/>	Destination Address	1.2.3.4	Destination Address IPv6		Destination Port	5060
Destination Address is an SRV	<input type="checkbox"/>								
Destination Address	1.2.3.4								
Destination Address IPv6									
Destination Port	5060								
SIP Trunk Security Profile	Non Secure SIP Trunk Profile								
SIP Profile	Standard SIP Profile								

### SIP Trunk fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **SIP Trunk Name:** A unique identifier for the SIP Trunk
- **Description:** A descriptive name for the SIP Trunk.

- **Device Pool:** Free text field to enter the proper device pool for the trunk
- **Call Classification:** A drop-down to select a call manager. Options are:
  - Offnet
  - OnNet
  - Use System Default
- **Media Resource Group List:** Defines the proper media resource group list (MRGL) for the SIP Trunk.
- **PSTN Access:** Defines whether calls made through this SIP trunk may reach the PSTN. The default is false.
- **Location:** The location for the SIP Trunk, which defines the total bandwidth available for calls between this location and the central location, or hub. None specifies unlimited available bandwidth.
- **Run On All Active CM Nodes:** Defines whether to set the run on all nodes.
- **Inbound Call CSS:** Defines the proper CSS for SIP Trunks per dial plan.
- **Inbound Prefix DN:** Defines the prefix digits to append to the called party number on incoming calls. CUCM adds prefix digits after first truncating the number (based on the Significant Digits setting). You can use the exit code +
- **Incoming Number Prefix:** Typically used for outbound click-to-dial from a handset call history.
- **SIP Information:** Array to add multiple SIP IP Destination:
  - **Destination Address is an SRV**
  - **Destination Address:** The IPv4 IP address of the destination.
  - **Destination Address IPv6:** The IPv6 of the destination.
  - **Destination Port:** The TCP/IP port for the SIP Trunk instance.
- **SIP Trunk Security Profile:** Defines the SIP Trunk Security Profile.
- **SIP Profile:** Defines the SIP Profile.



## Partition Model

The Partition dial plan model allows the administrator to define an unlimited number of Partitions.

Dp Partition				Add	Delete	Help	Action ▼
<input type="checkbox"/>	Dial Plan Name	Partition Name	Hierarchy				
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-PSTNInbound-PT	sys.hcs.VLS				
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-Unity-PT	sys.hcs.VLS				
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-INTL-PT	sys.hcs.VLS				
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-LD-PT	sys.hcs.VLS				
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-LOCAL-PT	sys.hcs.VLS				
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-INTERNAL-PT	sys.hcs.VLS				
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-INTERNAL-PT	sys.hcs				
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-PSTNInbound-PT	sys.hcs				
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-LD-PT	sys.hcs				
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-Unity-PT	sys.hcs				
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-INTL-PT	sys.hcs				
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-LOCAL-PT	sys.hcs				

Dp Partition [Site_Level_DP]		Save	Delete	Help	Back	Action ▼
Dial Plan Name	<input type="text" value="Site_Level_DP"/>					
Partition Name	<input type="text" value="{{ macro.SITENAME }}-PSTNInbound-PT"/>					
Partition Description	<input type="text" value="{{ macro.SITENAME }} PSTN Inbound"/>					
Partition Time Schedule	<input type="text" value="All the time"/>					

### Partition fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Partition Name:** Free text field to enter a unique name for the Partition.
- **Partition Description:** Meaningful description of the Partition.
- **Partition Time Schedule:** Time schedule for the Partition if required per dial plan. May be left blank.

## Calling Search Space Model

The Calling Search Space (CSS) dial plan model allows the administrator to define an unlimited number of CSS.

Dp Css			Add	Delete	Help	Action ▾
<input type="checkbox"/>	Dial Plan Name	^ CSS Name	Hierarchy			
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-PSTNInbound-CSS	sys.hcs.VLS			
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-LD-CSS	sys.hcs.VLS			
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-LOCAL-CSS	sys.hcs.VLS			
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-INTERNAL-CSS	sys.hcs.VLS			
<input type="checkbox"/>	Site_Level_DP	{{ macro.SITENAME }}-INTL-CSS	sys.hcs.VLS			
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-PSTNInbound-CSS	sys.hcs			
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-INTL-CSS	sys.hcs			
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-LD-CSS	sys.hcs			
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-INTERNAL-CSS	sys.hcs			
<input type="checkbox"/>	Tiered_Cust_Level_DP	{{ macro.DP_CustomerName }}-LOCAL-CSS	sys.hcs			
<input type="checkbox"/>	Tiered_Site_Level_DP	{{ macro.SITENAME }}-LD-CSS	sys.hcs			
<input type="checkbox"/>	Tiered_Site_Level_DP	{{ macro.SITENAME }}-INTL-CSS	sys.hcs			
<input type="checkbox"/>	Tiered_Site_Level_DP	{{ macro.SITENAME }}-INTERNAL-CSS	sys.hcs			
<input type="checkbox"/>	Tiered_Site_Level_DP	{{ macro.SITENAME }}-LOCAL-CSS	sys.hcs			

Dp Css [Tiered\_Cust\_Level\_DP] Save Delete Help Back Action ▾

Dial Plan Name: Tiered\_Cust\_Level\_DP ▾

CSS Name: {{ macro.DP\_CustomerName }}-INTL-CSS

CSS Description: {{ macro.DP\_CustomerName }} International Dialing

Partitions

- Route Partition Names: {{ macro.DP\_CustomerName }}-INTERNAL-PT  
 Partition Index: 1
- Route Partition Names: {{ macro.DP\_CustomerName }}-LOCAL-PT  
 Partition Index: 2
- Route Partition Names: {{ macro.DP\_CustomerName }}-LD-PT  
 Partition Index: 3
- Route Partition Names: {{ macro.DP\_CustomerName }}-INTL-PT  
 Partition Index: 4
- Route Partition Names: {{ macro.DP\_CustomerName }}-Unity-PT  
 Partition Index: 5

**CSS fields:**

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **CSS Name:** Free text field to enter a unique name for the CSS.
- **CSS Description:** Meaningful description of the CSS.
- **Partitions:** Array to add Partitions associated in order to the CSS.

- **Route Partition Name:** Free text field to enter valid Partition name
- **Partition Index:** Free text field to enter the numeric id for Partition order.

## Route Pattern Model

The Route Pattern dial plan model allows the administrator to define an unlimited number of Route Patterns. “Local Dialing” flag will be covered in a following section.

Dp Route Pattern [Tiered\_Cust\_Level\_DP] Save Delete Help Back Action ▾

Dial Plan Name	Tiered_Cust_Level_DP
Local Dialing	<input type="checkbox"/>
Route Pattern	9.1[2-9]00[2-9]0000
Route Pattern Description	{{ macro.DP_CustomerName }} Long Distance Dialing
Route Partition	{{ macro.DP_CustomerName }}-LD-PT
Numbering Plan	
Route Filter	
Route List	{{ macro.DP_CustomerName }}-AGGR-RL
Gateway Name	
Route Option	Route this pattern
Release Clause	No Error
Call Classification	OffNet
Allow Device Override	<input type="checkbox"/>
Provide Outside Dial Tone	<input checked="" type="checkbox"/>
Allow Overlap Sending	<input type="checkbox"/>
Urgent Priority	<input type="checkbox"/>
Authorization Level	0
Require Forced Authorization Code	<input type="checkbox"/>
Require Client Matter Code	<input type="checkbox"/>
Use Calling Party's External Phone Number Mask	Default
Calling Party Transform Mask	
Calling Party Prefix Digits (Outgoing Calls)	
Called Party Discard Digits	PreDet
Called Party Transform Mask	
Called Party Prefix Digits (Outgoing Calls)	
Calling Line Presentation Bit	
Calling Name Presentation Bit	
Connected Line Presentation Bit	
Connected Name Presentation Bit	
MLPP Precedence	Default

### Route Pattern fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Local Dialing:** Check box to identify special patterns.
- **Route Pattern:** Free text field to enter a common Call Manager routing pattern.
- **Route Pattern Description:** Meaningful description of the Route Pattern.

- **Route Partition:** Free text field to enter a valid CUCM Partition.
- **Numbering Plan:** Free text field to enter a valid CUCM Numbering Plan if IDP is utilized.
- **Route Filter:** Free text field to enter a valid route filter name.
- **Route List:** Free text field to enter a valid route list name.
- **Gateway Name:** Free text field to enter a valid gateway name.
- **Route Option:** Drop-down providing Call Manager option:
  - Route this pattern
  - Block this pattern
- **Release Clause:** Drop-down providing Call Manager option:
  - No Error
  - Unallocated Number
  - Call Rejected
  - Number Changed
  - Invalid Number Format
  - Precedence Level Exceeded
- **Call Classification:** Drop-down providing Call Manager option:
  - Offnet
  - OnNet
- **Allow Device Override:** Check box to enable device override.
- **Provide Outside Dial Tone:** Check box to enable Outside Dial Tone.
- **Allow Overlap Sending:** Check box to enable Overlap Sending.
- **Urgent Priority:** Check box to enable Urgent Priority.
- **Authorization Level:** Free text box to enter Authorization Level as numeric value.
- **Require Forced Authorization Code:** Check box to enable Forced Authorization Code.
- **Require Client Matter Code:** Check box to enable Client Matter Code.
- **Use Calling Party's External Phone Number Mask:** Drop-down providing Call Manager available options:
  - Default
  - On
  - Off
- **Calling Party Transform Mask:** Free text field to enter common Call Manager Transform Mask data.
- **Calling Party Prefix Digits (Outgoing Calls):** Free text field to enter common Call Manager Calling Party Prefix Digit data.
- **Called Party Discard Digits:** Drop-down providing Call Manager available options:
  - None
  - PreDot
  - PreDot Trailing-#

Note that more discard instructions may be added at market demand.

- **Called Party Transform Mask:** Free text field to enter common Call Manager Transform Mask data.
- **Called Party Prefix Digits (Outgoing Calls):** Free text field to enter common Call Manager Called Party Prefix Digit data.
- **Calling Line Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Calling Name Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Connected Line Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Connected Name Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **MLPP Precedence:** Drop-down providing Call Manager available options:
  - Default
  - Executive Override
  - Flash
  - Flash Override
  - Immediate
  - Priority
  - Routine

### Translation Pattern Model

The Translation Pattern dial plan model allows the administrator to define an unlimited number of Translation Patterns. “Local Dialing” flag will be covered in the following section.

Dp Trans Pattern [Tiered\_Cust\_Level\_DP] Save Delete Help Back Action ▾

Dial Plan Name: Tiered\_Cust\_Level\_DP ▾

Local Dialing:

Translation Pattern: 656XXXXXXX

Partition: {{ macro\_DP\_CustomerName }}-LD-PT ▾

Translation Pattern Description: 656 digit dialing translation pattern

CSS: {{ macro\_DP\_CustomerName }}-INTERNAL-CSS ▾

Use Originator's Calling Search Space:

Route Option: Route this pattern ▾

Release Clause: No Error ▾

Provide Outside Dial Tone:

Urgent Priority:

Do Not Wait For Interdigit Timeout On Subsequent Hops:

Route Next Hop By Calling Party Number:

Use Calling Party's External Phone Number Mask:

Calling Party Transform Mask:

Calling Party Prefix Digits (Outgoing Calls):

Calling Line Presentation Bit: Default ▾

Calling Name Presentation Bit: Default ▾

Connected Line Presentation Bit: Default ▾

Connected Name Presentation Bit: Default ▾

Called Party Transform Mask:

Called Party Discard Digits:

Called Party Prefix Digits (Outgoing Calls):

#### Translation Pattern fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Local Dialing:** Check box to identify special patterns.
- **Translation Pattern:** Free text field to enter a common Call Manager translation pattern.
- **Partition:** Free text field to enter a valid partition for the Translation Pattern.
- **Translation Pattern Description:** Meaningful description of the Translation Pattern.
- **CSS:** Free text field to assign a valid CSS per the dial plan.
- **Route Option:** Drop-down providing Call Manager options:
  - Route this pattern
  - Block this pattern
- **Release Clause:** Drop-down providing Call Manager options:
  - No Error

- Unallocated Number
- Call Rejected
- Number Changed
- Invalid Number Format
- Precedence Level Exceeded
- **Provide Outside Dial Tone:** Check box to enable Outside Dial Tone.
- **Urgent Priority:** Check box to enable Urgent Priority.
- **Do Not Wait For Interdigit Timeout On Subsequent Hops:** Check box to bypass interdigit timeout.
- **Route Next Hop By Calling Party Number:** Check box to enable Route Next Hop By Calling Party Number.
- **Use Calling Party's External Phone Number Mask:** Check box to enable use of Calling Party's External Phone Number Mask.
- **Use Originator's Calling Search Space:** Check box to enable Originator's Calling Search Space.
- **Calling Party Transform Mask:** Free text field to enter common Call Manager Transform Mask data.
- **Calling Party Prefix Digits (Outgoing Calls):** Free text field to enter common Call Manager Calling Party Prefix Digit data.
- **Calling Line Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Calling Name Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Connected Line Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Connected Name Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Called Party Transform Mask:** Free text field to enter common Call Manager Transform Mask data.
- **Called Party Prefix Digits (Outgoing Calls):** Free text field to enter common Call Manager Called Party Prefix Digit data.



### Route Pattern and Translation Pattern 'Local'

The Translation/Route Pattern local designation in dial plan model allows the administrator to define patterns as local or looping patterns from the Site/Customer dial plan input sheet. The dial plan input sheets allow for creating a list of local area code/exchange that can be referenced via macro values to create site or customer level unique patterns.

Dp Route Pattern [Site\_Level\_DP] Save Delete Help Back Action ▾

Dial Plan Name Site\_Level\_DP ▾

**Local Dialing**

Route Pattern {{ macro.DP\_PSTNAccess }}.{{ macro.DP\_AreaCode }}XXXXXX

Route Pattern Description 10 digit Digit Local

Route Partition {{ macro.SITENAME }}-LD-PT

Numbering Plan

Route Filter

Route List {{ macro.SITENAME }}-AGGR-RL

Gateway Name

Route Option Route this pattern ▾

Release Clause No Error ▾

Call Classification OffNet ▾

Dp Trans Pattern [Site\_Level\_DP] Save Delete Help Back Action ▾

Dial Plan Name Site\_Level\_DP ▾

**Local Dialing**

Translation Pattern {{ macro.DP\_PSTNAccess }}.{{ macro.DP\_AreaCode }}XXXX

Partition {{ macro.SITENAME }}-LD-PT ▾

Translation Pattern Description 7 digit dialing translation pattern

Css {{ macro.SITENAME }}-INTERNAL-CSS ▾

Use Originator's Calling Search Space

Route Option Route this pattern ▾

Release Clause No Error ▾

## CTI Route Points

The CTI Route Point dial plan model allows the administrator to define an unlimited number of CTI Route points with an associated line.

Dp Cti Route Point					Add	Delete	Help	Action ▼
■	Dial Plan Name	▲	Device Name	Description	Hierarchy			
<input type="checkbox"/>	Site_Level_DP		TestCTIRP1	Test CTI Route Point 1	sys.hcs.VLS			
<input type="checkbox"/>	Site_Level_DP		TestCTIRP2	Test CTI Route Point 2	sys.hcs.VLS			
<input type="checkbox"/>	Tiered_Cust_Level_DP		TestCTIRP1	Test CTI Route Point 1	sys.hcs			
<input type="checkbox"/>	Tiered_Cust_Level_DP		TestCTIRP2	Test CTI Route Point 2	sys.hcs			

Dp Cti Route Point [Tiered_Cust_Level_DP]		Save	Delete	Help	Back	Action ▼
<div style="display: flex; border-bottom: 1px solid #ccc;"> <span style="border-right: 1px solid #ccc; padding: 2px 5px;">CTI Route Point</span> <span style="padding: 2px 5px; background-color: #0056b3; color: white;">Associated Line</span> </div>						
Dial Plan Name*	<input type="text" value="Tiered_Cust_Level_DP"/>					
Device Name*	<input type="text" value="TestCTIRP1"/>					
Description	<input type="text" value="Test CTI Route Point 1"/>					
Device Pool*	<input type="text" value="Default"/>					
Calling Search Space	<input type="text" value="{{ macro.DP_CustomerName }}-LD-CSS"/>					
Location	<input type="text" value="Hub_None"/>					
Use Trusted Relay Point*	<input type="text" value="Default"/>					
Calling Party Transformation CSS	<input type="text" value="{{ macro.DP_CustomerName }}-LD-CSS"/>					
Geolocation	<input type="text" value="unspecified"/>					
Use Device Pool Calling Party Transformation CSS	<input checked="" type="checkbox"/>					

### CTI Route Point Device fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Device Name:** The unique device name assigned to the CTI Route Point.
- **Description:** Meaningful description of the CTI Route Point.
- **Device Pool:** Free text field to enter the proper device pool for the CTI Route Point.
- **Css:** Drop-down field that provides a list of CSS from the dial plan css model.
- **Location:** Free text field to assign a valid Call Manager Location
- **Use Trusted Relay Point:** Drop-down with values:

- Default
- Off
- On
- **Calling Party Transformation CSS:** Drop-down field that provides a list of CSS from the dial plan css model.
- **Geolocation:** Free text field to enter a geolocation if necessary.
- **Use Device Pool Calling Party Transformation CSS:** Check box to enable Use Device Pool Calling Party Transformation CSS.

Dp Cti Route Point [Tiered\_Cust\_Level\_DP] Save Delete Help Back Action ▾

CTI Route Point Associated Line

CTI Route Point DN	<input type="text" value="1999"/>
CTI Route Point Line Description	<input type="text" value="Line 1999 CTI Route Point"/>
CTI Route Point Line Partition	<input type="text" value="{{ macro.DP_CustomerName }}-INTERNAL-PT"/>
CTI Route Point Line CSS	<input type="text" value="{{ macro.DP_CustomerName }}-LD-CSS"/>

#### CTI Route Point Line Fields:

- **CTI Route Point DN:** The back end system will take the input from this field and create the Internal Number Inventory entry marked as used, then create a CUCM Line with the input number then finally associate the newly created line to the CTI Route Point.
- **CTI Route Point Line Description:** Meaningful description of the CTI Route Point Line.
- **CTI Route Point Line Partition:** Drop-down field that provides a list of Partitions from the dial plan partitions model.
- **CTI Route Point Line CSS:** Drop-down field that provides a list of CSS from the dial plan css model.

