VOSS Insights Dashboard and Reporting Administration Guide

Jan 14, 2022

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Contents

1 What's New **1**
- 1.1 VOSS Insights Dashboard and Reporting Administration Guide: Release SP66 . . . 1
- 1.2 VOSS Insights Dashboard and Reporting Administration Guide: Release SP25 . . . 2

2 Introduction **3**
- 2.1 Introduction . . . 3
- 2.2 Organization . . . 3
- 2.3 Dashboard Reporter Licensing . . . 4

3 Log Search and Extraction **6**
- 3.1 Main Menu . . . 6
- 3.2 Log Search Section . . . 8
- 3.3 Building a Dashboard / Report . . . 11

4 Analytic Dashboard and Report View **15**
- 4.1 Dashboards . . . 15
- 4.2 Dashboard Timeframe Definition . . . 16
- 4.3 Add Widget to a Dashboard . . . 17
- 4.4 Print Dashboard . . . 18
- 4.5 Position Widgets . . . 18
- 4.6 Edit Dashboard . . . 19
- 4.7 Clone Dashboard . . . 20
- 4.8 Delete Dashboard . . . 20
- 4.9 Move Dashboard . . . 21
- 4.10 Managing a Widget . . . 21
- 4.11 Edit Widget . . . 23
- 4.12 Configure Data . . . 25
- 4.13 Definitions, Fields and Filters . . . 26
- 4.14 Fields Details . . . 27
- 4.15 Filters Details . . . 29

5 Building a Chart **34**
- 5.1 Building a Chart Overview . . . 34
- 5.2 Chart Types . . . 34
- 5.3 Chart Tasks . . . 53

6 Dashboard Menu Tasks **58**
- 6.1 Dashboard Menu Options . . . 58

7 Administration **60**
- 7.1 Import/Export Wizard . . . 60
- 7.2 Manage Dashboards . . . 61
- 7.3 Edit Field Groupings . . . 65

7.4 User Settings . . . 66
7.5 Manage Forwarders . . . 67
7.6 Configuration . . . 67
7.7 Theme Management . . . 80
7.8 About . . . 89
7.9 Help . . . 90
7.10 Edit Account . . . 90
7.11 Sign Out . . . 90
7.12 Reports . . . 90
7.13 Data Sources . . . 92
7.14 Access Controls . . . 93
7.15 Permissions . . . 94
7.16 Customers . . . 96
7.17 Users . . . 98
7.18 SAML . . . 99

1. What's New

1.1. VOSS Insights Dashboard and Reporting Administration Guide: Release SP66

- "EmptyGroup" text used in widgets can now be customized by user. See: *Line / Area Chart*
- "EmptyGroup" text used in widgets can now be customized by user. See: *Column / Bar Chart*
- "EmptyGroup" text used in widgets can now be customized by user. See: *Scatter Chart*
- "EmptyGroup" text used in widgets can now be customized by user. See: *Funnel Chart*
- "EmptyGroup" text used in widgets can now be customized by user. See: *Card Chart*
- Custom favicon can now be imported. See: *Theme Management*
- Customizable login privacy text. See: *Theme Management*
- More color options added for arbitrator. See: *Theme Management*
- More color options added for dashboards and widgets. See: *Theme Management*
- New dashboards for VOSS Automate MSgraph, MSteams, and Spark. See: *Dashboards*
- New dashboards for Webex API data. See: *Dashboards*
- New data definitions added for VOSS Automate MSgraph, MSteams, and Spark objects. See: *Configure Data*
- New data definitions added for Webex API data. See: *Configure Data*
- New summary row option added to tables. See: *Table Charts*
- Widget editor will now auto update its preview chart upon any field changes. See: *Build Chart in Widget Editor*
- sync by permission group support added to SSO users See: *Permissions*

1.2. VOSS Insights Dashboard and Reporting Administration Guide: Release SP25

- Arbitrator SP25 - More color options added for arbitrator. See: *Theme Management*

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2. Introduction

2.1. Introduction

VOSS Insights Dashboard and Reporting is a powerful log analytics platform that allows multiple data sources and log formats to be consumed, extracted, analyzed, and displayed on dashboards and produce reports from those dashboards.

2.1.1. Purpose

This document describes how to use and administer the VOSS Insights platform. You can use this document to assist with importing existing dashboard templates, configuring new dashboards and widgets, cloning existing dashboards, ad-hoc report printing, scheduling reports, searching logs, building search extraction queries and troubleshooting issues by analyzing the logs being collected.

2.1.2. Intended Audience

This document is intended for anyone who will be administering or using the VOSS Insights platform.

2.2. Organization

The VOSS Insights platform design allows it to be used in multiple workflows. There isn't any linear flow that has to be followed. However, there are some elements that need to be configured in a specific order. Those will be pointed out in each section. This document is categorized as follows:

1. Log Search and Extraction: Location where log data is stored along with the ability to rapidly search all of the data. Additionally, all Search/Extraction Definitions are found in this section. Note: The term "log" is utilized as a generic description of the data elements saved in the index data store.
2. Analytic Dashboard and Report View: Location where each dashboard is located, modified and viewed along with Folder Organization, Ad-Hoc Printing, Widget Filtering and Global Filtering.
3. Administration: Add / Modify Users, Add / Modify Customers, Define Data Sources, Edit Mappings, Edit Field Groupings, Import/Export of Dashboard Templates and Scheduled Reporting.

2.2.1. Licensing

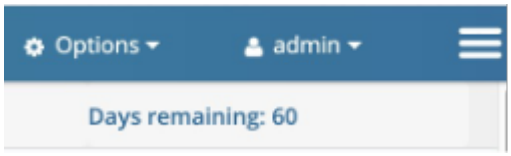
The VOSS Insights product and features are activated via a license file that is loaded on to every arbitrator and dashboard server. This license file contains an expiry date and the following information is how to activate and add a new license file once the expiry date has been reached.

When logging in to the GUI the admin user will be presented with an activation window where there is a product key. This will need to be copied for each individual server. This information will need to be provided to the VOSS representative who will produce a product key which will activate the server.

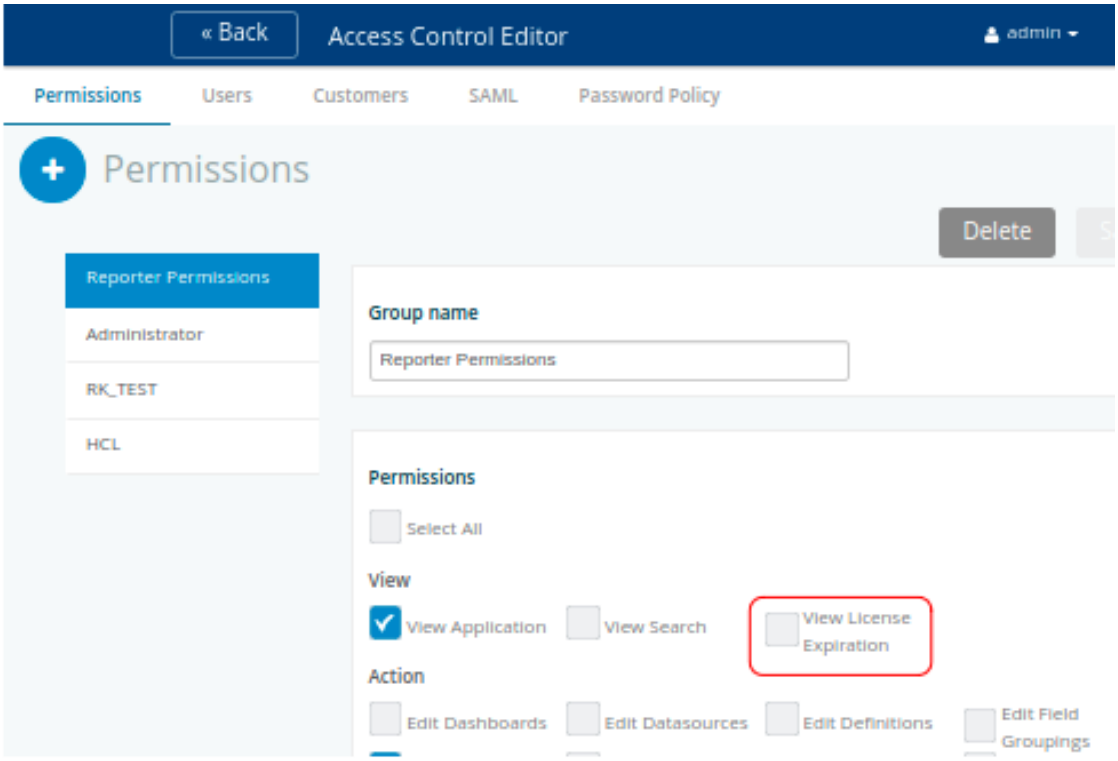
The admin user will be required to navigate to the arbitrator and the dashboard server and enter the product key in the box, and agree to the terms and click submit.

2.3. Dashboard Reporter Licensing

- The remaining days on the License are displayed in the UI upon login.



This **View License Expiration** setting can be enabled or hidden from the **Permissions** on the **Access Control Editor**:



- Alternatively, to see how many days left:

  From the main menu for the logged in user:

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1. Choose **About**
2. Check the **DAYS LICENSED** and **DAYS REMAINING** values.

- To load a license file:
  1. Obtain the license file
  2. Choose **About**
  3. Click **EDIT PRODUCT KEY** and replace it with the one from the licence file.

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3. Log Search and Extraction

3.1. Main Menu

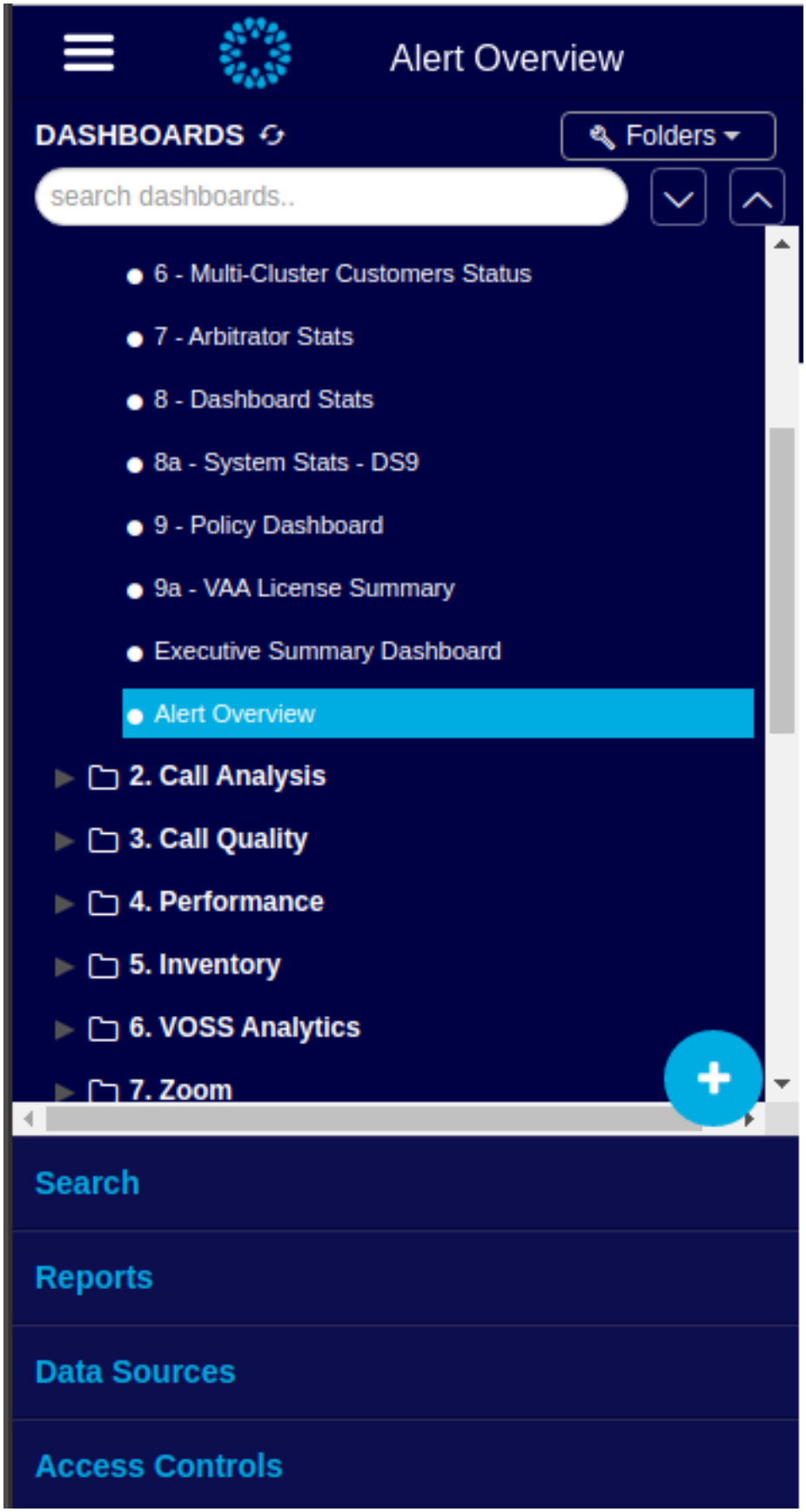
Clicking Main Menu opens the main menu.

All dashboards, reports and their associated folders are located in this section. If search definitions have not been performed then there will not be any folders or dashboards shown. See below on creating search definitions.

As dashboards are created they can be organized into folders that expand out into trees based on your logical order desired. Simply click **Folders** to define and name a new folder then drag your Dashboard into that folder. A search bar is present that allows for rapid locating of dashboards by searching their name.

There are four menu options located towards the bottom of the main menu:

- **Search**: Clicking here takes you to the main search screens where all logs are stored in a JSON index data store (see details below).
- **Reports**: Clicking here takes you to the Report Scheduler. This is where each report can be scheduled based on customer, duration, repeat timeframe and email address.
- **Data Sources**: Clicking here takes you to the section where you can define multiple data sources to extract data on which to analyze and report.
- **Access Controls**: Clicking here takes you to the section where multi-tenant customers and users are set up along with each user's associated log in credentials.



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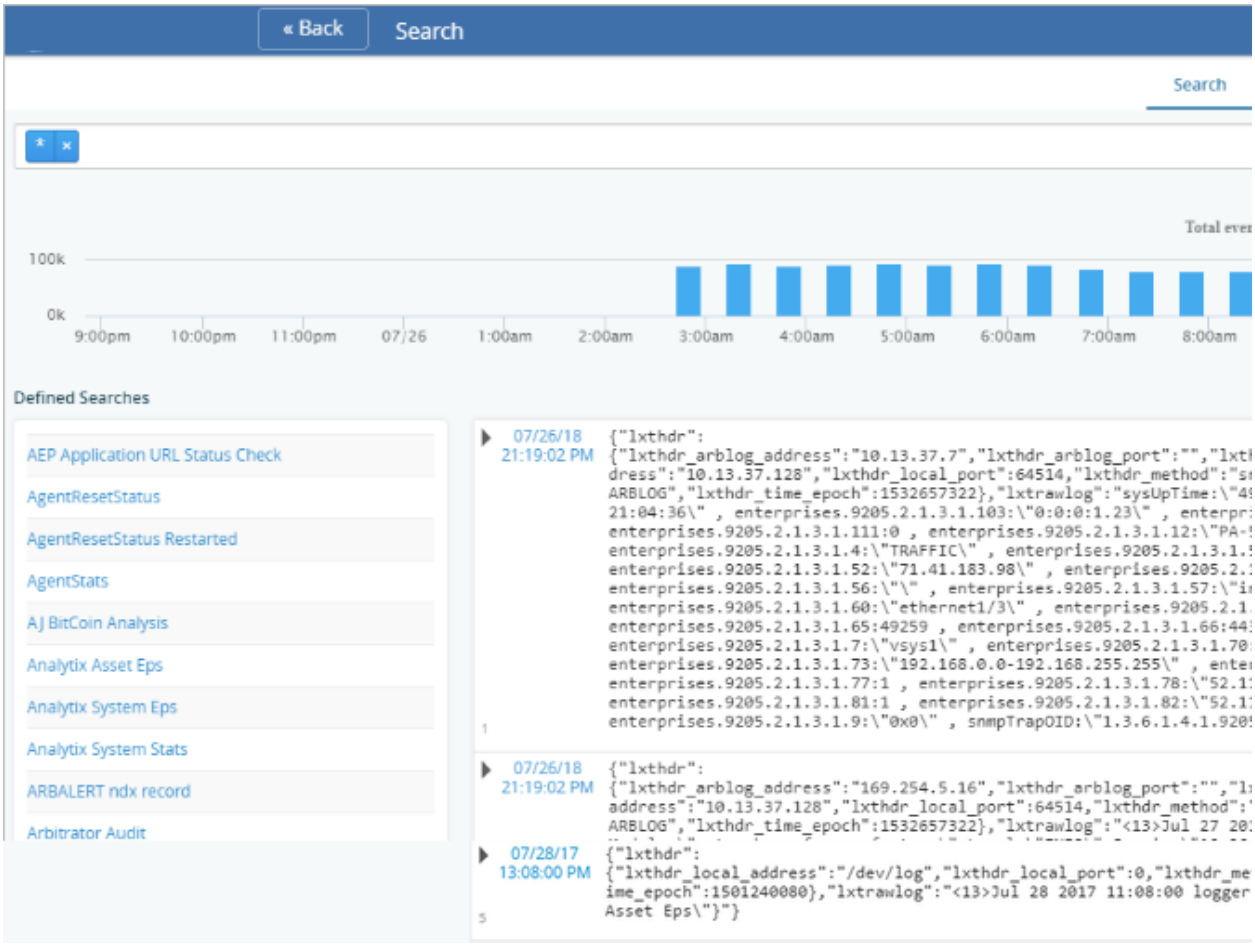
3.2. Log Search Section

Click Main Menu and select the Search option toward the bottom of the screen. The main search screen is launched into the default “Search” section. The default display value is the last 10 log events to enter the system. As shown below, the main search bar is located along the top of the screen with a blue highlighted “*” wildcard to display logs.



Once Logs are collecting this is where the JSON indexed records will be located. The system builds a library of all words contained in logs. The search bar allows for key word searches using single words or concatenated words with Boolean logic such as ‘and/or/not’ in addition to utilizing our automated Regular Expression engine to perform search extractions and save them as definitions. Additionally the search engine will start showing all words as soon as the first letters are typed thus making it easier to start the search process.

The drop-down box on the top right establishes the timeframe on which the system will search for logs. The default is the last 24 hours. Since log data (and the JSON indexed records) are time based the search timeframe is important. This is especially true when searching for logs from a source that has stopped sending data.

Clicking on this drop-down box opens up a date range box with preset time selections (Last 24 Hours, Last 1 Hour, Last 30 Minutes, Last 5 Minutes) along with a custom timeframe selection.

Clicking in the From box opens a calendar from which the timeframe can be selected. Be aware that the

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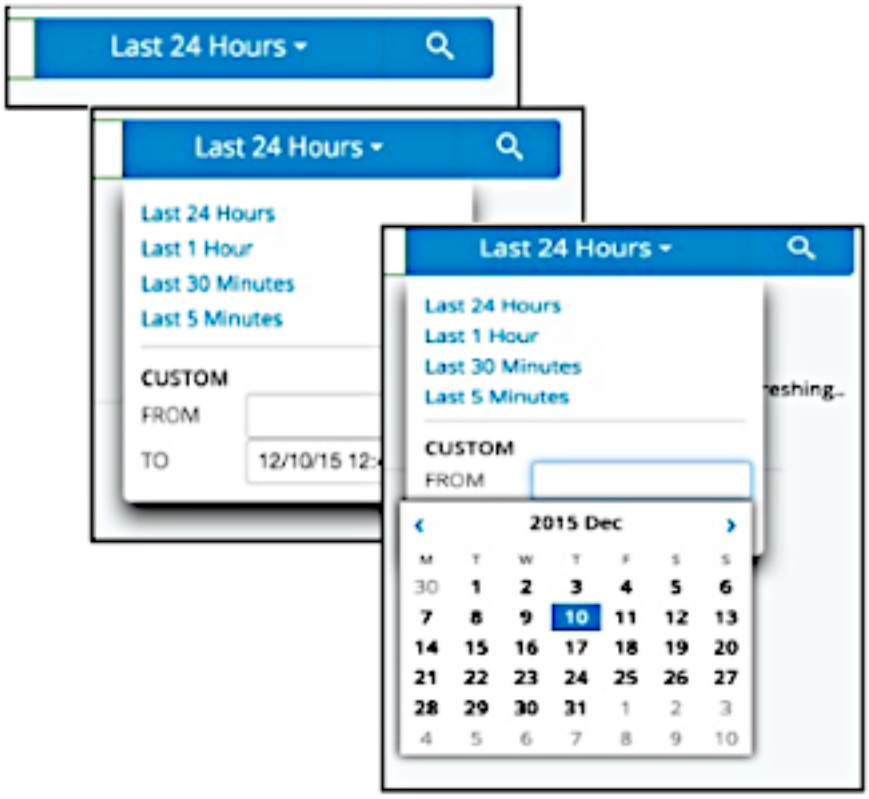
longer the date range, the more data the system searches thus the search timeframe is directly tied to the amount of data over time.



Just below the date bar is an entry that shows how many logs are available for the search request and timeframe along with how many are being displayed on the screen.

The commands beside this allow you to go to the beginning “< first”, go back to the previous groupings “prev”, skip to the next groupings “next” or forward to the last groupings “last”. The drop-down box to the right of this allows the selection of the number of logs to be displayed at once based on your search criteria.

Just below the search bar is a bar graph that, by default, represents the last 24 hours of log events with each bar representing quantity of logs collected in each 30 minute interval.

To the top right of the graph there is a menu button, when selected, will provide the option to retrieve the graph in multiple formats (print it to `.pdf`, download to `.png`, download to `.jpeg`, download to `.pdf` or download to `.svg`). This graph will change based on the selected data interval and based on the selected definitions as described below.

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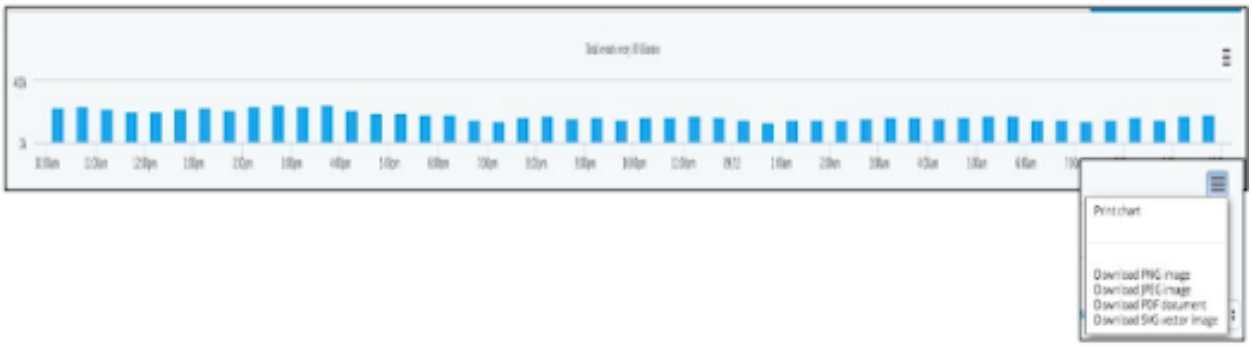
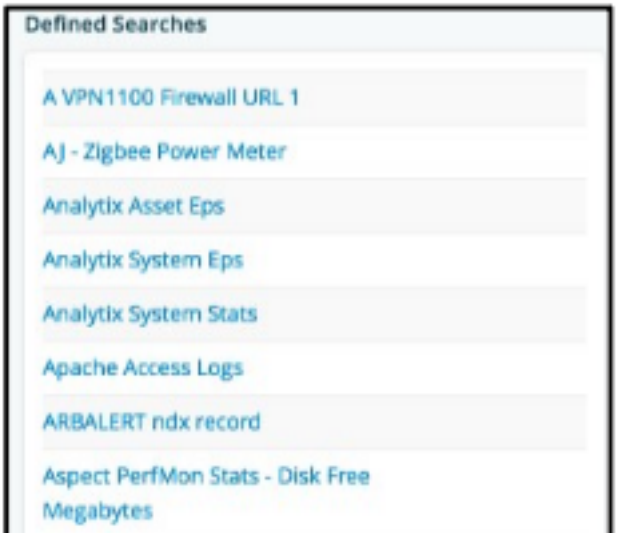


On the left side of the screen is a listing of all of the saved Search Defintions. A small graph will be present just to the right of each definition indicating the amount of logs in that definition over the time period selected in the time bar. By selecting any definition the logs will change and pull up all of the logs for that definition. Additionally the bar graph will adjust to reflect the quantities of logs in this definition.



In the main body of the page you will see the JSON format of the logs associated with the selected search definition. Notice that below each log are the data fields that have been extracted and are being analyzed on dashboards. Additionally each field has a down facing arrow to it's right. Clicking this arrow opens up a box and will provide search functions to select from:

1. Search in Context will search through all of the selected definition for that field and highlight it.
2. Exclude from Search will search through all of the selected definition for all data without that field.
3. Search All will search the entire log index data store for that field and highlight it.

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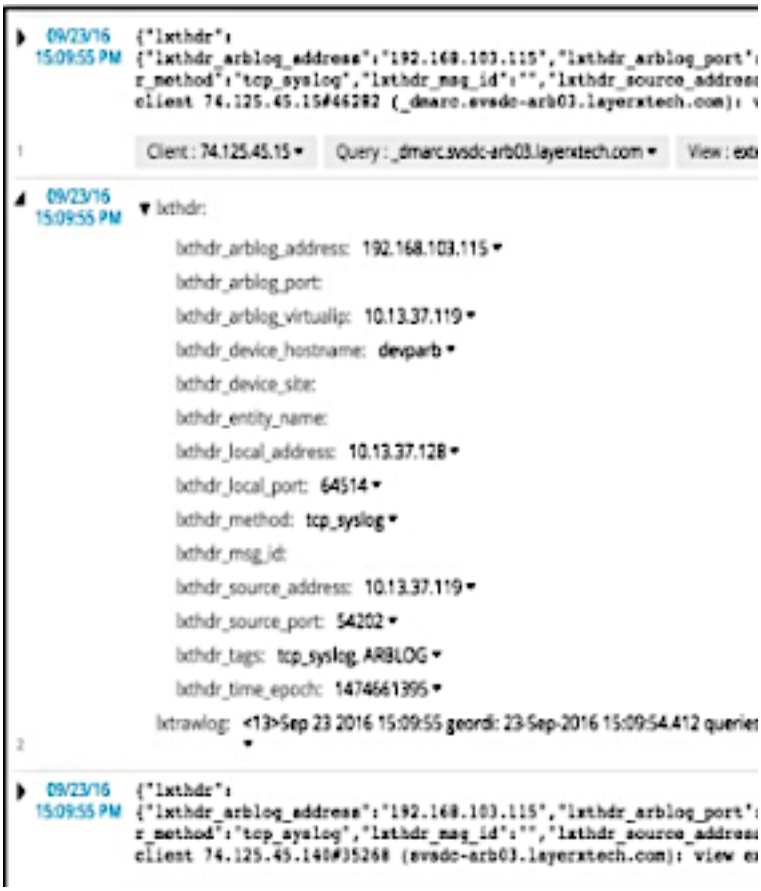
To the left of the date and time within each log is a right facing arrow. Clicking this arrow will open up the log and break out all to components of the VOSS Insights logging elements along with a copy of the raw log. Each item also has a down facing arrow that when clicked will open up the same search box and capabilities as detailed above.



3.3. Building a Dashboard / Report

1. The first step in building an VOSS Insights Dashboard and Report is to decide which logs contain the data to analyze. An example is DNS Logs from a Bind9 open source DNS server. Simply type any word contained in these logs, such as “queries”, and then make sure that you have the log coming from the Bind9 DNS server.

2. Next, start your extractions of the fields you wish to analyze. Highlight the field by dragging the cursor over it or double clicking the field. A box will be drawn around it and a box will pop up to name the field.

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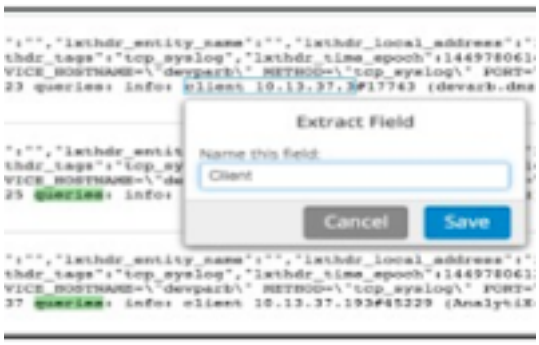
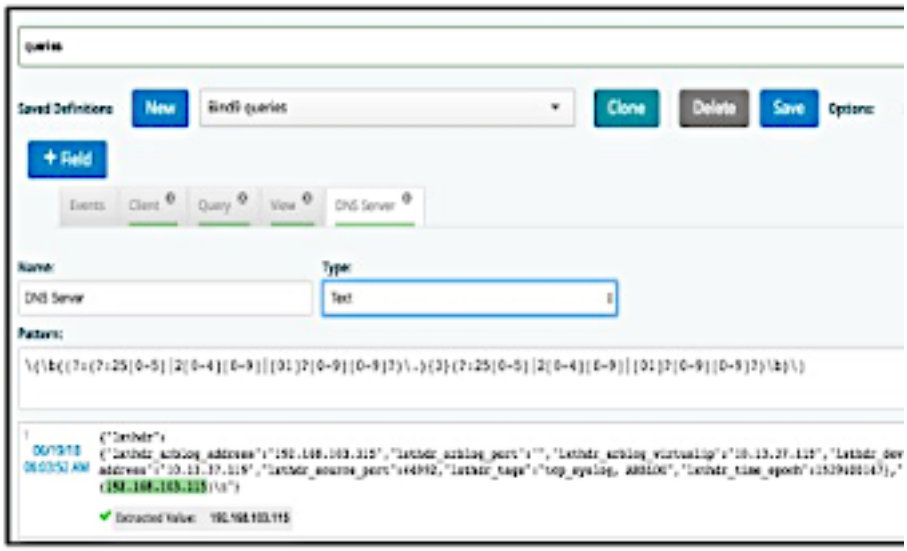


3. Type your field name (as shown above) and click **Save**. The automated Regular Expression engine will extract that field and save the name just below the saved definitions bar. Click the **New** tab to open it up and adjust the **Type** field based on the context of the log, for example: “Text”, “Integer”, “Float”, “Epoch Date” and “Calculation”.



4. If “Calculation” is chosen in the type field, then the user is presented with an additional view where math can be performed to derive an integer result. An example of this is a bandwidth calculation. This particular result will be stored with the definition and will be available to utilize on a dashboard. Simply drag the field(s) to calculate, add a numeric input and then design the equation by dragging the operands and groupings. The equation will be displayed below the bar to allow for easy checking of the logic. By clicking the **Test Calculation** button, the system will perform the math and display the results for further logic testing ahead of saving the calculation.