## Called Party Transformation Model

The Called Party Transformation dial plan model allows the administrator to define an unlimited number of Called Party Transformations.

Dp Called Party Transformation [Site_Level_DP]		Save	Delete	Help	Back	Action ▼
Dial Plan Name	Site_Level_DP					
Pattern*	**111					
Description	Transform 1111					
Route Partition	{{ macro.SITENAME }}-INTERNAL-PT					
Discard Digits						
Called Party Transformation Mask	2143360552					
Called Party Prefix Digits	3280					
Called Party Number Type	Cisco CallManager					
Called Party Numbering Plan	Cisco CallManager					

**Called Party Transformation** fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Pattern:** Free text field to allow entry in standard Call Manager patterns.
- **Description:** Meaningful description of the Called Party Transformation.
- **Route Partition:** Free text field for entry of a valid Call Manager Partition.
- **Called Party Discard Digits:** Drop-down providing Call Manager available options:
  - PreDot
  - PreDot Trailing-#

Note that more discard instructions may be added at market demand.

- **Called Party Transformation Mask:** Free text field for entry of transformation mask.
- **Called Party Prefix Digits:** Free text field for entry of prefix digits.
- **Called Party Number Type:** Drop-down providing Call Manager options:
  - Cisco CallManager
  - Unknown

- National
- International
- Subscriber
- **Called Party Numbering Plan:** Drop-down providing Call Manager options:
  - Cisco CallManager
  - ISDN
  - National Standard
  - Private
  - Unknown

### **Calling Party Transformation Model**

The Calling Party Transformation dial plan model allows the administrator to define an unlimited number of Calling Party Transformations.

Dp Calling Party Transformation [Tiered_Cust_Level_DP]		Save	Delete	Help	Back	Action ▼
Dial Plan Name	Tiered_Cust_Level_DP					
Pattern*	2143560001					
Description	Test calling Party TP					
Partition	{{ macro.DP_CustomerName }}-INTERNAL-PT					
Use Calling Party's						
External Phone	Default					
Number Mask						
Calling Line ID						
Presentation*	Default					
Calling Party						
Transform Mask	123456					
Calling Party Prefix						
Digits (Outgoing Calls)	9988					
Calling Party Discard						
Digits						
Calling Party Number						
Type*	Cisco CallManager					
Calling Party						
Numbering Plan*	Cisco CallManager					

#### Calling Party Transformation fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.
- **Pattern:** Free text field to allow entry of standard Call Manager patterns.
- **Description:** Meaningful description of the Called Party Transformation.
- **Partition:** Free text field for entry of a valid Call Manager Partition.
- **Use Calling Party's External Phone Number Mask:** Drop-down providing Call Manager available options:
  - Default
  - On
  - Off
- **Calling Line ID Presentation:** Drop-down providing Call Manager available options:

- Default
- Allowed
- Restricted
- **Calling Party Transform Mask:** Free text field to enter common Call Manager Transform Mask data
- **Calling Party Prefix Digits (Outgoing Calls):** Free text field to enter common Call Manager Calling Party Prefix Digit data.
- **Called Party Discard Digits:** Drop-down providing Call Manager available options:
  - PreDot

Note that more discard instructions may be added at market demand.

- **Called Party Number Type:** Drop-down providing Call Manager options:
  - Cisco CallManager
  - Unknown
  - National
  - International
  - Subscriber
- **Called Party Numbering Plan:** Drop-down providing Call Manager options:
  - Cisco CallManager
  - ISDN
  - National Standard
  - Private
  - Unknown

## SIP Route Pattern Model

The SIP Route Pattern dial plan model allows the administrator to define an unlimited number of SIP Route Patterns.

Dp Sip Route Pattern [Tiered\_Cust\_Level\_DP] Save Delete Help Back Action ▾

Dial Plan Name*	Tiered_Cust_Level_DP ▾
Pattern*	sip:7654321@vls.com
Description	SIP Route Pattern 7654321
Usage*	Domain Routing ▾
Route Partition*	{{ macro.DP_CustomerName }}-LD-PT
Route Option	Route this pattern ▾
Calling Party Transformation Mask	
Use Calling Party's External Phone Number Mask	Default ▾
Calling Party Prefix Digits (Outgoing Calls)	
Calling Line Presentation Bit	Default ▾
Calling Name Presentation Bit	Default ▾
Connected Line Presentation Bit	Default ▾
Connected Name Presentation Bit	Default ▾
Sip Trunk/Route List Name*	{{ macro.DP_CustomerName }}-AGGR-RL
Dn or Pattern IPv6	
Route On User Part	<input type="checkbox"/>
Use Caller CSS	<input checked="" type="checkbox"/>
Domain Routing Css Name	

**SIP Route Pattern** fields:

- **Dial Plan Name:** Drop-down driven unique name given to the entire dial plan as a whole. This name appears in every dial plan model type.



- **Pattern:** Free text field to allow entry in standard Call Manager patterns uri patterns.
- **Description:** Meaningful description of the SIP Route Pattern.
- **Usage:** Drop-down providing Call Manager options:
  - Domain Routing
- **Route Partition:** Free text field for entry of a valid Call Manager Partition.
- **Route Option:** Drop-down providing Call Manager options:
  - Route this pattern
  - Block this pattern
- **Calling Party Transform Mask:** Free text field to enter common Call Manager Transform Mask data
- **Use Calling Party's External Phone Number Mask:** Drop-down providing Call Manager available options:
  - Default
  - On
  - Off
- **Calling Party Prefix Digits (Outgoing Calls):** Free text field to enter common Call Manager Calling Party Prefix Digit data.
- **Calling Line ID Presentation:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Calling Name Presentation:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Calling Line Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Calling Name Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Connected Line Presentation Bit:** Drop-down providing Call Manager available options:
  - Default
  - Allowed
  - Restricted
- **Connected Name Presentation Bit:** Drop-down providing Call Manager available options:

- Default
  - Allowed
  - Restricted
- **Sip Trunk/Route List Name:** Free text field for entry of a valid SIP Trunk or Route List Name.
  - **Dn or Pattern IPv6:** Free text field for entry of Dn or Pattern IPv6.
  - **Route On User Part:** Check box to enable Route On User Part.
  - **Use Caller CSS:** Checkk box to enable use of Caller CSS.
  - **Domain Routing Css Name:** Free text field for entry of a domain routing CSS.

### 33.1.9. Microsoft Dial Plan Models

#### Overview

VOSS Automate supports the ability to predefine dial plan templates for Microsoft data models, and to push the dial plans, on-demand, for a specific customer or site.

#### Microsoft Dial Plan Models Workflow

To use this feature:

1. Ensure you have the **Dial Plan Management Tool** menus exposed in the Admin Portal:
  - In the Global Settings, ensure **Enforce HCS Dialplan Rules** is set to *No*.
  - Log in with an access profile that has permissions to the **Dial Plan Management Tool** menus.

---

**Note:**

- The **Dial Plan Input Data** menu is relevant only for Cisco dial plans.
  - For Microsoft dial plans, include the Microsoft Dial Plan Models menu and Microsoft models in your menu layout.
- 

2. *Create the Dial Plan Name*
3. *Create Data Models*
4. *Preview a Configured Dial Plan*
5. *Push a Dial Plan to Customer or Site*

At of VOSS Automate version 21.4-PB1, the following Microsoft data models and corresponding device models (Microsoft dial plan elements) are supported:

Device Model	Menu
device/msteamsonline/CsTenantDialplan	Tenant Dialplan
device/msteamsonline/CsOnlinePstnGateway	SBC Gateways
device/msteamsonline/CsOnlinePstnUsage	PSTN Usages
device/msteamsonline/CsOnlineVoiceRoute	Voice Routes
device/msteamsonline/CsOnlineVoiceRoutingPolicy	Voice Routing Policies
device/msteamsonline/CsTeamsTranslationRule	Translation Rules

As of VOSS Automate version 21.4-PB3, additional Microsoft device models have been added to offer providers a one-step in the customer onboarding process: pushing provider-specific dial plan elements as well as Teams polices to the customer's tenant.

The following Microsoft device models are supported. The equivalent data models have names that match the device model name as follows:

DP\_msteamsonline\_<device model name>

For example, DP\_msteamsonline\_CsOnlineVoicemailPolicy.

Device Model	Menu
device/msteamsonline/CsCallingLineIdentity	Calling Line Identity <sup>1</sup>
device/msteamsonline/CsOnlineVoicemailPolicy	Online Voicemail Policies
device/msteamsonline/CsTeamsCallingPolicy	Calling Policies
device/msteamsonline/CsTeamsCallParkPolicy	Call Park Policies
device/msteamsonline/CsTeamsEmergencyCallingPolicy	Emergency Calling Policies
device/msteamsonline/CsTeamsEmergencyCallRoutingPolicy	Emergency Call Routing Policies
device/msteamsonline/CsTeamsEnhancedEncryptionPolicy	Enhanced Encryption Policies

## Related Topics

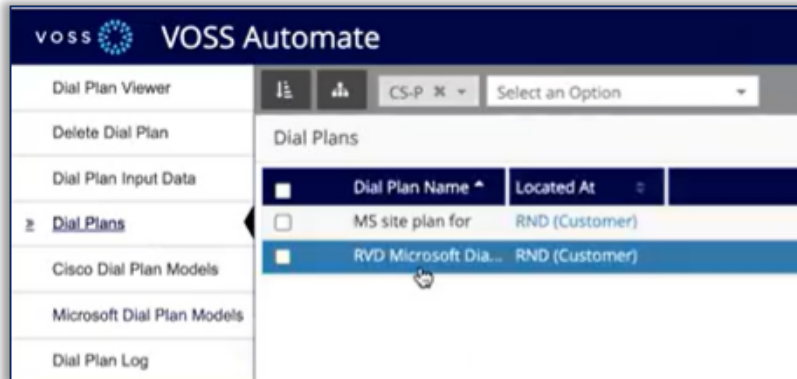
- [Cisco Custom Dial Plans](#)
- [Dial Plan Management Tool](#)
- [Dial Plan Viewer](#)
- [Dial Plan Maintenance](#)
- [Cisco Dial Plan Models](#)

<sup>1</sup> When adding an instance by creating a data model ([Create Data Models](#)) and if **Calling ID Substitute** is set to Resource Account, a Resource Account which has a number can be selected.

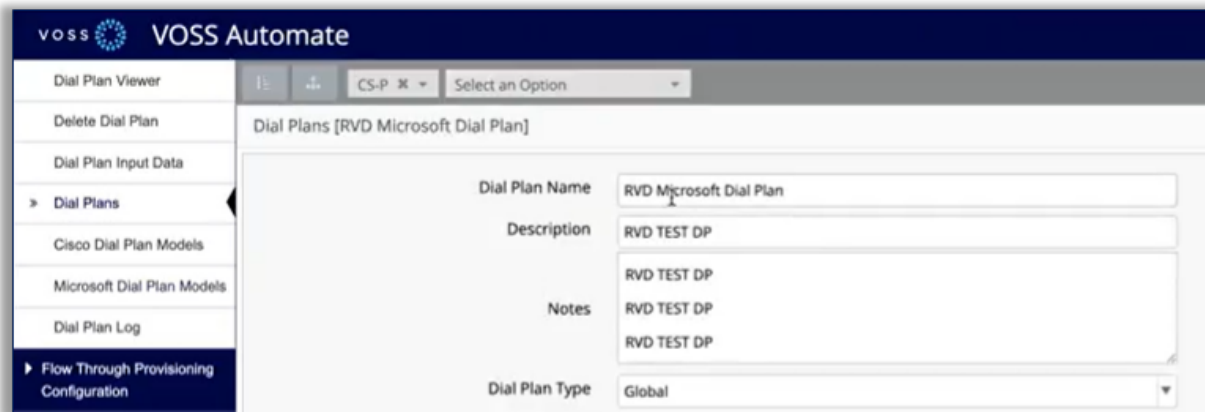
The **Calling Party Name** is also visible and can be configured.

## Create the Dial Plan Name

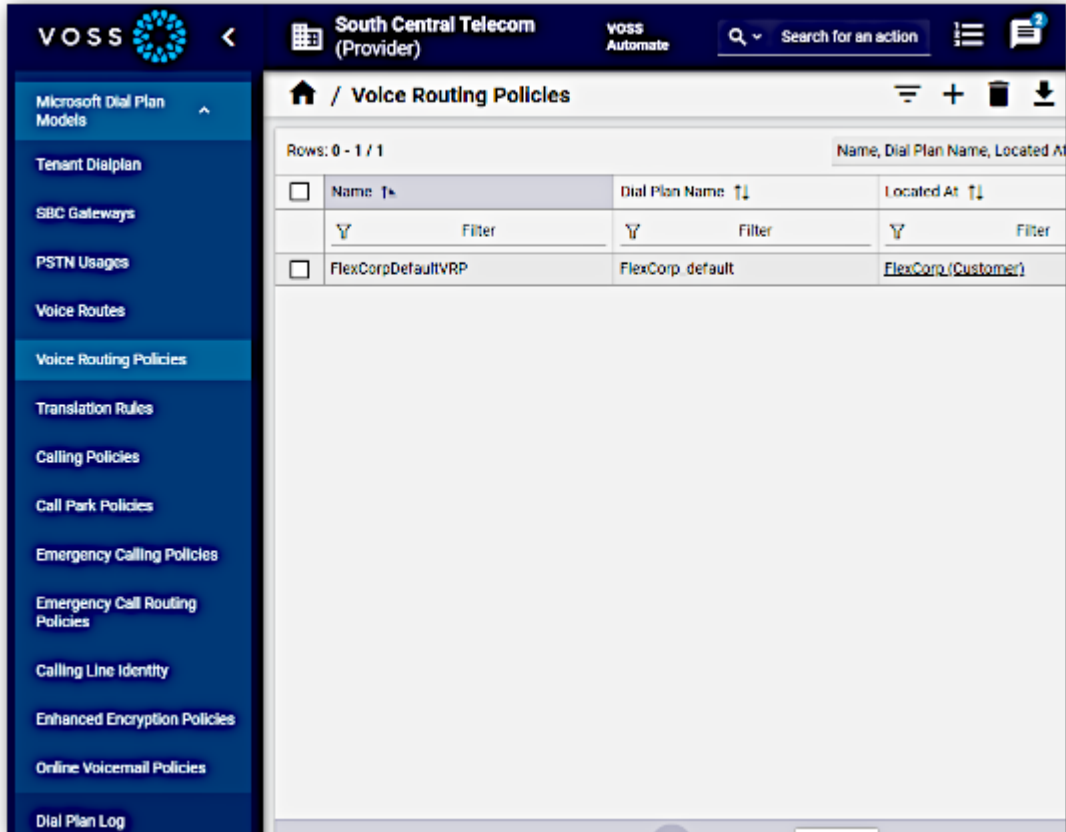
1. Go to **Dial Plan Management Tool > Dial Plan**.



2. Click **Add**.
3. Fill out a dial plan name, and a description.
4. At **Dial Plan Type**, choose an option, either Global, Site, or Multi-tenant / Shared Architecture.



5. Save.
6. Next steps: Create the data models, with their data.



## Create Data Models

Once you have a dial plan name you can create the data models with data in them.

1. Go to **Dial Plan Management Tool > Microsoft Dial Plan Models**.
2. Click on the relevant model.
3. Click **Add**.
4. Fill out data for the model:
  - Choose the dial plan name.
  - Configure data for the model.

---

**Note:** You can also use macros to add values in some fields.

---

The screenshot shows the Voss Automate web interface for configuring a Microsoft Dial Plan Model. The navigation menu on the left includes options like Tenant Dialplan, SBC Gateways, PSTN Usages, Voice Routes, Voice Routing Policies, Translation Rules, Calling Policies, Call Park Policies, Emergency Calling Policies, Emergency Call Routing Policies, Calling Line Identity, Enhanced Encryption Policies, Online Voicemail Policies, and Dial Plan Log. The main configuration area is titled 'Details' and contains the following fields and options:

- Dial Plan Name: FlexCorp\_default
- Name: FlexCorpDefaultGW.vosslab.net
- Description: (empty)
- Bypass Mode: (empty)
- Enabled:
- Failover Response Codes: (empty)
- Failover Time Seconds: (empty)
- Forward Call History:
- Forward PAI:
- FQDN: {{ macro.examplemacro }}
- Gateway LBR Enabled User Override:
- Gateway Site ID: (empty)
- Gateway Site LBR Enabled:
- Inbound PSTN Number Translation Rules: (+)
- Inbound Teams Number Translation Rules: (+)

5. Save.

The details you provided goes to the data model.

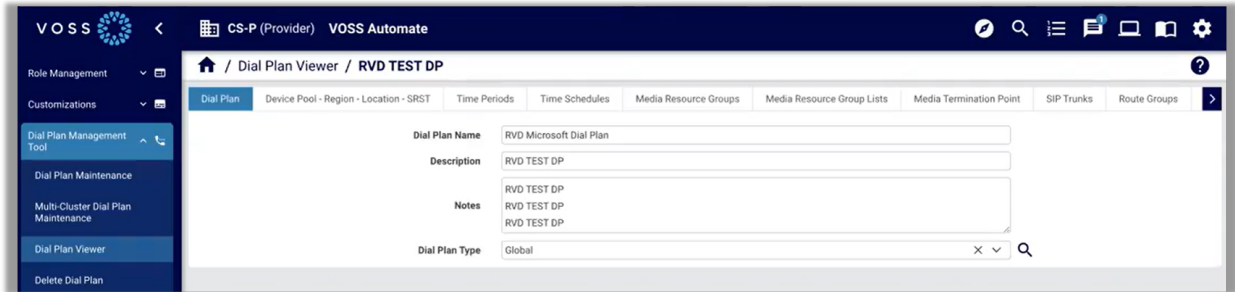
6. Next steps: Repeat this procedure to fill out data for any other models (if required) to build out your dial plan, then preview the dial plan you configured.

### Preview a Configured Dial Plan

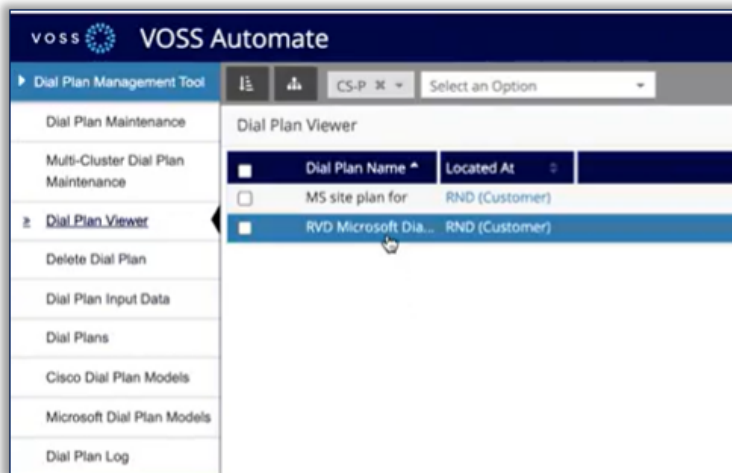
You can preview dial plans via the **Dial Plan Viewer**, which provides a read-only view of all data model entries added to a selected dial plan name.

**Note:** The Dial Plan Viewer displays read-only data. You cannot add or update any model entries via the Dial Plan Viewer. You can modify your data entries via the menus, then return to the viewer to see your changes, if required.

If you have data model entries added to a dial plan name for both Cisco and Microsoft dial plan models, these are all accessible for inspection in the tabs of the Dial Plan Viewer.

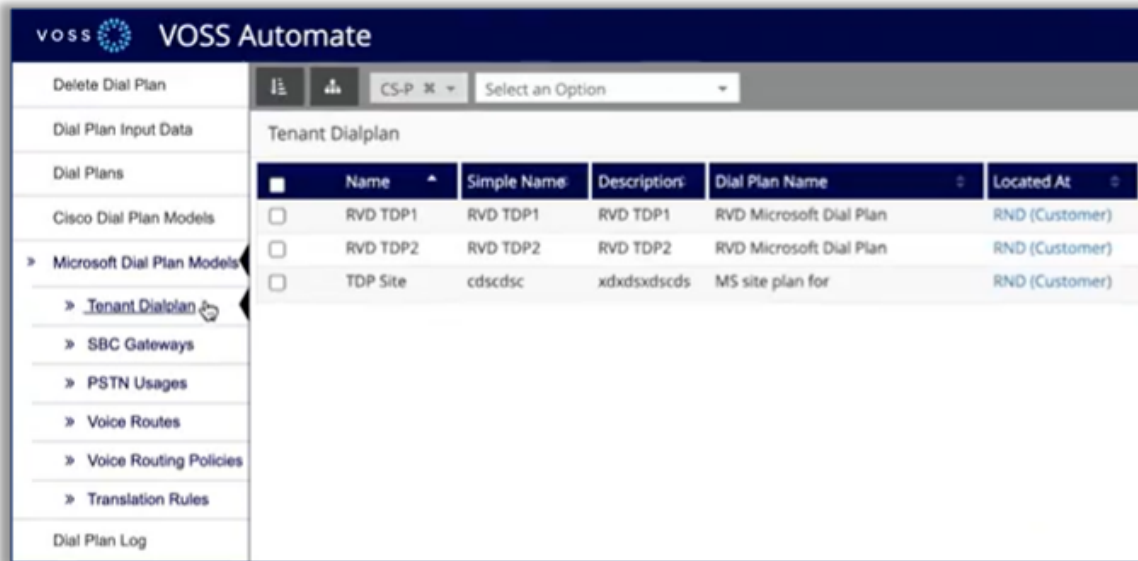


1. Go to **Dial Plan Management Tool > Dial Plan Viewer**.
2. In the **Dial Plan Viewer** summary list, click on the relevant dial plan name.



3. The tabs of the **Dial Plan Viewer** display the data for each data model entry created for the selected dial plan name.

**Note:** A dial plan can contain entries for both Cisco and Microsoft dial plan models, allowing you to push dial plans to both CUCM clusters and to the Microsoft tenant (for Microsoft Teams).



- Next steps: Push the dial plan, to a customer or to a site.

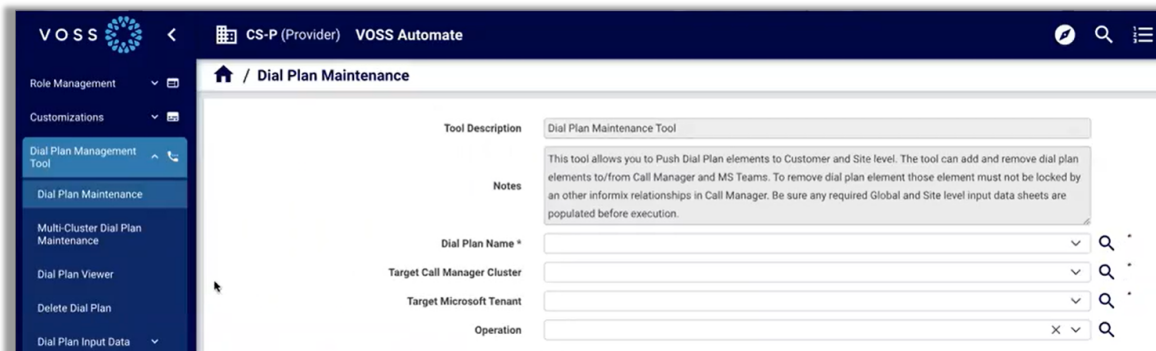
### Push a Dial Plan to Customer or Site

The Dial Plan Management Tool can push dial plan data to a customer or to a site, to the Microsoft tenant and to CUCM clusters, depending on the hierarchy where you created the dial plan, and on the data model entries included in your dial plan.

**Important:** If your dial plan is configured at a specific customer hierarchy, you'll need to push it from that hierarchy. If a dial plan is added at a site, it must be pushed to the site at that hierarchy.

- Choose the hierarchy where you added your dial plan (a customer or site).
- Go to **Dial Plan Management Tool > Dial Plan Maintenance**.
- At **Dial Plan Name**, select the name of the dial plan you wish to push to the site or customer.

**Note:** The **Dial Plan Name** drop-down lists dial plan names added to the current hierarchy.



- From **Target Call Manager Cluster** and **Target Microsoft Tenant**, choose the relevant target destination for the dial plan, either a CUCM cluster or a Microsoft tenant, or both, provided you have these



added to your system.

5. From the **Operation** drop-down, choose an option, either **Push Dial Plan** or **Remove Dial Plan**. To push your dial plan, select **Push Dial Plan**.
6. Click **Save**.

The relevant workflows are triggered to determine the content of the dial plan you defined. The dial plan data is pushed to the target (CUCM cluster or Microsoft tenant, as applicable).

For Microsoft, the dial plans are added to the Microsoft Tenant in VOSS Automate (accessible via the default menus as **MS Teams Dial Plan Management > Tenant Dialplan**), and the dial plan details are also updated to the Microsoft Teams cloud portal.

### 33.1.10. Dial Plan Model Bulk Loader

Individual dial plans are meant to be established in the system with a bulk loader. Reference Bulk Loaders will be provided by VOSS staff for use in customer deployments. The key to dial plan for use with the tooling is the Dial Plan Name. This is the top entry in the dial plan model loader. Once a name is established it will carry down through the rest of the fields pertaining to the dial plan name.

Example of the dial plan model bulk loader:

	A	B	C	D	E	F	G	H	I
1	##	Dial Plan Name							
2	entity: data/DP_DialPlan; parallel: False; parallel_transaction_limit: ; template:								
3		hierarchy	action	search_fields	device	template	ndf	pkid	dpName
4		# Base							# DP_DialPlan
5	# Comment	# Hierarchy Node	# Action	# Search Fields	# Device	# CFT Template	# Network Device List	# Unique Identifier	# Dial Plan Name
6	0	sys.hcs	Add						Tiered_Cust_Level_DP Global Dial Plan E
7	##								
8	##								
9	##	Device Pool - Region - Location - SRST Reference							
10	entity: data/DP_DP-Reg-Loc; hierarchy: sys; parallel: False; parallel_transaction_limit: ; template:								
11		hierarchy	action	search_fields	device	template	ndf	pkid	dpName
12		# Base							# Device Pool
13	# Comment	# Hierarchy Node	# Action	# Search Fields	# Device	# CFT Template	# Network Device List	# Unique Identifier	# Dial Plan Name
14	0	sys.hcs	Add						Tiered_Cust_Level_DP (( macro.DP_Cust
15	##								
16	##								
17	##	Time Periods							
18	entity: data/DP_TimePeriod; hierarchy: sys; parallel: False; parallel_transaction_limit: ; template:								
19		hierarchy	action	search_fields	device	template	ndf	pkid	dpName
20		# Base							# Time Period
21	# Comment	# Hierarchy Node	# Action	# Search Fields	# Device	# CFT Template	# Network Device List	# Unique Identifier	# Dial Plan Name
22	0	sys.hcs	Add						Tiered_Cust_Level_DP 01:00
23	0	sys.hcs	Add						Tiered_Cust_Level_DP 07:00
24	0	sys.hcs	Add						Tiered_Cust_Level_DP No Office Hours

### 33.1.11. Dial Plan Log

Logs that will record any dial plan push/remove actions within the system. The information is read only and informational.

	Timestamp in UTC	Dial Plan	Dial Plan Action	Dial Plan Elements	Launched By	Action Hierarchy	Hierarchy
<input type="checkbox"/>	2017-06-29 20:05:57.931482	Site_Level_DP	push	all	VLSAdmin	sys.hcs.VLS.Tenant1.Vancouver	sys.hcs.VLS.Tenant1.Vancouver
<input type="checkbox"/>	2017-06-29 20:39:03.092865	Site_Level_DP	remove	all	VLSAdmin	sys.hcs.VLS.Tenant1.Vancouver	sys.hcs.VLS.Tenant1.Vancouver
<input type="checkbox"/>	2017-06-29 20:44:48.719970	Site_Level_DP	push	all	VLSAdmin	sys.hcs.VLS.Tenant1.Vancouver	sys.hcs.VLS.Tenant1.Vancouver
<input type="checkbox"/>	2017-06-29 20:47:13.973042	Site_Level_DP	remove	all	VLSAdmin	sys.hcs.VLS.Tenant1.Vancouver	sys.hcs.VLS.Tenant1.Vancouver
<input checked="" type="checkbox"/>	2017-06-29 20:48:13.449928	Site_Level_DP	push	all	VLSAdmin	sys.hcs.VLS.Tenant1.Vancouver	sys.hcs.VLS.Tenant1.Vancouver
<input type="checkbox"/>	2017-06-29 20:53:32.707848	Site_Level_DP	remove	all	VLSAdmin	sys.hcs.VLS.Tenant1.Vancouver	sys.hcs.VLS.Tenant1.Vancouver
<input type="checkbox"/>	2017-06-29 20:55:33.029889	Site_Level_DP	push	all	VLSAdmin	sys.hcs.VLS.Tenant1.Vancouver	sys.hcs.VLS.Tenant1.Vancouver

## Dial Plan Log [2017-06-29 20:55:33.029889]

Timestamp in UTC	2017-06-29 20:55:33.029889
Dial Plan	Site_Level_DP
Dial Plan Elements	all
Dial Plan Action	push
Target Call Manager	[["10.5.25.21", "8443", "hcs.VLS"]]
Launched By	VLSAdmin
Action Hierarchy	sys.hcs.VLS.Tenant1.Vancouver

Log fields:

- Timestamp in UTS: The timestamp of the time the dial plan action was launched
- Dial Plan: The dial plan model applied
- Dial Plan Elements: Point to all or subset of dial plan elements.
- Dial Plan Action: Push or Remove
- Target Call Manager: The URI to the destination Call Manager
- Launched By: The administrator who submitted the request
- Action Hierarchy: The hierarchy level at which the action was launched.

## 33.2. Number Management

### 33.2.1. Move Number Inventory Instances

VOSS Automate provides an feature that can be used to move number inventory instances to a selected hierarchy. It is particularly useful to *bulk load* number inventory instances that need to be moved.

The feature is available as a view: `view/move_data_ini` that can be added manually as a menu item on an administrator menu layout if needed.

**Note:** Access Profile permissions have already been added for all administrator levels to create, read and export a bulk load template of this view.

## Move a Number on the View

To use move a number on the view:

1. Select the **Internal Number**.
2. Select the **Move To Hierarchy** to move the number to.
3. Click **Save** to carry out the move operation.

## Bulk Load

More typically, the view can be used in a bulk load sheet. After exporting the view as a bulk load sheet, the exported sheet header row will be similar to the following:

```
entity: view/move_data_ini;
hierarchy: sys;
parallel: False;
parallel_transaction_limit: ;
template: ;
meta_prefix: $;
evaluate_macros: False
```

Columns are then available for:

- **Comment**: to comment an entry if needed
- **Hierarchy Node** (\$hierarchy): for the source hierarchy
- **Action** (\$action): value is always add
- **Internal Number** (\$internal\_number): for the number to move
- **Move To Hierarchy** (move\_to\_hn): for the target hierarchy

The following image shows an example bulk load sheet:

entity: view/move_data_ini; hierarchy: sys; parallel: False; parallel_transaction_limit: ; template: ; meta_prefix: \$; evaluate_macros: False				
	hierarchy	action	internal_number	move_to_hn
#	# Base	# Action	# move_data_ini	# Move To Hierarchy
#	sys.hcs.CS-P.WebexTestUCMcallingAutomation	add	1000	sys.hcs.CS-P.WebexTestUCMcallingAutomation
#	sys.hcs.CS-P.WebexTestUCMcallingAutomation	add	1001	sys.hcs.CS-P.WebexTestUCMcallingAutomation
#	sys.hcs.CS-P	add	\+13468760628	sys.hcs.CS-P.WebexTestAutomation.Site2

## 33.3. Phone-based Registration

### 33.3.1. Introduction to Phone-Based Registration (PBR)

#### Overview

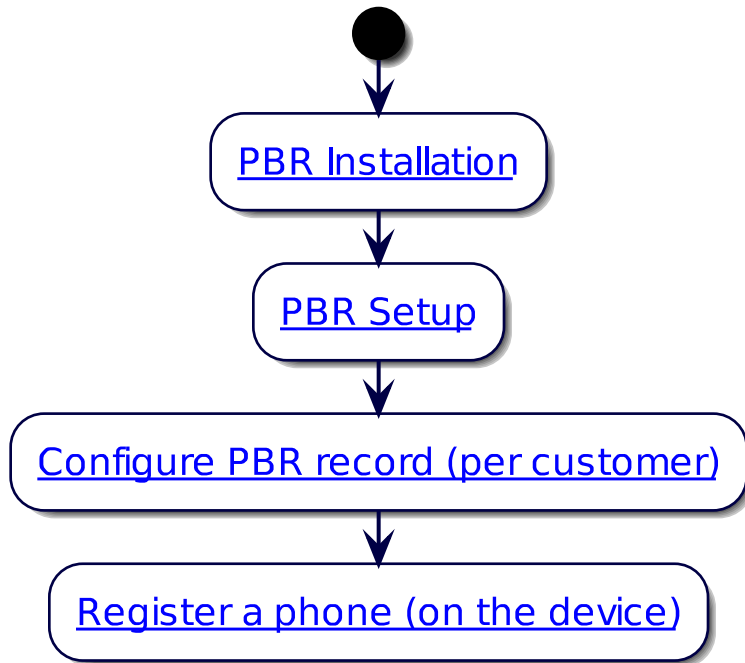
This topic provides an introduction for the installation, configuration, operation, and troubleshooting procedures for VOSS Automate's Phone-Based Registration (PBR) feature.

PBR allows an administrator to pre-provision Cisco phones for UC subscribers with rich and detailed configuration without requiring advance knowledge of the phone MAC address.

Given a pre-configured phone, PBR allows an end-user to access an auto-registered phone to register their pre-configured device via the Phone Services menus.

The flowchart provides a high-level workflow for PBR, including these steps:

- Install PBR (See *Install Phone-based Registration (PBR) Web Service*)
- Set up PBR (See *PBR Setup - Configure CUCM for AutoRegistration and Phone Based Registration*)
- Add PBR Config records (one per customer) (See *Add PBR Config Records*)
- Register a phone (on the device) (See *Register a Phone for Phone Based Provisioning*)



#### Related Topics

- *Install Phone-based Registration (PBR) Web Service*
- *PBR Setup - Configure CUCM for AutoRegistration and Phone Based Registration*
- *Add PBR Config Records*
- *Register a Phone for Phone Based Provisioning*
- *Add Phone-Based Registration Menus and Access Profile*
- *Create Restricted API Role and Admin User*

## PBR Architecture

VOSS Automate's Phone-Based Registration (PBR) feature is implemented as a [Cisco Unified IP Phone Services Application](#).