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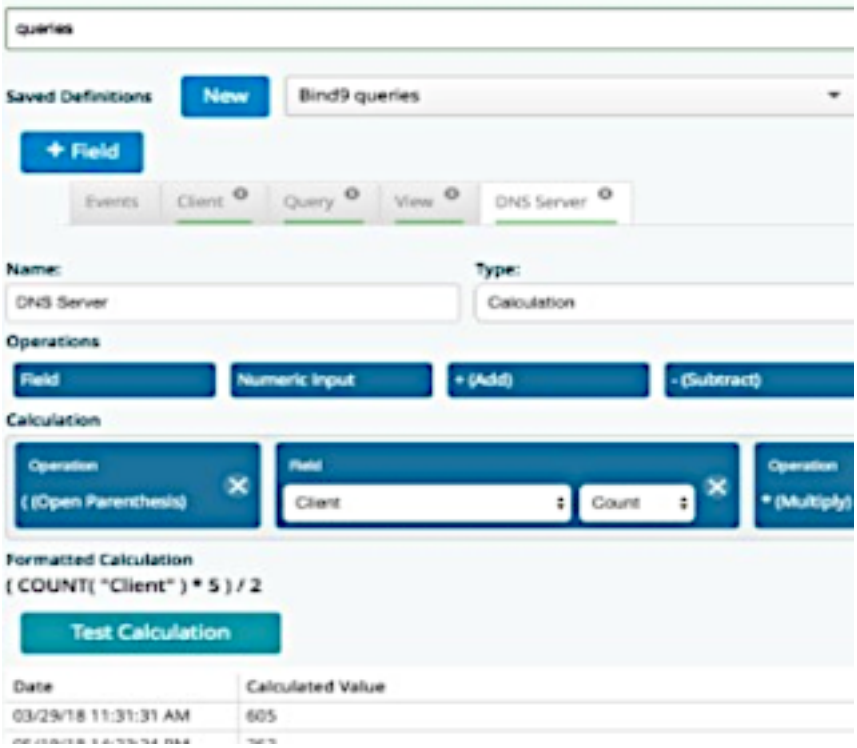
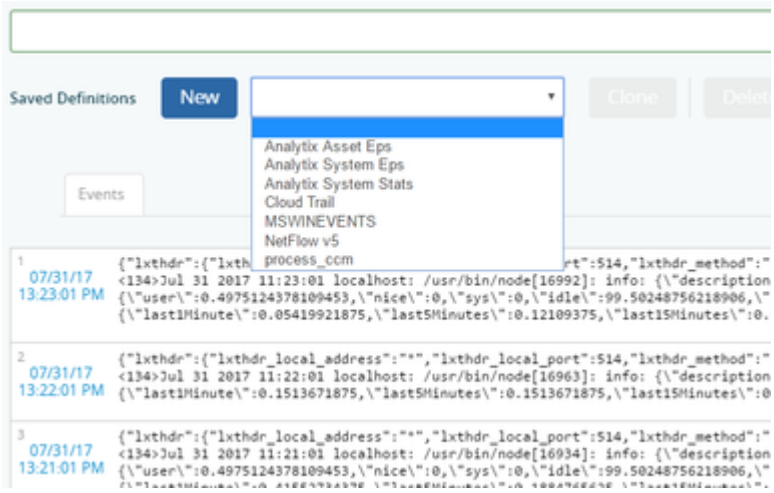


5. Repeat this step for each field you wish to analyze.
6. Once complete be sure to give this search definition a name. *Each search definition creates a default dashboard and report with the title being the name you gave the definition.* (More on the dashboards to come.) Keep in mind that there is no limit to the number of combinations of saved search definitions allowed on any log source (i.e. multiple search definitions on a DNS log).
7. The Saved Definitions drop-down contains the complete list of all saved definitions that have been created. Each Saved Definition is now a Resource from which data can be pulled into a widget on a dashboard and report as you design them.



8. The buttons to the right, i.e. **Clone**, **Save**, **Delete** and **Summarize Data** allow the management of the search definitions/resources.

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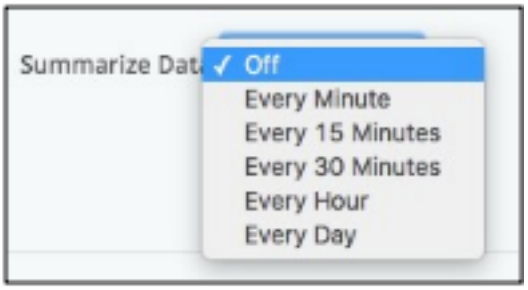
- **Clone** allows you to take a saved definition and copy it. Simply pull up the definition you want and click the clone button and give it a new name. Now you can simply change only the field extractions you want instead of creating them from new.
- **Save** allows you to save a modified search definition. Note that when a definition is modified and saved then the dashboard will start updating when new log data arrives into the system.
- **Delete** allows you to delete a search definition from the list.
- **Summarize Data** gives you the option of consolidating the data from the logs based on time. Clicking the drop-down, allows you to choose the required interval on which the data will be summarized (Minute, 15 Minutes, 30 Minutes, Hourly, and Daily). When invoking summarization all unique combinations of text fields will be kept.



Integer fields are aggregated together with their associated operation (Counts are summed; Min, Max, Avg, Stddev, and Variance aggregations are stored for every integer field). This is a method of making the dashboards more responsive since it will summarize the data and store only that one value versus all of the values.

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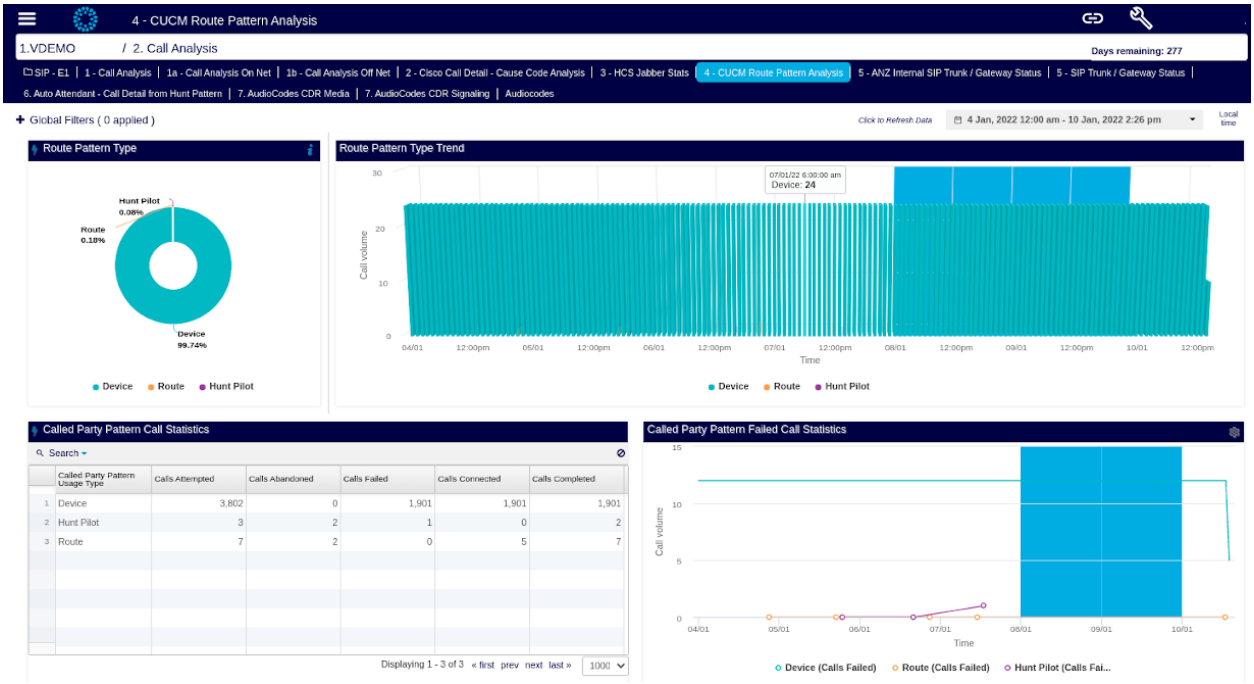
4. Analytic Dashboard and Report View

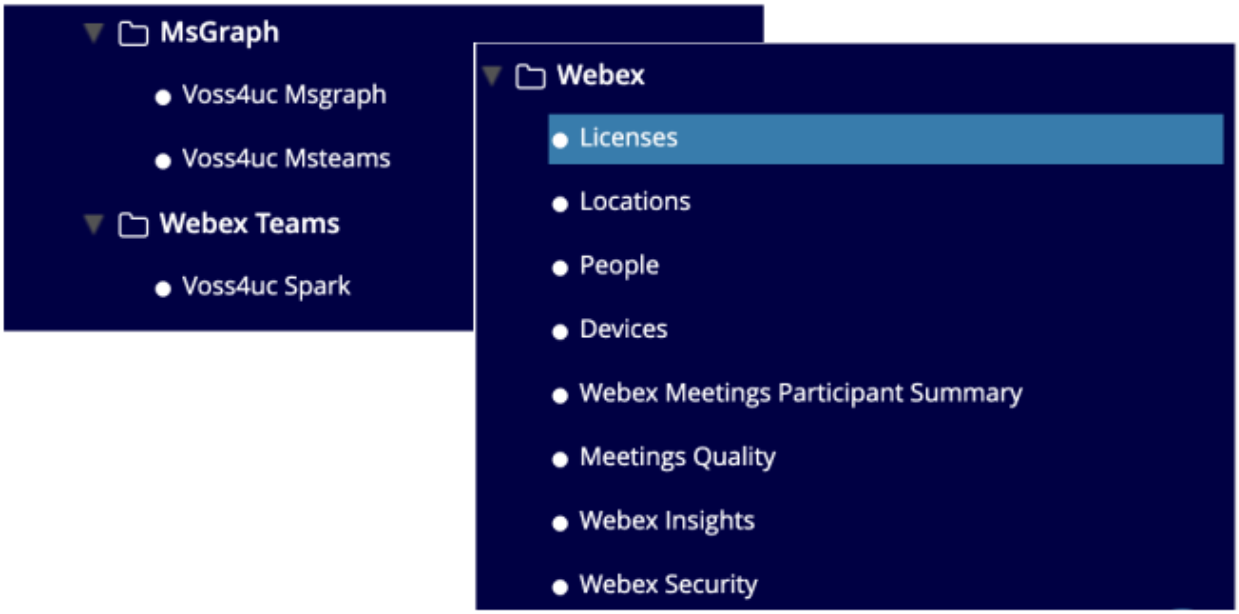
4.1. Dashboards

Click Main Menu and on the main menu screen you will find the default dashboards based on the search definitions created previously. These default dashboards automatically pull out each element and create a top occurring list of the fields in each search definition. From here you can start to edit and customize the dashboard to meet your needs.



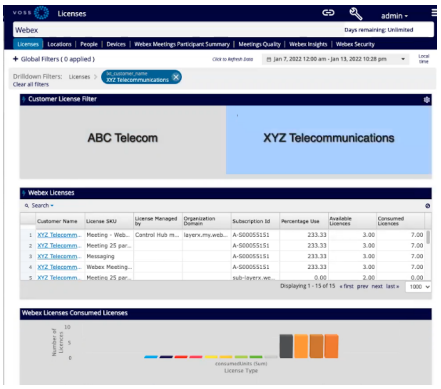
Start by clicking on the default dashboard that you wish to modify. The dashboard page will open up and you will see the widgets populate based on the search definitions you previously entered.

From SP66, new dashboards are also available:



4.1.1. Webex Dashboards

If your Arbitrator is configured for Webex, the Webex dashboards can be used. (Refer to the *API Config* section in the Configuration chapter of the VOSS Insights Arbitrator Data Correlation Administration and User Guide.)



4.2. Dashboard Timeframe Definition

The date/timeframe will default to 24 hours. Click on the date drop-down at the top-right of the screen, and it will open up into a calendar along with a list of pre-set time frames (Last 5 minutes, Last 30 Minutes, Last Hour, etc.). Scroll through and select the date/timeframe that you want to include on the dashboard.

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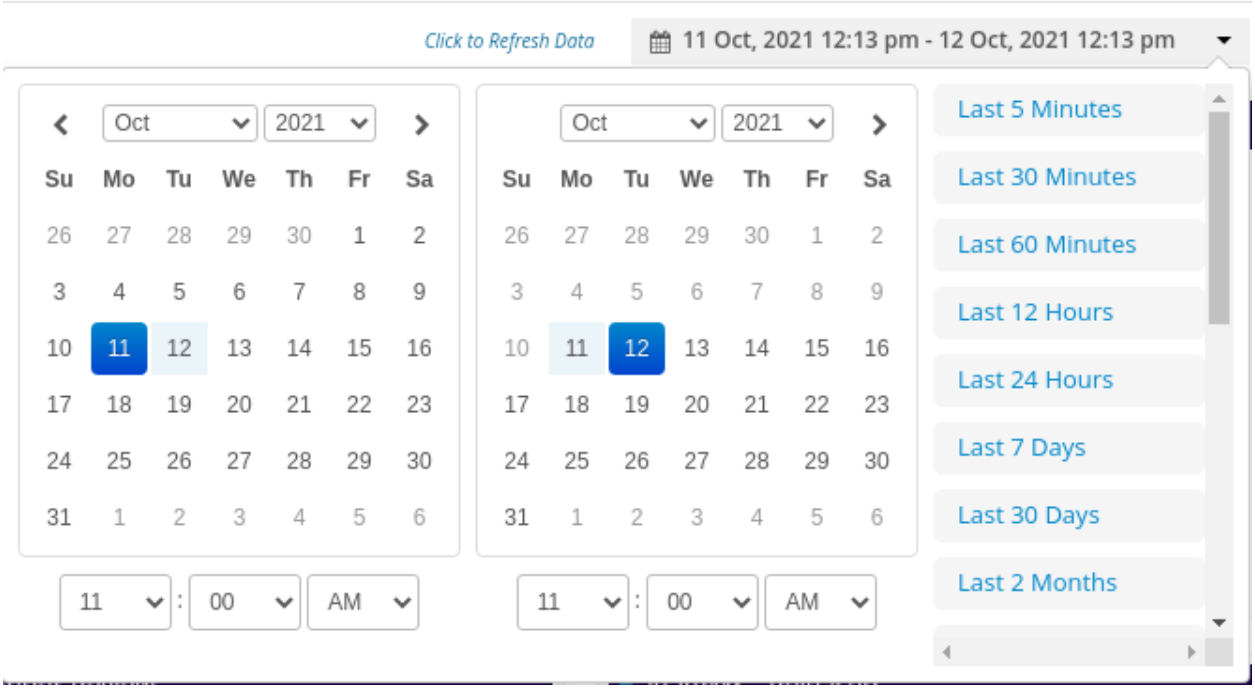


An option is available to toggle between **Local time** and **UTC time** in the display.

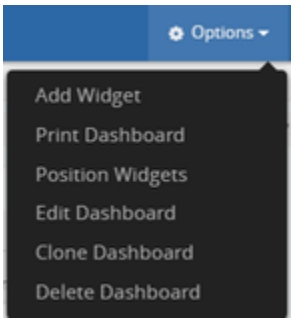
Keep in mind, as with the search definition, the more time selected the more data to analyze thus time to render the widgets is based on the timeframe selected and the amount of data to pull.

4.3. Add Widget to a Dashboard

Click the **Options** drop-down and select the **Add Widget** option. This will show you options:

- **Generic Chart**: to choose a chart and pull in data from the resource definitions.
- **Rich Text**: add HTML formatted text, including hyperlinks.

See “Managing a Widget” for details on how to build the widget.



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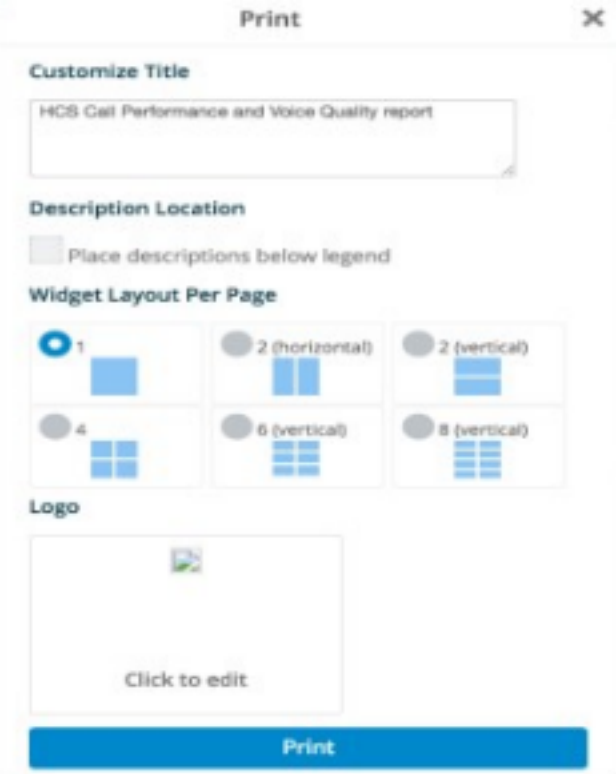
4.4. Print Dashboard

Click the **Options** drop-down and select the **Print Dashboard** option. A print dialog box will pop up allowing you to customize the title. Enter the title you want, and then check the **Place descriptions below legend** check box. This will place all description text in the Widgets below the charts. Then select the design by choosing the number of widgets to place on a page. Once complete upload a logo and print the report.



4.5. Position Widgets

Click the **Options** drop-down and select the **Position Widgets** option. This will put the dashboard in a mode that allows you to move the widgets around the page plus resize the boxes. When you hover over a widget a corner symbol appears in the bottom right corner. Grab that corner to drag and resize the box. To move the entire widget just grab the widget anywhere and drag it to the desired location. When complete be sure you click **Update** in the top right corner to save the new dashboard positioning.

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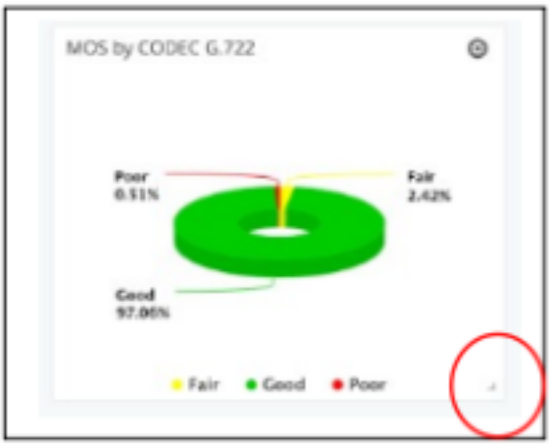
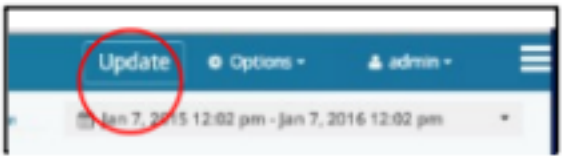
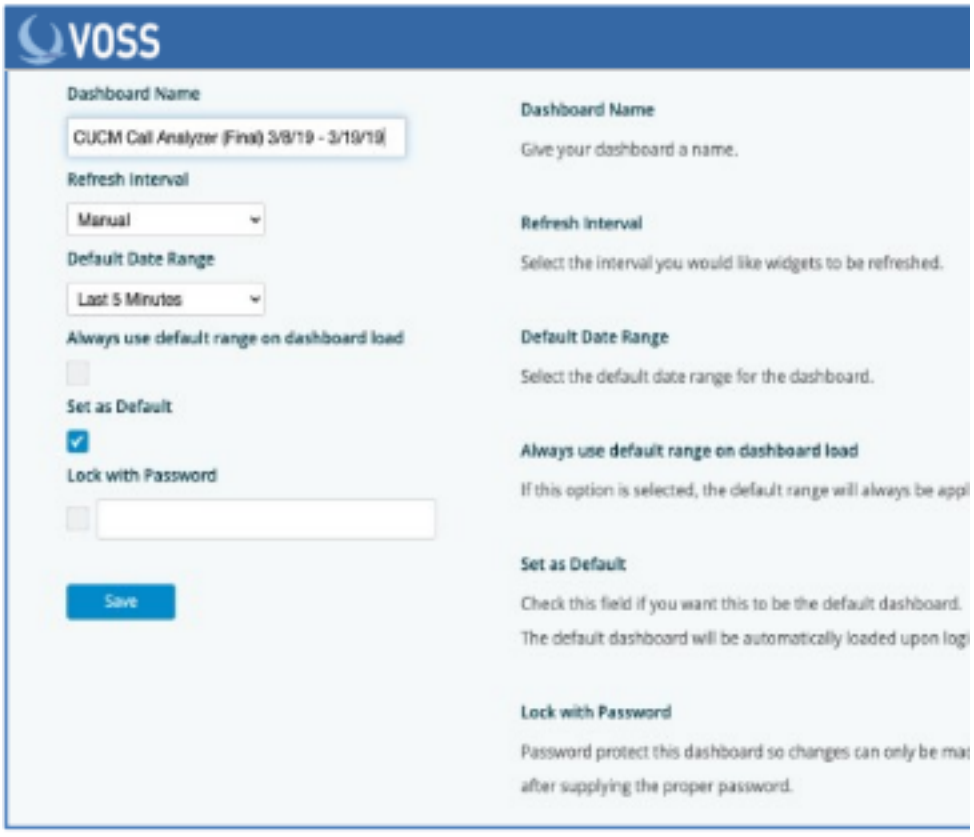




4.6. Edit Dashboard

Click the Options drop-down and select the Edit Dashboard option. This will take you to a page where you edit the Dashboard Name and make it specific to your preference. Additionally, you can set the refresh interval by clicking on the drop-down menu and choosing the interval. This will determine how often the system refreshes the data from the database.

Be sure to click **Save** button to save your changes.



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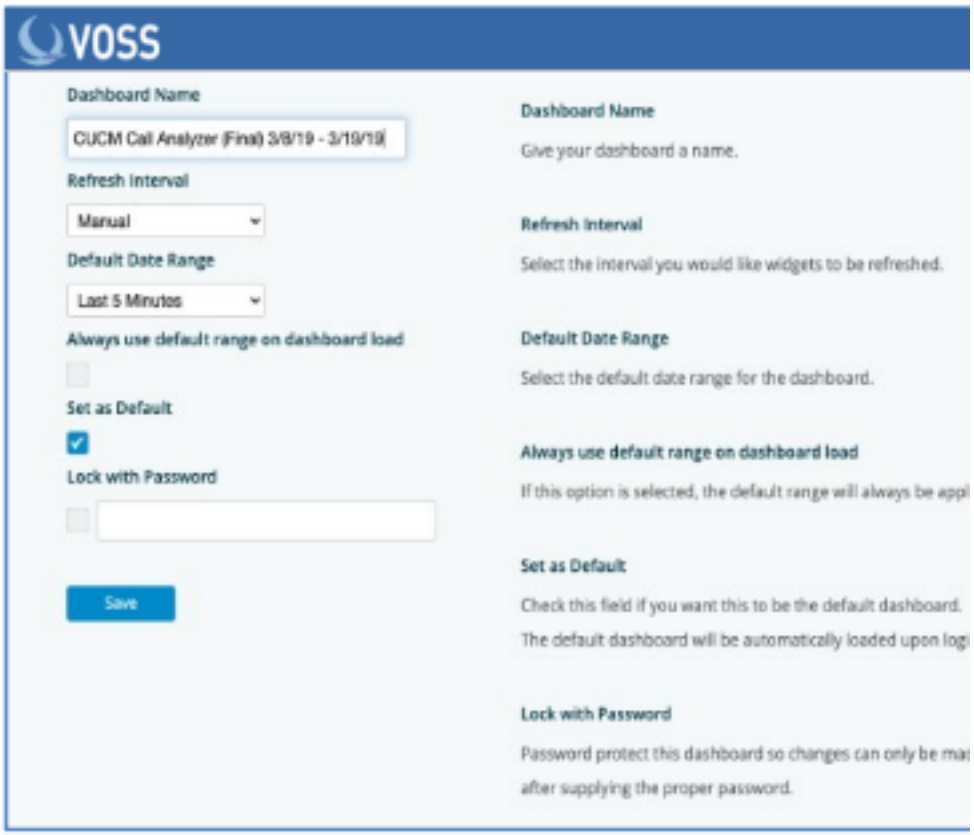
4.7. Clone Dashboard

Click the Options drop-down and select the Clone Dashboard option. This takes you to the Dashboard Editor, and the system makes a copy of the dashboard. You must change the name in the Dashboard Name box and click **Save**. You will then be taken to the newly named dashboard where you can edit the widgets.



4.8. Delete Dashboard

Click the Options drop-down and select the Delete Dashboard option. This will delete the dashboard and remove it from the menu.

Note: This does not delete the extraction definitions. You will need to go to the search screen for this function.

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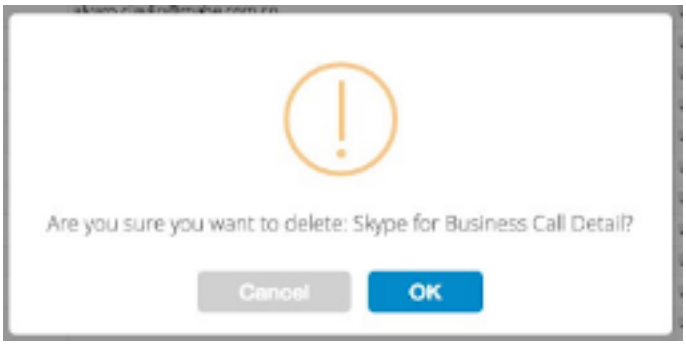
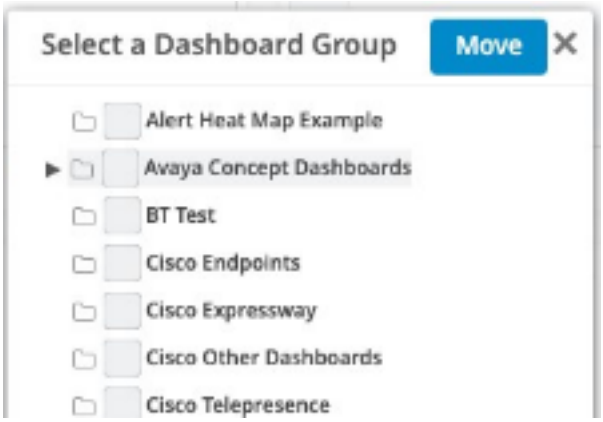


4.9. Move Dashboard

While on the dashboard you wish to move, select the **Options** drop-down and choose **Move Dashboard**. This will bring up the tree of all the folders defined in the system. Click on the folder to which you want to move the dashboard.



4.10. Managing a Widget

In the top right corner of each widget there is an edit button.

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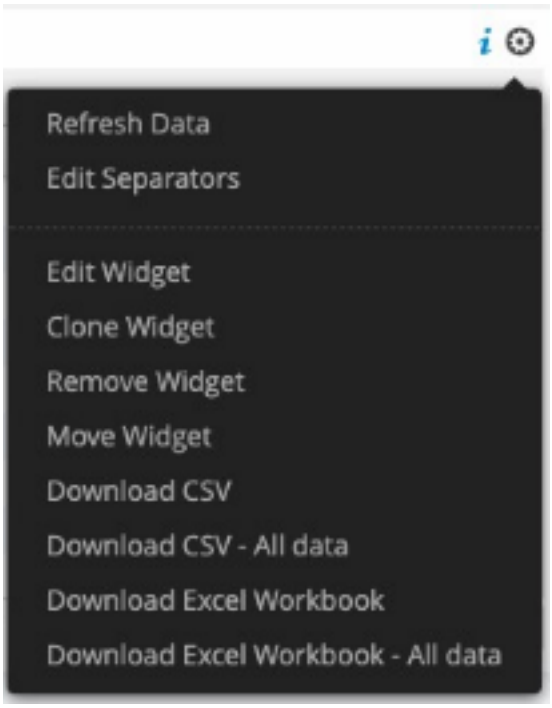

Clicking on this button opens up several options to apply to that specific widget. Depending on how the widget was configured, options may include:

- **Refresh Data**: Clicking here is a manual refresh of the data from the database.
- **Edit Separators**: Clicking on this option opens up a separate page where you can select one or more separators that you want to use on your widget, i.e. Left, Right, Top, Bottom or All.
- **Save Chart**: (Only available if the Widget is a Chart). Clicking here allows you to save any widget to your desktop as an `.svg` file. This file can then be imported into documents for custom reporting.
- **Edit Widget**: Clicking on this option opens up a separate page to edit the data and the analysis of the data that is represented on the widget (see below).
- **Clone Widget**: Clicking on this option will copy and paste the widget as is. You then can modify it to meet the specific data analysis needed. This is much quicker than creating a brand new widget/dashboard.
- **Remove Widget**: Clicking on this option will delete the widget from the dashboard.
- **Move Widget**: Clicking on this option will bring up the tree of all of the folders and dashboards in the system. Simply choose the folder and click on the dashboard destination you desire.

Note: You can *filter* data in a widget before downloading. Use the **Search** control of the widget. The downloaded file would then *only* contain the filtered data.

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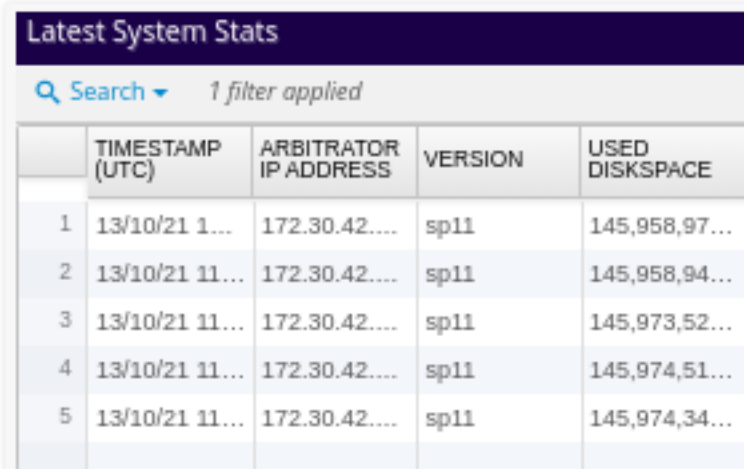

- **Download CSV**: Clicking on this option will download the underlying data (chart or table) to `.csv` that you can save on your computer. The data will be pulled based on the time selected in the time-bar.
- **Download CSV-All data**: Choosing "All Data" will download all of the table data in that widget (regardless of the time set in the time-bar) to a `.csv` file that you can save to your local computer.

  The "All data" option will take global filters into consideration.
- **Download Excel Workbook**: (Only available if the Widget is a Table.) Clicking on this option will download the table data to an Excel file that you can save to your local computer.
- **Download Excel Workbook - All data**: (Only available if the Widget is a Table.) Clicking on this option will download *all* the table data to an Excel file that you can save to your local computer.

  The "All data" option will take global filters into consideration.

4.11. Edit Widget

Click the **Edit Widget** option to launch a new page (Widget Editor) that provides many powerful data analysis options.