This operates a web service on the VOSS Automate platform, for example, when installed on a multi-node cluster on all unified nodes, as shown in the following diagram:

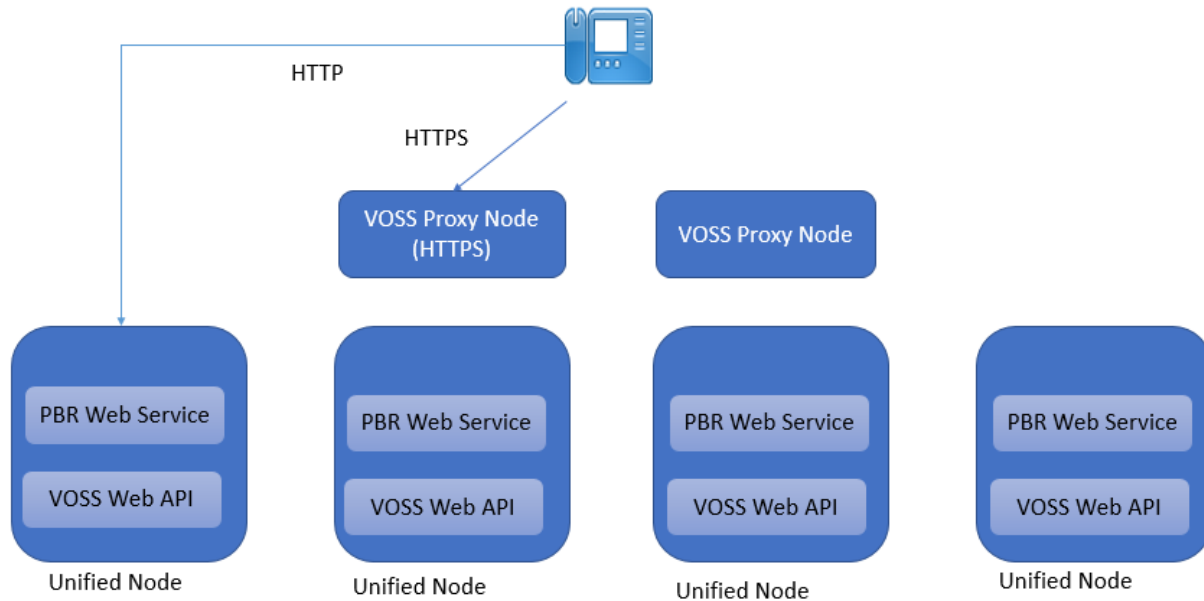


Figure 1: PBR network connectivity

### 33.3.2. Add Phone-Based Registration Menus and Access Profile

#### Overview

The Phone Based Registration (PBR) menus must be added to the Automate menu layouts for Provider and Customer administrators that require access to the feature.

**Note:** The simplest way to configure the menu layouts and access profiles for PBR is to export the existing menu layouts and access profiles for the appropriate roles, and submit to VOSS GS team to create a customized version that includes current modifications.

## Related Topics

- *Introduction to Phone-Based Registration (PBR)*

## PBR Menu Layout and Access Profiles

The image shows a sample menu layout for PBR.

▶ Subscriber Management	
---	Lines
---	Agent Lines
---	Phones
---	Subscribers
---	Quick Add Subscriber
---	Quick Add Subscriber Groups
---	Smart Add Phone
---	Reset UC Passwords
---	Voicemail
---	WebEx
---	PLAR (Hotdial)
---	Hunt Groups
---	Call Pickup Groups
---	PBR Phones & PINs*
---	PBR Reaster Phone**
▶ Phone-Based Registration*	
---	PBR Set-Up
---	PBR Config
---	PBR phonereg IP Phone Service
---	PBR UDT Templates
---	PBR ULT Templates
---	CUCM CallManagers
---	CUCM CallManager Groups
---	AutoRegistration Phone Protocol
---	Auto Reg Phones

### Add PBR Menus to Services

The table describes the Phone-Based Registration menus to add under **Services**:

Menu to add	Description
PBR Set-Up	<ul style="list-style-type: none"> <li>Title: PBR Set-Up</li> <li>Type: view/RS_SetupReg_VIEW</li> <li>Display As Form</li> </ul>
PBR Config	<ul style="list-style-type: none"> <li>Title: PBR Config</li> <li>Type: data/RS_PBR_Config</li> <li>Display as list</li> </ul>
PBR phonereg IP Phone Service	<ul style="list-style-type: none"> <li>Title: PBR phonereg IP Phone Service</li> <li>Type: device/cucm/lpPhoneServices</li> </ul>
PBR UDT Templates	<ul style="list-style-type: none"> <li>Title: PBR UDT Templates</li> <li>Type: device/cucm/UniversalDeviceTemplate</li> </ul>
PBR ULT Templates	<ul style="list-style-type: none"> <li>Title: PBR ULT Templates</li> <li>Type device/cucm/UniversalLineTemplate</li> </ul>
CUCM CallManagers	<ul style="list-style-type: none"> <li>Title: CUCM CallManagers</li> <li>Type: device/cucm/CallManager</li> </ul>
CUCM CallManager Groups	<ul style="list-style-type: none"> <li>Title: CUCM CallManager Groups</li> <li>Type: device/cucm/CallManagerGroup</li> </ul>
AutoRegistration Phone Protocol	<ul style="list-style-type: none"> <li>Title: AutoRegistration Phone Protocol</li> <li>Type: device/cucm/ServiceParameter</li> <li>Filter: AutoRegistrationPhoneProtocol <ul style="list-style-type: none"> <li>Filter By - Name</li> <li>Filter Type - Equals</li> <li>Filter String - AutoRegistrationPhoneProtocol</li> <li>Ignore Case - false</li> </ul> </li> </ul>
Auto Reg Phones	<ul style="list-style-type: none"> <li>Title: Auto Reg Phones</li> <li>Type: relation/SubscriberPhone</li> <li>Filter: Auto <ul style="list-style-type: none"> <li>Filter By - BAT Phone Template</li> <li>Filter Type - Equals</li> <li>Filter String - Auto</li> <li>Ignore Case - false</li> </ul> </li> </ul>

### Add PBR Menus to Subscriber Management

The table describes the Phone-Based Registration menus to add under **Subscriber Management Advanced Functions**:

Menu to add	Description
PBR Phones & PINs	<ul style="list-style-type: none"> <li>Type: data/RS_PBR_Device</li> <li>Title: PBR Phones &amp; PINs</li> </ul>
PBR Register Phone	<ul style="list-style-type: none"> <li>Title: PBR Register Phone</li> <li>Type: view/RS_RegPhone_VIEW</li> <li>Display As: Form</li> </ul>

### Add PBR Views to Access Profile for Provider Admin

Add the following PBR views to the access profile for Provider administrators (expose all operations):

- view/RS\_RegPhone\_VIEW
- view/RS\_SetupReg\_VIEW
- data/RS\_PBR\_Config
- data/RS\_PBR\_Device

## 33.3.3. Create Restricted API Role and Admin User

### Overview

The Phone Based Registration (PBR) Web service initiates transactions on behalf of the end user that is registering a phone. This requires a limited role to provide the least privilege to this user.

### Related Topics

- [Introduction to Phone-Based Registration \(PBR\)](#)

### Create a Restricted API Access Role at the Provider Hierarchy

- Browse to **Role Management**.
- Click **Roles** and then **Add**.
- Complete the form as follows:
  - Name: PBR\_RestrictedAPIAccess
  - Menu Layout: RS\_PBR\_Restricted\_Menu
  - Access Profile: RS\_PBR\_RestrictedAPIAccess



User Roles [PBR\_RestrictedAPIAccess] Save Delete Help Back Action ▾

Base **Rules**

Name\* PBR\_RestrictedAPIAccess

Description

Menu Layout RS\_PBR\_Restricted\_Menu ▾

Theme default ▾

Access Profile\* RS\_PBR\_RestrictedAPIAccess ▾

Interface\* Administration ▾

Landing Page ▾

Self Service Links ▾

Figure 3: Sample Restricted API Access Role

### Create a Restricted API Access User at the Provider Hierarchy

1. Browse to **Admin Users**.
2. Click **Add**.
3. Complete the form and select **PBR\_RestrictedAPIAccess** for the role.
4. Note the email address and password.

Administration Users [pbr\_api\_user] Save Delete Help Back Action ▾

Base **Account Information**

User Name\* pbr\_api\_user

Email Address pbr\_api\_user@cc-p.com

First Name

Last Name

Password \*\*\*\*\*

Repeat Password \*\*\*\*\*

Role\* PBR\_RestrictedAPIAccess ▾

Language English ▾

Set by Default Language

Figure 4: Sample Restricted API Access user

### 33.3.4. Install Phone-based Registration (PBR) Web Service

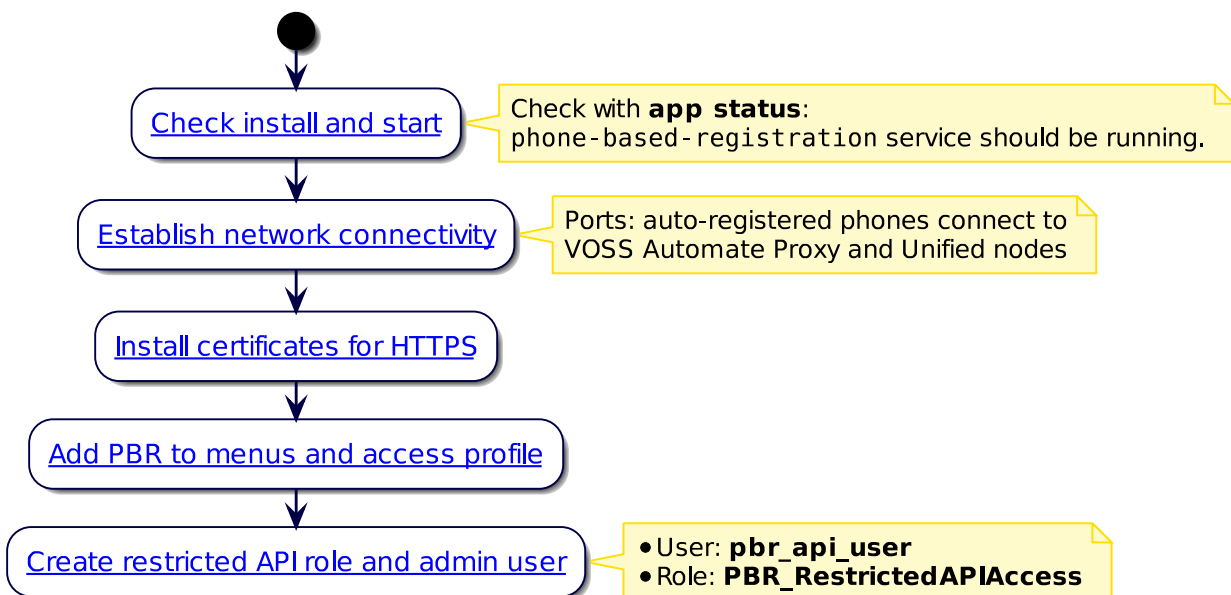
#### Overview

This section describes how to install phone-based registration (PBR) web service. Two options are described:

- Install PBR Web Service on a Cluster
- Install PBR Web Service on a Standalone System

**Note:** A full service restart is initiated on initial startup of the phone-based-registration (PBR) web service on each VOSS Automate unified node.

The flowchart sets out the high level steps for the install task:



#### Related Topics

- *Introduction to Phone-Based Registration (PBR)*
- *PBR Setup - Configure CUCM for AutoRegistration and Phone Based Registration*
- *Add PBR Config Records*
- *Register a Phone for Phone Based Provisioning*
- *Add Phone-Based Registration Menus and Access Profile*
- *Create Restricted API Role and Admin User*

## Prepare for PBR Installation

Before starting installation of PBR, you will need to prepare the following:

- Network connectivity
- Certificates for HTTPS

## Network connectivity for PBR

Phone-based registration (PBR) requires that auto-registered phones can connect to the VOSS Automate Proxy Nodes and Unified nodes.

Source Node	Destination Node	Transport	Port	Protocol
Phone	VOSS Automate Proxy Nodes	TCP	443	HTTPS
Phone	VOSS Automate Unified Nodes	TCP	8412	HTTP

Table 1: PBR network ports

Note that either HTTP or HTTPS is used on a per-customer basis. The choice depends on:

- Security requirements, for example, HTTPS only.
- Device support (some older devices do not support HTTPS – refer to the Cisco IP Phone security guide for list of devices that support secure communications).

## Certificates for HTTPS

When using HTTPS for connectivity, the VOSS Automate certificate must be installed on CUCMs that make use of the PBR service.

The VOSS Automate Platform certificate must be copied from the VOSS Automate server and uploaded to CUCM.

1. Log in to VOSS Automate using Firefox or Chrome.
2. In the URL, click on the 'Lock' symbol and choose to view the certificate.
3. Find the 'Copy To' or 'Export' option, depending on your browser, and save the certificate file to your PC.
4. Log in to VOSS Automate using the "Cisco Unified OS Administration" login.
5. Browse to **Security > Certificate Management** and upload the certificate with "Certificate Purpose" set to 'tomcat-trust'.
6. Restart the Cisco service as per the instructions.

---

**Note:** The CUCM Hostname configured on CUCM under **System > Server** must be able to resolve via DNS otherwise the phones will not authenticate. If the Hostname does not resolve then change the hostname to the IP address instead.

---

### Install PBR Web Service on a Cluster

1. On a *standard* topology, log in to *each node* serially and run `app install phone-based-registration`.

On a *modular architecture* topology, log in to *each application node* serially and run `app install phone-based-registration`.

2. Verify that the PBR service is running: `app status`.

The output should contain v21.1, for example:

```
phone-based-registration v21.1 (2021-01-11 07:46)
|-nodeservice           running
```

### Install PBR Web Service on a Standalone System

1. Log in to the unified node and run `app install phone-based-registration`.
2. Verify that PBR is running: `app status`.

The output should contain v21.1, for example:

```
phone-based-registration v21.1 (2021-01-11 07:46)
|-nodeservice           running
```

### PBR Web Service - Web Weight Example Output

The PBR web service is assigned the same web weights as the `selfservice` and `voss-deviceapi` service. For example, when running `web weight list` from a web proxy, the output should be similar to the example below:

```
platform@VOSS-WP-1:~$ web weight list
Default service weights

upstreamservers:
  phonebasedreg:
    phoneservices:
      192.168.100.10:443: 0
      192.168.100.3:443: 1
      192.168.100.4:443: 1
      192.168.100.5:443: 1
      192.168.100.6:443: 1
      192.168.100.9:443: 0
  voss-deviceapi:
    selfservice:
      192.168.100.10:443: 0
      192.168.100.3:443: 1
      192.168.100.4:443: 1
      192.168.100.5:443: 1
      192.168.100.6:443: 1
      192.168.100.9:443: 0
    voss-deviceapi:
```

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```

192.168.100.10:443: 0
192.168.100.3:443: 1
192.168.100.4:443: 1
192.168.100.5:443: 1
192.168.100.6:443: 1
192.168.100.9:443: 0

```

### 33.3.5. Add PBR Config Records

#### Overview

Phone-based registration (PBR) supports a number of configuration parameters that define how the service operates in a specific provider or customer environment.

You will need to create PBR configuration (PBR config) records, as follows:

- Create a single PBR config record, globally, at Provider level.

The global PBR config record at the Provider level allows the PBR web service to make the initial connection to the VOSS Automate API.

- Create a PBR config record for each customer that will use the phone-based registration add-on.

The PBR config record at the Customer level defines the specific connection parameters for a specific customer, and eventually will allow per customer VOSS Automate user to be used.

The screenshot displays the 'PBR Config [Default]' configuration page. The left sidebar shows a navigation menu with 'Services' expanded to 'Phone-Based Registration' and 'PBR Config' selected. The main content area contains the following configuration fields:

- Name\*: Default
- BAT Prefix Required\*:
- BAT DeviceName Format: SEP
- Auto Provision PBR\*:
- Pin Required\*:
- UseSiteWidePin\*:
- Default Pin:
- PBR Device Record Required\*:
- Phone Registration Portal Address: 172.30.11.126
- Phone Registration Portal Port: 443
- Phone Registration Portal API User\*: flexcorp\_pbr\_api\_user@flexcorp.com
- Phone Registration Portal API Password\*: .....
- Repeat Phone Registration Portal API Password\*: .....
- Phone Registration service Hierarchy: sys.hcs.CC-P.FlexCorp
- CUCM IP: 172.30.11.130

## Related Topics

- [Introduction to Phone-Based Registration \(PBR\)](#)

## Provisioning PBR device records with site-wide PINs

Site-wide PINS are useful when PINs are required for either security or to address use-cases where DNs are not unique.

However, the operational overhead of provisioning a device record per unique device is not acceptable. In this case, create a single PBR device record at each site:

PBR Phones & PINs\* [SITE]

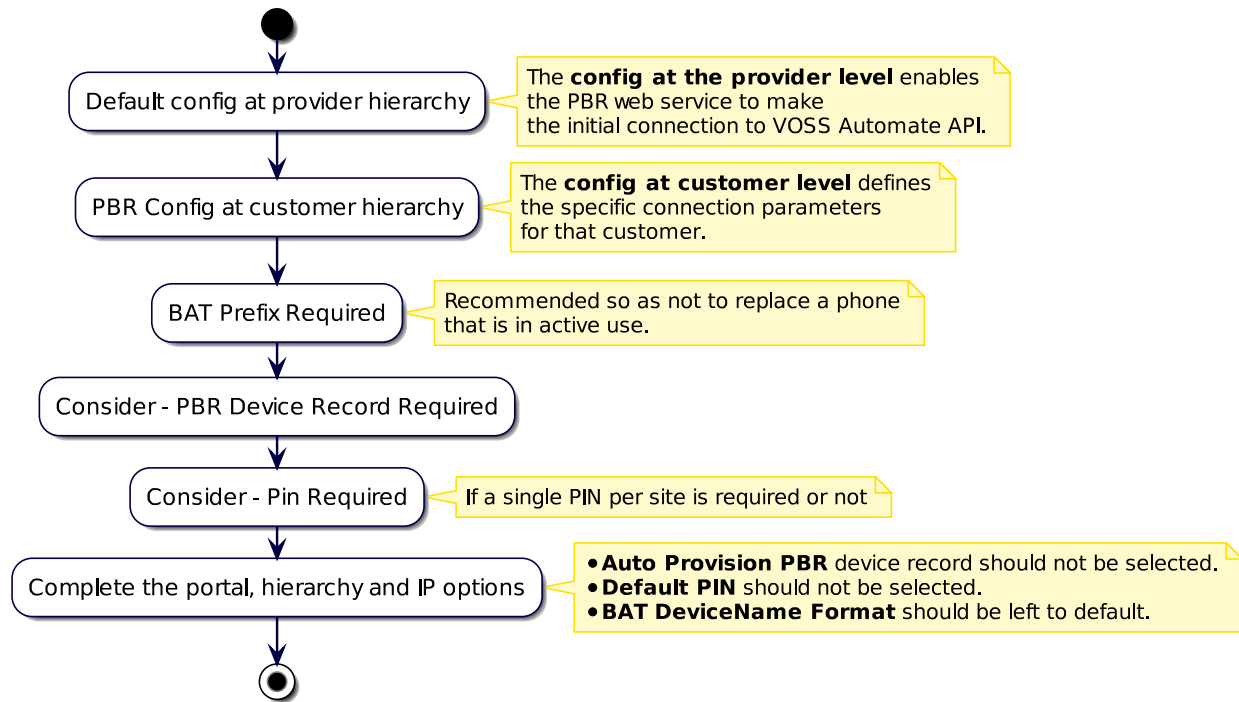
Device Name*	<input type="text" value="SITE"/>
Pattern*	<input type="text" value="SITE"/>
PIN	<input type="text" value="12345"/>
Route Partition	<input type="text" value="Cu1Si1-Feature-PT"/>

### Note:

- When using site-wide PINS the device name and pattern must be hardcoded to use SITE. This is case sensitive.
- When using site-wide PINS the administrator must specify the route partition for the site.

## Add PBR Config Records

This procedure configures the PBR registration. Instructions are provided for the PBR config record at the Provider level (global) and per customer.



**Important:** Do not select the following options. These features are experimental and should not be enabled:

- Auto Provision PBR device record
- Use default PIN

1. In Automate, go to (default menus) **Services > Phone Based Registration > PBR Config**, then choose the hierarchy:
  - To set up the global PBR record, choose Provider hierarchy.
  - To set up the per customer PBR record, choose the relevant customer hierarchy.
2. Fill out a name for the PBR config record.
3. Select the **BAT Prefix Required** checkbox.

**Note:**

- It is recommended that PBR configuration should only allow the replacement of phones with fake MACs with device name prefix starting with BAT. This ensures that it is never possible for a user to replace a phone that is in active use.
- Leave **BAT DeviceName Format** as *default*.

4. Choose options based whether the use of PBR device records is required in this environment?
  - a. The PBR device record allows an administrator to explicitly specify that a device is eligible for phone-based registration.  
Select the **PBR Device Record Required** checkbox, if required.
  - b. The PBR device record allows an administrator to specify that a PIN that should be used when performing phone-based registration for a specific phone or for all phones at a site.

Select the **Pin Required** checkbox, if required.

- c. The PBR device record can be used to guarantee that the correct device is replaced in environments where directory numbers are not unique within a CUCM cluster, for example, multiple directory numbers are configured with the same DN, but located in different partitions.

In this case, clear the **UseSiteWidePIN** checkbox.

---

**Note:** By default, Automate requires a PBR device record per device, but in some cases, it may be sufficient to use a single pin per site. In this case, you can enable (select) the **UseSiteWidePIN** checkbox. This provides limited security to ensure that a PIN is still required to register a phone, but reduces the operational burden by eliminating the need to provision a PBR device record for each phone. See [Provisioning PBR device records with site-wide PINs](#)

---

5. At **Phone Registration Portal Port** and **Phone Registration Portal Address**, specify the port and the IP address or hostname:
  - For HTTPS-based connectivity, the port should be *443* and the address is the IP address or hostname of an Automate proxy node in a cluster.
  - For HTTP-based connectivity, the port can be *80*, and the address is the IP address or hostname of the primary Automate unified node in a cluster.

---

**Note:** The phone registration portal address and the port you specify must be accessible from the phone network.

---

6. At **Phone Registration Portal API User** and **Phone Registration Portal API Password**, fill out the email address for the API user previously created, and fill out the password.

See [Create Restricted API Role and Admin User](#)

---

**Note:** The portal API user credentials (username and password), is required for both the Provider-level PBR config record and for the PBR config record for any customers.

---

7. At **Phone Registration Service Hierarchy**, specify the hierarchy:
  - If the PBR config record is defined at Provider level, specify the hierarchy as in the following example: *sys.hcs.CC-P*.
  - If the PBR config record is defined at the Customer level, specify the hierarchy as in the following example: *sys.hcs.CC-P.FlexCorp*
8. At **CUCM IP**, specify the IP address of CUCM that is accessible to Automate using HTTPS SOAP requests.
9. Save the PBR config record you configured, then run the following CLI command on the primary node to restart the services:

```
cluster run all app start phone-based-registration
```



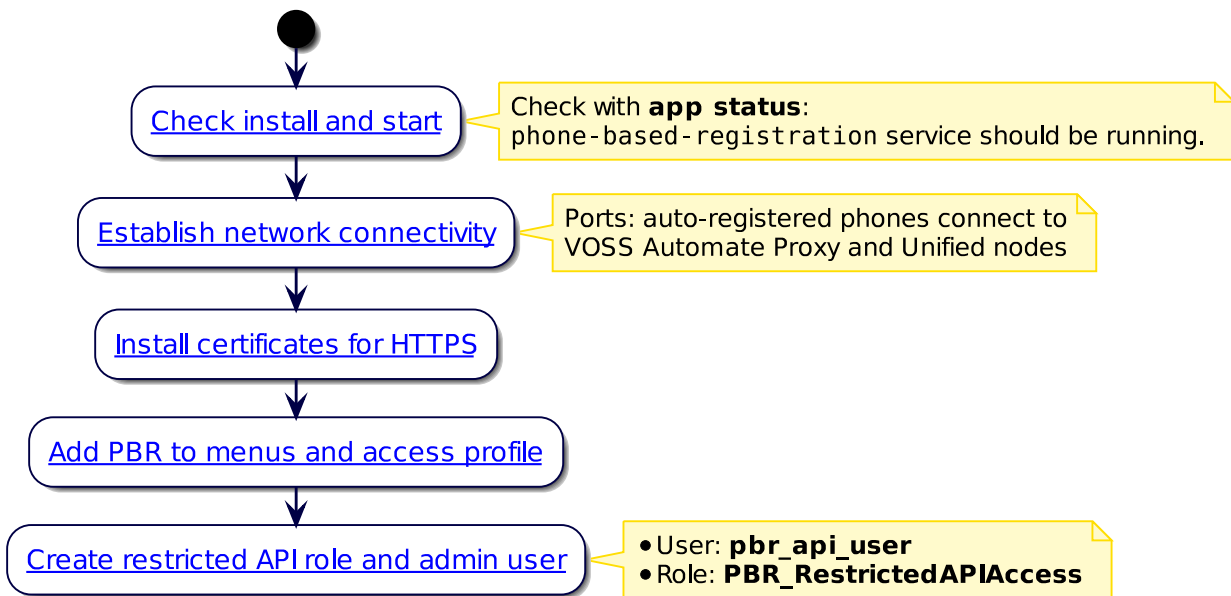
### 33.3.6. PBR Setup - Configure CUCM for AutoRegistration and Phone Based Registration

This section describes phone-based registration (PBR) setup.

#### Related Topics

- [Introduction to Phone-Based Registration \(PBR\)](#)

The flowchart provides the steps for this task:



#### Using PBR Setup to Configure a CUCM

Use the **PBR Setup** menu to automates the configuration of Cisco Unified Communications Manager (CUCM) for AutoRegistration and Phone Based Registration.

1. In the VOSS Automate Admin portal, go to (default menus) **Services > Phone Based Registration > PBR Setup**.
2. Configure the following:

Setting	Description
CUCM IP Address	IP Address of the publisher for the CUCM cluster.
Call Manager Group for Auto Reg	Name of CUCM group for AutoReg.
Call Manager for Auto Reg	Name of the Call Manager for AutoReg (as specified under <b>Services &gt; Phone Based Registration &gt; CUCM Call Managers</b> ).
First and Last Directory Number for Autoreg	A valid range of DNs to be used for Auto Registration.
PBR Portal Address	The IP Address of VOSS cluster UN1 .
PBR Portal Port	8412

#### PBR Set-Up

CUCM IP Address*	<input type="text" value="172.30.11.130"/>
Call Manager Group for Auto Reg*	<input type="text" value="Default"/>
Call Manager for Auto Reg*	<input type="text" value="172.30.11.130"/>
First Directory Number for auto registration*	<input type="text" value="8012000"/>
Last Directory Number for auto registration*	<input type="text" value="8012001"/>
Phone Registration Portal Address*	<input type="text" value="172.30.11.126"/>
Phone Registration Portal Port*	<input type="text" value="8412"/>

VOSS recommends that initial configuration of the CUCM is performed using the PBR Setup workflow described above. In cases where there is existing auto-registration config on the CUCM, it may be required to do this manually.

**Important:** Set the **Services Provisioning** value (under **Enterprise Parameters Configuration - Parameter Name** on the associated CUCM) to **Both**.

## Configuration on CUCM

VOSS Automate Phone Based Registration (PBR) requires the following functionality to be configured on CUCMs that manage phones which may be registered by this feature:

1. Configure the CUCM to allow AutoRegistration of new phones.

This is standard auto registration config for CUCM. The PBR Setup in VOSS Automate carries out this configuration.

2. When a phone Auto Registers the phonereg phone service should be configured for the phone. This is achieved by specifying a Universal Device Template for Auto Reg that subscribes to the phonereg phone service.

Screenshots of the relevant configuration on CUCM are provided to assist with understanding how the service is implemented and as background for a Cisco expert that may need to fine tune the Unified CM config.

3. Setup the phonereg Phone Service:

Browse to **Device > Device Settings > Phone Services**.

172.30.11.126

**IP Phone Services Configuration**

Save Delete Update Subscriptions Add New

**Status**

Status: Ready

**Service Information**

Service Name\* phonereg

Service Description phonereg

Service URL\* http://172.30.11.126:8412/phoneservices/172.30.11.130/phone

Secure-Service URL

Service Category\* XML Service

Service Type\* Standard IP Phone Service

Service Vendor

Service Version

Enable

**Service Parameter Information**

Parameters

New Parameter Edit Parameter Delete Parameter

Save Delete Update Subscriptions Add New

Service URL:

Depending on whether HTTPS or HTTP is used the service URL may be different:

- HTTP (Service URL):

```
http://{VOSS_IP}:{PBR_PORT}/phoneservices/{UnifiedCM_IP}/phonereg/menu?device=
#DEVICENAME#
```

- HTTPS (Secure-Service URL):