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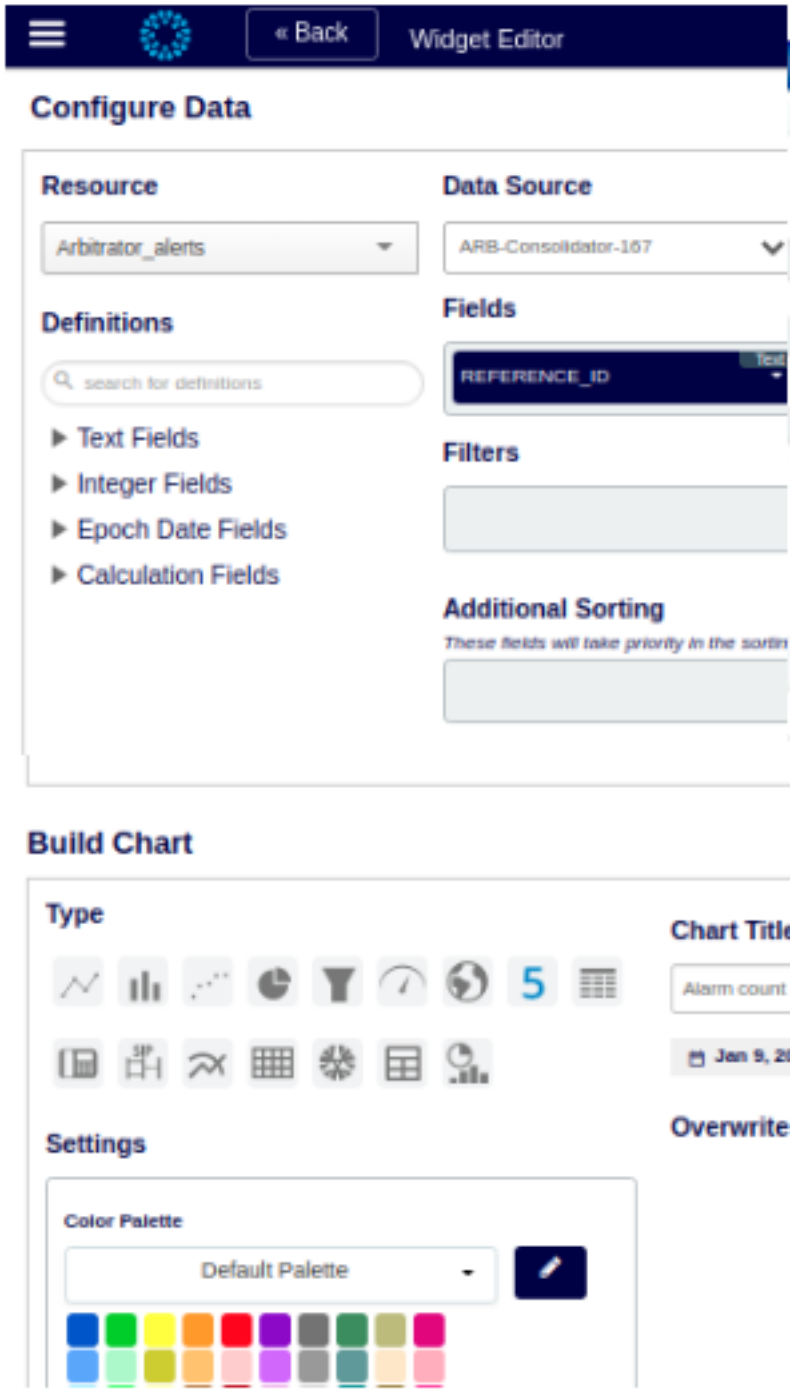

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4.12. Configure Data

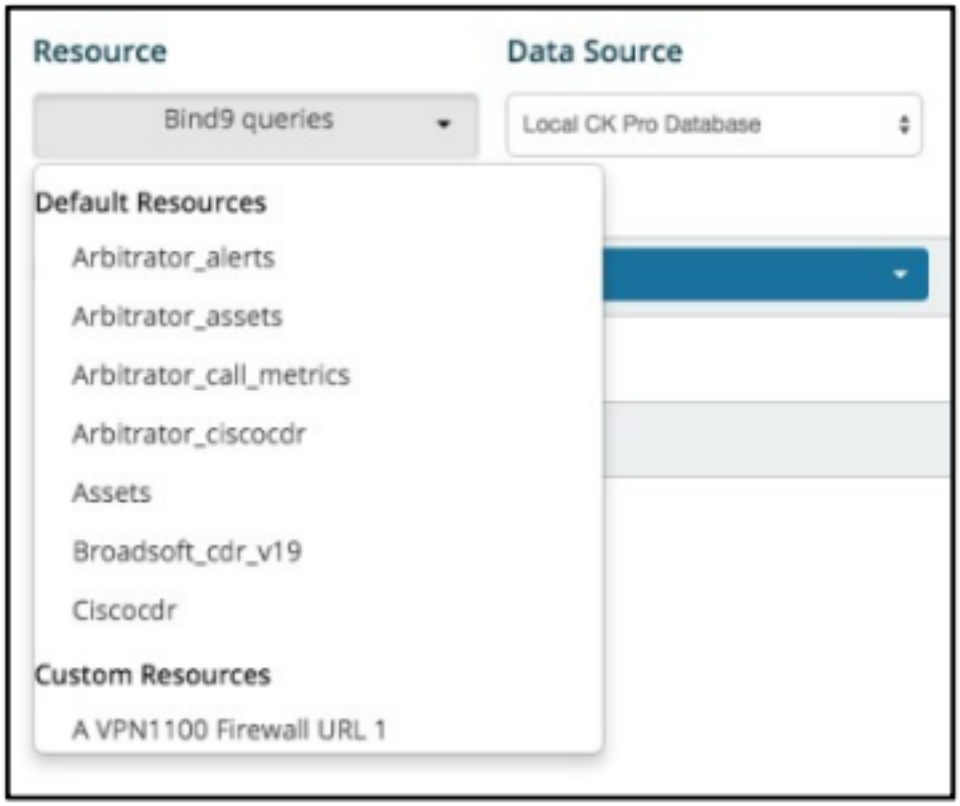
Two drop-down menus are available in the top left corner of the Widget Editor screen: **Resource** and **Data Source**.

- The **Resource** drop-down contains a list of all of the search definitions that have been defined. When editing an existing widget within a dashboard the default name is the search definition used for that dashboard. However you can use this to pull data onto a widget from any defined search definition thus creating a dashboard of widgets that analyze data from multiple data sources (Ex: Firewall, DNS, Router, Application)

  From SP66, new data definitions are also available for:

  - VOSS Automate MSgraph, MSteams, and Spark objects (search for `msgraph`, `msteams`, `spark`).
  - Webex API data (search for `webex`).

- The **Data Source** tab contains all of the databases to which the VOSS Insights platform has access. This can be its local database or it can contain multiple databases. Adding new Data Sources is described in a later section.



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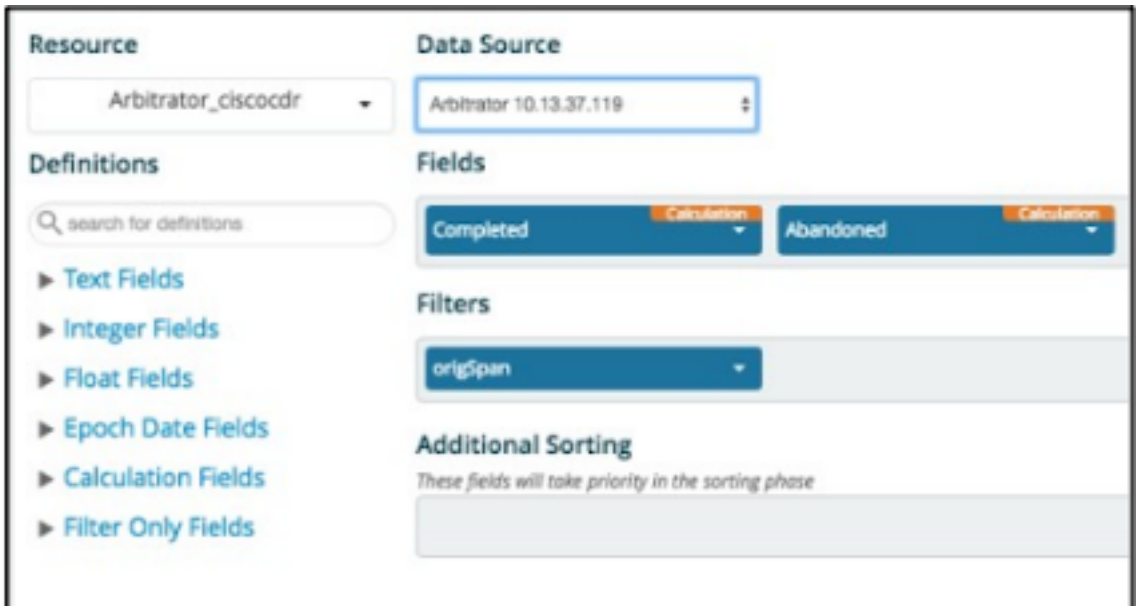
4.13. Definitions, Fields and Filters

Below the Resource drop-down menu are three sections titled Definitions, Fields and Filters.



- **Definitions** are broken out by type (Text, Integer, Float, Epoch Date, Calculated and Filter Only fields) based on the data type extracted from the Search Definitions previously created and associated with this widget. You will only see the **Definitions** that are available based on the **Resource** chosen.
- **Fields** is where you drag and drop the specific field from the definitions that you want to analyze on the widget. As many fields as required may be added to a single widget. See Field Analysis below.
- **Filters** allow you to set a filter definition for that widget, i.e. filter on only values greater than 200. These filters allow the widget to be created to provide analysis of the data based on the specific context. See Filter Analysis below.

  Example: The figure below shows a Widget that is analyzing Average and Maximum Packet Loss over time while filtering to display only the values that are between 0 and 100 for each data element.

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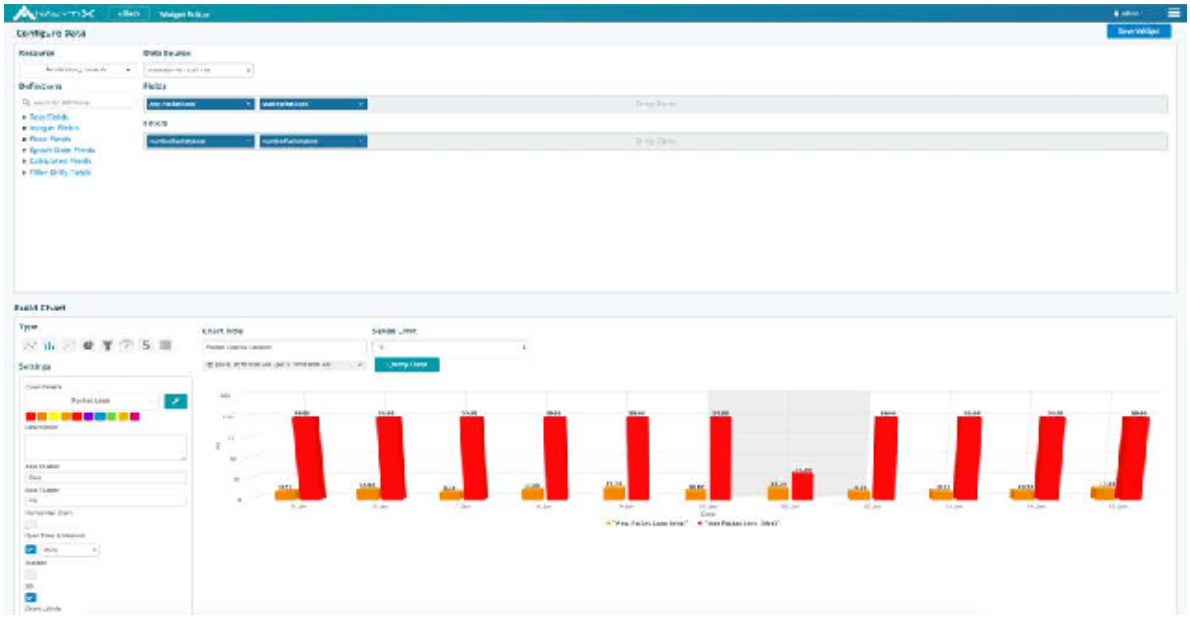
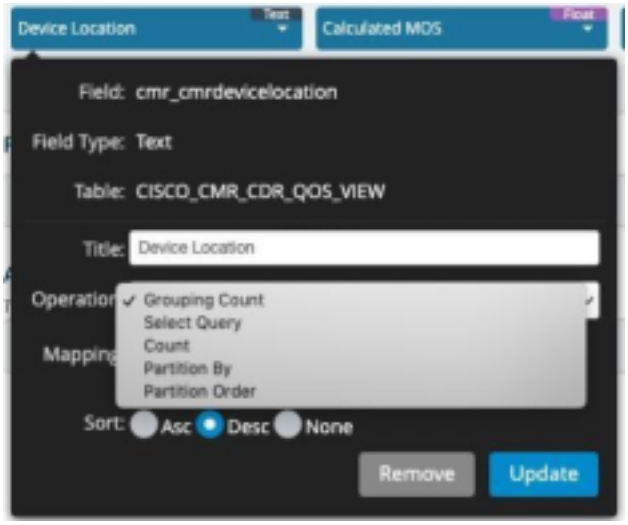


- **Additional Sorting** allows you to set the starting order for fields that appear in a table. Utilizing this field allows the column sort to be pre-set based on the fields dropped into this bar.

4.14. Fields Details

The data elements in the **Fields** box have several analytic options depending on the context of the field and the desired functions, (e.g. Integer Field with a SUM Calculation). The options available are:

- **Text**



If the extracted field is a text field then it will show “Text” in the **Field Type**. The **Title** is automatically populated with the field name from the log. This title can be changed to describe more accurately the data field. Next is an **Operation** box that provides two options:

  - Grouping Count - will group all of the same fields and count the number of times they occur in the data, for example: Field is Acme Trading and it occurred 35 times. The output will be Acme Trading count of 35.

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- Select Query - allows you to choose to output all records from the query without grouping them. Warning: This could result in a tremendous amount of data depending on the topic being analyzed. Example is a call table that could return millions of rows.
- Count - will return the total count of the value. If there are 1000 occurrences of the value “350” the output will be 1000.
- Partition By and Partition Order - These two functions are specific to our PostgreSQL database and allow you to show the most recent or the earliest entries in the data. They are utilized with the “Select Query” on the data set.

- **Integer**

If the extracted field is an integer field then it will show “Integer” in the **Field Type**. The **Title** is automatically populated with the field name from the log. This title can be changed to describe more accurately the data field. Next is an **Operation** box that provides eight options:

- Grouping Count - will group all of the same fields and count the number of times they occur in the data, for example: Field is the value “350” and it occurred 10 times. The output will be 350 count of 10.
- Select Query - allows you to choose to output all records from the query without grouping them. Warning: This could result in a tremendous amount of data depending on the topic being analyzed. Example is a call table that could return millions of rows.
- Count - will return the total count of the value. If there are 1000 occurrences of the value “350”, the output will be 1000.
- Min - will calculate the minimum value that has occurred in the data and output that value.
- Max - will calculate the maximum value that has occurred in the data and output that value.
- Avg - will calculate the average value of all the data and output that value.
- Sum - will calculate the sum of all the data and output that value.
- Variance - will calculate the variance within the data and output that value. Variance is how far a set of integers are spread out, thus a variance value of zero indicates that all the values are identical.

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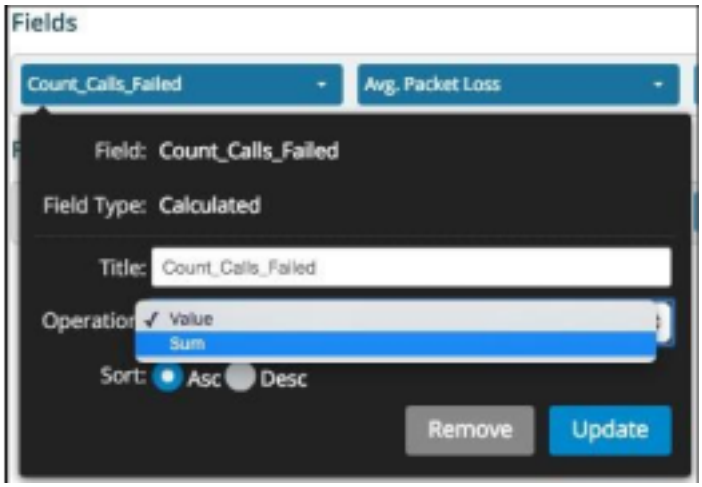
- Stddev - will calculate the standard deviation within the data and output that value. Standard deviation will quantify the amount of variation or dispersion of the data set. A value close to zero indicates that the data points are close to the *mean* or the expected value while a high value indicates that the data points are spread out over a wide range of values.
- Partition By and Partition Order - These two functions are specific to our PostgreSQL database and allow you to show the most recent or the earliest entries in the data. They are utilized with the "Select Query" on the data set.

- **Calculate**



If the extracted field is a pre calculated field then it will show Calculated in the **Field Type**. The **Title** is automatically populated with the field name used in the database. This title can be changed to describe more accurately the data field. Next is an **Operation** box that provides two options:

- Value - will output the exact value of the calculated field, for example: The calculation is the count of all failed calls then the output will be that value.
- Sum - will sum up all the values of the calculated filed, for example: The calculation is the call failure ratio then the output will be the sum of all of these values.

4.15. Filters Details

This section allows filters to be applied to data elements being analyzed from the **Fields** box. As with Fields there are several analytic options depending on the context of the filter and the desired functions, i.e. Integer Field utilizing a greater than Calculation. The options available are:

- **Text**

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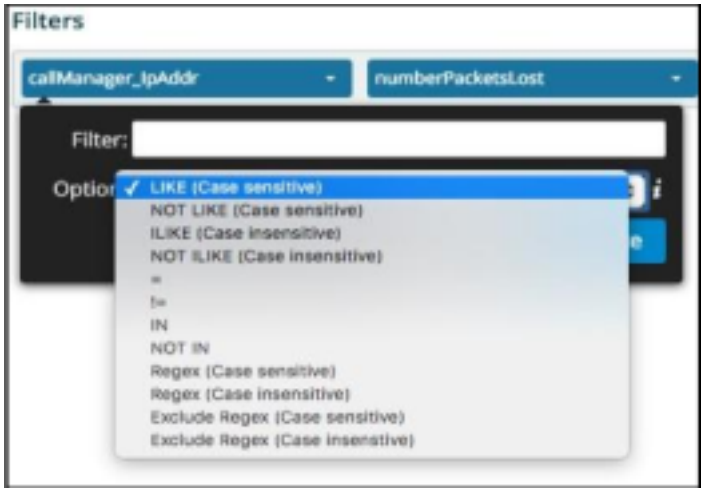

There is an empty Filter box labeled **Filter** where the custom filter function needs to be input. Next is an **Option** box that provides/defines the filter that is applied in the filter box. There are 12 available filtering functions:

- LIKE (Case Sensitive) - is a function that 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) - is a function that 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) - is a function that based on the pattern entered in the filter field will return the data that matches 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.
- NOT ILIKE (Case Insensitive) - is a function that 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 (=) - is a function that 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 (!=) - is a function that 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 - is a function that 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 - is a function that 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) - is a function that utilizes POSIX Regular Expressions to extract data. It is case sensitive.
- REGEX (Case Insensitive) - is a function that utilizes POSIX Regular Expressions to extract data. It is NOT case sensitive.
- EXCLUDE REGEX (Case Sensitive) - is a function that utilizes POSIX Regular Expressions to extract the data that doesn't match the pattern. It is case sensitive.

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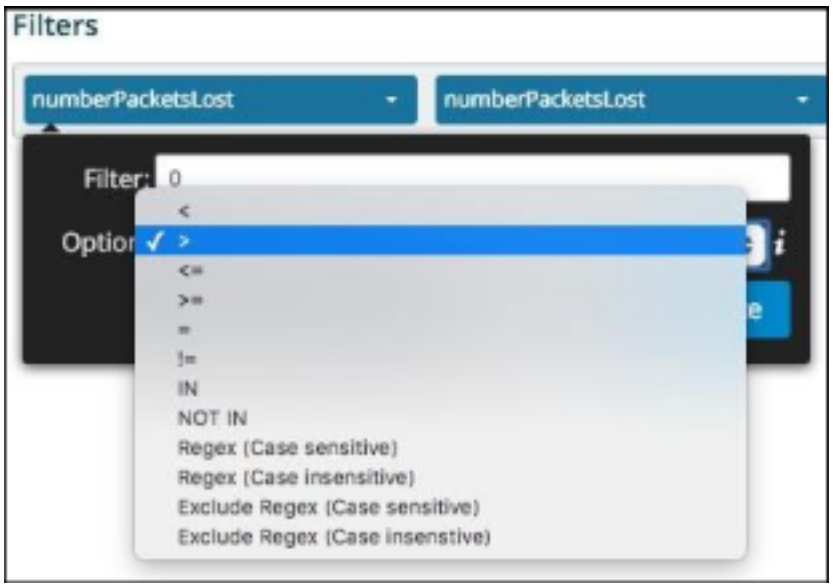
- EXCLUDE REGEX (Case Insensitive) - is a function that utilizes POSIX Regular Expressions to extract the data that doesn't match the pattern. It is NOT case sensitive.

- **Integer**



There is an empty Filter box labeled Filter where the custom filter function needs to be input. Next is an Option box that provides/defines the filter that is applied in the filter box. There are twelve available filtering functions:

- Less Than (<) - is a function that 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 (>) - is a function that 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 (<=) - is a function that 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 (>=) - is a function that 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 (=) - is a function that 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 (!=) - is a function that 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 - is a function that 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 - is a function that 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) - is a function that utilizes POSIX Regular Expressions to extract data. It is case sensitive.
- REGEX (Case Insensitive) - is a function that utilizes POSIX Regular Expressions to extract data. It is NOT case sensitive.
- EXCLUDE REGEX (Case Sensitive) - is a function that utilizes POSIX Regular Expressions to extract the data that doesn't match the pattern. It is case sensitive.

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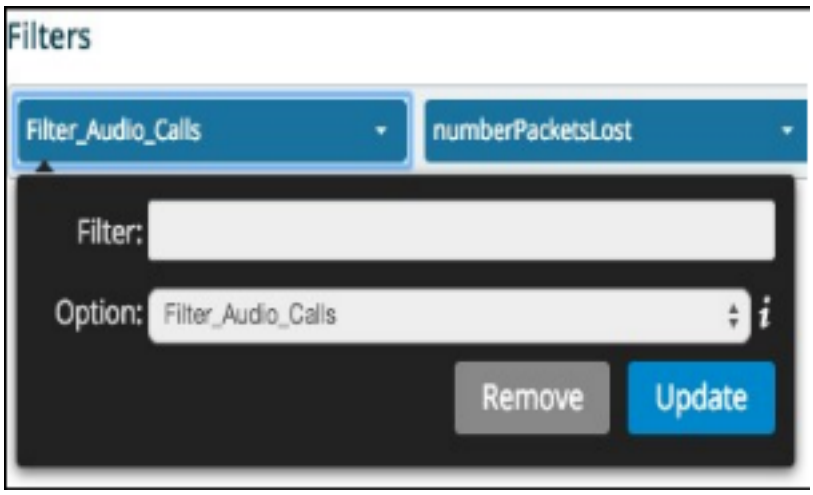
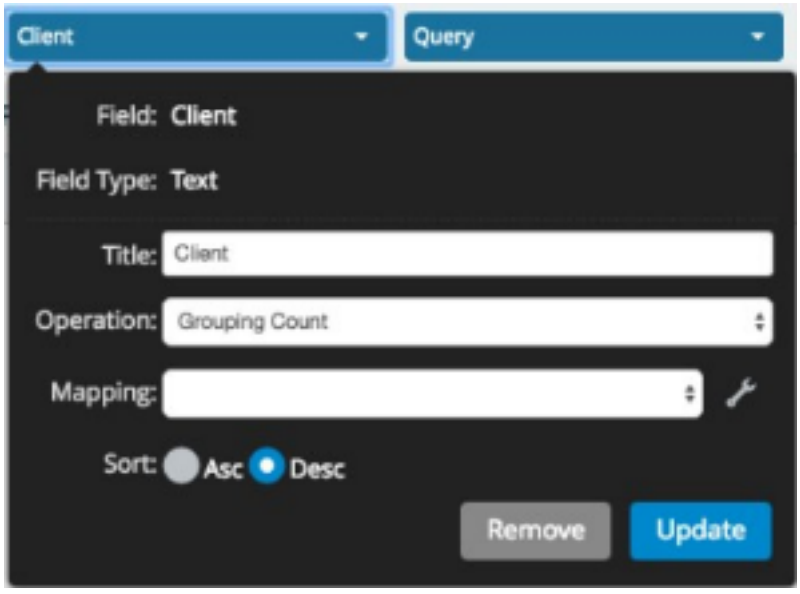
  - EXCLUDE REGEX (Case Insensitive) - is a function that utilizes POSIX Regular Expressions to extract the data that doesn't match the pattern. It is NOT case sensitive.

- **Filter Only**



If utilizing a Filter Only value in the Option box there are not any additional options. This is a predefined function in the database and the system will utilize this for the filtered content.

- **Mapping**



By clicking on the wrench icon, a page will pop up allowing a powerful feature of mapping data elements to common names. This can be any data such as Cause Codes to Cause Names, Location Numbers to Location Names, Protocol Numbers to Protocol Names, etc. When applying a mapping to a Field then the mapped value will show up in the widget in place of the data from the log.

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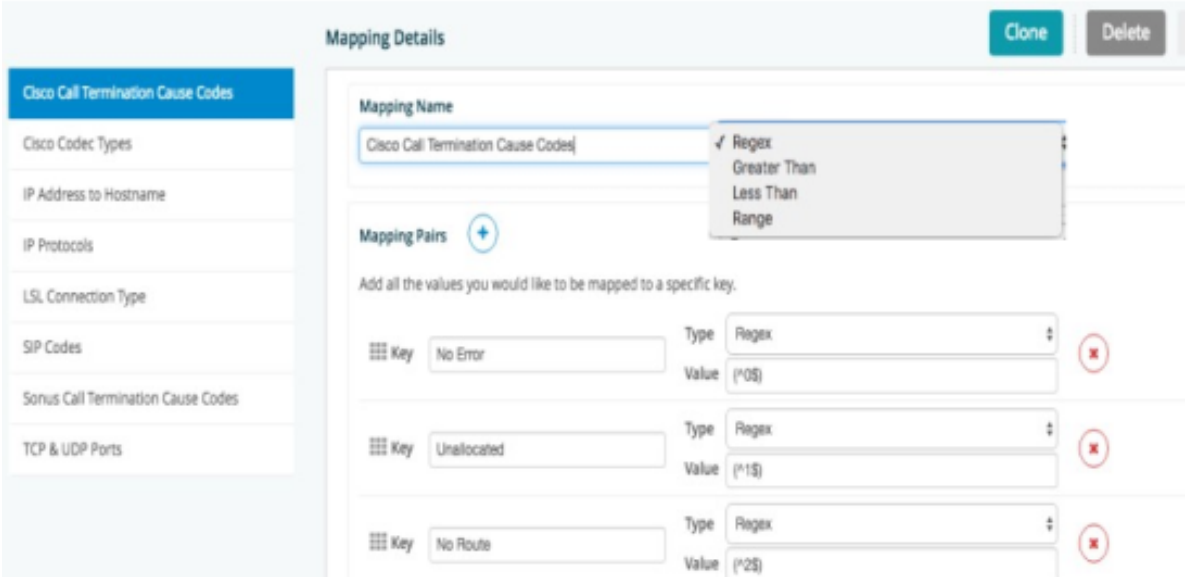

There are four flexible functions to utilize to map the data from the log:

- Regex
- Greater Than
- Less Than
- Range

The order of each mapping element is important since precedence is top down. You can rearrange them by clicking and dragging the keypad icon next to the **Key** label.

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5. Building a Chart

5.1. Building a Chart Overview

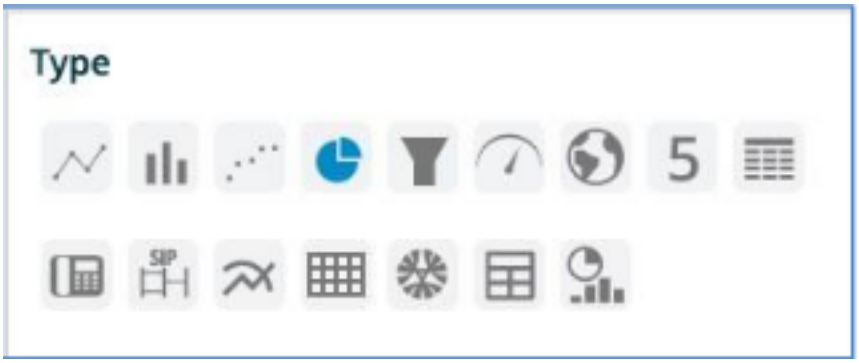
After you have the data elements defined for the widget then you can decide how to reflect the analysis. Just below the **Configure Data** section is a section defined as **Build Chart**.

5.1.1. Build Chart

Here you have several options to choose from based on the data type.

Type: There are 11 chart types exposed that can be utilized to display your data. (Line/Area Chart, Column/Bar Chart, Scatter Chart, Pie/Doughnut Chart, Funnel Chart, Gauge Chart, Card Chart, Table Chart, Call Hops and SIP Ladder Diagram.)

Each one has specific rules that apply to certain data elements. Example: Table data elements over time (i.e. DNS Entries for the day by IP address) will not display with a gauge type. Each chart type also will bring up specific options that can be utilized for that chart under the Settings section



5.2. Chart Types

5.2.1. Line / Area Chart

When clicking on the **Line Chart** the **Settings** options below are adjusted to that particular selection. You have the following choices:

- Color Palette - This defines the colors to associate with data values, the line plus allows you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Axis X Label - Labels the X Axis (Horizontal) for the chart such as “Date”.
- Axis Y Label - Labels the Y Axis (Vertical) for the chart such as “milliseconds”.
- Area Chart - By selecting this check box the chart will display the area under the line versus simply the line within the chart.
- Numeric Precision - Select the decimal precision for each point.
- Over Time & Interval - By selecting this check box the chart will display the data over the specified time and based on the interval toggled within the adjacent box, i.e. Minute, Hour, Daily, Weekly, and Monthly.
- Over Time Accumulation – Selecting this box will accumulate all of the values as they are represented in the chart versus each value.
- Show Data Table - Selecting this will display data in a table below the chart.
- Stacked - By selecting this check box the chart will stack the values on top of each other.
- Show Labels - By selecting this check box then each value that defines the chart will be labeled on the chart.
- Show Bullets - By selecting this check box then a bullet will be placed on the chart for each value.
- Show Legend - By selecting this check box then the Field Definition for the values being charted will be displayed in the position selected, with the associated color representation.
- Placement – Drop-down box providing options on where to place the legend on the chart.
- Show Alert Line - This allows a value to be set to show a threshold or “Alert” line on the chart and have it represented in a different color.
- Empty Group Text - enter text to show if the group name is empty (instead of “EmptyGroup”).

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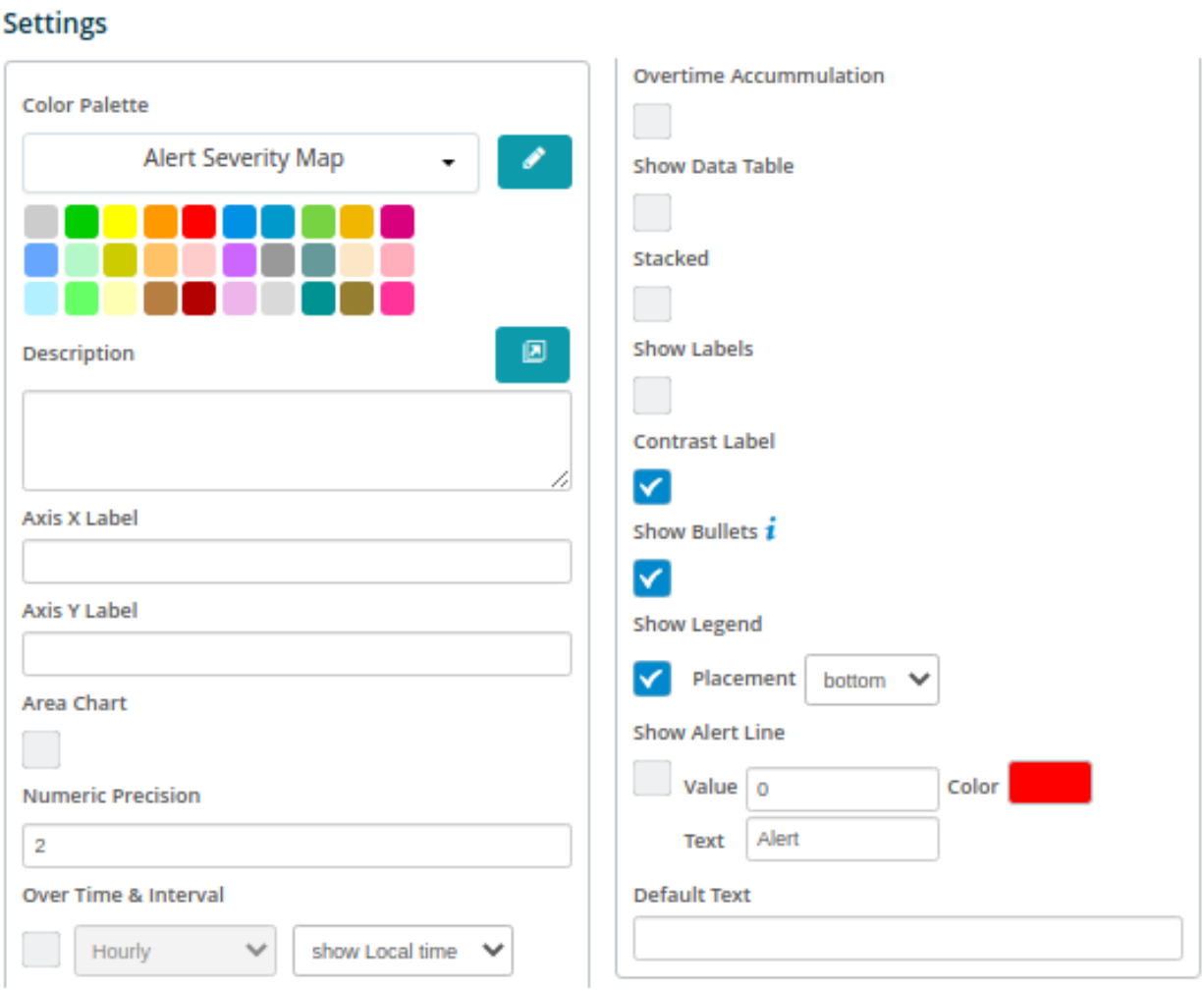

5.2.2. Column / Bar Chart

When clicking on the Column/Bar Chart, the **Settings** options below are adjusted to that particular selection. You have the following choices:

- Color Palette - This defines the colors to associate with data values, the columns/bars plus allows you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Axis X Label - Labels the X Axis (Horizontal) for the chart, such as “Date”.
- Axis Y Label - Labels the Y Axis (Vertical) for the chart, such as “milliseconds”.
- Horizontal Chart - By selecting this check box, the chart will display the columns/bars horizontally across the chart.
- Numeric Precision - Select the decimal precision for each point.
- Scrollbar – Number of Columns – Input the number of columns (vertical or horizontal) that you want to represent on the chart. A scrollbar will appear that will allow you to scroll through the remainder of the

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data while only representing the number of columns selected.