```
https://{VOSS_IP}:443/phoneservices/{UnifiedCM_IP}/phonereg/menu?device=
↩️#DEVICENAME#
```

For HTTPS-only, both Secure Services URL and Service URL must be populated with the HTTPS URL.

**Note:** The port must always be specified explicitly.

4. Configure phonereg Universal Device Template:
  - a. Browse to **User Management > User/Phone Add > Universal Device Template**.
  - b. Note the subscription to the phonereg Phone Service.

**Universal Device Template Configuration**

Save
 Delete
Expand All
 Add New

**▼ Template Information**

Name \*

**▼ Required and Frequently Entered Settings**

Device Description

Device Pool \*  [View Details](#)

Device Security Profile \*

SIP Profile \*

Phone Button Template \*

**▶ Device Settings**

**▶ Device Routing**

**▶ Phone Settings**

**▶ Protocol Settings**

**▶ Phone Buttons Configuration**

**▼ IP Phone Services Subscription**

Subscribe

Service	Description	Action
Register Phone	phonereg	

5. CUCM for Auto Registration:
  - a. Browse to **System > Cisco Unified CM**.
  - b. Note the phonereg Universal device template.

**Cisco Unified CM Configuration**

Save Reset Apply Config

---

**Status**  
Info Status: Ready

---

**Cisco Unified Communications Manager Information**  
 Cisco Unified Communications Manager: CM\_fx-pbr-cucm-01 (used by 17 devices)

---

**Server Information**  
 CTI ID: 1  
 Cisco Unified Communications Manager Server\*: fx-pbr-cucm-01  
 Cisco Unified Communications Manager Name\*:   
 Description:   
 Location Bandwidth Manager Group:

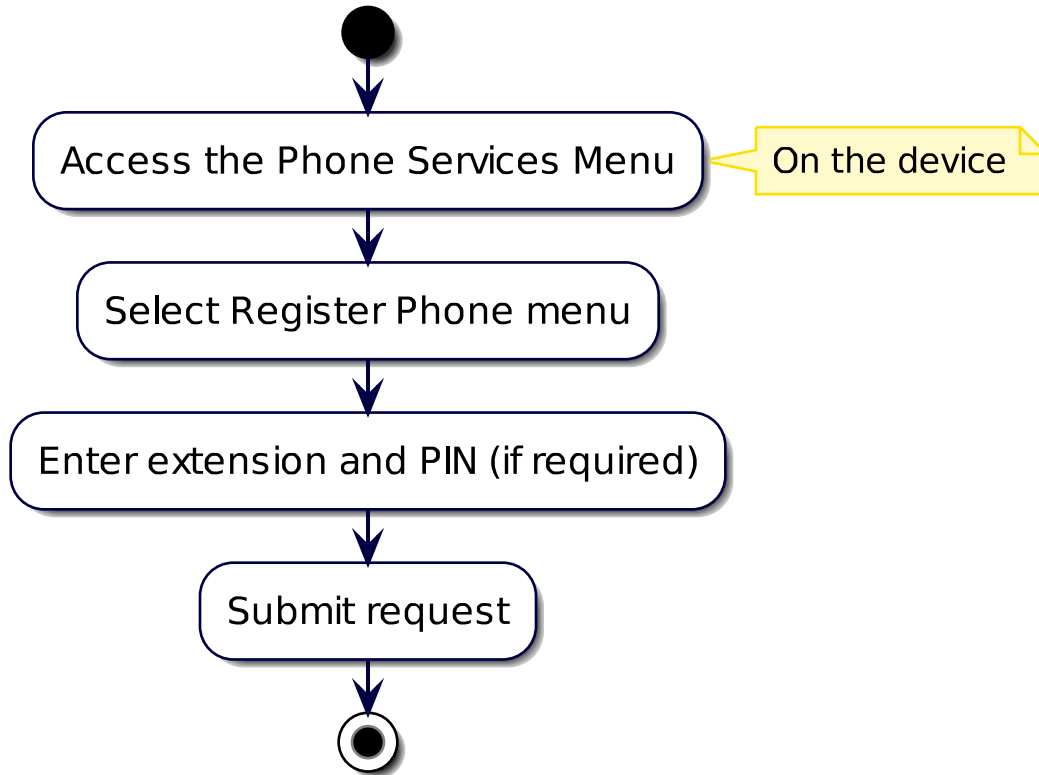
---

**Auto-registration Information**  
 Universal Device Template\*:   
 Universal Line Template\*:   
 Starting Directory Number\*:   
 Ending Directory Number\*:   
 Auto-registration Disabled on this Cisco Unified Communications Manager  
 Next Auto-Registration number to be used:   
 Note: Ensure there are unused Directory Numbers within the configured range.

### 33.3.7. Register a Phone for Phone Based Provisioning

#### Overview

The flowchart sets out the high-level steps for registering a phone:



#### Related Topics

- [Introduction to Phone-Based Registration \(PBR\)](#)

#### Register and Provision Phone

This procedure sets up a phone for PBR, provisions a PBR device record, and auto-registers the physical phone with CUCM.

1. Set up a phone for phone-based registration:
  - a. Provision a phone with a fake MAC Address, for example, *BAT000008012005*

---

**Note:** You can provision a phone with a fake MAC address using bulk loaders, or via the Automate Admin Portal you can use Quick Add Subscriber, VOSS Automate Phone Management, or Advanced Subscriber features. In this case, we're using Quick Add Subscriber.

---

The fake MAC address must have a BAT prefix, for example, *BATABCABCABCABC*.

Quick Add Subscriber

Entitlement Profile: ["BasicUser", "hcs.CC-P"]

Quick Add Group\*: Standard CIPC SIP

User status: Adding services to NEW CUCM user.

Lines

Directory Number\*: 1008

Voice:

Phone Type: Cisco IP Communicator

Phone Protocol: SIP

Phones

Phone Name\*: BATDONALDS

Extension Mobility:

Single Number Reach:

- (Optional). Provision a PBR device record for the phone with a PIN:

**Note:** Configure a PIN code that can be used to authenticate requests to register phones with Phone Based Registration.

The PBR device record assists with unique identification of device to replace where directory numbers are not unique within a CUCM cluster.

- Go to (default menus) **Subscriber Management > PBR Phones and PINS > Add**.
- At **Device Name**, specify the device name of the pre-provisioned device with the fake MAC.
- Fill out the PIN. The minimum PIN length is 1 digit and the maximum is 6 digits.

**Note:** Route partition is not required unless a site-wide PIN is used.

PBR Phones & PINS\* [BATDONALDS]

Device Name\*: BATDONALDS

Pattern\*: 1008

PIN: 12345

Route Partition:

- Auto-register the physical phone with CUCM:



- a. Select **Phone Services**.
- b. Select **Register Phone**.
- c. Enter extension and PIN (if required).
- d. Submit request.





A request is initiated to Automate to replace the configuration of the auto-registered phone with the rich settings defined for the pre-provisioned device with fake MAC.

The phone screen displays status, **Registering Phone**.

Verify in the Automate transaction log that the phone registration transaction displays.

Transaction						
ID	Action	Username	Status	Detail	Submitted Time	
27354	Create Rs Reg Phone View	pbr_api_user	Success	RS_RegPhone_VIEW	January 16, 4:12:15 PM	

Transaction		Replay	Help	Back
Status	Success			
Submitter Host Name	V4UCUCCEUCDMPRI			
Processor Host Name	V4UCUCCEUCDMPRI			
Message	Refresh device/cucm/User			
Rolled Back	No			
Priority	Normal			
Submitted Time	January 16, 2018 at 4:12:15 PM South Africa Standard Time			
Started Time	January 16, 2018 at 4:12:15 PM South Africa Standard Time			
Completed Time	January 16, 2018 at 4:12:21 PM South Africa Standard Time			
Duration	5,623 seconds			

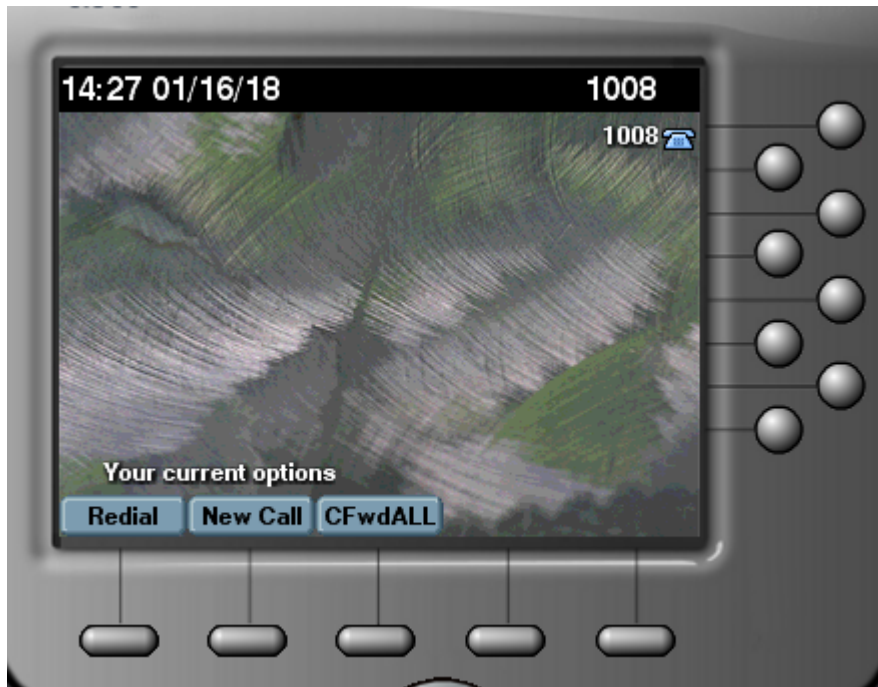
  

Sub Transactions					
Action	Status	Transaction	Submitted Time	Detail	
Update Cucm Phone	Success	<a href="#">Link</a>	January 16, 4:12:19 PM	SEPDONALDS	
Delete RS PBR Device	Success	<a href="#">Link</a>	January 16, 4:12:18 PM	BATDONALDS	

**Note:**

- The PBR Device Record is deleted (if you need to re-register this phone then a new record is required).
- The device name of the pre-provisioned phone (BATDONALDS) is updated to match the name of the auto-registered phone.

4. Once the transaction completes, verify that the phone reboots and shows the device configuration of the pre-provisioned phone.



## 33.4. Phone Services

### 33.4.1. Introduction to Phone Services

VOSS Automate's phone services feature provides a XML-based interface to user settings that can be utilized via Cisco IP phones.

Enabling phone services makes the following services available for users to interact with via their IP Phones, using the Telephone User Interface (TUI):

Service	Description
Speed Dials	Allows a user to manage and use their speed dials for the phones/extension mobility profile.
Call Forward	Allows a user to manage call forward destinations per line for key call forward options (all, busy, no answer).
Reset Pin	<p>Allows a user that has Extension Mobility to reset their Extension Mobility PIN (CUCM PIN), provided they're logged in to the phone, and that the <i>RS_PBR_RestrictedAPIAccess</i> access profile has the <i>Create</i> permission configured for the following model: <code>view/ResetUCPasswordPinVIEW</code></p> <p>Resetting the PIN also updates CUCM.</p> <hr/> <p><b>Note:</b> Reset phone has been tested on the following devices: Cisco 7970 SCCP, Cisco 7960 SCCP, Cisco 9951 SIP, Cisco 8841 SIP, IP Communicator</p> <hr/>
Corporate Directory	Search for and initiate calls with other users, from within VOSS Automate.



These services display alongside other phone services that are set up in the system.

---

To use phone services, you'll need network connectivity between the phones and the VOSS Automate Proxy server instance. HTTP is supported only from the phones.

The phone services feature has been tested for support of the following phone types:

- 78XX, 88XX, 89XX, and 99XX
- Cisco IP Communicator

---

**Note:** Other Cisco phone models may also work with this feature. However, since we haven't tested them, it is strongly recommended that you use other phone models with caution and test them thoroughly in a lab environment before using them in production.

---

### Related Topics

- [Configure Phone Services](#)
- [Manage Phone Services](#)

## 33.4.2. Configure Phone Services

### Overview

This procedure sets up and enables phone services feature.

### Pre-requisites

- The phone-based registration web service must be installed before you can set up phone services. See [Install Phone-based Registration \(PBR\) Web Service](#).

### Phone services setup workflow

This procedure involves the following steps:

1. [Step 1: Configure a local admin for use by phone services](#)
2. [Step 2: Enable the PBR instance for CUCM clusters](#)
3. [Step 3: Create CUCM IP phone service for phones to access phone services](#)
4. [Step 4: Verify connectivity between VOSS Automate and phones](#)

### Related Topics

- [Introduction to Phone Services](#)
- [Manage Phone Services](#)
- [Install Phone-based Registration \(PBR\) Web Service](#)

---

### Step 1: Configure a local admin for use by phone services

Configure a local admin user in the system, at the Provider level, to be used by the phone services feature to initiate transactions in VOSS Automate.

It is recommended that this user is used only for phone services, and is not used to log in to the system or for other admin purposes.

The permissions required for this user are included in the access profile **RS\_PBR\_RestrictedAPIAccess**, which is on the system by default.

You may need to create a role with the relevant settings to assign to the user being created. This user and password is used in the next step.

---

**Note:** Consider a credential policy for this user that does not expire the password to avoid needing to change the password and update the various configurations setup in Step 2 for the new password.

---

### Step 2: Enable the PBR instance for CUCM clusters

---

**Note:** If you've already configured phone-based registration, some of these steps may already be complete. To access configuration parameters, go to (default menus) **Services > Phone Based Registration > PBR Config**.

---

- Set up the required PBR configuration instances in VOSS Automate.  
You may be required to add the correct model (*data/RS\_PBR\_Config*) to the access profile and menu layouts for the roles that require access to enable/configure phone services.
- An instance of the model at the Provider level is required (with the CUCM IP value blank if you don't have a CUCM at the Provider level).  
This instance enables the basic phone services capability on the system.
- An instance of the model at the hierarchy level of the CUCM cluster that requires the feature to be supported.

---

**Important:** In the case of a multi-cluster setup, multiple instances may be required at the same hierarchy (one instance per CUCM).

---

The table lists mandatory fields for phone services:

---

**Note:** Where an image showing values is included in the documentation for this step, values are examples only. Besides these required values, all other fields are optional for phone services.

---

Setting	Description
Name	Unique name for this instance.
Phone Registration Portal Address	The IP address of the VOSS Automate Proxy that the phones will communicate with. This needs to be the address visible to the phones (could be across a NAT boundary).
Phone Registration Portal Port	This must be port 8412.
Phone Registration Portal API User	This user ID is hardcoded for phone services: pbr-api-access@[providername].com
Phone Registration Portal API Password	The password for the local admin user you set up.
Phone Registration Service Hierarchy	This field is populated based on the hierarchy breadcrumb when you click the Add button. If it is incorrect, return to the list view and change the breadcrumb to the correct hierarchy: <ul style="list-style-type: none"> <li>• If the config record is defined at Provider level, then this must be the Provider hierarchy, for example <code>sys.hcs.CS-P</code>.</li> <li>• If the config record is defined at the Customer level, then this must be the Customer hierarchy, for example <code>sys.hcs.CS-P.CS-NB.AAAGlobal</code>.</li> </ul>
CUCM IP	This should be the IP address of the Unified CM Publisher that is accessible to VOSS Automate using HTTP SOAP requests. Optional if this is the initial Provider level record and there is not a Unified CM at that level.

Name\* Default  
 BAT Prefix Required\*   
 BAT DeviceName Format  
 Auto Provision PBR\*   
 Pin Required\*   
 UseSiteWidePin\*   
 PBR Device Record Required\*   
 Phone Registration Portal Address 172.29.232.12  
 Phone Registration Portal Port 8412  
 Phone Registration Portal API User pbr-api-access@csp.com  
 Phone Registration Portal API Password .....  
 Repeat Phone Registration Portal API Password .....  
 Phone Registration service Hierarchy sys.hcs.CS-P.CS-NB.AAAGlobal  
 CUCM IP 10.120.11.206

To simplify the setup of multiple instances of this record in a system with two or more clusters, include a configuration template in your menu layout with values for the shared settings (for example, portal address, portal port, API user, and API password). This will pre-populate the form with these values.

**Note:** Depending on your network setup, in the event of a proxy failure (for example, a data center disaster recovery failover scenario), the phone services hostname/IP address may need to be changed to the proxy in the disaster recovery data center.

### Important:

- You must restart the services once you've saved the above configuration in VOSS Automate. To restart services, run the following CLI command on the primary node (if not already done):

**cluster run application app start phone-based-registration**

If you're on-boarding and configuring several customers at the same time, the command needs to be run only once, after all configuration is complete.

Subsequent single customer onboarding will however require that the command is re-run.

- Ensure you set the **Services Provisioning** value (under **Enterprise Parameters Configuration - Parameter Name** on the associated Unified CM) to **Both**.

### Step 3: Create CUCM IP phone service for phones to access phones services

The table describes two methods for setting up the service that controls which devices the service appears on:

Method	Description
Regular service	The service must be subscribed individually to specific phones on which the service must appear: <b>Enable</b> checkbox = Selected
Enterprise-wide subscription	The service will appear on all phones in the system: <b>Enterprise Subscription</b> checkbox = Selected

Typically, an *enterprise-wide subscription* is simpler as it means not managing the service subscriptions by device.

For more granular control, manage it as a *regular service*, and subscribe as needed.

The IP Phone Service provides the details of the VOSS Automate service, which is how the IP Phones access the feature. The service needs to be set up into the Unified CM for the phones to use it.

Go to (default menus) **Device > Device Settings > Phone Services**.

The table describes settings for the service:

**Note:** The service can be configured via VOSS Automate if the IP Phone Services device model is included in your menus (or via bulk loader). Otherwise it can be configured directly in the CUCM.

Setting	Description
Service Name	VOSS Automate Phone Services (or preferred name that will appear in the Phone's services menu)
Service Description	VOSS Automate Phone Services
Service Category	XML Service
Service Type	Standard IP Phone Service
Service Vendor	VOSS
ServiceURL	Set the URL as described in <i>ServiceURL Format</i> , below.



### ServiceURL Format

This section describes the format to be used for the ServiceURL.

This is an example ServiceURL only, showing the corporate directory format set to “UN-LN-FN” and the corporate directory scope set to “Customer”. See parameters below, and replace the value following the equals sign (=) with the values you require.

```
http://<VOSS Automate-Address>:8412/phoneservices/<UnifiedCMAAddress>/menu
?name=#DEVICENAME#
&corp_dir=true
&corp_dir_format=UN-LN-FN
&corp_dir_scope=Customer
&refresh=true
```

The table describes the parameters in the ServiceURL:

Parameter	Description
<VOSS Automate-Address>	The address the phones will use to reach VOSS Automate (typically the primary proxy server - consider any NAT setup in your network). You may consider using/validating a DNS SRV address here for redundancy in the event of a proxy failure.
<UnifiedCMAddress>	The address of Unified CM as known to VOSS Automate - consider any NAT setup in your network.
corp_dir	Corporate directory. Enabled (true) by default. To disable it, set "corp_dir=false" in the URL. When enabled, the "Corp Dir" menu item is added to the list of services. Corporate directory shows the user with the number of the associated device at the selected hierarchy or lower (see corp_dir_scope), and displays a maximum of 50 numbers only. Users are filtered and formatted according to the corp_dir_format parameter. Note that the corporate directory excludes "end user" type users who have been marked "Exclude from Directory", as well as "admin" type users.
corp_dir_format	Determines the format of the corporate directory. Options are: <ul style="list-style-type: none"> <li>• "UN-LN-FN" = Username, Lastname, Firstname</li> <li>• "LN-FN-UN" = Lastname, Firstname, Username</li> <li>• "LN-FN" = Lastname, Firstname</li> <li>• "FN-LN" = Firstname, Lastname</li> <li>• "UN" = Username</li> </ul> The default is "UN-LN-FN", i.e. Username, Lastname, Firstname
corp_dir_scope	Defines which users and numbers display in the corporate directory. Options are Provider, Reseller, Customer, IntermediateNode, Site, LinkedSite. (Default is "Customer") The phone or device profile directory is used as a starting point, and then the search looks up the hierarchy for the corp_dir_scope value. For example, if set to "Customer", the corporate directory displays users and numbers at the Customer hierarchy or lower. If the phone or device profile number making the call is located at a higher hierarchy than the corp_dir_scope value, then VOSS Automate ignores the corp_dir_scope value and includes all users and numbers at the hierarchy of the phone or device profile number.
refresh	Default is refresh=false Defines whether the service retrieves the latest settings from the underlying Unified CM when the service is used. For example, when opening the call forward option, refresh=true allows the service to retrieve the latest "call forward all setting" from the Unified CM. This is useful if the <b>CFWD ALL</b> softkey is also used on the phone. If the softkey is not being used and changes are only in VOSS Automate, then refresh=false (default) can be used to speed up the service.

**Note:** For more details around user types and corporate directory (corp\_dir), see also [Add Admin Users](#)

**Important:** When making any change to a value on the IP Phone Services URL, click **Update Subscrip-**

**tions** on the **IP Phone Services Configuration** page on the Unified CM for the update to take effect.

---

#### Step 4: Verify connectivity between VOSS Automate and phones

To enable the phone services feature, the network must support connectivity between the phones and the VOSS Automate Proxy server. This may be across a NAT boundary, or configuring a firewall to allow HTTP traffic on port 8412.

For redundancy, consider the user/validating of a DNS SRV entry for the VOSS Automate proxy address. Otherwise, if IP address or static hostname is used, the service and rules may need updating in the event of a disaster recovery (DR) scenario or proxy failure.

### 33.4.3. Manage Phone Services

#### Overview

Once phone services is configured, users can manage the following phone services directly from the phone (if configured in VOSS Automate):

- Speed Dials
- Reset PIN (see [Introduction to Phone Services](#))
- Call Forward - View Call Forward Settings, Set Call Fwd All(CFA), Set Call Fwd Busy(CFB), Set Call Forward NoAnswer(CFNA)
- Corporate Directory

---

**Important:** Phone services is only available for use once it is correctly configured in VOSS Automate as well as in the associated Cisco Unified Communications Manager (CUCM). See [Configure Phone Services](#).

---



### Related Topics

- [Introduction to Phone Services](#)
- [Configure Phone Services](#)

### Manage Phone Services from the Telephone User Interface (TUI)

This procedure adds, edits, and deletes a service directly from the Telephone User Interface (TUI).

---

**Note:** The services all work in a similar way. These steps describe an example for speed dial.

---

1. Select **Services** > **Speed Dial**.
2. Click **Manage**.
3. Click **Add**, **Edit** or **Delete** and follow the prompts.
4. Click **Submit** to initiate the transaction (only relevant to **Add** and **Edit**).

## 33.5. Call Routing for Disaster Recovery

### 33.5.1. Call Redirection Routing Plan for Disaster Recovery

#### Overview

VOSS Automate provides a set of tools to configure and enable alternate call routing for disaster recovery (DR) from the failure of back-end services. This allows business continuity for end-customers, without service provider engagement.

**Note:** This feature only supports Oracle SBCs (Session Border Controller) and will provision the required redirection routing entries in the Local Route Table (LRT) of the Oracle SBC.

The feature provides the following:

- An interface to manage DR routing plans
- An interface to enable/disable DR routing plans
- Email notifications to addressees or groups of enabled and disabled DR routing plans

High level administrators with required permissions can expose the necessary interfaces for the models of this feature on menu layouts and ensure user access profiles are updated accordingly:

- `relation/dr_routing_plan_rel`: manage call redirection routing plans
- `view/dr_routing_plan_view`: enable/disable call redirection routing plans

The instance of `data/EmailHtmlTemplate` called `DR Activation` is the email notification template that by default contains variables:

- `{{ pwf.EMAIL.status }}`: activated/deactivated
- `{{ pwf.EMAIL.plans }}`: list of DR plans

The following macro is used when creating the redirection entry and will need to be cloned down and customized to set the value after the `@` symbol, as required:

- `dr_routing_OracleSBC_NewLine`

<b>Name *</b>	<code>dr_routing_OracleSBC_NewLine</code>
<b>Description</b>	
<b>Macro *</b>	<pre> {{ macro.CustomerBuild_OracleSBC_LessThan }}{{ macro.CustomerBuild_OracleSBC_RouteTag }}{{ macro.CustomerBuild_OracleSBC_MoreThan }}&lt;user type="E164"&gt;{{ pwf.incoming_number }}&lt;/user&gt;&lt;next type="regex"&gt;!(*.\$)!sip:{{ pwf.destination_number }}@SBC-CFWD!&lt;/next&gt;{{ macro.CustomerBuild_OracleSBC_LessThan }}{{ macro.CustomerBuild_OracleSBC_EndOfRouteTag }}{{ macro.CustomerBuild_OracleSBC_MoreThan }} </pre>

---

## Manage Call Redirection Routing Plans

If this model interface is available to an administrator, the list of plans is available to manage.

---

**Note:** The input form provides an interface to add *individual numbers* per plan. A separate plan is required for each number to be redirected. (This feature is typically used on a small scale.)

---

To add or modify a plan:

1. Add or update the **DR Plan name** and **Description**.
2. Add the **Destination Number** in E164 Format
3. Add or update the **Network Device List** that contains the session-based controller (SBC - `device/oracle/sbc/`) that holds the local routing table configuration. This routing configuration on the SBC is then of a higher priority than any other routing.

See: [Network Device Lists \(NDLs\)](#).

4. Choose to enter individual **Email Addresses** and select an **Email Group Name** from the drop-down list to receive an email notification when a redirection routing plan is activated or deactivated.

This feature requires the setup of:

- an SMTP server - see: [Add a SMTP Server](#)
- if used, email groups - see: [Email Groups](#).

5. Select an **Incoming Number** from the drop-down list that requires redirection.

The **Current Activation Status** will show if the current plan has been activated or not.

## Enable or Disable Call Redirection Routing Plans

If this model interface is available to an administrator, a set of transfer boxes is available to activate or deactivate selected plans that have been created.

1. Choose the operation to be carried out on the selected plans: **Enable selected DR plans** or **Disable selected DR plans**
2. In the **Plans** transfer box, move created plans according to the selected required enable or disable operation.
3. When the operation is saved:
  - Individual updates are made to the SBC available in the NDL: an update per selected plan.
  - If email messaging has been set up, target addressees and groups are sent an email notification of the operations.
  - The **Current Activation Status** of a redirection routing plan is updated accordingly.

## 34. Appendix: Glossary

### 34.1. Glossary

**1ESS**

Number One Electronic Switching System

**1FR**

Flat rate service

**2.5G**

Enhanced 2G mobile telephone

**2G**

Second generation mobile telephone

**3G**

Third generation mobile telephone

**4WTS**

Four-wire termination set

**A number**

Calling number. The number of the party initiating a call. See also B number.

**AC**

Agile Commit

**Access Profile**

Customizable component in VOSS Automate.

**Accessibility**

For software systems, refers to guidelines issued by the World Wide Web Consortium (W3C) to remove barriers, via code and design, that prevent or make it difficult for people with disabilities to use online sites and tools.

**ACD**

Automatic Call Distribution - Director

**ACTS**

Advanced Coin Telephone Service

**AD**

Active Directory

**ADSL**

Asymmetric Digital Subscriber Line

**AMA**

Automatic Message Accounting

**Analytics**

A VOSS Insights solution. VOSS Insights Analytics delivers powerful log analytics with no data collection caps or scale limitations. VOSS Insights Analytics comprises Dashboard, Arbitrator, and optionally, Windows Forwarder

**ANI**

Automatic Number Identification

**API**

Application Programming Interface

**Arbitrator**

VOSS Insights Arbitrator is a log analytics platform that allows multiple data sources and log formats to be consumed, extracted, analyzed, and correlated, for complete event, alarm and systems monitoring.

**Associated**

Associated phone. An associated phone is linked to a user. The phone's linked user is then associated with the phone's number.

**Assurance**

A VOSS Insights solution. VOSS Insights Assurance provides business performance intelligence, allowing monitoring of UC apps with log analytics and customizable alerts, and comprises the the Dashboard and Arbitrator applications, with optional integrations for VOSS Automate, Avaya, and Windows Forwarder.

**Auto Attendant**

An automated (auto) attendant system that transfers telephone calls to the extension of a user or department without the intervention of a receptionist or operator. This is achieved via a system of voice menus that the person initiating the call interacts with via their telephone keypad or via voice commands. In some auto attendant systems, there are message-only information menus and voice menus that are used so that an organization can provide business information such as hours, directions to their premises, information about job opportunities, and answer other frequently-asked questions. After the message has played, the caller can be forwarded to the operator or they can return to the main menu.

**Automate**

The VOSS Automate system, a business and vendor agnostic solution focused on digital office management and unified communication (UC), able to integrate with any external application that includes APIs.

**AXL**

Administration XML (AXL) interface supporting multiple AXL schema versions, which provide an abstraction layer between AXL Applications and the Unified CM database. Also, Cisco AVVID XML (AXL) server, a component of Cisco CallManager. The AXL server enables the Cisco EGW to identify and monitor individual end-user lines required for DPNSS supplementary services such as call back and extension status.

**B number**

Called number. The number of the party receiving a call. See also A number.

**BAP**

Business Admin Portal

**BAT**

The file name extension for a batch file (.bat). Also, a phone template (BAT phone template), or the recommended device name prefix in VOSS Automate when provisioning phones with a fake MAC address



**BC**  
Business Commit

**BKEY**  
Business key

**BOK**  
Unblocking

**BU**  
Business Unit

**Camelot**  
SIP call load generator used to make SIP calls. Used to create load for CUCM and UCxn.

**CC**  
Country code

**CCCE**  
Cisco Contact Center Express. Contact center solution, also known as Cisco Unified Contact Center Express (UCCX), designed for mid-market enterprise branch or corporate departments requiring a sophisticated customer interaction management solution for up to 300 agents.

**CCIS**  
Common Channel Interoffice Signaling

**CCM**  
Cisco CallManager. Call process software, also known as Cisco Unified Communications Manager, or CUCM.

**CDET**  
Cisco Defect and Enhancement Tracking system for HCS.

**CDR**  
Call Data Records. Also, Call Detail Record

**CEL**  
Cisco Enterprise Linux Cisco Testbeds

**CEPB**  
Communications Enabled Business Processes

**CEPM**  
Cisco Enterprise Policy Manager, used for managing entitlement.

**CER**  
Cisco Emergency Responder. Used for filling out information to route emergency calls.

**CF**  
Call forward

**CFD**  
Customer Found Defect

**CFT**  
Configuration Template

**CIA**  
Change Impact Analysis

**CID**  
Caller ID

**CIPC**

Cisco IP Communicator, a soft client (which looks like a phone) on PC for voice

**Cisco Emergency Responder**

Also known as CER, a server that ensures that the Cisco Unified Communications Manager (Unified CM) sends emergency calls to the appropriate Public Safety Answering Point (PSAP) for the caller's location, and that the PSAP can identify the caller's location and return the call if necessary. In addition, the system automatically tracks and updates equipment moves and changes.

**Cisco SRST**

Cisco Secure Survivable Remote Site Telephony, a disaster mitigation technology.

**Cisco Unified Presence**

Also known as CUP, a standards-based platform that collects information from multiple sources about user availability and communications capabilities to provide rich presence status and facilitate presence-enabled communications with Cisco Unified Communications and other critical business applications.

**Cisco36xx**

A Cisco 36xx Series Router

**CLI**

Command-line interface. Also short for Caller ID (Caller Line Identification).

**CLID**

Caller ID / Caller Line ID

**CLIP**

Calling Line Identification Presentation

**CLIR**

Calling Line Identification Restriction

**Cluster ID (CID)**

An ID assigned to each Cisco Unified Communications Manager PBX cluster in the system. This is configurable when adding the cluster and can be viewed on the cluster details page.

**Contact Center**

A hardware and software solution that involves the intelligent routing of all contacts, call treatment, and general contact management over a multichannel IP infrastructure. Contact Centers often contain functionality to enable automatic call distribution functionality that interfaces with an organization's unified communications solution.

**CoS**

Short for Class of service. The term refers to a Calling Search Space (CSS) that is specifically used to define call routing and feature processing for a line or a phone.

**COSI**

Cisco Open Source Initiative

**COSMOS**

Wire records

**CPID**

Call processing identifier (unique system-wide). First part of the FINT. The CPID and RID need to be unique within a provider. This is assigned to hardware as required (e.g. PBX, PGW, Voicemail, etc). The CPID is generally configurable when adding the hardware and is displayed when viewing the settings.

**CR**

Change Request

**CRUD**

Short for Create Read Update Delete

**CSF**

Client Service Framework

**CSM**

Cisco Security Manager

**CSP**

Communications Service Provider

**CSS**

Calling search space

**CSV**

Short for Comma-separated Values

**CT**

Call type

**CTI**

Computer telephony integration, also called computer-telephone integration or CTI, is technology that allows interactions on a telephone and a computer to be integrated or co-ordinated. As contact channels have expanded from voice to include email, web, and fax, the definition of CTI has expanded to include the integration of all customer contact channels (voice, email, web, fax, etc.) with computer systems.

**CUAE**

Cisco Unified Application Environment, an application development environment for developers.

**CUBE**

Cisco Unified Border Element. Cisco IOS Session Border Controller (SBC) that interconnects independent voice over IP (VoIP) and video over IP enterprise networks for data voice and video transport. CUBE is an integrated Cisco IOS Software application that runs on the Cisco 2900/3900 and 2800/3800 Series Integrated Services Routers (ISRs), the Cisco AS5350XM/AS5400XM universal gateways and the ASR 1002/1004/1006 routers.

**CUC**

Short for Cisco Unity Connection

**CUC (CUCXM)**

Cisco Unity Connection. Voice mail system

**CUCCE**

Cisco Unified Contact Center Enterprise. Call center management.

**CUCCX**

Cisco Unified Contact Center Express

**CUCDM**

Cisco Unified Communications Domain Manager.

**CUCI**

Cisco Unified Communications Integration. See also CUCIMOC.

**CUCIMOC**

Cisco Unified Communications Integration for Microsoft Office Communicator. Requires Microsoft OCS & Office Comm AD; Cisco CUCM provides call control click to dial phone status.

**CUCM**

**Cisco Unified CM  
Call Manager  
Unified CM**

Cisco Unified Communications Manager

**CUCMBE**

Cisco Unified Communications Manager Business Edition. VOIP PBX.

**CUCMS**

Cisco Unified Communications Management Suite. Packaged services on CUCM

**CUCX**

Cisco Unified Contact Center Express. See also CCX or UCCX.

**CUE**

Cisco Unity Express. Linux based, runs on ISR blade; voice mail

**CUEA**

Cisco Unified Expert Advisor. Routes call to agents based on expertise

**CUIS**

Cisco Unified Intelligence Suite

**CUMA**

Cisco Unified Mobility Advantage. Mobile Client

Cisco Communications Manager Appliance. In a Network server and communicates to Smart Phone Client CUMC and SIP to UCM

**CUMC**

Cisco Unified Mobile Communicator. Client in a smart phone for connection to CUMA - SIP to UCM

**CUMP**

Cisco Unified Meeting Place (similar to WebEx).

**CUnM**

Cisco netManager Unified Communications. Part of the UC management suite.

**CUOM**

Cisco Unified Operations Manager. Part of the UC management suite.

**CUP**

Cisco Unified Presence. Presence Server.

**CUPC**

Cisco Unified Personal Communicator. UC PC soft client.

**CUPM**

Provisioning Manager. Part of the UC management suite.

**CUPS**

Short for Cisco Unified Presence Server. Provides Presence Status.

**CUSM**

Cisco Unified Service Monitor. A service monitor.

**CUSSM**

Cisco Unified Service Statistics Monitor. Service statistics.

**CUVA**

Cisco Unified Video Advantage. Screen video with phone PC app

**CUVC**

Cisco Unified Video Conferencing. Video conferencing server bridge

**CVP**

Cisco Voice Portal. Call center scripts.

**Dashboards**

VOSS Insights Dashboard server ships with standard, read-only templates called VOSS Reference Dashboards. Insights dashboards are configured to display data that provides statistics for the system. Customers can use the reference dashboards as shipped, or clone and edit the dashboards to create custom dashboards. Insights Dashboards are based on search definitions that extract data from one or more fields. These may be predefined search definitions that ship with the default dashboards, or definitions that you set up to create custom views of the data to meet the needs of your organization.

Dashboards are also available in VOSS Automate.

**DDCO**

Direct Dial Central Office (Opposite of DID)

**DDD**

Direct Distance Dialing

**DDI**

Direct Dial Inward (same as DID).

**DECT**

Digital Enhanced Cordless Telecommunications

**DEM**

Digital Experience Monitoring

**Device Model**

Device model of the Automate database includes a copy of the structure and data from each of the UC apps that Automate integrates with (for example, CUCM, Microsoft Teams, LDAP, Microsoft Graph, CUCX, Webex Teams). Each device model resides in a subsection dedicated to the UC app source it belongs to. The data in the device model is always considered a copy only, whereas the source UC app is the data master. Data models are owned and managed by VOSS Automate. See also, "Views", "Relation Models", "MongoDB".

**DHCP**

Dynamic Host Configuration Protocol. Used to perform basic configuration of computer systems, usually at boot time. May be used to set network parameters such as IP address, subnet mask and host name.

**Dial plan**

A dial plan establishes the expected number and pattern of digits for a telephone number, including country codes, access codes, area codes, extension numbers and all combinations of digits dialed. Dial plans must comply with the telephone networks to which they connect.

**Dialplan**

Defines the number construction rules

**DID**

Direct Inward Dialing (US term for DDI).

**Digital Experience Monitoring**

Also known as DEM, Digital Experience Monitoring is deployed to do front door testing to test connectivity to web-based systems, such as Microsoft Teams. DEM is deployed in the Arbitrator to display data in the Dashboard when alerts and alarms are raised for DEM collected metrics that are out of permitted thresholds. For Insights, DEM can deliver metrics such as overall round trip times to the application, the amount of hops taken, best and worst latency, the connection path (shown hop-by-hop).

**Directory Number Routing**

DNR, or Directory Number Routing, allows an administrator to make their DN inventory inter- and intra-site routable by adding the necessary translation patterns on Cisco Unified Communications Manager (CUCM, or CallManager) when deploying a non-SLC-based dial plan. Normally, for the SLC-based dial plans, because each site requires a unique SLC, these translation patterns can automatically be deployed. This is not the case for non-SLC (flat) dial plans. In this case, DNR instances can be created when DN inventory is added to make these internally routable.

**DMS**

Digital Multiplex System

**DN**

Short for Directory Number. This number can be assigned to a user and can be dialed. A DN may be composed of an extension prefix and/or a site location code and/or extension, but the DN is the final form of the internal dialable number. The DN is not the E.164 number, although they may coincide.

**DN Inventory**

Short for Directory Number Inventory. A list of directory numbers (DNs) configured in VOSS Automate that can then be used in a line configuration. The DN inventory resides only in VOSS Automate and is not pushed to Cisco Unified Communications Manager (CUCM, or CallManager). DN's may also be used as feature pilot numbers (for example, Hunt Pilot or Call Pickup patterns). When used as a service number, the DN is marked as unavailable and it cannot be used in a line configuration. DN inventory is configured at the Site or Customer hierarchy level. However, to configure DN inventory at a customer hierarchy, the customer dial plan must be configured not to use site location codes ("flat dial plan").

**DNIS**

Dialed Number Identification System

**DP**

Short for Dial plan

**DPCODE**

Dial Peer Code

**DPNSS**

Digital Private Network Signaling System.

**Drop account**

The Insights Dropbox (drop) account is used for install and upgrade. The username is "drop". By default, the password is not set and can be set up via the CLI Administration menu (Change Dropbox Password).