- Over Time & Interval - By selecting this check box the chart will display the data over the specified time based on the interval toggled within the adjacent box, i.e. Minute, Hour, Daily, Weekly and Monthly.
- Over Time Accumulation – Selecting this box will accumulate all of the values as they are represented in the chat versus each value.
- Show Data Table - Selecting this will display data in a table below the chart.
- Group Columns on Dimension – Selecting this will allow you to group the metrics on the dimensions being analyzed in the chart.
- Stack Type – By selecting this box the chart will stack the values based on the type selected: Stack, StackPercentage or Drilldown.
- Drilldown Overtime – Axis X Type: Select the X Axis drilldown for an overtime chart based on the “Category” or the “DateTime”.
- 3D - By selecting this check box the columns/bars 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.
- Contrast Label – Select this to provide better contrast on the font. Usually utilized with dark mode in the browser.
- 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.
- Placement – Drop-down box providing options on where to place the legend on the chart.
- Show Alert Line – This allows a value to be set to show a threshold or “Alert” line on the chart and have it represented in a different color.
- Empty Group Text - enter text to show if the group name is empty (instead of “EmptyGroup”).

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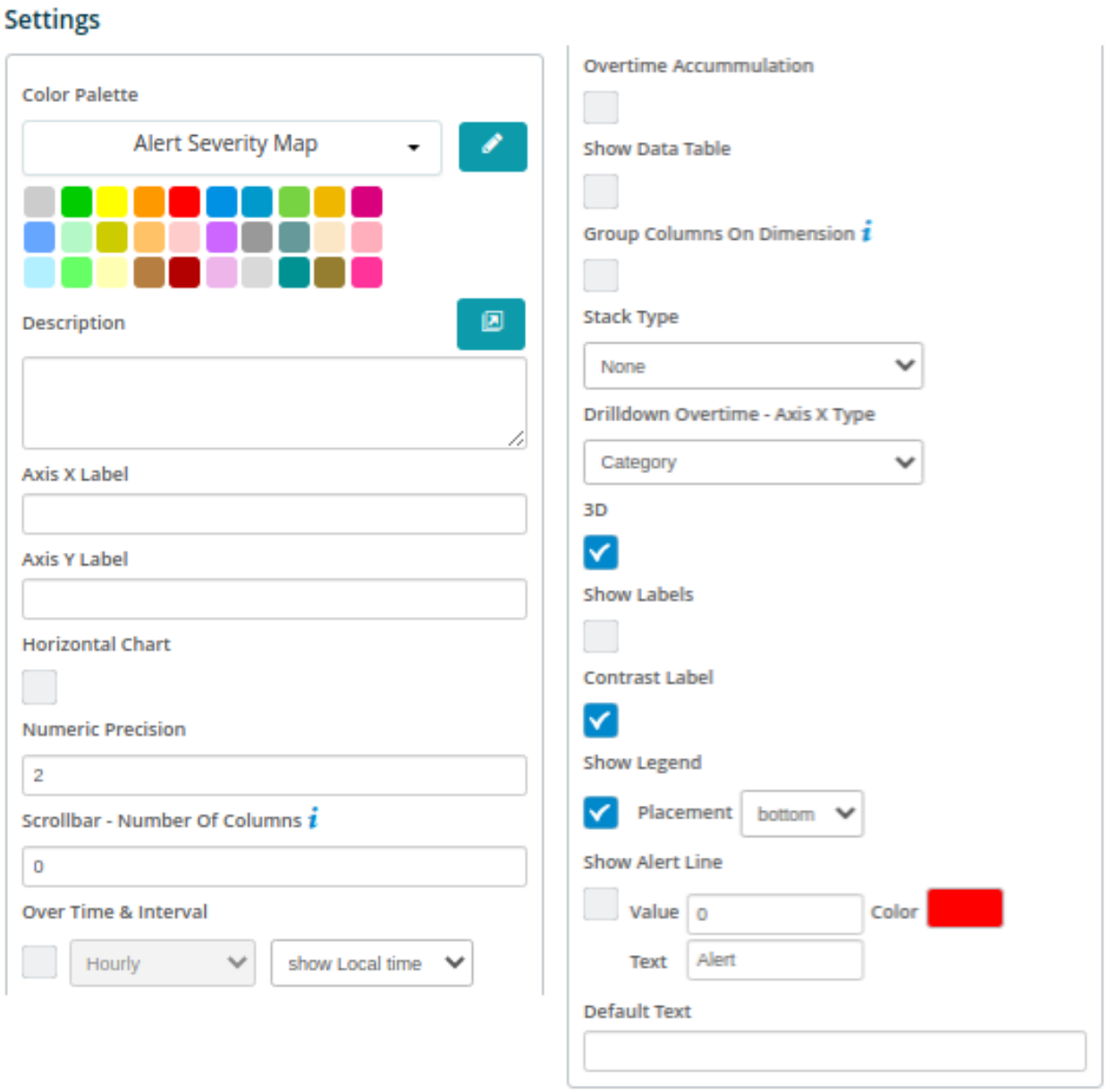

5.2.3. Scatter Chart

When clicking on the Scatter Chart the **Settings** options below are adjusted to that particular selection. You have the following choices:

- Color Palette - This defines the colors to associate with data values, the scatter plots plus allows you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Axis X Label - Labels the X Axis (Horizontal) for the chart, such as “Date”.
- Axis Y Label - Labels the Y Axis (Vertical) for the chart, such as “milliseconds”.

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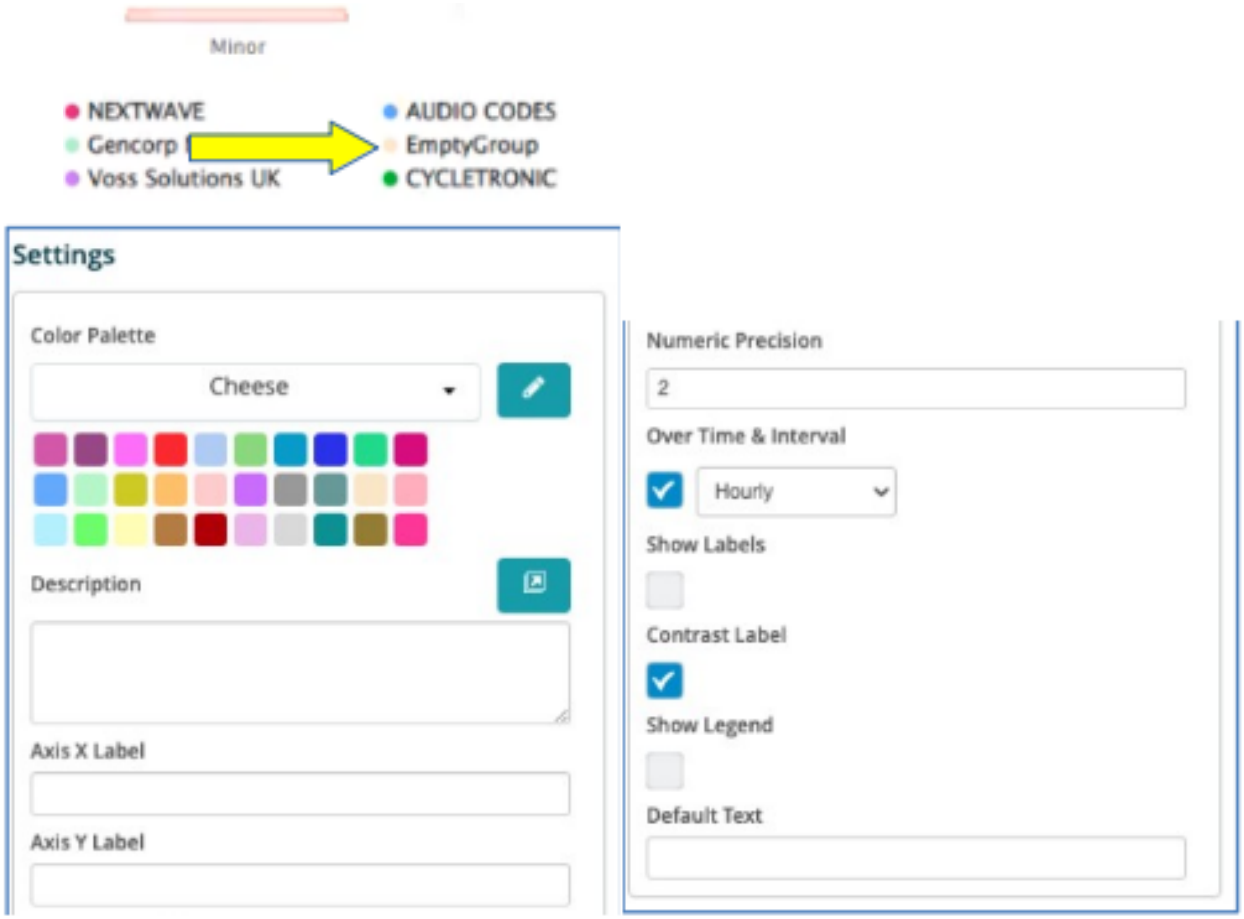
- Numeric Precision - Select the decimal precision for each point.
- Over Time & Interval - By selecting this check box the chart will display the data over the specified time and based on the interval toggled within the adjacent box, i.e. Minute, Hour, Daily, Weekly and Monthly.
- Show Labels - By selecting this check box then each value that defines the chart will be labeled on the chart.
- Contrast Label - Select this to provide better contrast on the font. Usually utilized with dark mode in the browser.
- Show Legend - By selecting this check box then the Field Definition for the values being charted will be displayed in the selected position on the chart with the associated color representation.
- Empty Group Text - enter text to show if the group name is empty (instead of “EmptyGroup”).



5.2.4. Pie / Doughnut Chart

When clicking on the Pie / Doughnut Chart the **Settings** options below are adjusted to that particular selection. You have the following choices:

- Color Palette - This defines the colors to associate with data values and the Pie/Doughnut plots plus allows you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)

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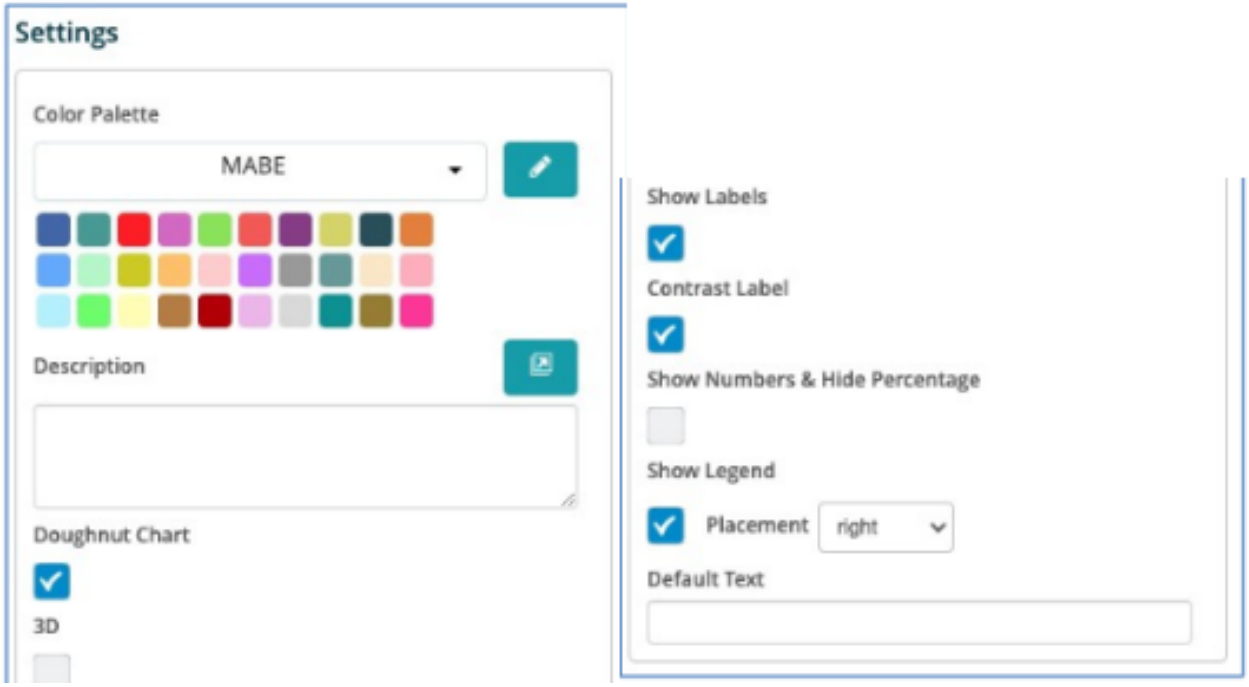
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Doughnut Chart - By selecting this check box the chart will turn into a Doughnut chart with the values plotted around an empty space in the middle versus wedges of a Pie.
- 3D - Show the chart in 3-D.
- Show Labels - By selecting this check box then each value that defines the chart will be labeled on the chart.
- Contrast Label - Select this to provide better contrast on the font. Usually utilized with dark mode in the browser.
- Show Numbers & Hide Percentage - Allows the values / numbers to be shown on the chart versus the percentages.
- Show Legend - By selecting this check box then the Field Definition for the values being charted will be displayed in the selected position on the chart with the associated color representation.



5.2.5. Funnel Chart

When clicking on the Funnel Chart the **Settings** options below are adjusted to that particular selection. You have the following options:

- Color Palette - This defines the colors to associate with data values and the funnel plots plus allows you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Show Labels - By selecting this check box then each value that defines the chart will be labeled on the chart.

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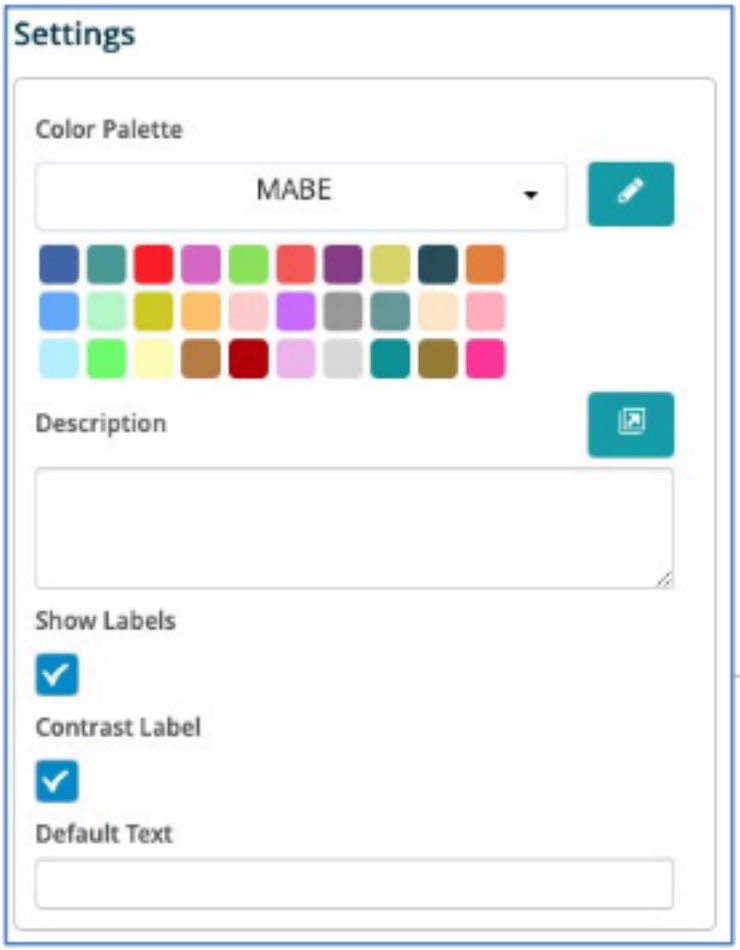
- Contrast Label - Select this to provide better contrast on the font. Usually utilized with dark mode in the browser.
- Empty Group Text - enter text to show if the group name is empty (instead of “EmptyGroup”).



5.2.6. Gauge Chart

When clicking on the Gauge Chart the **Settings** options below are adjusted to that particular selection. You have the following choices:

- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Data Label - Labels the middle of the gauge with value from field extraction.
- Minimum and Maximum - Place the starting value (Minimum) and the ending value (Maximum) for the gauge needle to traverse, i.e. Start at 0 and End at 60,000

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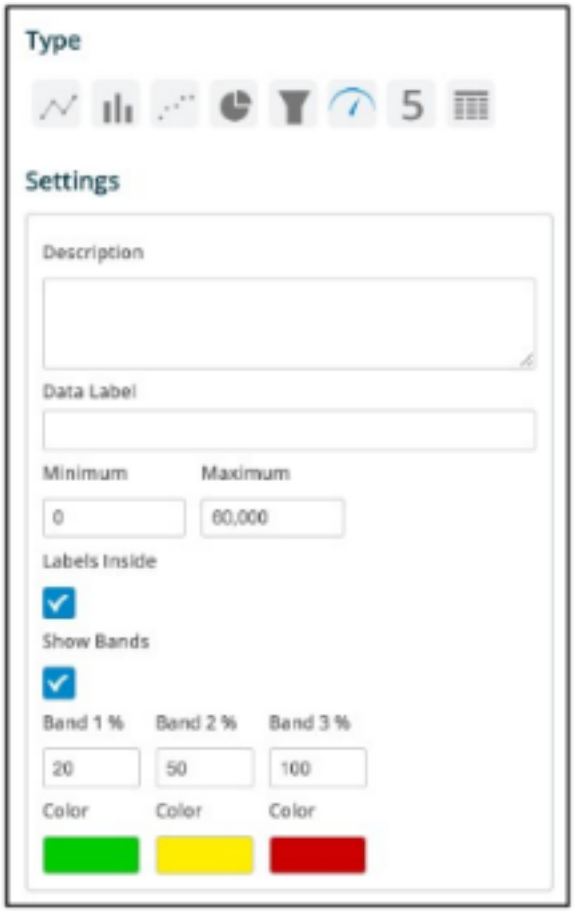
- Labels Inside - By selecting this check box the value will be labeled with the definition based on the field extraction.
- Show Bands - By selecting this check box then the gauge will have a maximum of 3 colored bands indicating certain severity levels. These are user defined thus a good, minor and 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.
- Modify each color band by simply clicking on the color swatch. A color box pops up where you can select the hue or enter specific values to change the color.



5.2.7. Card Chart

When clicking on the Card Chart the **Settings** options below are adjusted to that particular selection. This chart option creates a card for each value to analyze. You have the following choices:

- Colour Palette - This defines the colors to associate with data values, and the Card plots, plus you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Hide Fields - Allows you to hide fields that you may not want to show on a graph. The field choice

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starts at 1 from left to right. Enter the number or numbers of fields you want to hide. Separate each by a comma.

- Colour Palette Option - This allows you to select a specific color for either the **Text** or the **Background** on the Card Chart.
- Card Type - This allows you to select the type of data to show on a Card. There will be additional options that open up based on the value selected here. The types are Data Card, MM Data Card (Multiple Metrics and Dimensions displayed on the Card), Trending Card (Provides a Direction or Color change to indicate the positive or negative trend for the data), Accumulated Trending Card (same as trending but based on the accumulated values versus the individual values).
- Layout Vertically - By clicking in the check box this will orient all the cards in a vertical fashion in the widget.
- Label Prefix - This allows a description of the element on each card to be placed before the value.
- Label Suffix - This allows a description of the value on each card to be placed after the value.
- Font Size - Select the font size for the Label Prefix/Suffix and the data element.
- Font Weight - Select the font weight, i.e. normal or bold.
- Format As Decimal - Check this box to add the decimal point to the value on the card.
- Display Text Only - Select this value to only show the text on the card.
- Empty Group Text - enter text to show if the group name is empty (instead of “EmptyGroup”).

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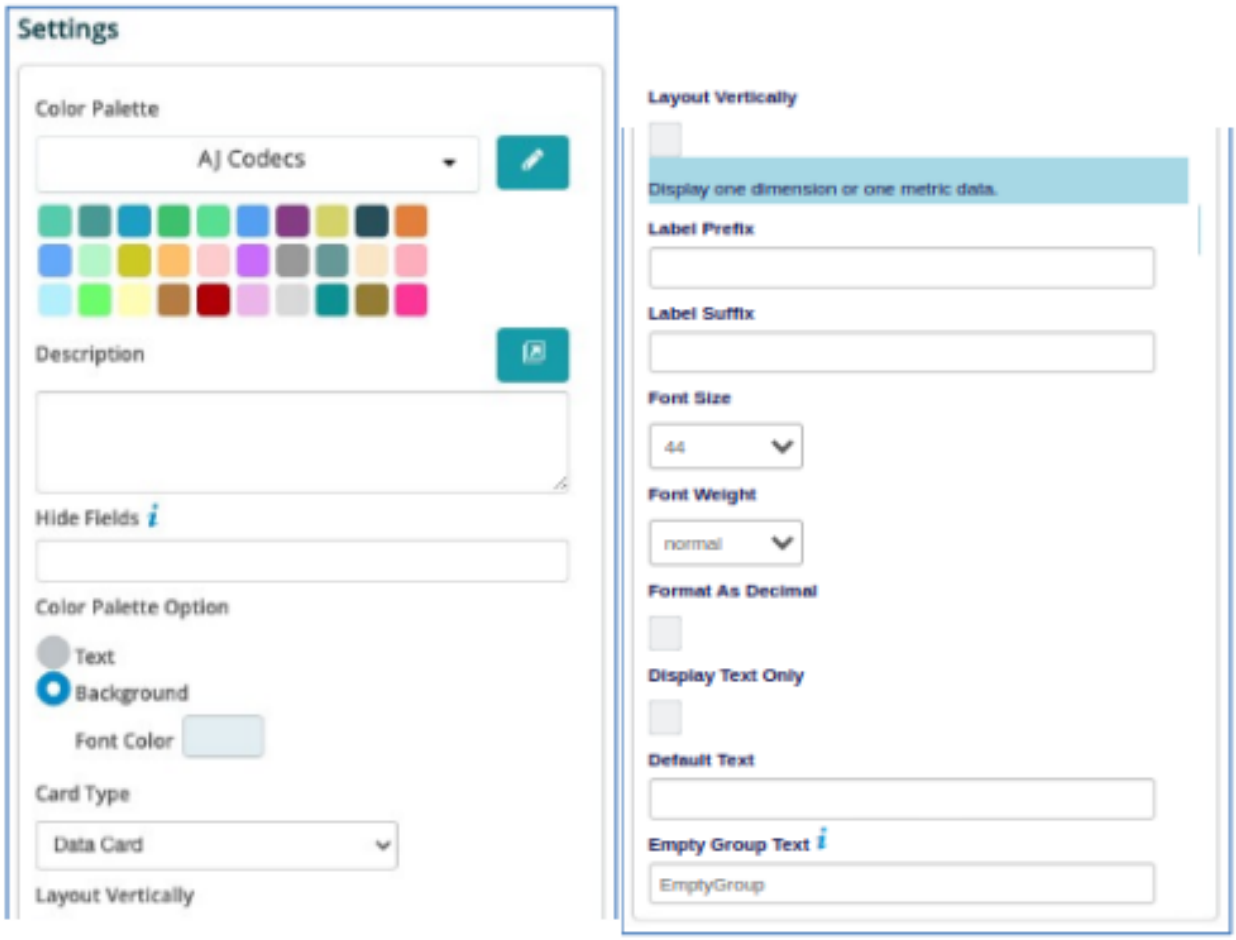

5.2.8. Table Charts

There are two table choices within the platform. When clicking on the Table Chart the **Settings** options below are adjusted to that particular selection.

Table 1

Table 1 (Icon is indicated by the top row arrow).

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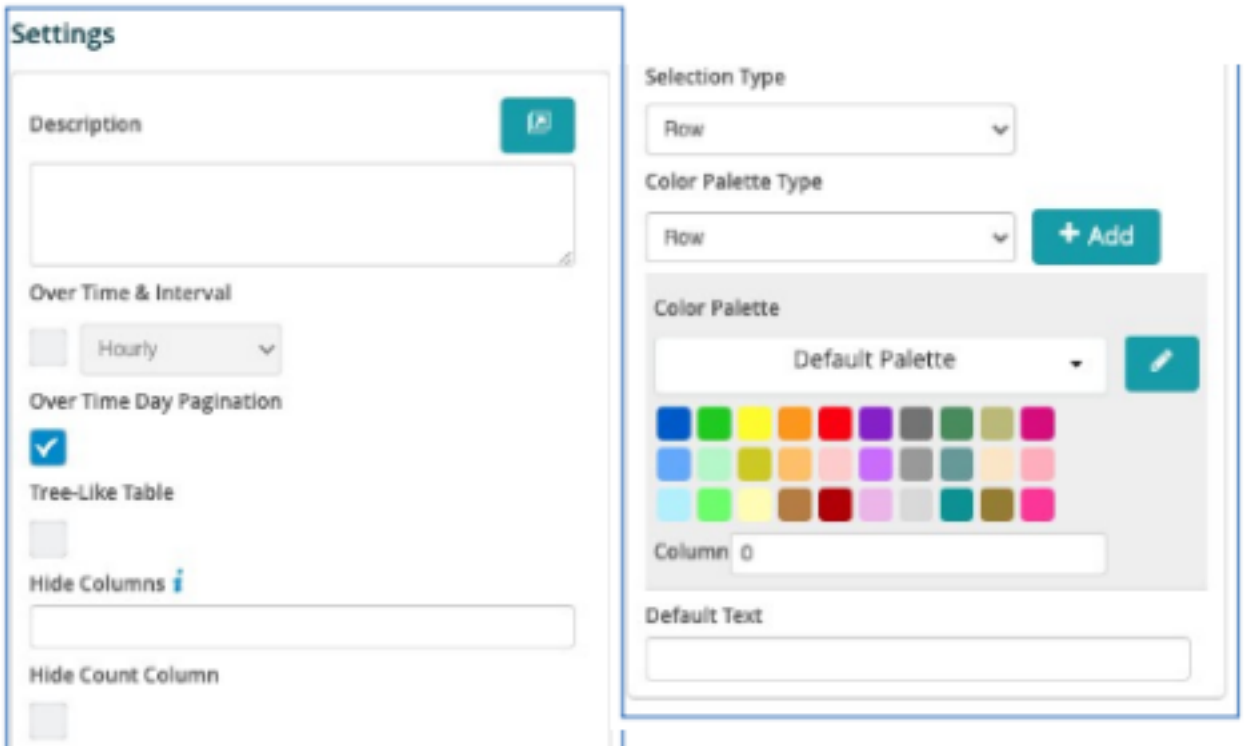

You have the following choices:

- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Over Time & Interval - By selecting this box the chart will display the data over the specified time and based on the interval toggled within the adjacent box, i.e. Minute, Hour, Daily, Weekly and Monthly.
- Over Time Day Pagination - By selecting this box the table can be viewed page by page over the time interval.
- Tree-Like Table - If this box is selected then each row in the table will an arrow indicator that allows a parent / child relationship within the row. Clicking the arrow opens up the children below. Clicking again displays only the top / parent level.
- Hide Columns - Allows you to hide columns that you may not want to show on the table. The column choice starts at 1 from left to right. Enter the number or numbers of columns you want to hide. Separate each by a comma.
- Hide Count Column - There is a default “Count” column added to the end of the table. Selecting this field will hide that column.
- Selection Type - Select Row or Cell. Cell will underline the field (similar to a URL) that is being used in the drill down selected at the bottom. Row is just a standard view.
- Color Palette Type - Select Row or Cell. This allows a custom color (based on values, regex, ranges or comparisons) to be applied to either the cell or the row.
- Color Palette Option - This allows you to select the specific color to apply, based on the selection above. The color palette is applied based on the calculation set up and applied to the column selected next to that field. (Starts with column 1).

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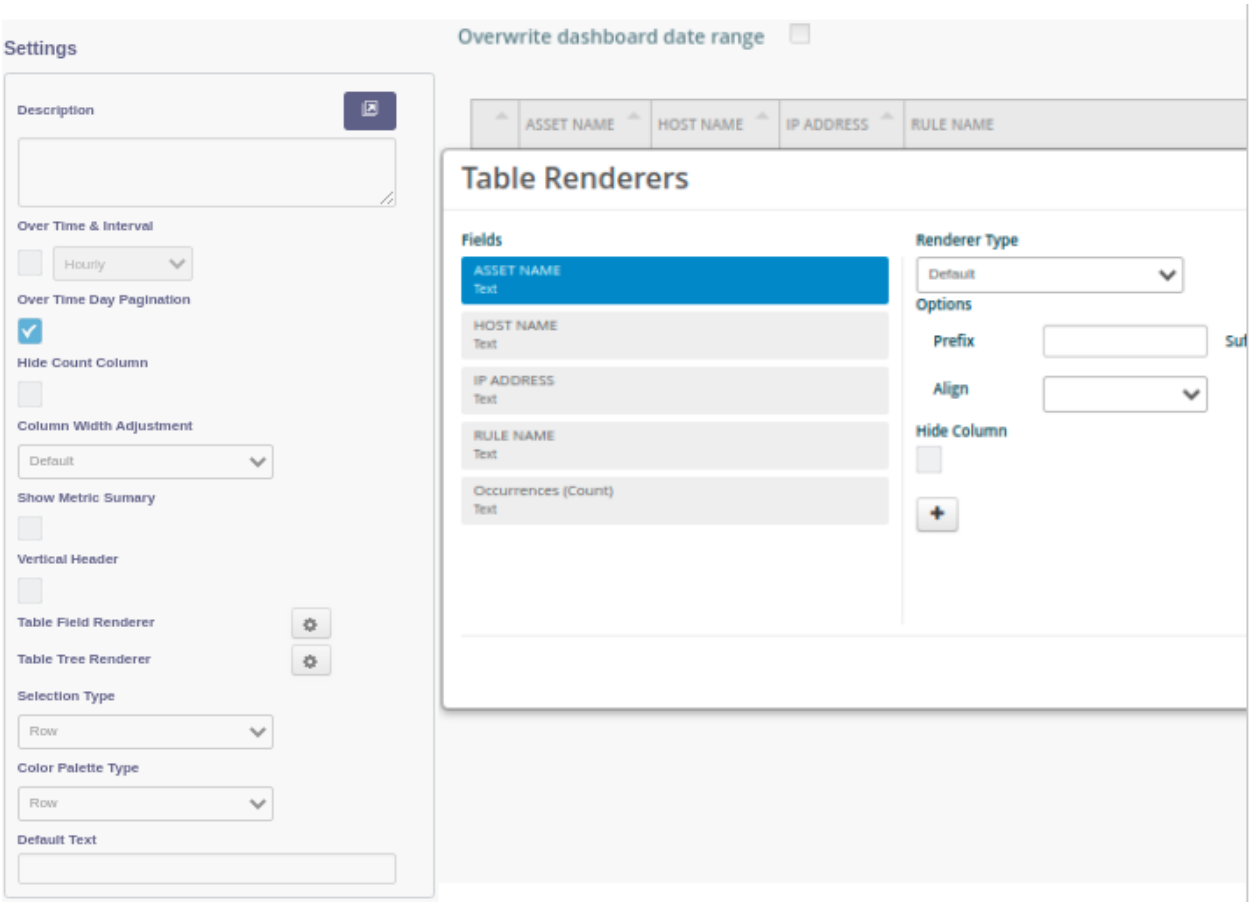
Table 2

Table 2: Icon is indicated by the bottom row arrow).



You have the following choices:

- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Over Time & Interval - By selecting this box the chart will display the data over the specified time and based on the interval toggled within the adjacent box, i.e. Minute, Hour, Daily, Weekly and Monthly.
- Over Time Day Pagination - By selecting this box the table can be viewed page by page over the time interval.