**DSL**

Digital Subscriber Line

**DTMF**

Dual-tone multi-frequency. A method for instructing a telephone switching system of the telephone number to be dialed. This is done by sending pairs of tones down the line.

**E.164 Associations**

E.164 Associations allow the customer's DN's to be reachable from the PSTN network (DDI routing). The Administrator creates an E.164 (PSTN)-to-DN (internal extensions) association to provide the DDI mapping.

**E.164 Inventory**

A list of E.164 (E164) numbers configured at a site hierarchy. This list only resides in VOSS Automate and is not pushed to Cisco Unified Communications Manager (CUCM, or CallManager).

**E.164 Number**

The globally routable phone number that includes country code and country-specific format. This number is used for offnet Public Switched Telephone Network (PSTN) calls. E164 numbers must always be unique and the local PTT should ensure that the same number ranges are not given out twice.

**E164**

Also E.164. ITU-T recommendation defining PSTN numbering plan E164.

**ECE**

Early Customer Engagement

**EDRs**

Event Data Records

**EISUP**

Extended ISDN User Part

**ELIN**

Emergency Location Identification Number

**EMCC**

Short for Extension Mobility Cross Connect

**EOL**

End of line. Variable used by the system to determine the end of line in each model.

**ER**

Emergency Release. The term used to describe an ES by VOSS.

**Events**

Configurable tool in VOSS Automate. A condition or trigger that drives a certain behavior, activity, workflow, or steps within a workflow in VOSS Automate. Available only to the VOSS team.

**EXT**

Extension and external prefix

**EXTN**

Extension Final part of the FINT

**FAC**

Short for Forced Authentication Code

**FDM**

Frequency-division multiplexing

**FDP**

Field Display Policy. GUI rules that define how fields display and behave.

**FINT (fint)**

Full Internal Number, CPID + RID + SLC + EXTN = Cisco Unified CM DN. This is the full internal number the system knows the lines as. The construct of this is defined in the number construction rules. When a location is added, the full fint inventory is created for the location.

**FNN**

The full national number (PSTN number). The E164 telephone number without area code

**GDPR**

Short for General Data Protection Regulation

**Generic Driver**

The VOSS Automate core element, a tool that can learn the structure and detail of external APIs to create the models reflecting the UC app integrated with VOSS Automate as device models, and

enables VOSS Automate to reflect the external system structure and offer feature parity. The creation of the device models automatically creates a VOSS Automate API for each model. These APIs are used by the Automate interface and bulk loaders and can also be used for external integration.

**GK**

Gatekeeper

**Glassfish**

Open Source Application Server

**GPRS**

General Packet Radio Service

**GSM**

Global system for mobile communications

**GUI**

Graphical user interface

**GUI Rules**

Configurable tool in VOSS Automate governing the behavior of the VOSS Automate interface, such as the display of drop-down lists, or the dependency between fields (for example, where the value selected in one field defines whether another field displays). Available only to the VOSS team.

**GW**

Gateway

**H - M-UCS**

Hosted - Managed-Unified Communications Solution

**H 323**

ITU - T umbrella recommendation defining audio-visual protocols on a packet network H323 Protocol.

**HCS**

Short for Hosted Collaboration Solution.

**HN**

Hierarchy Node

**HOST**

Hand Over System Test

**Hosted UCS - HUCS**

This setting does not apply to Cisco HCS. Short form of Hosted Unified Communications Services. An abbreviation of M - HUCS.

**HSI**

H323 Signaling Interface

**HUCS**

This setting does not apply to Cisco HCS. Short form of Hosted Unified Communications Services - HUCS is a comprehensive, converged IP communications system of data, voice, video, and mobility applications, enabling more effective and secure personal communications that directly affect both sales and profitability.

**Hunting****Hunt Group**

Hunting, or a hunt group, is a telephony concept that refers to the concept of distributing phone calls from a single telephone number to several phone lines. A number of different hunt methods exist that can be configured depending on the organizations needs and requirements. The most common hunting methods include multi-line hunting, linear hunting, circular hunting and most-idle hunting.



**ICPID**

Call processing identifier, IPPBX-based

**IDDD**

International Direct Distance Dialing

**Idle URL**

An Idle URL can be seen as a form of advanced screensaver. When a phone has been not received user input for a configurable amount of time (URL Idle Time Parameter), the system will perform a HTTP GET for the URL in the URL Idle field and will then display the contents of the URL on the phones screen. This content can be anything from an organizations logo to more advanced data such as a weather forecast or company updates.

**IDP**

Identity Provider

**ILEC**

Incumbent Local Exchange Carrier

**IM**

Instant messaging

**IMACS**

IMACs stands for Installs, Moves, Adds and Changes. It covers the administration for: Installing new Customers, Locations, Users and Phones; moving Users and Phones; Adding Users and Phones and changing the Features and Services used for Users and Phones.

**IMAP**

IMAP load generator: Used to generate IMAP traffic for UCxn.

**IMP**

Interface Messaging Processor

**INI**

Internal Number Inventory

**Inventory**

When a phone is initially entered into the system, it is added as an inventory item in the Service Providers warehouse. The Device Name and type are the only things known about this Phone. Over time, the phone will be allocated initially to a Reseller, who in turn will allocate it to a Customer. It is still an inventory item. It does not become a provisioned phone until it has been allocated to a Location.

**IOS**

Internetwork Operating System is an operating system from Cisco that is the primary control program used on Cisco Routers and devices. IOS is widely used and is robust system software that supports the common functions of all products under Cisco's CiscoFusion architecture.

**IP**

Internet Protocol

**IP Addressing**

IP Addressing should be unique, however, where two Customers have chosen the same private IP address ranges for their locations, NAT will be required to ensure that IP addresses within the system are unique.

**IPCBU**

IP Communications with a key focus on CUCM and IP phones.

**IPT**

Internet Protocol Telephony (IP Telephony)

**ISC**

The Cisco IP Solution Center (ISC). A security management solution from Cisco.

**ISD**

International Subscriber Dialing

**ISDN**

Integrated Services Digital Network

**ISP**

Inter-site prefix

**ISUP**

ISDN user part

**ITU-T**

International Telecommunications Union - Developer of global info-communications standards

**IVR**

Interactive voice response

**JSON**

A language independent, lightweight data interchange format that was initially introduced for Javascript. JSON is commonly used for APIs and data storage, and is the standard format for presenting data from the Automate database. Depending on their access rights, high level Automate admins have the ability to view the data on every page in VOSS Automate in JSON format. Some Automate pages provide a JSON Edit option via the Automate toolbar. The JSON Editor displays all the attributes of the model and their order in the model, and allows the admin to update field values via the editor instead of the GUI.

**LDAP**

Lightweight Directory Access Protocol

**LEPN**

Location Emergency Published Number

**Line / Line Relation**

In the context of the Shared Lines Across Sites feature, the line or line relation is the line configured via (default menus) Subscriber Management > Lines, which is pushed to Cisco Unified Communications Manager (CUCM, or CallManager). A line is also pushed to Cisco Unified Communications Manager (CUCM, or CallManager) when it is referenced in a phone, extension mobility profile, or single number reach profile, and doesn't already exist on the Cisco Unified Communications Manager. On Cisco Unified Communications Manager, a line corresponds with the items under menu Call Routing > Directory Number. It is also called a "line relation" because this is the technical term for the construct within VOSS Automate.

**Line Appearance**

A line appearance is the assignment of a line to a phone. One line can have many line appearances. If a line has more than one line appearance, it is considered a shared line.

**Location Name**

The Location name must be unique within a Customer. A naming convention is recommended, where a suffix is added to the location name that contains a reference to the Customer, for example, nsydney\_cisco, Location names can be re-used within different Customers.

**Logged on**

Only a phone that has Extension Mobility Support can be logged onto by a user using a User Mobility profile. Once logged-on, the phone adopts the profile of the Mobile User and drops their registered number and profile.

**LRID**

Routing identifier, location-based

**M - HUCS**

Managed Hosted Unified Communications Service

**MAC**

Message Authentication Code

**MAC Address**

A Media Access Control address (MAC address), is a unique identifier assigned to network devices by their manufacturers. They are used for identification and in the Media Access Control protocol sub layer. MAC addresses are unique by their very nature.

**MACD**

Short for Move, Add, Change, Delete. MACD operations on services in enterprise communications.

**Macro Functions**

Predefined utilities performing calculations, used for configuring macros.

**Macros**

Customizable components in VOSS Automate.

**MDF**

Main Distribution Frame

**Menu**

Customizable component in VOSS Automate.

**MF**

Multi-frequency

**MGCP**

Media Gateway Control Protocol

**MML**

Man-machine language

**MOH**

Music on Hold

**MongoDB**

The main database used by VOSS Automate, MongoDB is a hierarchical database, organized in several sections, each with their own use. The structure of data held is referred to as models.

**Movius**

Movius is a leader in carrier-grade media servers, application servers and real-time multimedia applications for IP and TDM networks.

**MT**

Multi-tenant

**MVS**

Multi Vendor Subscriber

**MWI**

Message waiting indicator

**NANP**

North American Numbering Plan - a dial plan based on 3-digit area codes and 7-digit telephone numbers used by 24 countries in North America and the Caribbean.

**NAT**

Network Address Translation - A standard that enables a local area network (LAN) to use one set of IP addresses for internal network traffic and a second set of addresses for external traffic.

**NDL**

Network Device List

**NDLR**

Network Device List Reference

**NetFlow**

A VOSS Insights solution, comprising DS9 and Dashboard applications. Insights NetFlow provides the architecture to allow visualization and analysis of network traffic flow data.

**Netwise**

A Netwise CMG Telephony Server

**Network Observability**

A VOSS Insights feature, configured in Arbitrator via probe scripts that collect data from the customer's network devices, and which data is displayed for analysis purposes via two standard, read-only Network Observability dashboards for the Analytics solution, in the Dashboard system.

**NGN**

Next Generation Network

**NOA**

Nature Of Address

**NSITE**

Solution Testing primarily used for verifying HCS as a solution and scale testing.

**NTP**

Network Time Protocol. Used to synchronize computer system clocks to a high degree of accuracy.

**OCS**

Online Charging System, a system allowing Communication Service Providers to charge their customers, in real time, based on service usage.

**OSS**

Operations Support Systems

**Overbuild**

Overbuild is a VOSS Automate feature that allows you to integrate with a customer's existing UC infrastructure.

**PABX**

Private Automated Branch Exchange, often shortened to PBX.

**PAI**

P-Asserted-Identity

**PAT**

Port Address Translation. A form of network address translation whereby each IP Address on the LAN is translated to the same IP address but each with a different port.

**PBT**

Phone Button Template

**PBX**

Private branch exchange. Digital or analog telephone switchboard located on the subscriber premises and used to connect private and public telephone networks

**PCC**

Padded Country Code

**PGW**

Packet Gateway. IP to TDM / PSTN networks

**PGW Cisco Transit switch**

The Cisco PGW (Protocol Gateway) is a multi-protocol, carrier-grade soft-switch designed to support media gateway control functions and interworking in next-generation networks (NGNs).

**Phone MAC Address**

See the MAC Address glossary entry for a full explanation of a MAC address. By their very nature, all Phone MAC addresses in the system are unique.

**Pilot Number**

A pilot number is an address or location within a PBX or IP-PBX and is generally defined as a blank extension number or an extension that does not have a person or telephone associated with it. Without a defined pilot number, the PBX or IP-PBX cannot locate where the incoming call was received. Pilot Numbers are used in the system for a number of services such as Hunt Groups and Voicemail services.

**PIN**

Personal Identity Number

**PLAR**

Private Line Automatic Ringdown

**PMBX**

Private Manual Branch Exchange

**PNOC**

Cisco Proactive Network Operations Center

**PostgreSQL**

The relational database used by VOSS Insights and which holds a managed copy of some of the data from MongoDB. Data in PostgreSQL is organized in tables and is referred to as resources. Charts and other analysis options in VOSS Automate dashboards draw their data from this database.

**POTS**

Plain Old Telephone Service

**PRD**

Product Requirements Definition

**PRI**

Primary Rate Interface. ISDN interface to primary rate access

**Provisioned**

Once a phone has been moved into a Location and into a specific subnet, the system allocates an IP address to the phones MAC address. If that phone is physically connected to the correct VLAN in the Location, then it will be automatically provisioned with the allocated IP address.

**Provisioning Workflows**

The mechanism managing processes and tasks in the order specific to the provisioning needs and business requirements in VOSS Automate.

**PSB**

Product Security Baseline

**PST**

Product Specification Tool

**PSTN**

Public Switched Telephone Network

**PT**

Partition

**PTT**

Push to Talk

**Public Holiday**

Public holidays are often referred to as Bank Holidays, National holidays, Federal Holidays and Vacations. Public Holidays are days that have been declared by a national, or sometimes local, authority to be non-working days. Public holidays are usually declared as an official observance of a religious, national, or culturally significant event. The impact on business is that businesses may be closed for business on days that would traditionally be trading days, for example Monday to Friday. Public holidays on days that are traditionally days of rest, tend to have a lesser impact on business.

**PWF**

Provisioning Workflow

**QAG**

Quick Add Group

**QAS**

Quick Add Subscriber

**QoS**

Quality of Service

**QS**

Quick Subscriber

**QSIG**

Q Signaling (ISDN-based protocol for signaling between PBXs)

**RBAC**

Role Based Access Control

**RCMAC**

Recent Change Memory Administration Center

**RD**

Short for Remote Destination

**RDP**

Remote Destination Protocol

**Registered**

Only a provisioned phone can be registered. The registering process provides the phone with a telephone number and a configuration file. Only a registered phone can operate as a normal phone and can make and receive calls.

**Relation**

Relation model, a logical arrangement of multiple models in VOSS Automate, usually combining two or more device and data models. The anchoring model for the relation to which all other models in this relation are linked is called the "left hand model". The left hand model controls the model summary information, that is, it is the source of the data shown in the lists. Most lists in Automate showing rich data are relation models.

**REN**

Ringer Equivalency Number

**RL**

Short for Route List

**ROI**

Return on Investment

**Role**

Configurable component in VOSS Automate.

**Routing ID (RID)**

This is configurable as to whether it is a customer level or location level ID. Although it is configurable, if anything other than Location is selected you will likely have problems. This ID is selected for a location and is unique for the CPID. In the case of a location, the RID could be an available rid for the CPID of the IPPBX of the location.

**RTMT**

UC application monitoring tool for viewing performance counters and alerts/alarms.

**SAS**

Solution Architecture Specification

**SBC**

Session Border Controller.

**SBR**

Scale Based Regression. Performance related

**SCCP**

Skinny Client Control Protocol

**SCTP**

Stream Controlled Transmission Protocol.

**SDD**

Short for Site Defaults Doc

**SDL**

Software Development Lifecycle

**SDP**

Service Delivery Platform

**Service Activation**

The technical process of creating, delivering, and managing a service to or for a customer. It generally involves the configuration of multiple products (for example dial-tone, voice mail, conferencing, corporate directories and XML applications) for the one service.

**Session Border Controller**

Also known as SBC, Session Border Controller devices are deployed at the network edge and at carrier interconnects (between users and other service providers). SBCs help secure and manage traffic in and out of enterprise carrier networks, as well as facilitating communications between incompatible signaling messages and media flows (sessions) from end devices or application servers.

**SF**

Single Frequency supervision tone (2600)

**SIP**

Session Initiation Protocol (SIP). A signaling protocol, widely used for setting up and tearing down multimedia communication sessions such as voice and video calls over the Internet.

**SIPp**

Used to generate SIP traffic for CUP.

**Site Code**

A location level code assigned for each location in the system. This is required if you wanted more than a single location in the system (as the fint needs to be unique). The site code inventory is managed per customer in the system. The length of the site code is always allowed to be variable with a defined maximum length. Overlapping site codes are not allowed within a customer - if a site code of 1 was defined, then a site code of 12 would not be allowed.

**Site defaults**

Site defaults allow you to provide default values that apply at site level for configuration required when onboarding customers, users, and subscribers.

**SLC**

Site location code (unique within a customer). Penultimate part of the FINT.

**SLC-based Dial Plan**

A site location code (SLC)-based dial plan is one that uses unique, site-specific dialable location codes that are embedded in the DN along with the extension. For example, the default Type 1 through Type 3 Cisco dial plans are SLC-based. Only the Type 4 dial plan is not SLC-based. Type 4 dial plan is commonly referred to as a "flat" dial plan because DNs are the actual extensions. In the context of the Shared Lines Across Sites feature, this distinction between types of dial plans is important because to support the Shared Line Across Sites, where devices at different sites can share a line that supports intra/intersite dialing from every site, an SLC would not allow a line to span multiple sites (because multiple sites can't have the same SLC). The Shared Line Across Sites feature requires the customer to deploy a non-SLC based dial plan.

**SM**

Session Manager.

**SME**

Cisco Session Manager Edition, a transit switch used to aggregate multiple unified communications systems, referred to as leaf systems.

**SMS**

Short Message Service. Also known as text messages.

**SMTP**

Simple Mail Transfer Protocol. Internet protocol providing e-mail services

**SNMP**

Simple Network Management Protocol. Network management protocol used in TCP/IP networks

**SNR**

Single Number Reach

**SOAP**

Simple Object Access Protocol

**SP**

Service Provider

**SP Lock**

Unlocking

**SRND**

Solution Reference Network Design

**SRST**

Survivable Remote Site Telephony. Limited call functionality when losing WAN connection

**SS7**

Signaling System 7



**SSO**

Short for Single Sign-on

**STD**

Subscriber Trunk Dialing

**SVC**

Service

**T-CXR**

T carrier

**TAC**

Technical Assistance Center

**TAPI**

Telephony Application Programming Interface

**TCO**

Total Cost of Ownership

**Technician Server**

A server that is not managed by the system, but rather directly by a technician.

**The system**

A term used in the documentation to refer to the application and its related hardware and software components.

**Themes**

Customizable component in VOSS Automate.

**TLS**

Transport Layer Security

**TOD**

Time of Day

**TOI**

Transfer of Information

**TSPS**

Traffic Service Position System

**TXE**

Telephone Exchange Electronic

**TZ**

Timezone

**UAX**

Unit Automatic Exchange

**UC**

Short for Unified Communications. Product suite.

**UC SDP**

Unified Communications Service Delivery Platform

**UCaaS**

Unified Communication as a Services, for hosted and managed IP Telephony, offers a proven end-to-end integrated reference architecture for Unified Communications and IP telephony services, specifically targeting large, Enterprise and Service Provider deployments.

**UCBU**

UCNX (Voice Mail) CUP (Presence) Mobile Clients Soft Clients Servers for these

**UCCE**

Unified Contact Center Enterprise. ACD Automatic call distribution

**UCCX**

Cisco Unified Contact Center Express. See also CUCX or CCX.

**UCNX**

Unity Connection. Linux server-based unified messaging application.

**UCS**

Unified Computing System. Cisco servers to replace HP.

**Unified Mobility**

Cisco Unified Mobility

**Unified Presence**

Cisco Unified Presence

**Unity**

Cisco Unity is a powerful Unified Communications solution that provides advanced, convergence-based communication services such as voice and unified messaging on a platform that offers the utmost in reliability, scalability, and performance.

**UnmanagedPBX**

Un-managed PBXs are often used as parent components for a location.

**URI**

Uniform Resource Identifier

**User Name**

A unique name for a user across all customers. While Last Name and First name can be the same, User Name must be unique across all Customers. Hence, we recommend adding a domain suffix to user names, such as cmay\_cisco\_ns, where the suffix is an abbreviation for Cisco North Sydney location. Alternatively, the user name can be the same as the user phone number (DDI). This ensures that the user name is always unique.

**View**

A framework model in VOSS Automate without any actual data, used to collect information and initiate processes. For example, when opening a link in the Automate GUI that opens a page and not a list, this is a view model.

**VM**

Voicemail

**VMware**

VMware and its client software, used to manage virtual machines and UCS blade configuration. Also used to monitor performance statistics at the hardware level.

**VOIP**

Voice over Internet Protocol

**VPAT**

Voluntary Product Accessibility Template, a template to assess the accessibility compliance of a site.

**VQManager**

Tool used to monitor jitter in the network. Jitter monitoring is important to UCxn.

**WAP**

Wireless Access Point / Wireless Application Protocol

**WATS**

Wide Area Telephone Service

**WCS**

Wireless Control System

**WebEx**

A Cisco application for meetings, messaging, and events.

**WLA**

Cisco Wireless Location Application

**WLC**

Cisco Wireless LAN Controller

**WTAI**

Wireless Telephony Applications Interface

**XML**

Extensible Markup Language

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