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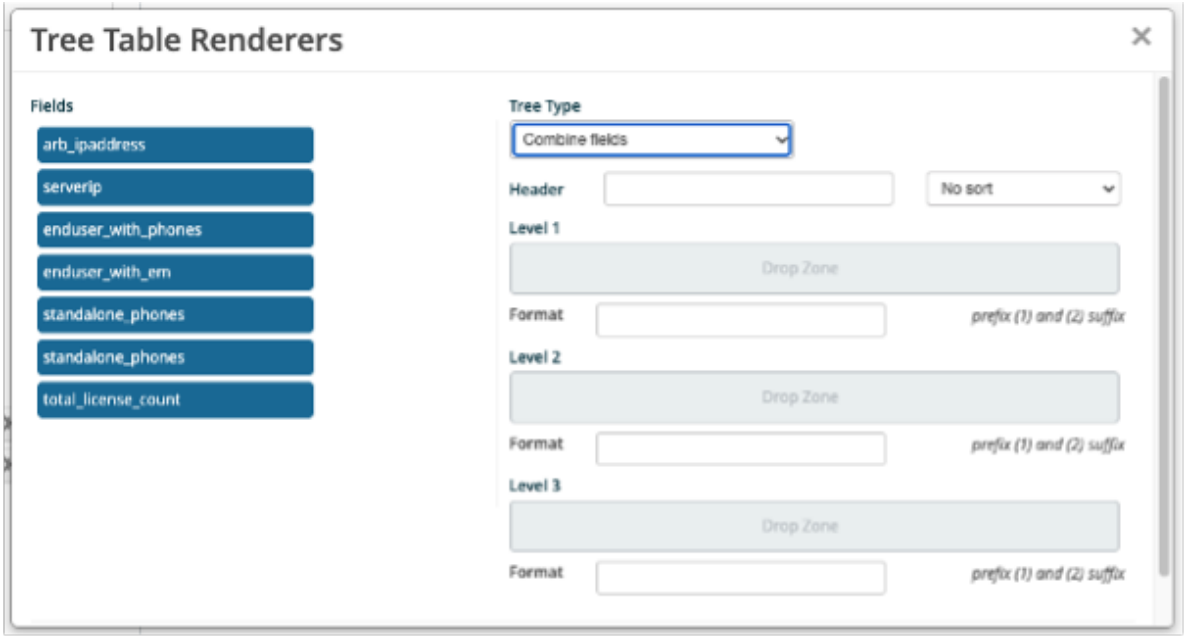
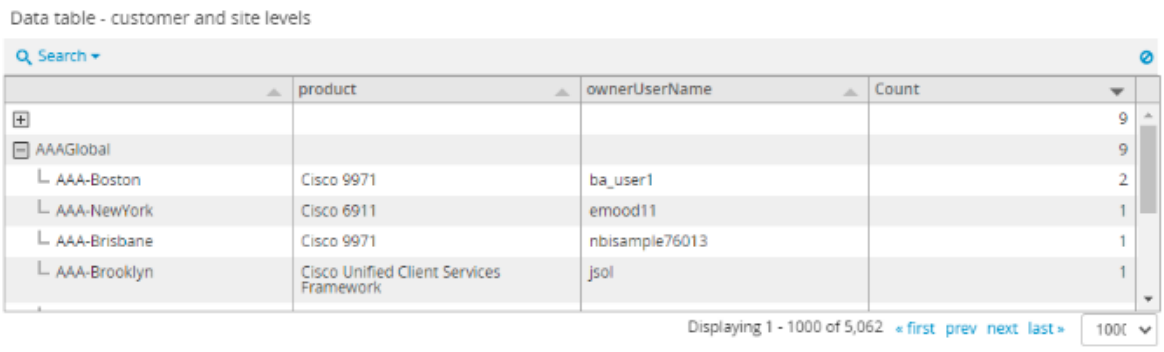
- Tree-Like Table - If this box is selected then each row in the table will an arrow indicator that allows a parent / child relationship within the row. Clicking the arrow opens up the children below. Clicking again displays only the top / parent level.
- Hide Count Column - There is a default “Count” column added to the end of the table. Selecting this field will hide that column.
- Column Width Adjustment - Column widths can fit contents or can be customized.
- Show Metric Summary - Add a summary row to the bottom of the table.
- Vertical Header - Selecting this box will place the text within the header of each column in a vertical position.
- Table Renderers - By clicking the **Edit** button here it opens up a box with several options to design how you want to represent the data in the table. Included with this is the color palette as well. The fields are represented on the left-hand side. There are 4 Renderer types to choose from in that drop-down box:
  - Default - Just as it is present in the table
  - Text - Convert the data to text
  - Traffic Light - This is a colored ball that is driven by the values within the palette
  - Tick Cross - A symbol to represent the data type in the row)

The Tree Table Renderer configuration screen allows you to control how data is grouped per tree table.





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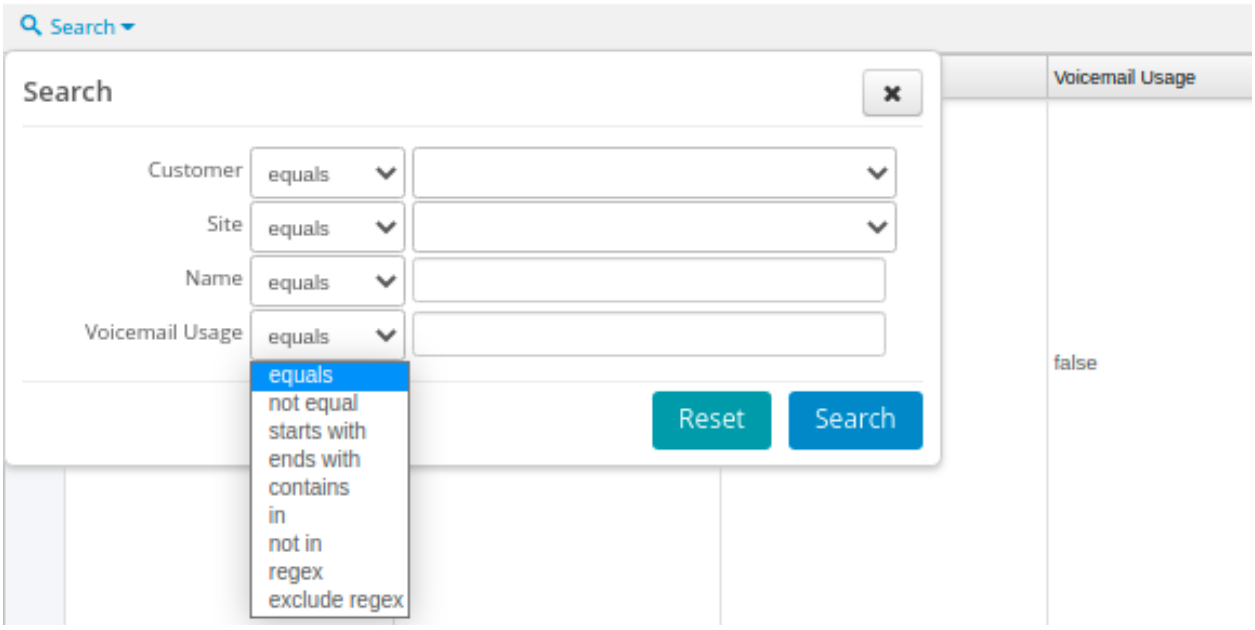
Each selection provides for additional choices that are logically assigned. Additionally, you can choose to put in a custom prefix or suffix for the data. An example is a $ or a metric such as Gbps.

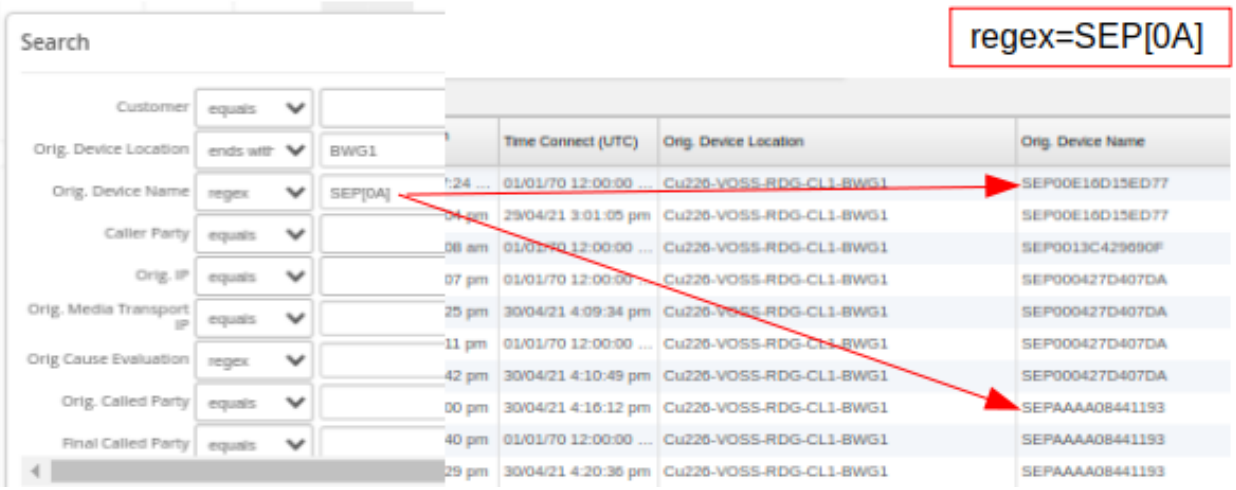
- Selection Type - Select Row or Cell. Cell will underline the field (similar to a URL) that is being used in the drill down selected at the bottom. Row is just a standard view.
- Color Palette Type - Select Row or Cell. This allows a custom color (based on values, regex, ranges or comparisons) to be applied to either the cell or the row.

Search Box

Table charts also show a search box for displayed fields. Values can be searched for by a range of matching operators, including regex.



The example below illustrates the results of a combined “ends with” and regex *SEP[0A]* (contains *SEP* followed by either *0* or *A*):



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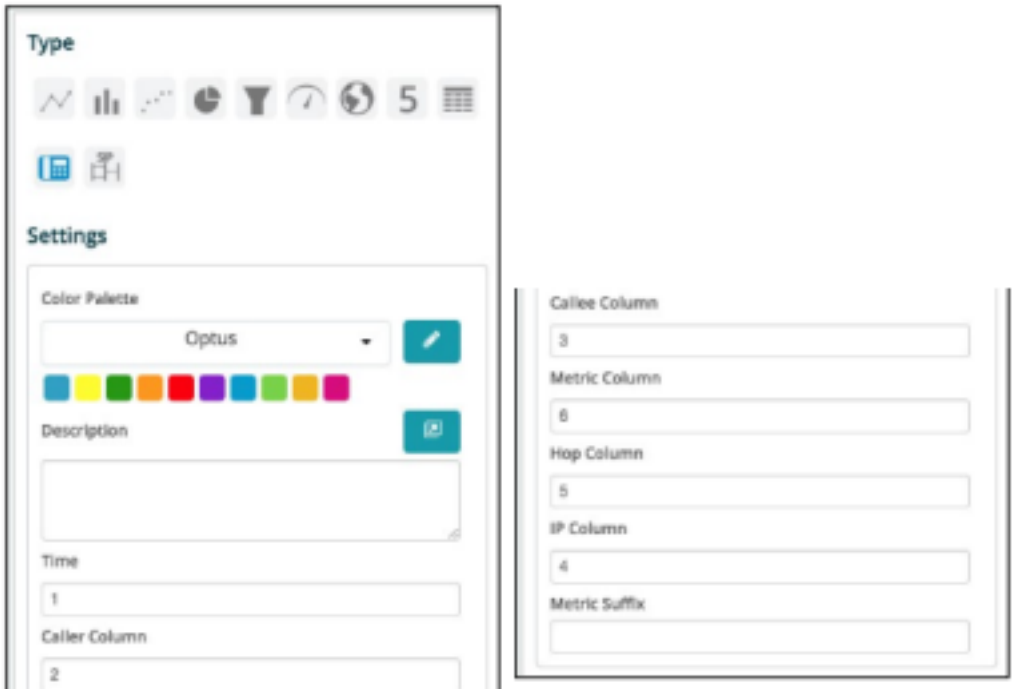
5.2.9. Call Hop Charts

When clicking on the Call Hop Chart the **Settings** options below are adjusted to that particular selection. This chart option creates a view where all the individual hops of the call are visible along with each hop latency.

- Color Palette - The color palette can be utilized to design specific highlight colors based on the amount of latency on each hop. For example: If a hop is over 200ms of latency that value on that hop can be colored red. The color palette is a choice for the user.
- Description - A complete description of what this chart and widget represents can be typed in this box. This description will show up when you click the “i” in the top right corner of the widget.
- Call Displaying Type - There are two choices. Call Hops utilized for Skype for Business and Call Paths utilized for Avaya RTCP.
- The boxes just under the description are auto created based on the fields dragged out on the “Fields” bar. The numbers can be changed to represent the position that each of these fields show in the Call Hop chart. The last box **Metric Suffix** allows you to enter the metric measurement that the latency is presented in, i.e. ms for milliseconds.



5.2.10. SIP Signaling Ladder Diagram Charts

This chart is a specialty chart utilized only when you are collecting SIP signaling data from pcap files or from the LX Raptor. Select the specific data type from the drop-down menu under **Data Type**.

A full description of the chart content can be placed in the box under **Description**.

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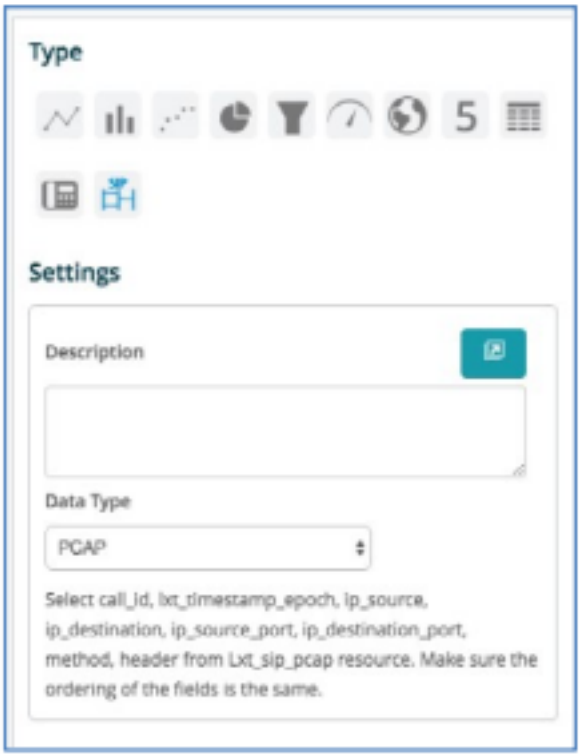

5.2.11. Multi Chart

When clicking on the Multi Chart the **Settings** options below are adjusted to that particular selection. You have the following choices:

- Color Palette - This defines the colors to associate with data values, the columns/bars plus allows you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Combination Chart Type - There are 3 choices to choose from.
  - Single Y-Axis Title - This places the data on a single axis.
  - Multi Y-Axis Titles - The titles and the data are represented across the Y Axis individually
  - Individual Charts - Each data point is graphed across the chart individually.
- Over Time & Interval - By selecting this box the chart will display the data over the specified time and based on the interval toggled within the adjacent box, i.e. Minute, Hour, Daily, Weekly and Monthly.
- Dimensions - This allows the dimension to be displayed with the metric on the chart label if applicable.

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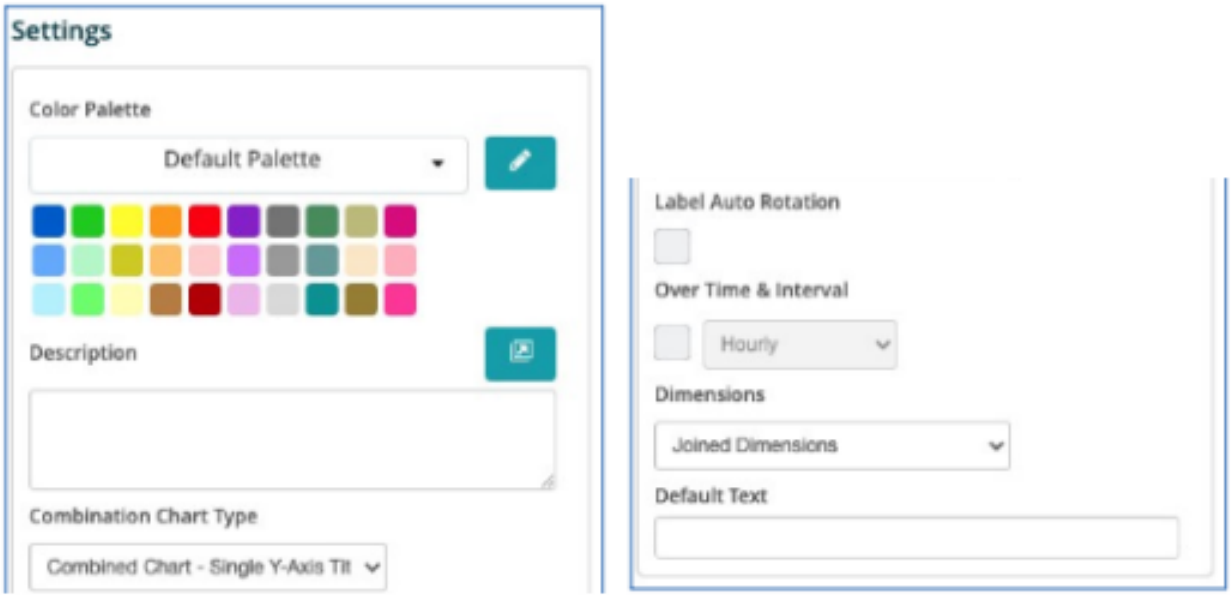

5.2.12. Chord Diagram

A chord diagram displays the inter-relationships between data in a matrix. Configure the first field (to) as a dimension, the second field (From) as a dimension and the third field (Weight) as a metric.

When clicking on the Chord Diagram the **Settings** options below are adjusted to that particular selection. You have the following choices:

- Color Palette - This defines the colors to associate with data values, the columns/bars plus allows you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Contrast Label - Select this to provide better contrast on the font. Usually utilized with dark mode in the browser.
- Label Font Size - Input the font size.
- Chord Diagram Type - The two choices are Sankey, which shows the relationship horizontally or Dependency Wheel, which connects the relationship in a wheel design.

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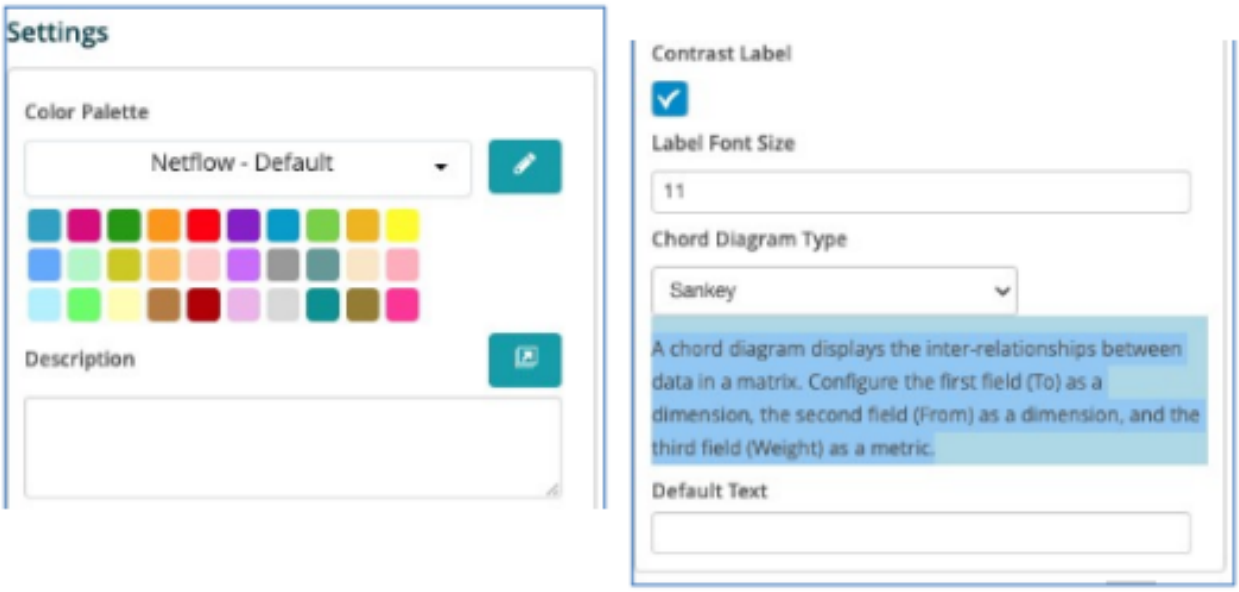

5.2.13. Combo Chart

A combo chart allows you to combine multiple metrics with a dimension to be displayed on the chart.

When clicking on the Combo Chart the **Settings** options below are adjusted to that particular selection. You have the following choices:

- Color Palette - This defines the colors to associate with data values, the columns/bars plus allows you to save that palette for use with additional widgets. See the options on how to define the palette below. (*Color Palette Changes*)
- Description - Allows you to enter a description of the chart to be displayed along the top portion of the chart.
- Over Time & Interval - By selecting this box the chart will display the data over the specified time and based on the interval toggled within the adjacent box, i.e. Minute, Hour, Daily, Weekly and Monthly).
- Show Labels - By selecting this box then each value that defines the chart will be labeled on the chart.
- Show Data Table - Selecting this will display data in a table below the chart.
- Contrast Label - Select this to provide better contrast on the font. Usually utilized with dark mode in the browser.
- Chart Type - The choices are Line, Spline, Column, Bar, Area or Areaspline. Select what works best to represent the data on the chart.

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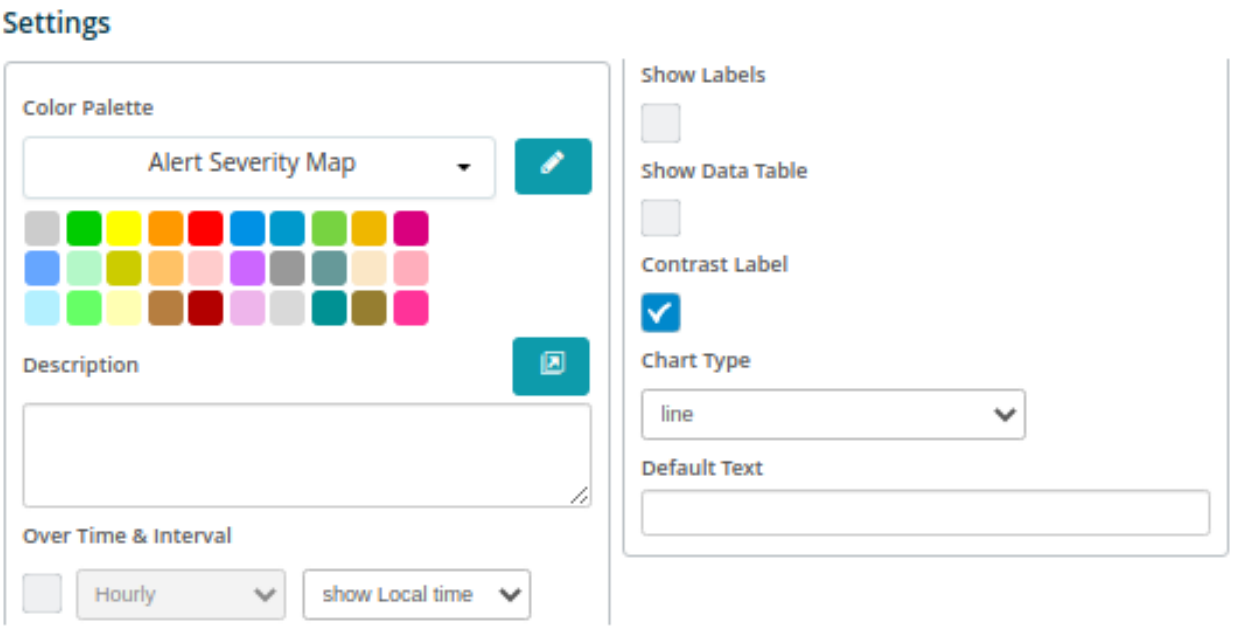

5.3. Chart Tasks

5.3.1. Color Palette Changes

Click the **Edit** button next to the Color Palette name and a box is displayed allowing the color palette to be changed.

Select the color to represent each data elements/values extracted from the log field definitions. Name the choices and click **Save**. Now you can simply select this name in the Color Palette drop-down box. The associated chart will apply the colors based on the selected Color Palette name.

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5.3.2. Build Chart in Widget Editor

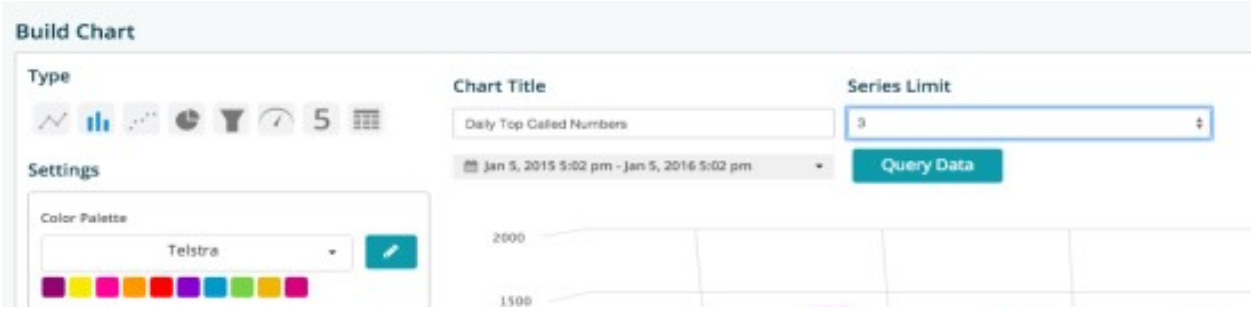

Chart Title

Once you have finished designing your widget you can give it a title. In the text box below Chart Title, enter the specific name you want to represent the data in the Widget. This name will be at the top of the widget on the dashboard.

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Series Limit

Next select the number of data points that need to be reflected in the chart.

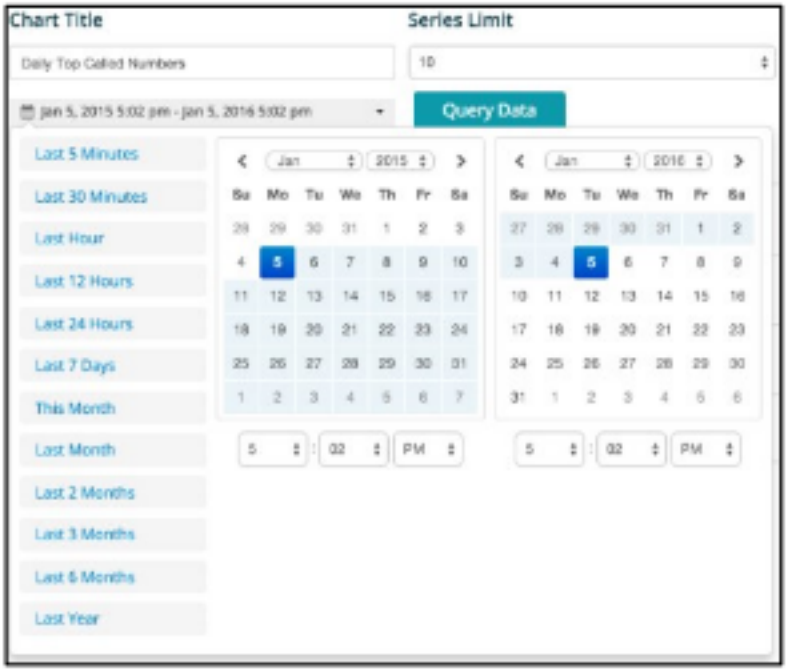
This is an upper limit thus the chart will not reflect more than selected here.

Timeframe

Next select the time frame by clicking on the data box just below the Chart Title.

A box will pop up showing a preset list of time frames.

If desired select one of these, i.e. This Month, otherwise a custom date and time frame can be selected by choosing the day/month/year/time in the left hand **from** calendar and the same in the right hand **to** calendar.



Query Data

By clicking this button the system will query the data based on your inputs and return a chart to inspect.

The chart will auto update its preview chart upon any field changes.

Save Widget

The **Save Widget** button is located in the top-right corner of the screen.

Make sure that you click this button before exiting the widget editor. If you don't click this button, changes will not be saved.

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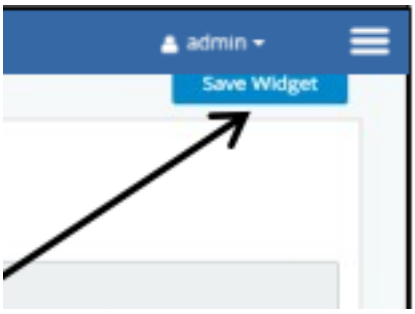
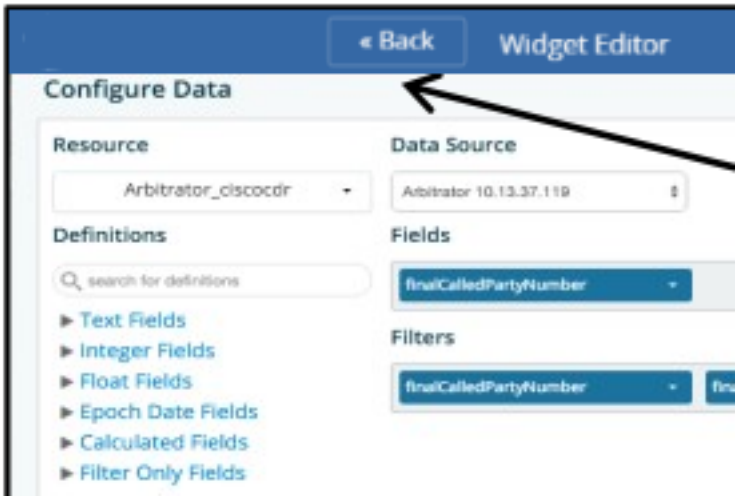


Back

The **Back** button is located in the top-left corner of the screen. Clicking this button returns you to the dashboard associated with that widget.



5.3.3. Drilling down into the Data

Drilldown Options

After you have your widgets and data sources defined you will find an option at the bottom of the Widget Editor screen that will allow for drilling into the data elements within your dashboard. This enables rapid viewing of data associated with certain elements and enables consolidated workflow through the data analysis.

If the selected data elements for your widget allow for drilldown then they will automatically appear in the **Select Drilldown Fields** bar.

Check the check box next to the field that you want to utilize as the basis of drilling into the data. An example could be an interface address on a router to see all data associated with that interface. Next select the type of drilldown behavior you want for this widget.

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- Selecting **None** disables drilldown functions for this widget.
- Selecting **Filter Other Widgets** causes all of the other widgets on the dashboard to recalculate based on the selected field/data element checked in the bar to the side. This will allow a field such as an IP address in a table to be selected within the widget and all of the other analytic widgets on the dashboard will recalculate to only show the data associated with that IP address.
- Selecting **Search Index** enables the automatic launching of the Index data search screen. Populating it with the exact text selected within the widget and then setting the date range in the search return based on what is defined in the dashboard, pulls up all the logs that match that text string. This is a very rapid way of searching for all logs based on certain analysis observed within a dashboard widget.
- Selecting **Link to Another Dashboard** opens up a tree of all the dashboards defined within the system. Select the dashboard to which you want to link the drilldown function. You can also select to edit this dashboard prior to the linking. This function allows the flexibility of defining dashboard for certain analysis and linking to them from an overview type of dashboard. The example is an overall dashboard of multiple customers with a drilldown to a specific customer dashboard enabled by selecting that customer identifier within the widget.
- Selecting **Launch Third-Party URL** and entering the URL for the selected page to launch in the **URL** text box, will tie that URL to the data fields within the widget on the dashboard. This is a very quick analytic drilldown into more detail about certain elements and behaviors within the dashboard. An example is to tie a Malware definition website to malware behaviors observed from firewall log data.

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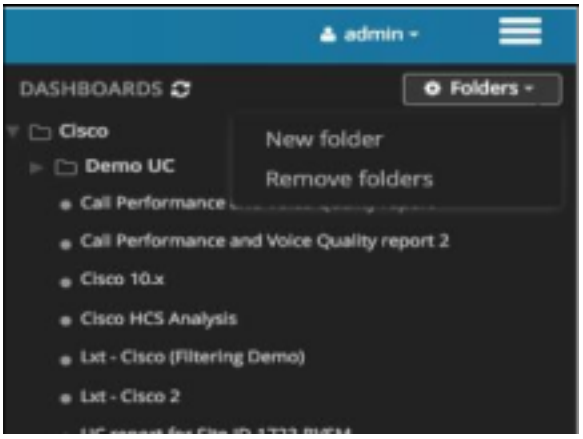
6. Dashboard Menu Tasks

6.1. Dashboard Menu Options

6.1.1. Folders

The dashboards are organized initially in alphabetical order. You can create folders by clicking the Folders drop-down in the top-left corner and then choosing either the New sub folder or New top level folder option. Then simply drag and drop the sub folders into the desired top level folders.

You can remove a folder by clicking on it, and selecting the Remove folder option from the same menu.



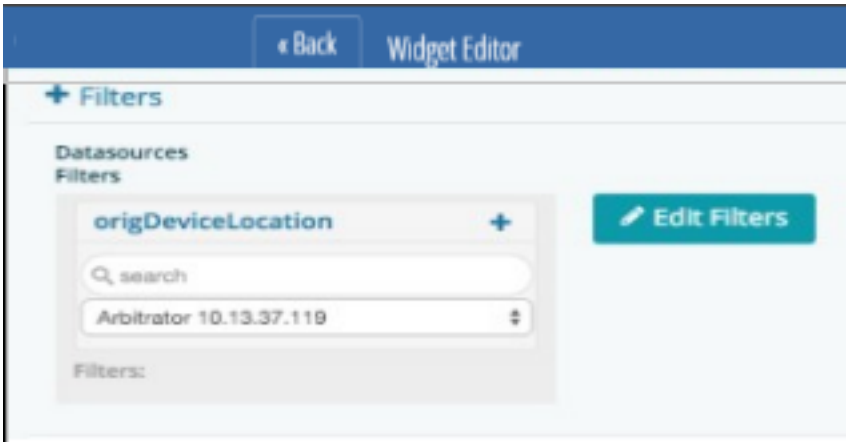
6.1.2. Create a New Dashboard (from the menu)

The blue circle with a plus (+) sign at the bottom-right of the menu will allow you to create a new dashboard on the main menu screen.

This will take you to the Dashboard Editor screen. Note that Resource Definitions and Widgets will need to be created.

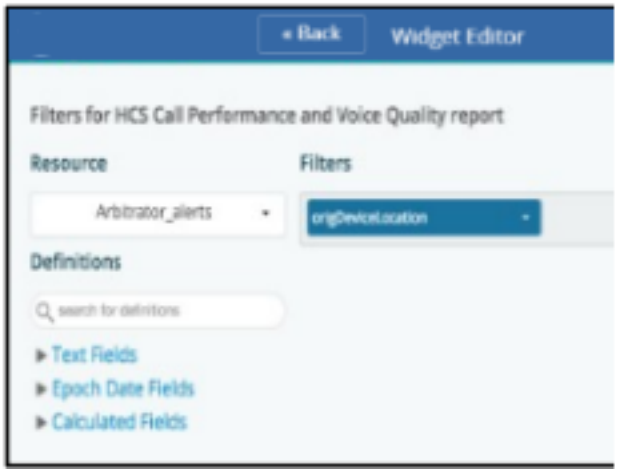
6.1.3. Global Filtering

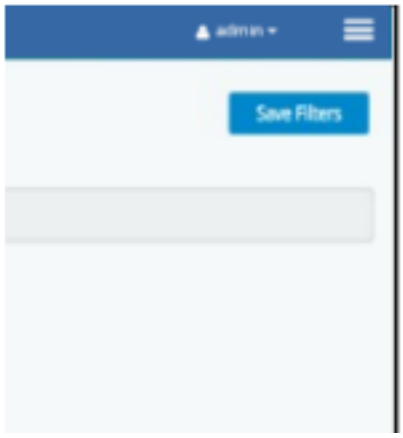
Located in the top-left corner of the dashboard view is a button (+ Global Filters) to add global filters to the dashboard. Click on this button and a box opens that allows you to add a filter based on a data element extracted from a Search Definition and Resource.



Simply click **Edit Filters** and a Filter Wizard box is displayed. Here, you can select the Resource and the Definition to apply as a filter. Once complete click **Save Filters** to return to the dashboard.

An example of a global filter is producing a performance dashboard by customer location. The widgets on the dashboard are all the performance statistics but the data is filtered by the customer location.





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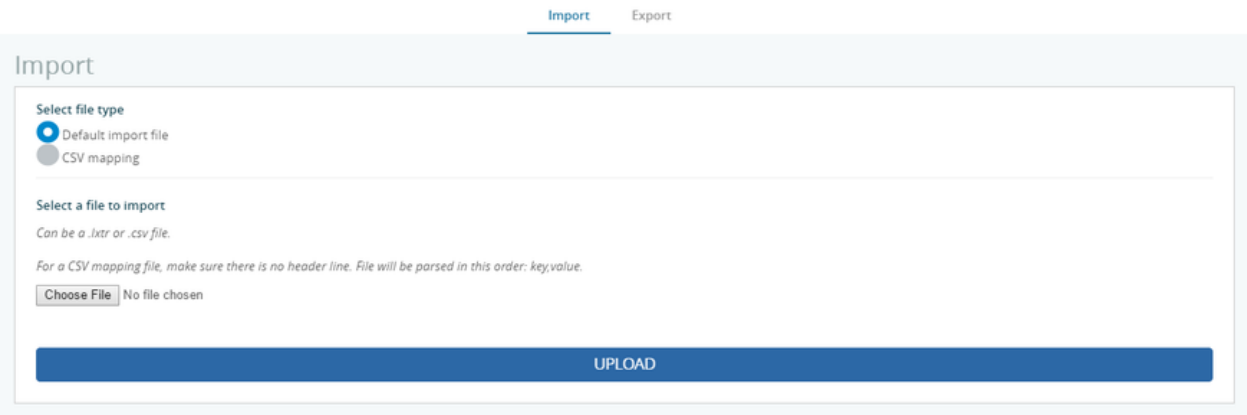
7. Administration

7.1. Import/Export Wizard

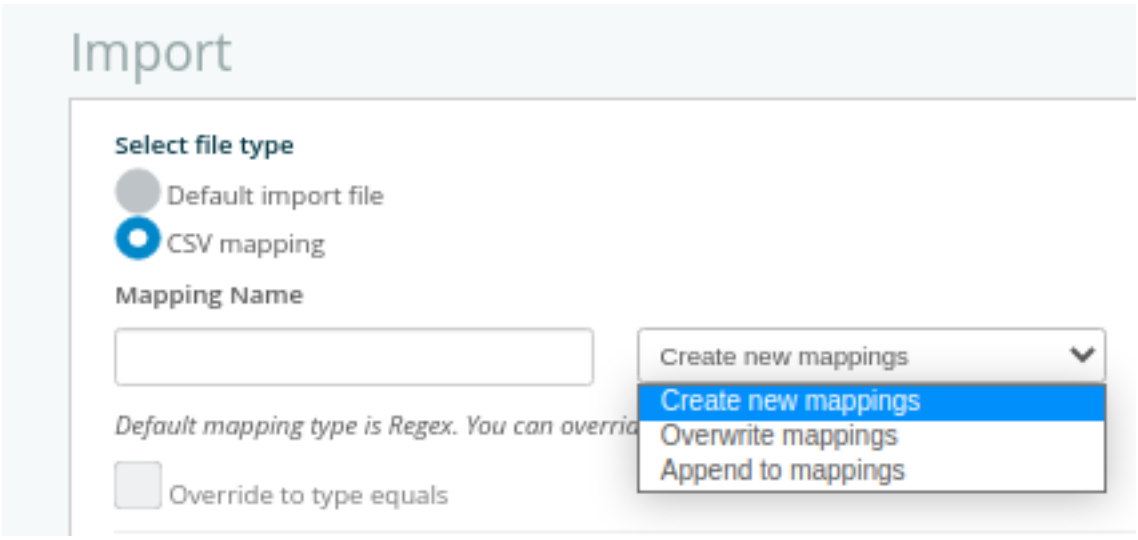
Click the Admin drop-down and select the Import/Export Wizard option

This function allows for dashboard templates to be saved and moved between systems. Click on this option and a window opens showing two options (Import and Export):



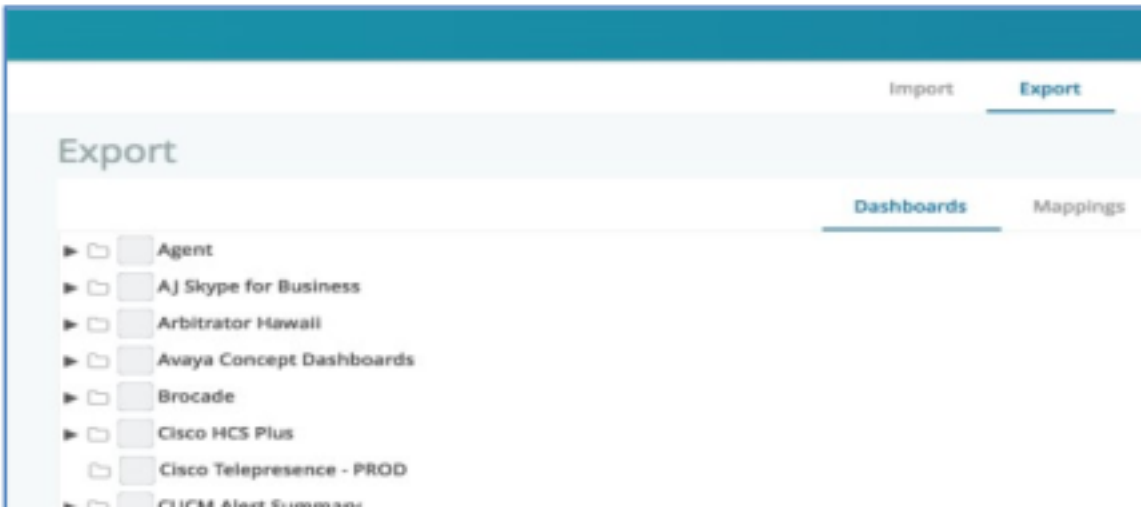
- **Import**: This allows you to select a saved template and import it into your system. The saved files are in a proprietary format (`.lxtr`).

  With a **CSV Mapping** import, options are available to create, overwrite or append the new mappings.



Click **Choose File**, select the required file and click **Upload**. The dashboard template will be imported into the system where you can modify, customize and arrange it as needed.

- **Export**: This allows you to select a dashboard template on your system and export it to another system. Click **Export** to open a window showing all of your dashboards as well as a 'drop zone'. Drag and drop the dashboards you wish to export and click **Export** when complete. The `.lxtr` file will be saved to your local computer.



7.2. Manage Dashboards

When user log in, the dashboards available to them is displayed from the main menu . This tree and list of dashboards can be managed by an administrator.

Click the **Admin** drop-down menu and select the **Manage Dashboards** option. This opens up another window with:

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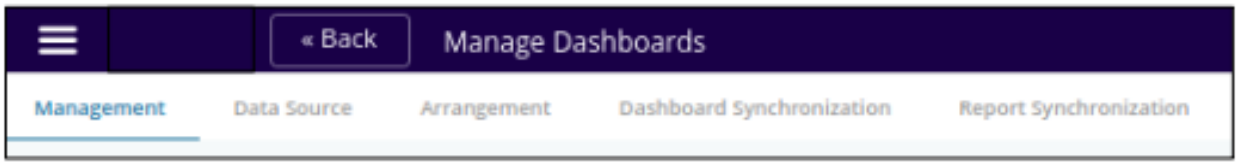


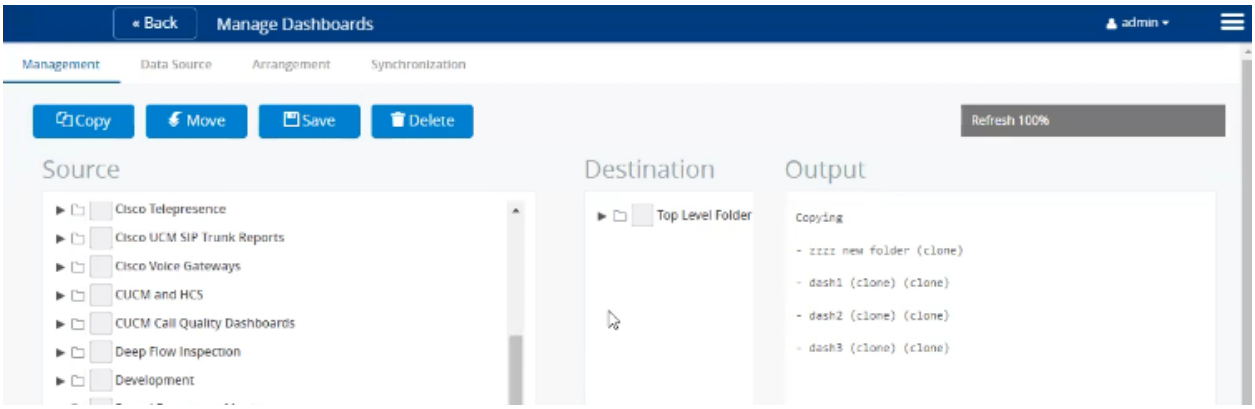
7.2.1. The Management tab

Three columns:

- **Source**: a tree of all the dashboards defined in the system along with all the user accounts defined in the system. This column shows available dashboard screens.
- **Destination**: the top level and sub folders the dashboards will be copied or moved to.
- **Output**: shows the output of the command used, for example, if **Copy** was used, the heading `Copying` will be shown, followed by the list of copied items.

Select items from **Source** and use **Copy**, **Move** or **Delete** to carry out tasks on the selection. When copying, duplicate dashboards will be cloned: the text “(clone)” will be appended to the dashboard name.

Click **Save** to save the dashboards.



7.2.2. The Data Source tab

Showing dropdowns **Data source types**, **Data sources** and three columns:

- **Dashboard**: select elements from the tree to carry out the bulk update of data sources.
- **Widget**: displays the current data sources of the selection
- **Changes**: according to the selected values in the **Data source types**, **Data sources**, shows updates to be made to the data sources of the selected elements.

Click **Save** to save the dashboards.

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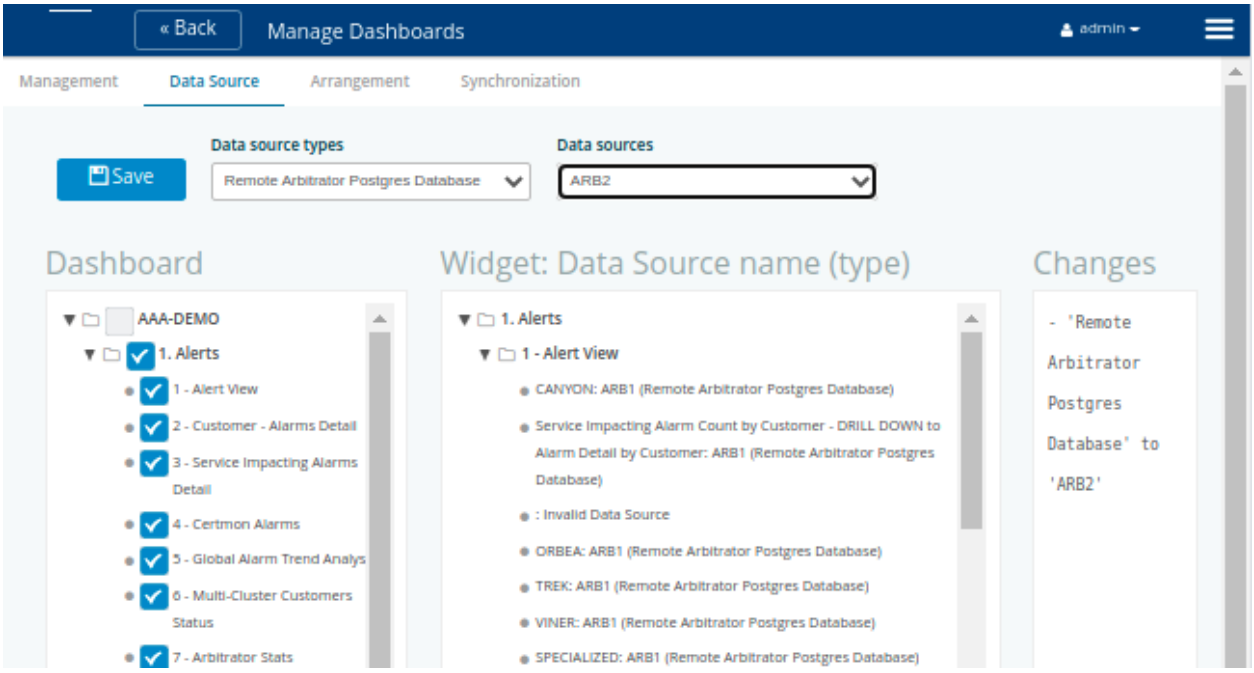

7.2.3. The Arrangement tab

Three columns:

- **Source**: a tree of all the dashboards defined in the system along with all the user accounts defined in the system. This column shows available dashboard screens.

  To arrange, select dashboard folder. It will then show up in the **List** column.
- **List**: this column will allow you to arrange the order of items, using drag-and-drop.
- **Changes**: shows the output of the arrangement.

Click **Save** to save the arrangement.

7.2.4. The Dashboard Synchronization tab

Shows **Sync**, **Copy** and **Overwrite** buttons as well as three columns:

- Users: select a user to sync selected dashboards with
- **Dashboards**: user associated dashboards are selected. Select or un-select manually.
- **Preview**: output of selection

Carry out the **Sync**, **Copy** and **Overwrite**.

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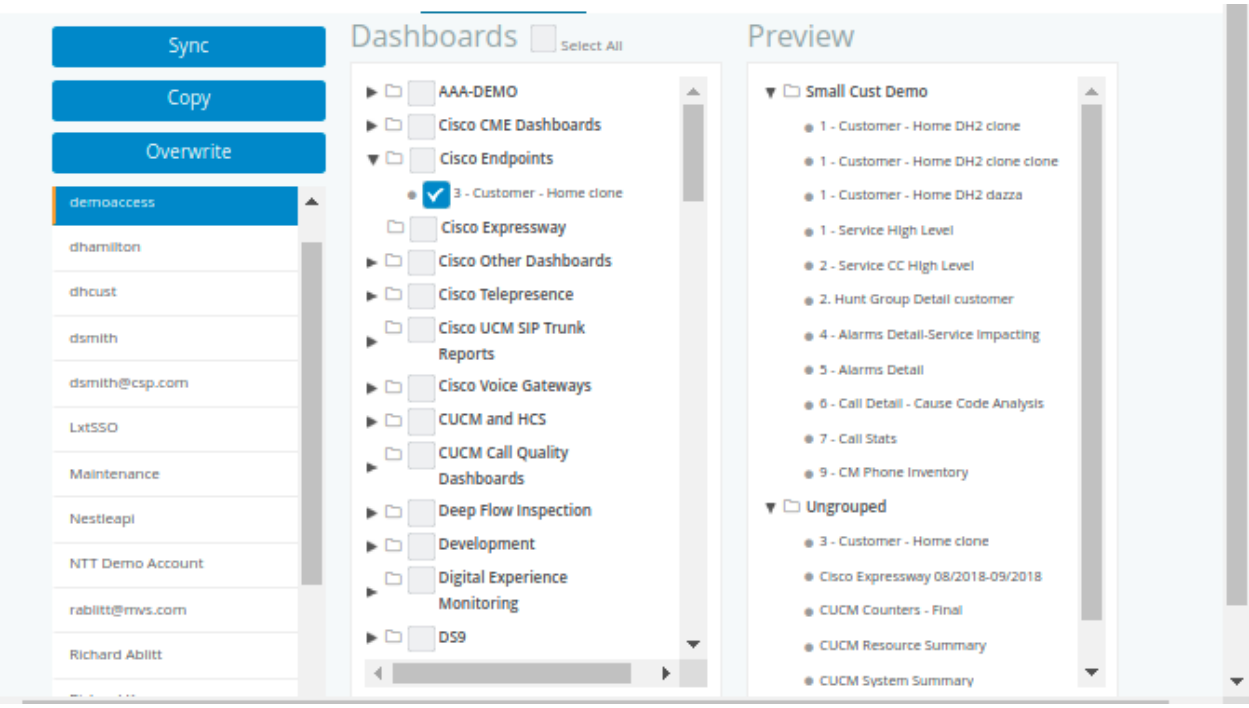

7.2.5. The Report Synchronization tab

Reports created by the logged in user can be shared with any users. A scheduled report that is synced therefore does not have to be recreated by the target user. Target users can also delete synced report themselves if necessary.

Showing a **Sync Reports** button. The left **Dashboards** column shows available reports that can be synced. Use the check box to sync. The **Preview** column shows the target user's reports and any synced reports

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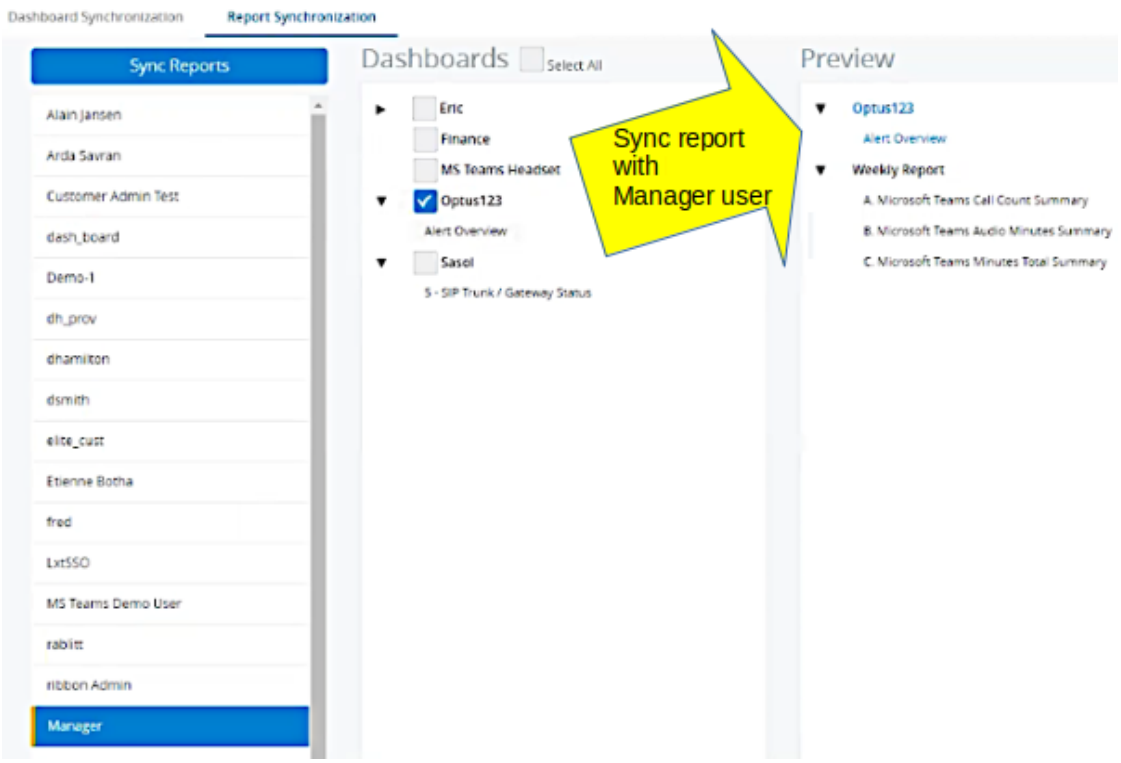

7.3. Edit Field Groupings

Click the **Admin** drop-down menu and select the **Edit Field Groupings** option. This function will pull up another window where you will be able to define and label similar groups of data that will provide for common analysis and drill down functions on a single dashboard.

An example is the device IP address from three different data resources such as SNMP Query Stats, API Calls and Log Data. This will allow all of the drilldown functions defined in a widget to recalculate the data associated with these multiple data sources on a single dashboard.

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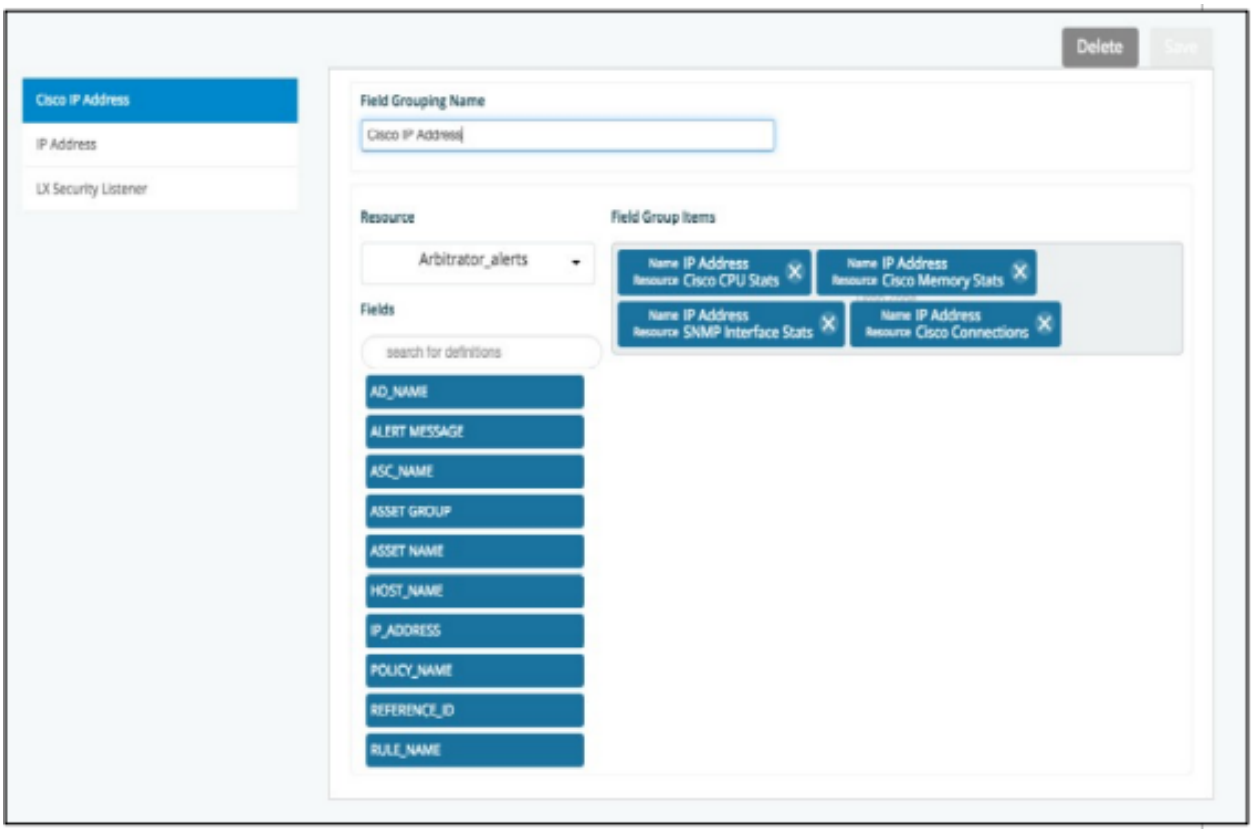
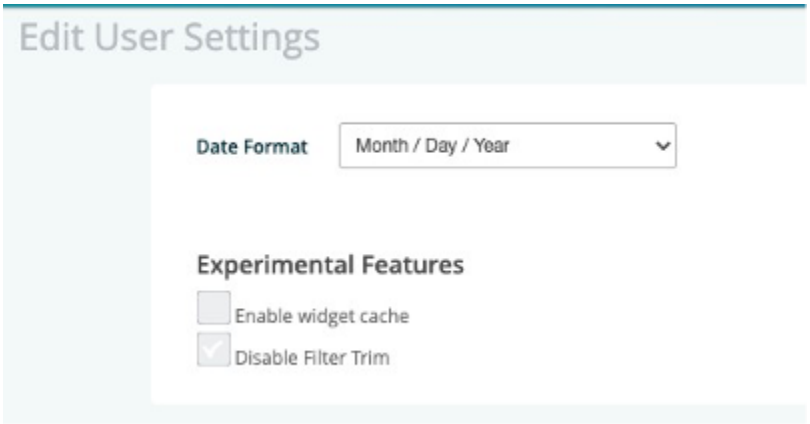


7.4. User Settings

Click the Admin drop-down menu and select the User Settings option. This function is primarily intended for international date representations on dashboard and reporting output. Other user specific settings will be added to this section in the future.

Experimental Settings are also available under **User Settings**.



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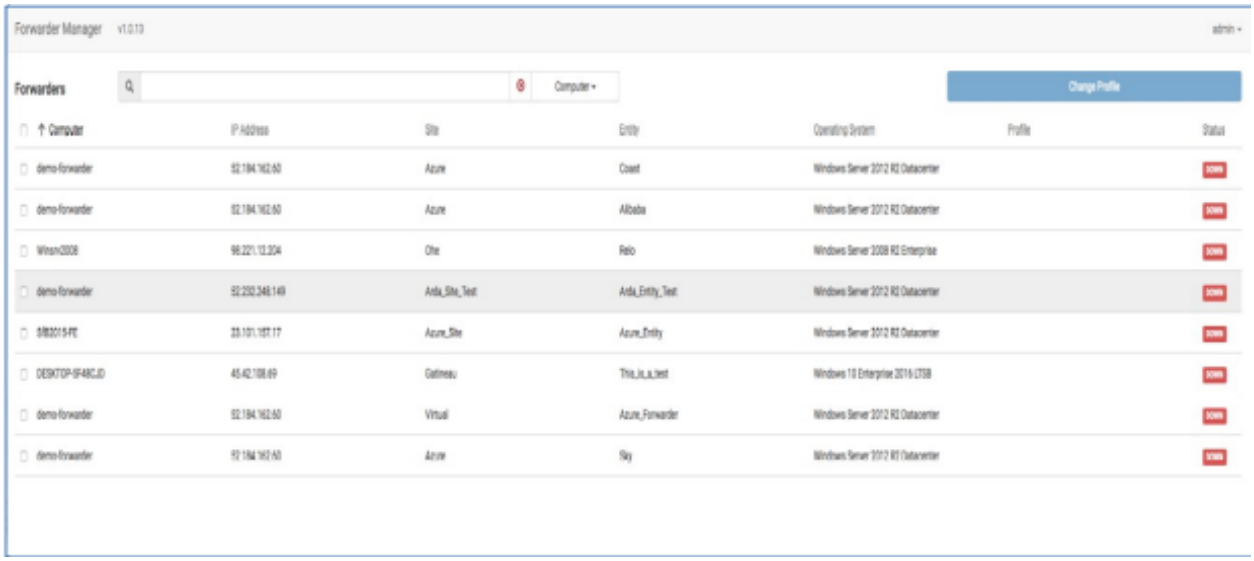
7.5. Manage Forwarders

Forwarders are individual Windows applications that load on Windows based servers to allow for the definition, monitoring and extraction of data from the server, the Windows Operating System and the resident applications.

This section provides for a centralized method of acquiring status and changing configuration profiles on each Forwarder deployed. The Forwarder is scheduled to check into this dashboard host on a regular interval. If there is a new profile loaded, then it will update itself automatically.



7.6. Configuration

The Configuration screen provides several options to configure and administer functions of the Dashboard/Reporting application.

7.6.1. Archive

The system does a backup daily. For the most part, there is nothing for the user to configure. All data and configurations that exists on the system are archived automatically on a daily basis. Archived data are logically grouped together and by default stored into separate archived files locally on the box. There is a separate page for each Archive group. More detailed information about each Archive group can be found on the individual Archive group pages. The user also has the option to mount an NFS drive to the system. All archived files will then get archived to the NFS mounted drive. Note: removing the NFS mount will NOT copy the NFS contents back to local storage. Only NFS v3 mounts are currently supported today.

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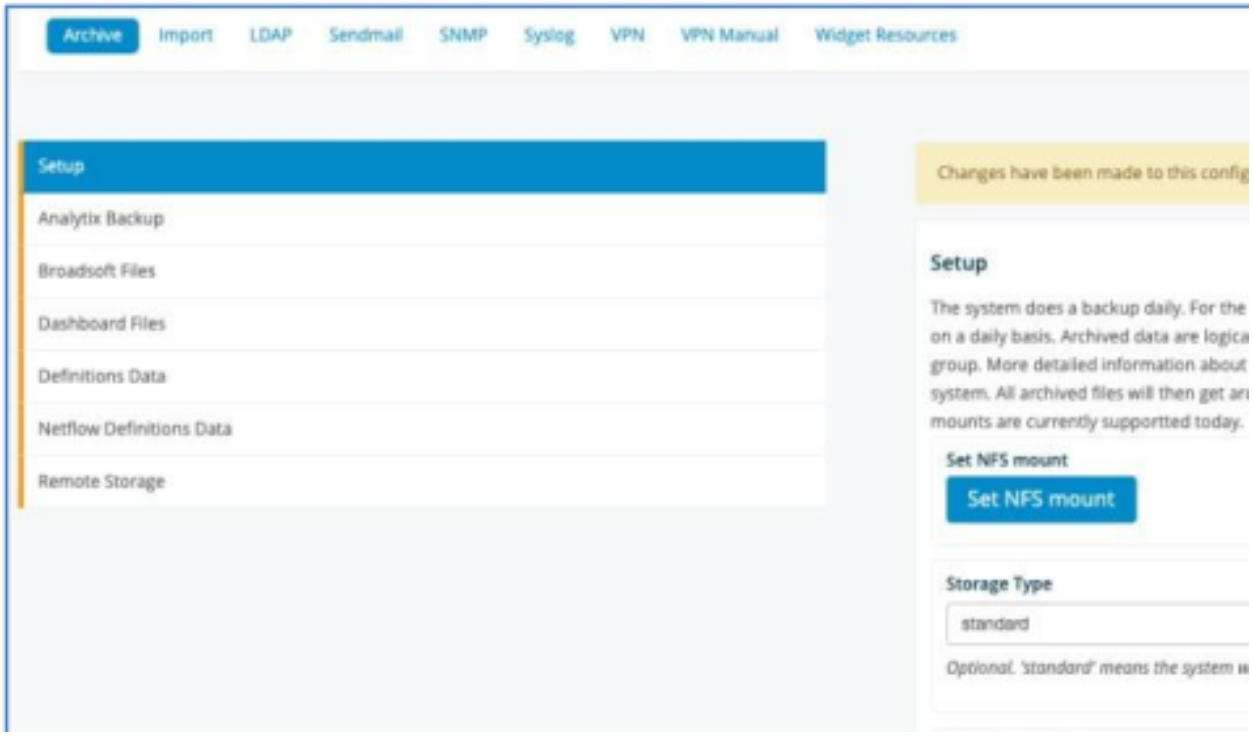
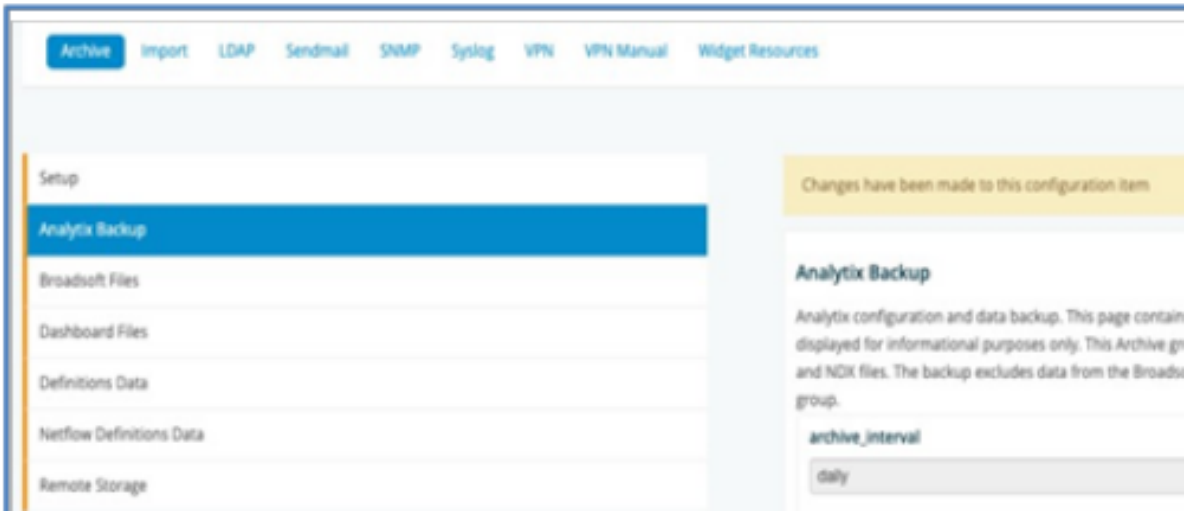


- **VOSS Insights Backup**: This page contains the settings for the backup of the entire VOSS VOSS Insights Dashboard / Reporting system. There is nothing to edit here. The settings are simply displayed for informational purposes only. This Archive group contains the following data: VOSS VOSS Insights Configuration settings (Assets, Licensing), User Permissions settings (LDAP), and NDX files. The backup excludes data from the specific Broadsoft data store, along with definition data and files. Broadsoft definitions and definition files each have their own separate Archive group.



- **Broadsoft Files**: This section is the archival for specific Broadsoft files. This Archive group will back-up all Broadsoft raw files. These are the files that the system collects from the SFTP server and / or Broadsoft switch. The settings here are for informational purposes only. However, the user may disable the storage of the raw Broadsoft files on the system. This option should be used to conserve disk space.

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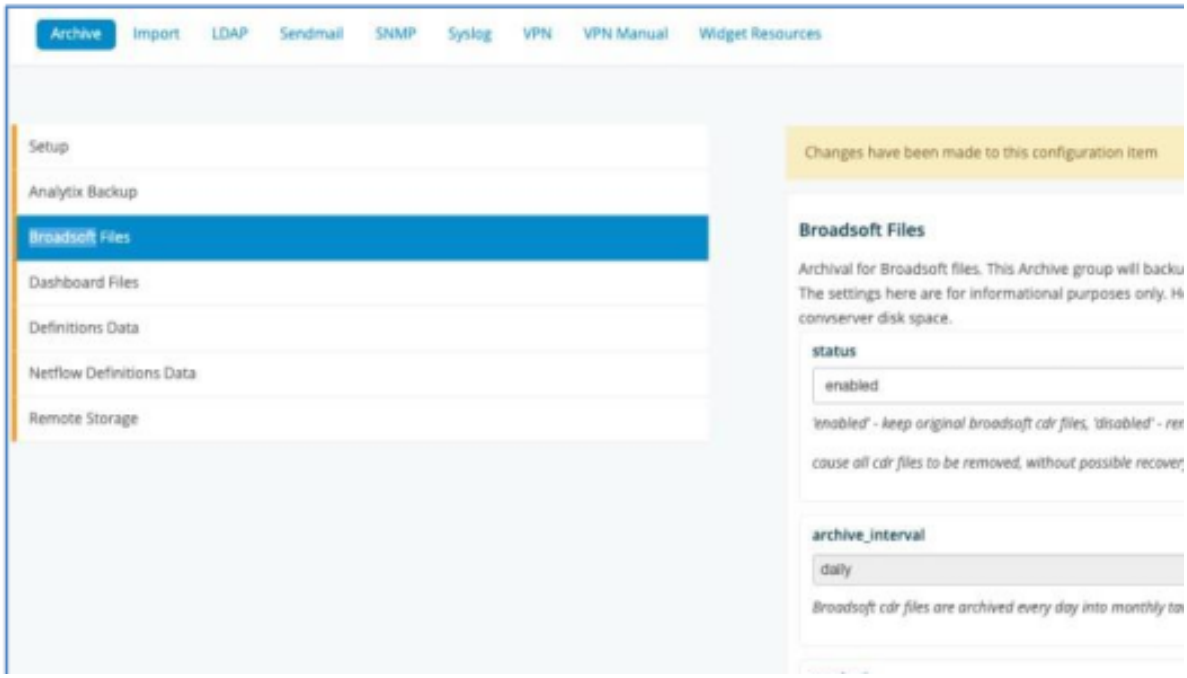
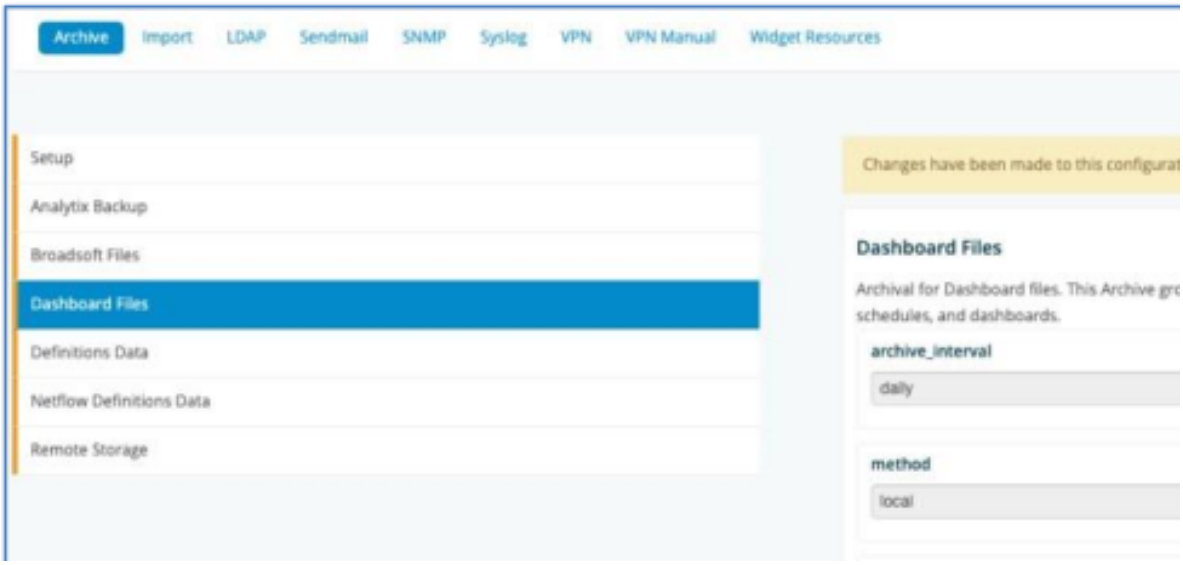


- **Dashboard Files**: This Archive group will archive all Dashboard settings. This includes all user created definition files, mappings, color palettes, user configs, schedules, and dashboards.



- **Definitions Data**: This Archive group will back-up all User Search Definitions data in the database tables. This is the data that drives the widgets. There is nothing to edit here. The settings here are for information purposes only.

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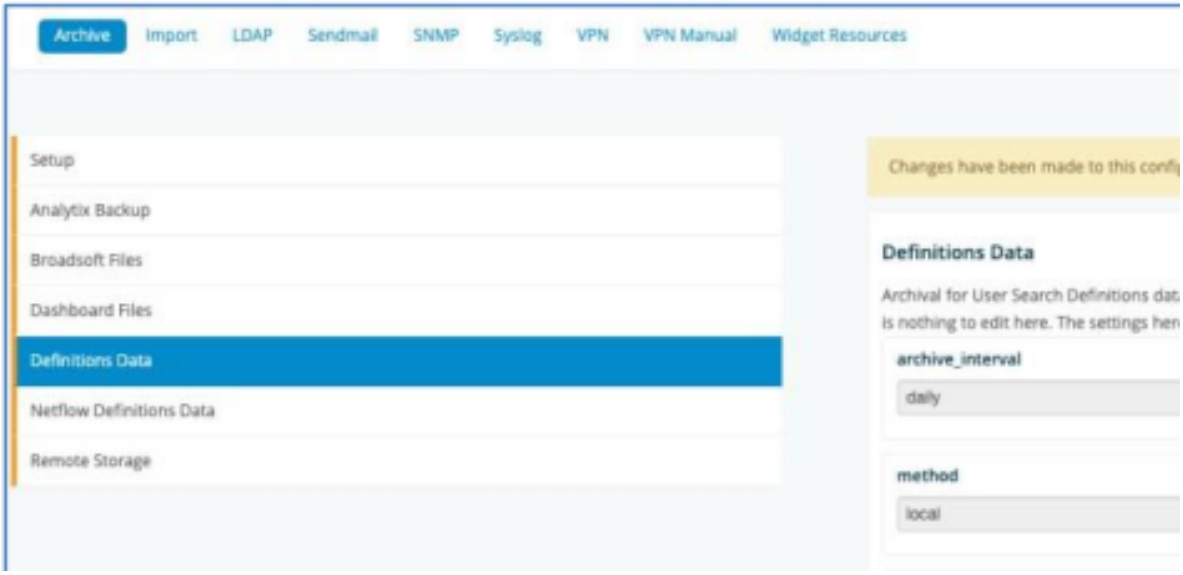
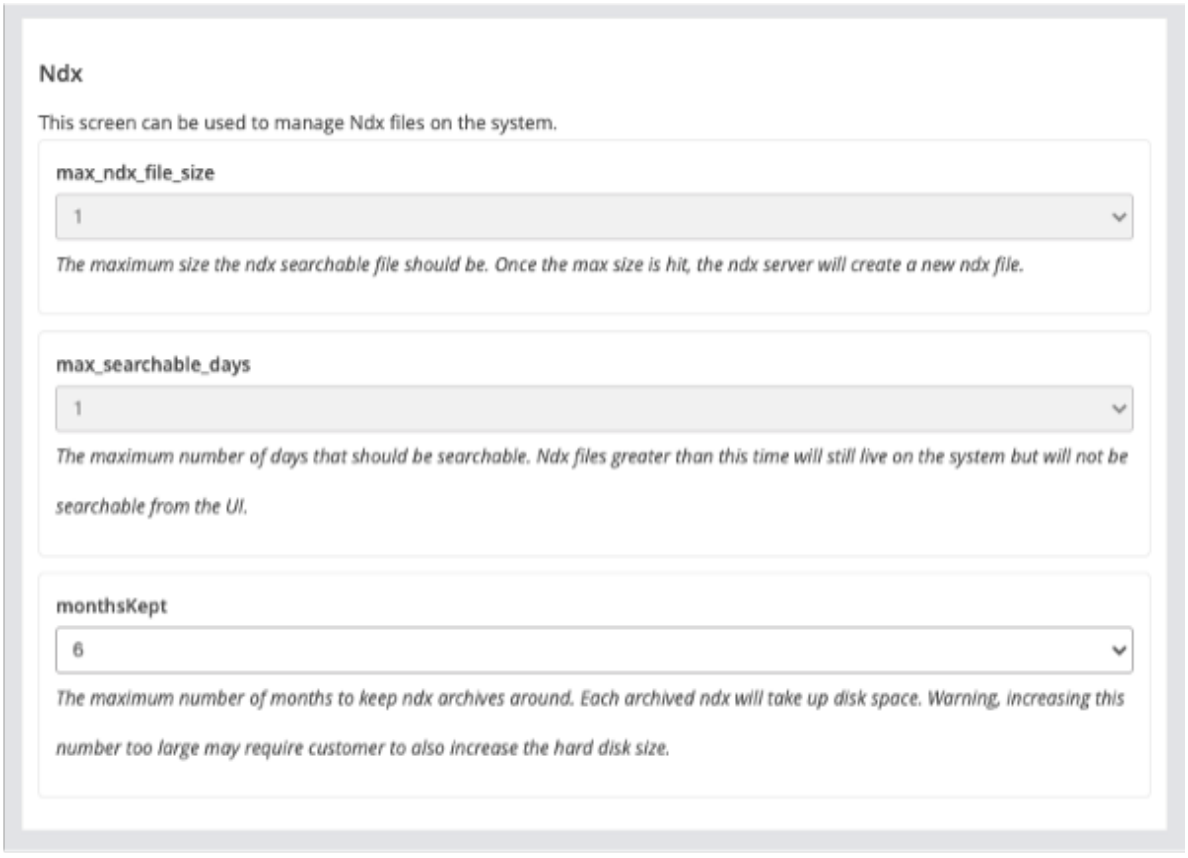


- **Ndx**: This Archive group will manage Ndx files on the system. Default **monthsKept** is 6 months.



- **Netflow Definitions Data**: This Archive group will back-up all Netflow Definitions data. This is the data that drives the widgets. There is nothing to edit here. The settings here are for information purposes only.

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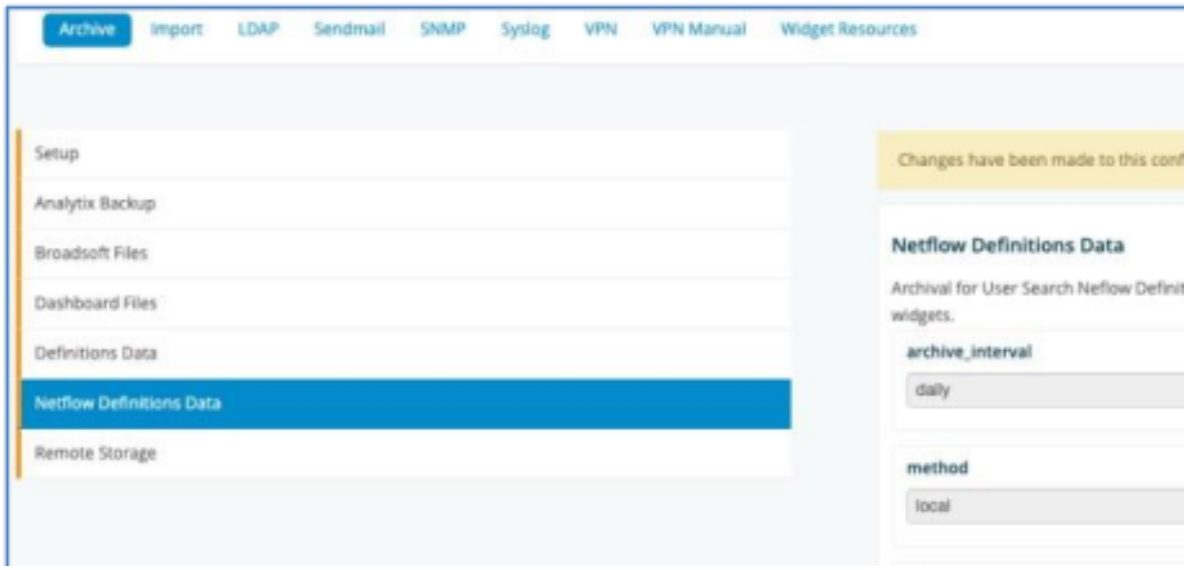
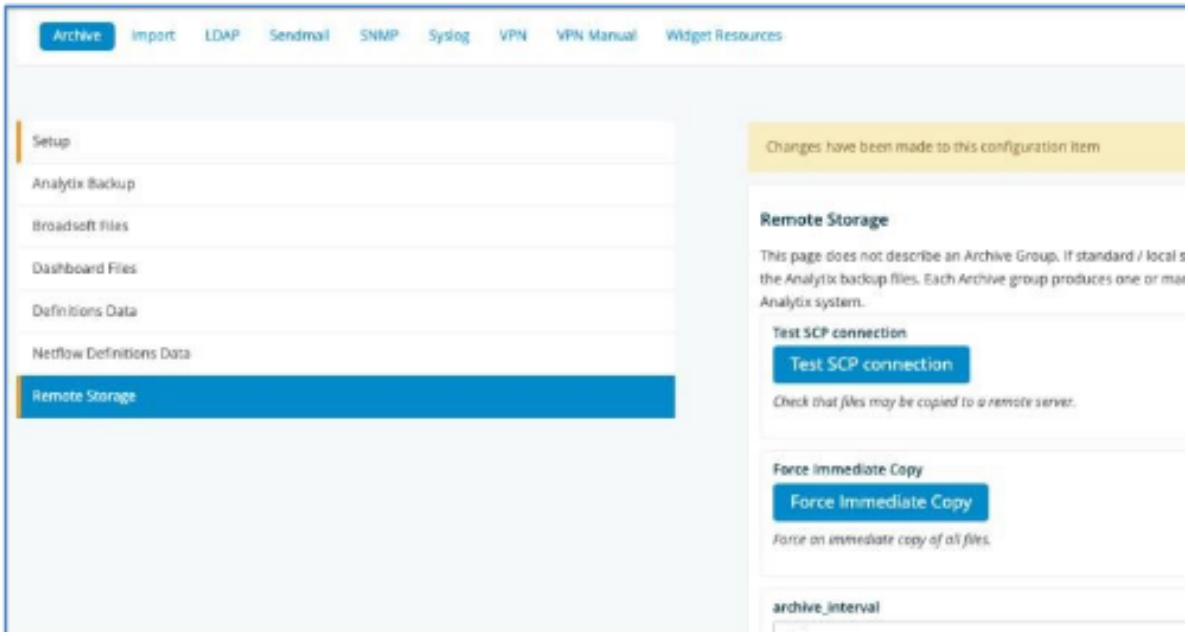


- **Remote Storage**: This page does not describe an Archive Group. If standard / local storage is chosen in the Archive Setup page, then this screen allows the user to configure remote archival of the VOSS Insights back-up files. Each Archive group produces one or many archive files. The system can be configured to scp these archive files to a backup location or to another VOSS Insights system.



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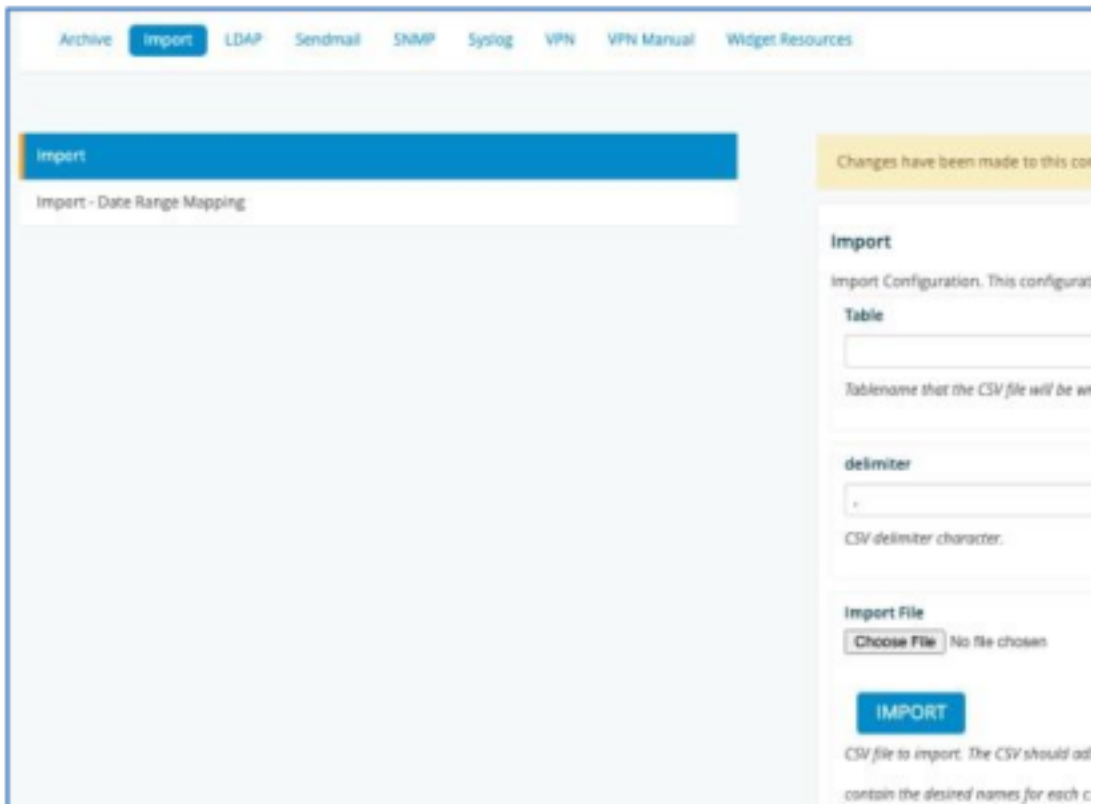
7.6.2. Import

This tab allows you to import data into the system from a `.csv` file. There are specific instructions on this page that need to be followed on how to format the `.csv`. This functionality will allow you to manually add data that can be utilized in different contexts within the VOSS Insights platform. An example could be specific costs associated with calling functions.



- **Import- Date Range Mapping**: The "Date Range Mapping Import" is a feature that allows the user to import in a list of named date ranges (for example: Fiscal Quarters that may not align to standard calendar quarters, etc.).

  If a date range mapping is imported, the Dashboard UI will allow the user to change the dashboard calendar by the imported date range name. Multiple named date ranges may be provided. Only dates are currently supported. The times for the entire day will be used (midnight to midnight).

  Select a file to be imported then click the **IMPORT** button. CSV format requirements described on this page must be followed:

```
CSV file to import. The CSV should adhere to the CSV RFC https://www.ietf.org/rfc/
↪rfc4180.txt.
Additionally, there are two more requirements. First, the first line of the CSV␣
↪must contain the
desired names for each CSV placement. Secondly, the second line of the CSV must␣
↪contain the desired
types for each CSV placement. Use 'integer', 'float', or 'string'. The normal CSV␣
↪data can then start
on lines 3 and above. Inherently a CSV file does not describe the names or types␣
↪of each CSV placement.
This is required so the system can create the proper database table and store the␣
↪data appropriately.
```

(continues on next page)

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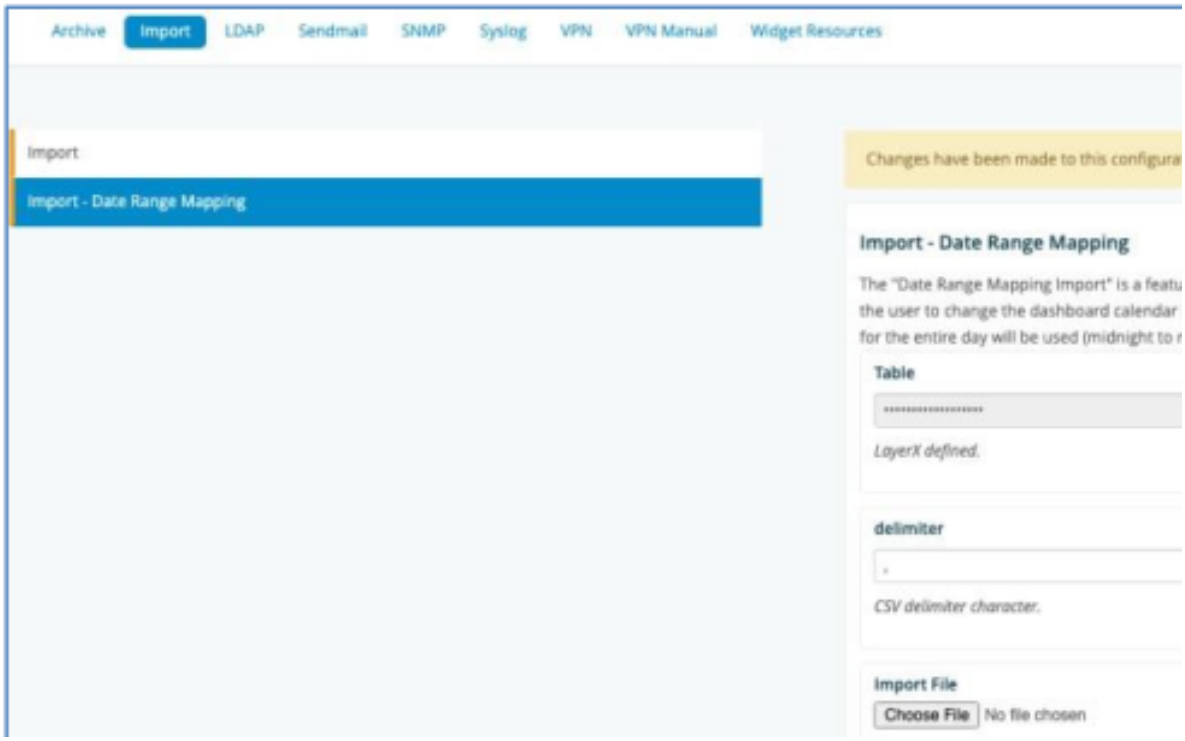
(continued from previous page)

```
Failure to include these two lines will result in a failure to import in the CSV␣
↪data.
```



Once imported, you can use the date range drop down to cycle through and select the custom dates.

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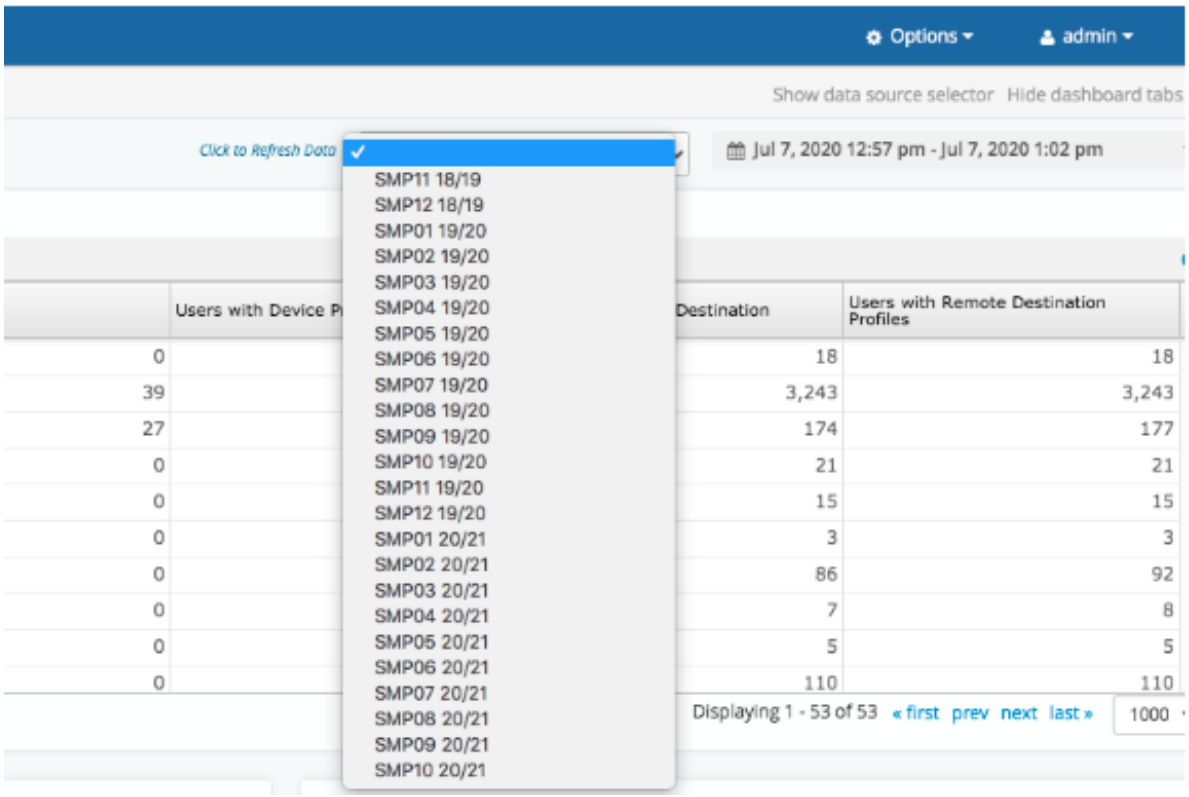

7.6.3. LDAP

The system uses a local LDAP server to store user information. The system also supports authenticating with an external Microsoft Active Directory server. If an external Microsoft AD is used, the system will automatically sync all users locally. Local user accounts are necessary to set specific system privileges. Please note that Microsoft AD passwords are never stored locally. Authentication always occurs with external Microsoft AD. Once authenticated, the system allows the user access based on the user's local system privileges. In order to properly configure this screen, the customer administrator must have an in-depth knowledge of the customer's Microsoft AD architecture. Improper configuration may cause too little or too many users in the system.

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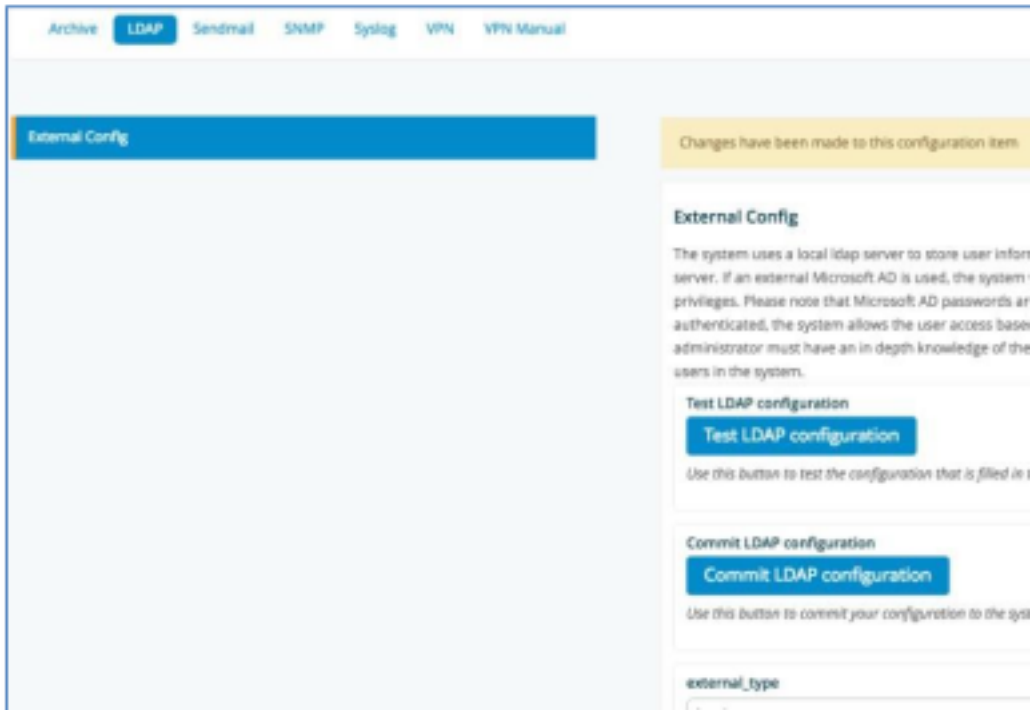
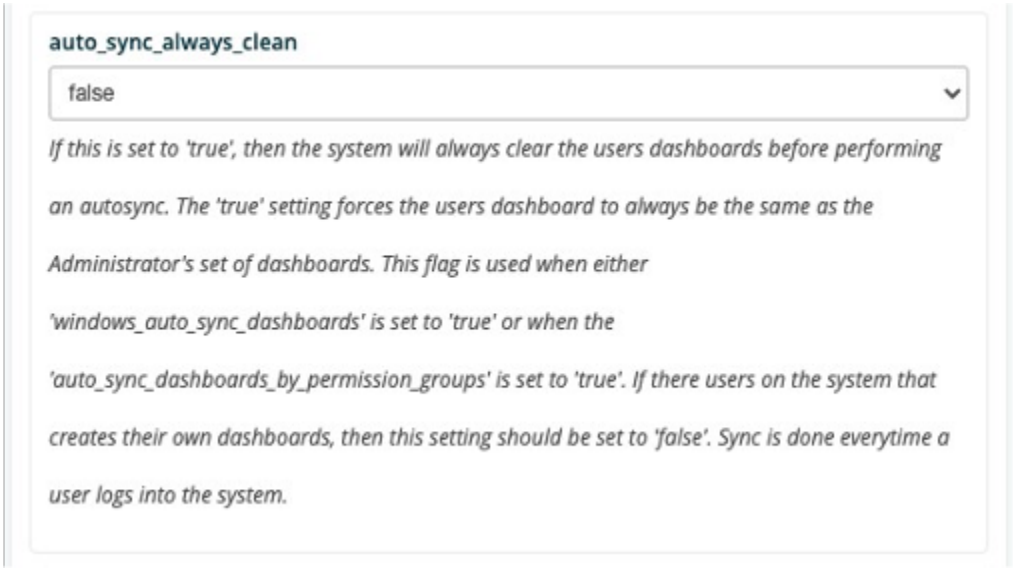


The **auto_sync_always_clean** option can be set to clear user dashboards before sync.



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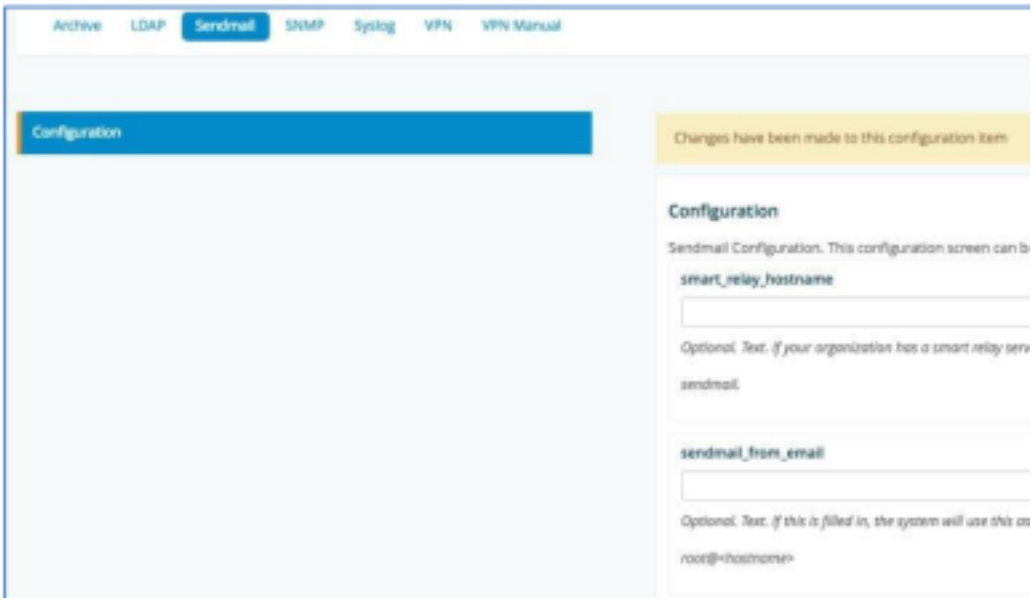
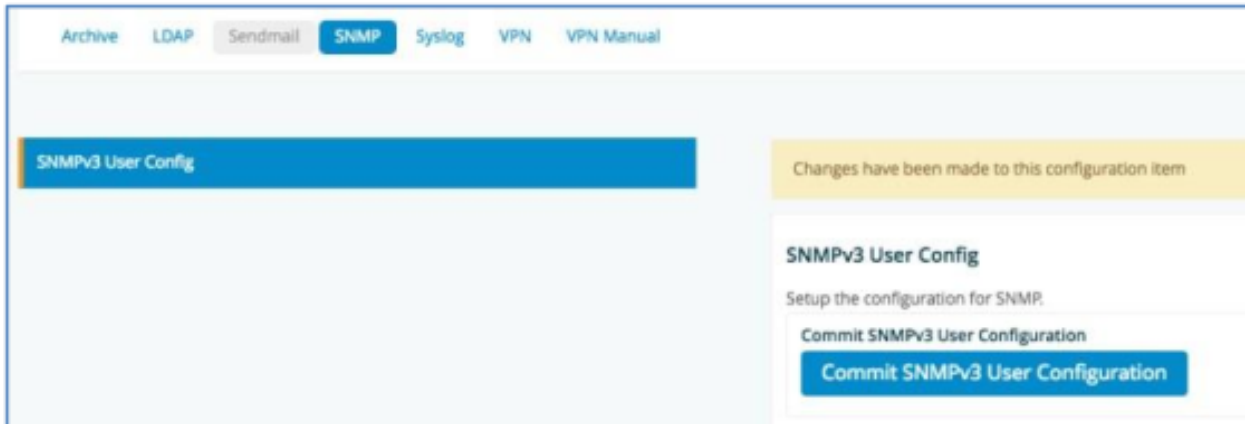
7.6.4. Sendmail

The system has Sendmail built in, but this screen allows for specific configuration tweaks to allow it to interface with specific customer mail functions. All of the fields here are optional.



7.6.5. SNMP

This allows the system to be configured to work with SNMP v3. It allows you to select the specific authentication and encryption methods to be utilized.



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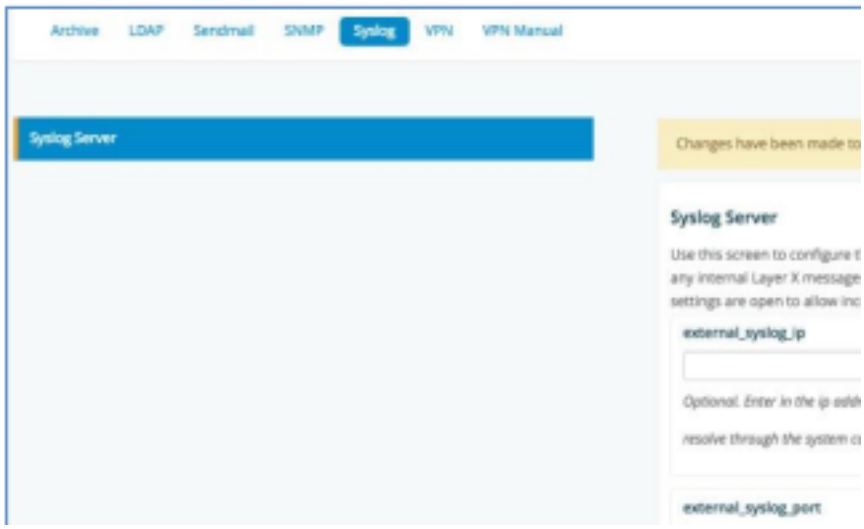
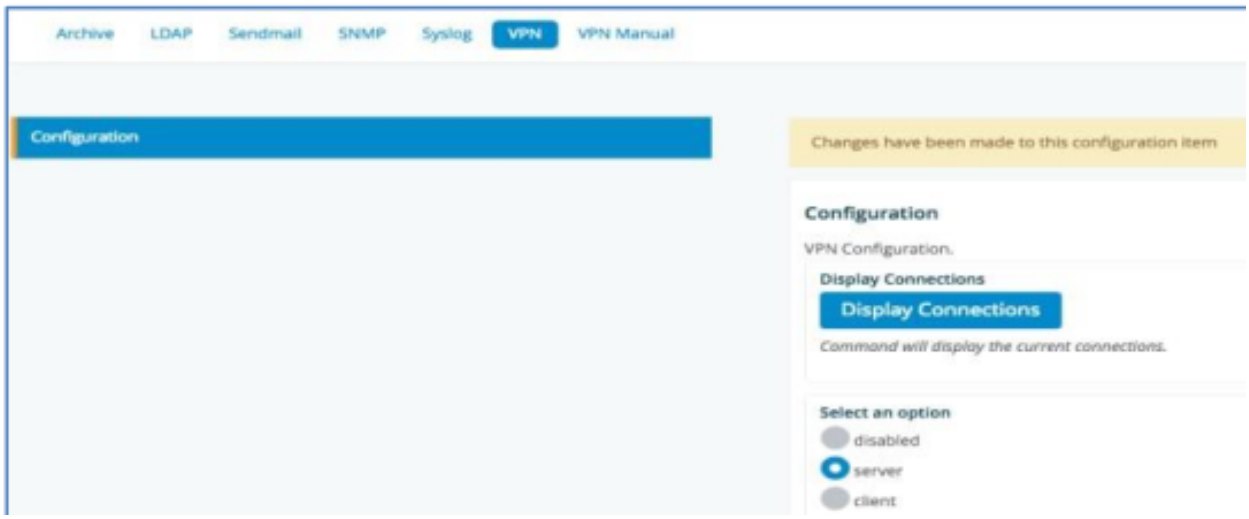
7.6.6. Syslog

The system has the ability to send out syslog messages about several of the internal functions including backup and archival success. Use this screen to configure the IP address of your central syslog server. This is a system wide setting. If an IP address is specified, the system will send any internal messages onto the specified syslog server. Only one central syslog server can be specified at this time. Please validate firewall settings are open to allow incoming messages on the specified IP address and port.



7.6.7. VPN

The system can be connected to another Dashboard/Reporting platform, an Arbitrator Correlation platform, a Windows Forwarder or other client that supports the connectivity. Utilize this screen to set up automated connections to a server or client. The default port utilized is port 1194. Note that the screen selections will change based on the context selected (server or client).



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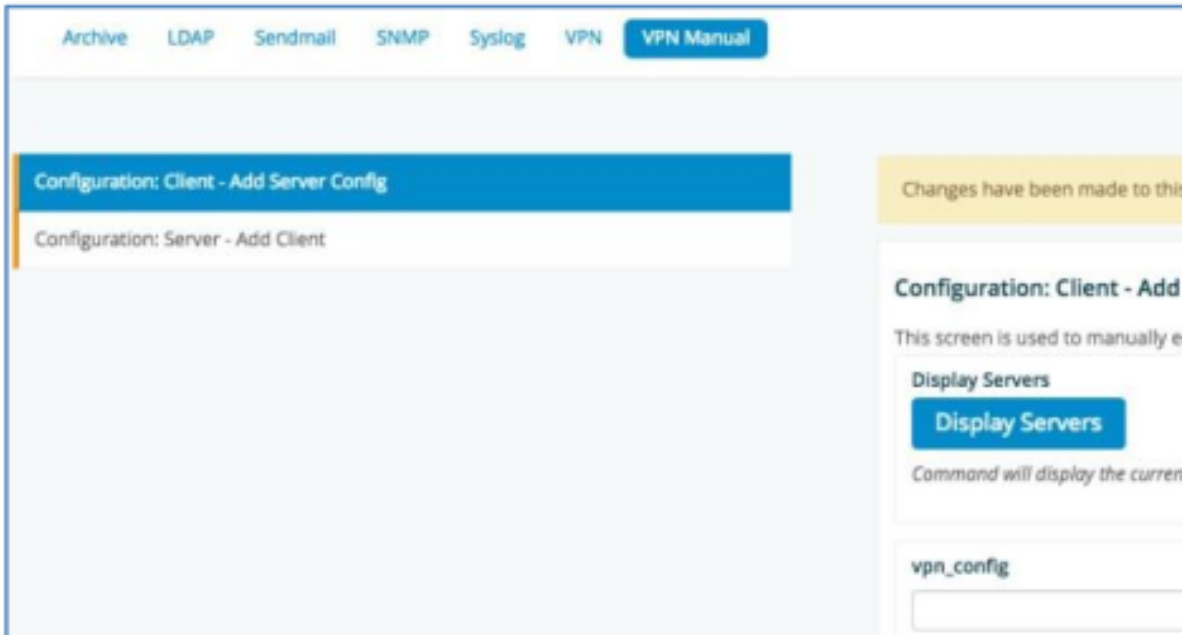
7.6.8. VPN Manual

- **Configuration: Client - Add Server Config**: The system allows you to enter a VPN configuration file directly into the system. Just paste the config directly into the bar under the label **vpn_config**.



- **Configuration: Server – Add Client**: This screen is used to obtain a VPN Client Configuration file. This will allow connectivity from the Windows Forwarder directly to this server utilizing OpenVPN. There are a few prerequisites:

  1. There must be network connectivity between the Windows Forwarder machine to this server.
  2. The specified OpenVPN port (default port 1194) must be opened on the firewall between this server and the Windows Forwarder IPs.
  3. This server VPN Configuration screen should be configured for server mode.

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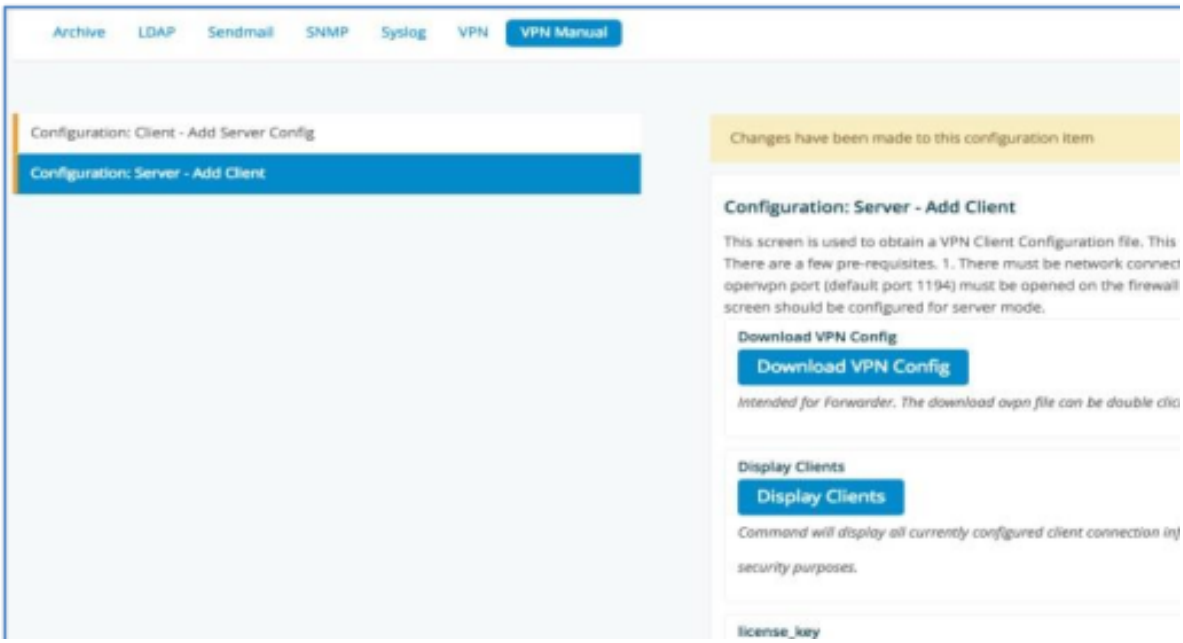
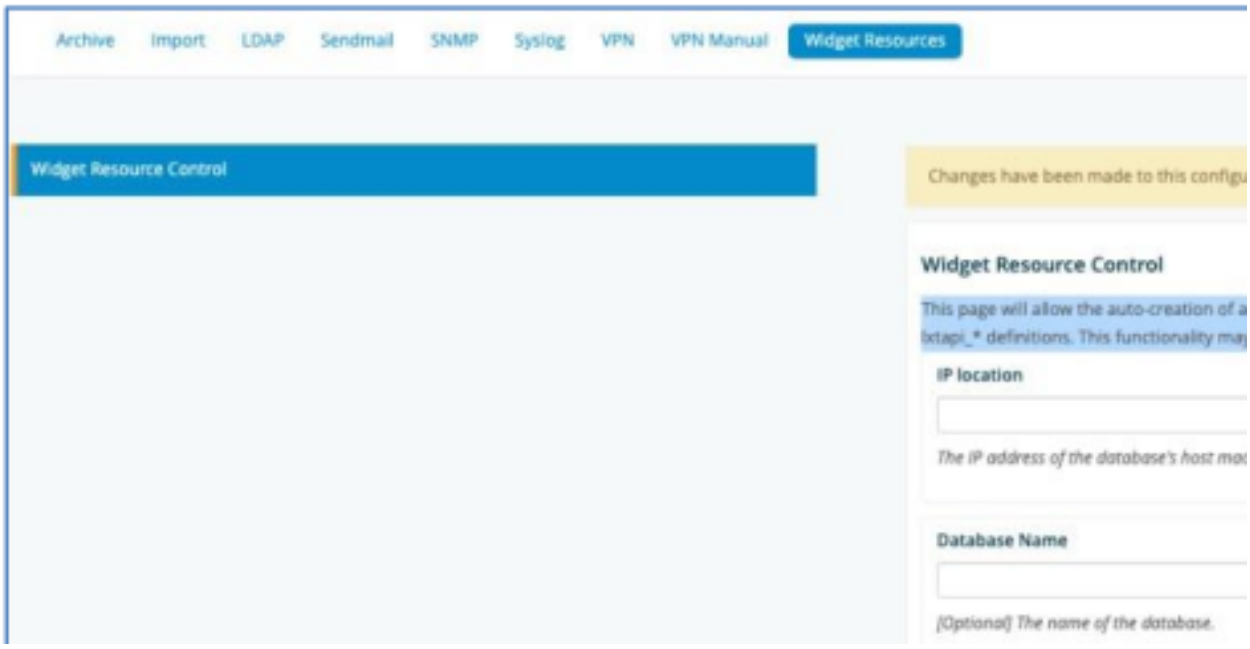


7.6.9. Widget Resources

This page will allow the auto-creation of a dashboard widget's resource description for a new table. At a minimum, the IP address and table name should be provided to fetch/create the `lxtapi_*` definitions. This functionality may also be used to generate dashboards for generic Postgres databases, if the database's security information is known.



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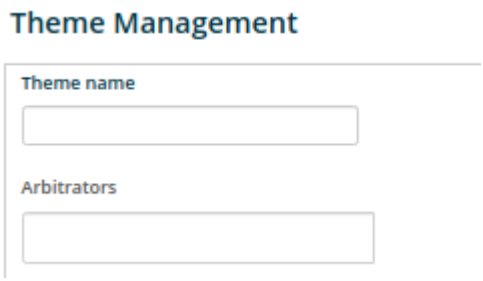
7.7. Theme Management

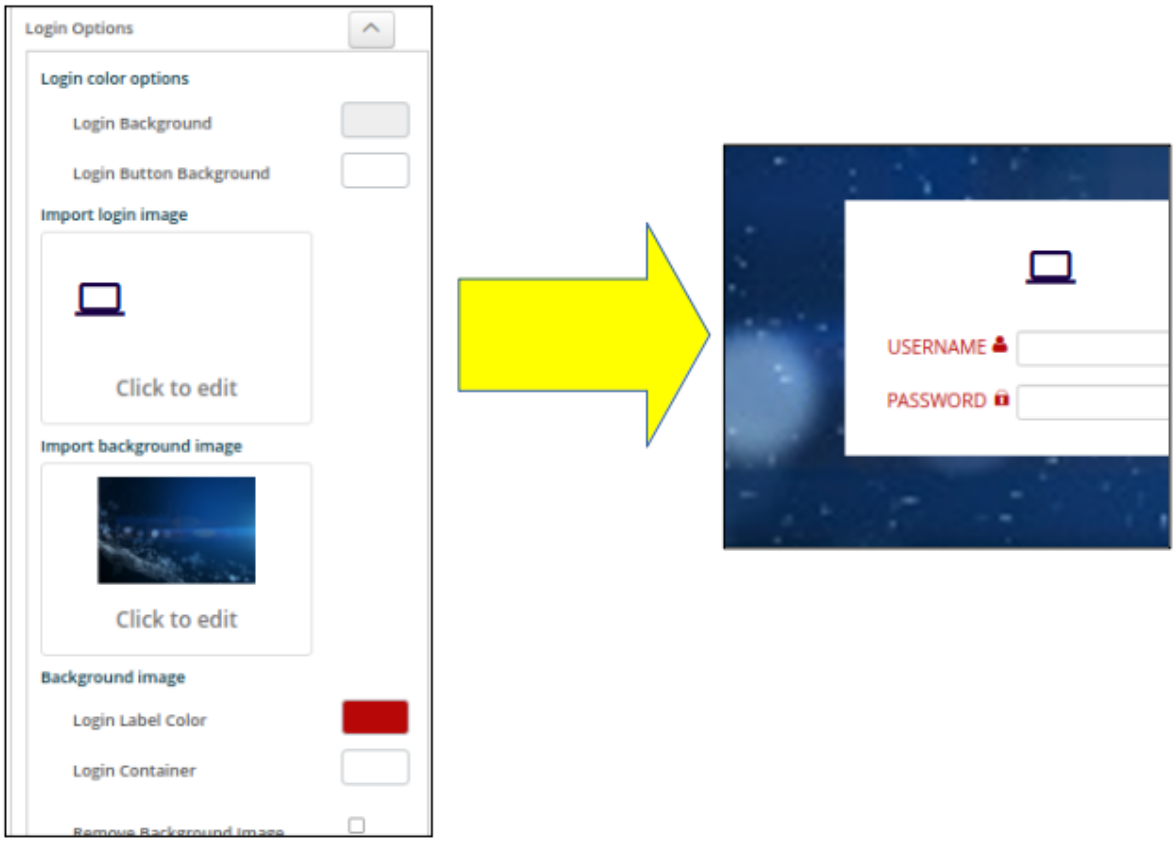
The Theme Management screen provides several options to configure themes: create, modify, reset and delete. Custom themes can also be created.

7.7.1. Create a New Theme

1. From the reporter user menu on the main screen, choose **Theme Management**.
2. From the **Select action** drop down, choose Create New Theme.



3. Enter a **Theme Name** and optionally any arbitrator to share the theme.
4. **Login Options**: refer to the **Login sample** for a preview of changes.



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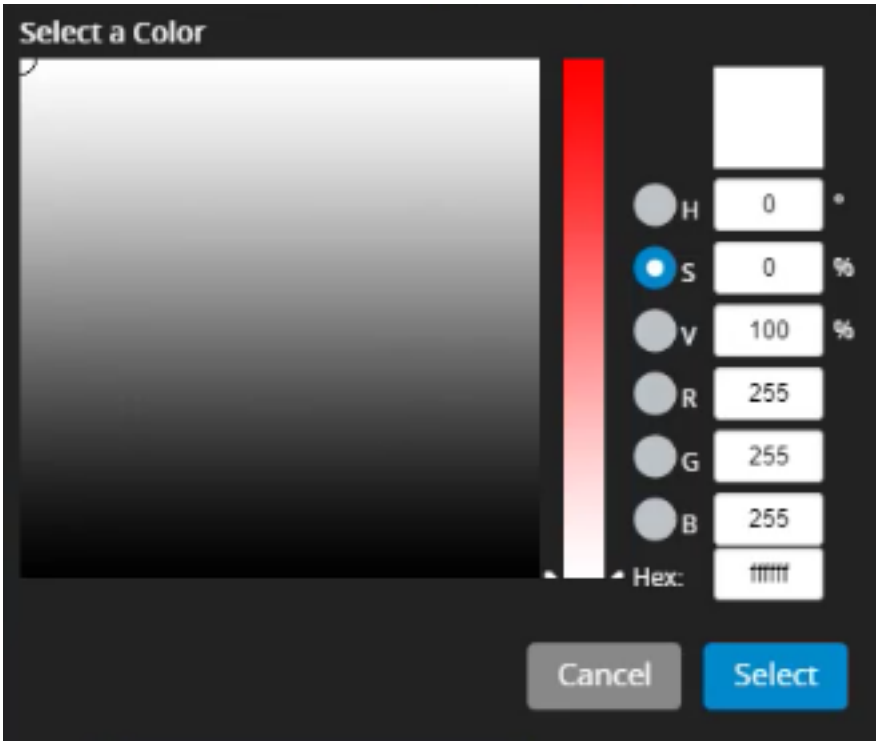
a. For **Login color options** (Login Background, Login Button Background), click in the color box to open a color picker widget. You can use the sliders, buttons and input boxes to set a color. Verify your color shows in the **Hex:** input as a hex value and click **Select**.



b. From **Import login image**, select the image to show on the login page, above the username and password input boxes.

c. From **Import background image**, select the image to show as background on the login page, behind the login box. If not used, then the **Login Background** color applies.

   If needed, select the **Remove Background image** check box to remove any imported background image.

d. From **Login Container**, select the required color options. The **Privacy Security Text** box can be used to enter login privacy text:

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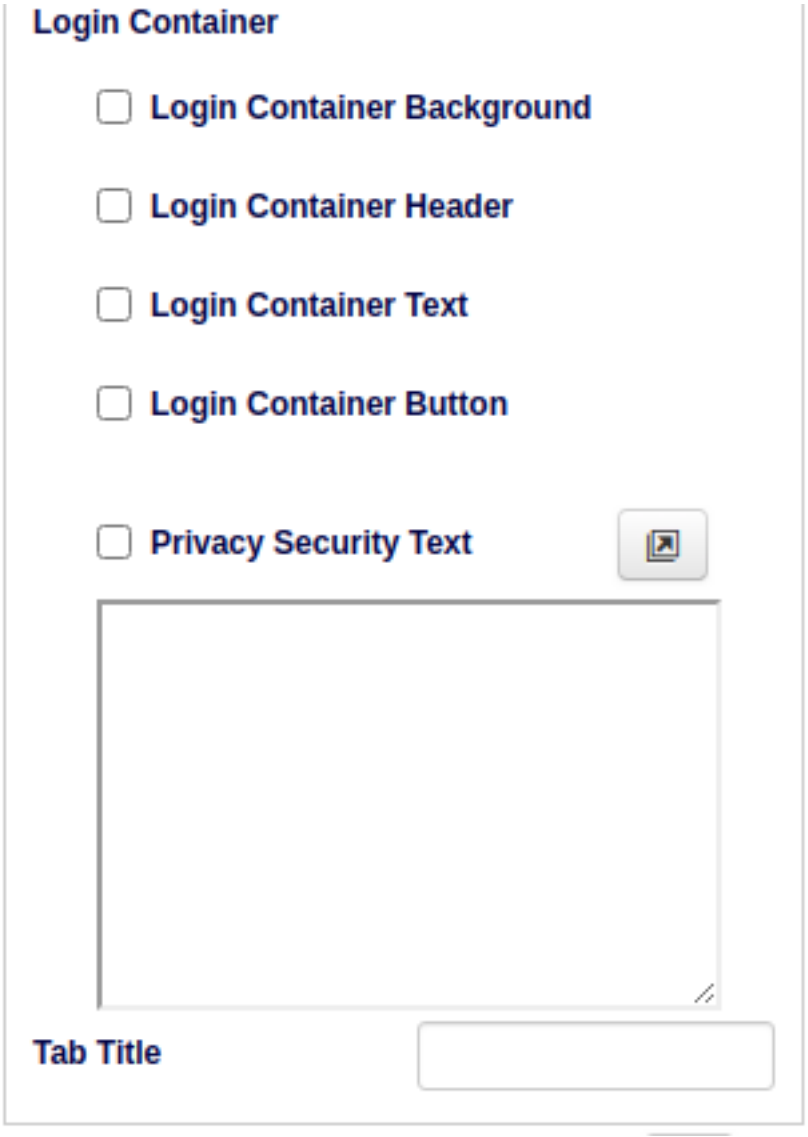

A **Tab Title** text value can be entered to show as the browser tab text.

5. **Dashboard Options**:: refer to the **Dashboard sample** for a preview of changes.

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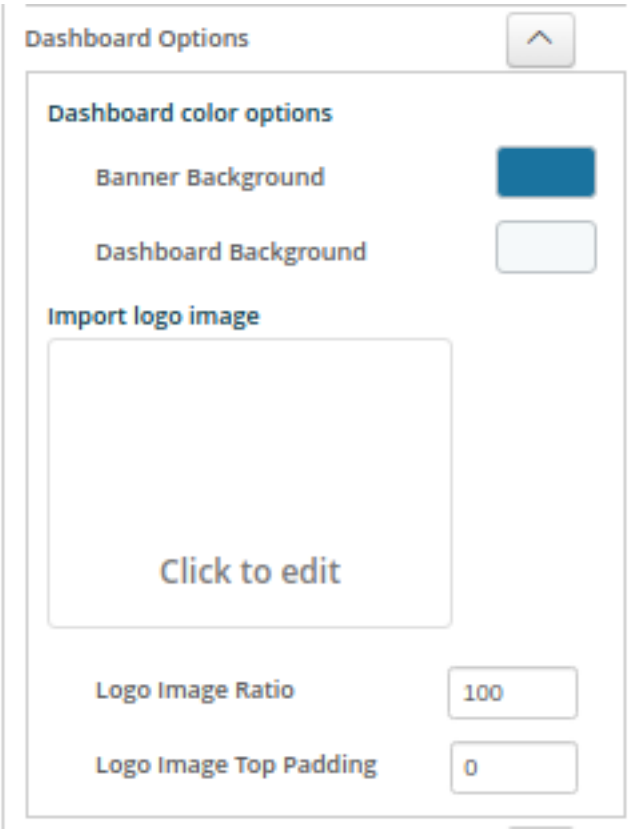

a. For **Dashboard color options** (Banner Background, Dashboard Background), click in the color box to open a color picker widget. You can use the sliders, buttons and input boxes to set a color. Verify your color shows in the **Hex:** input as a hex value and click **Select**.

   For the dashboard, Theme Color Options are also available for text, Container, Primary Active elements and Containers.

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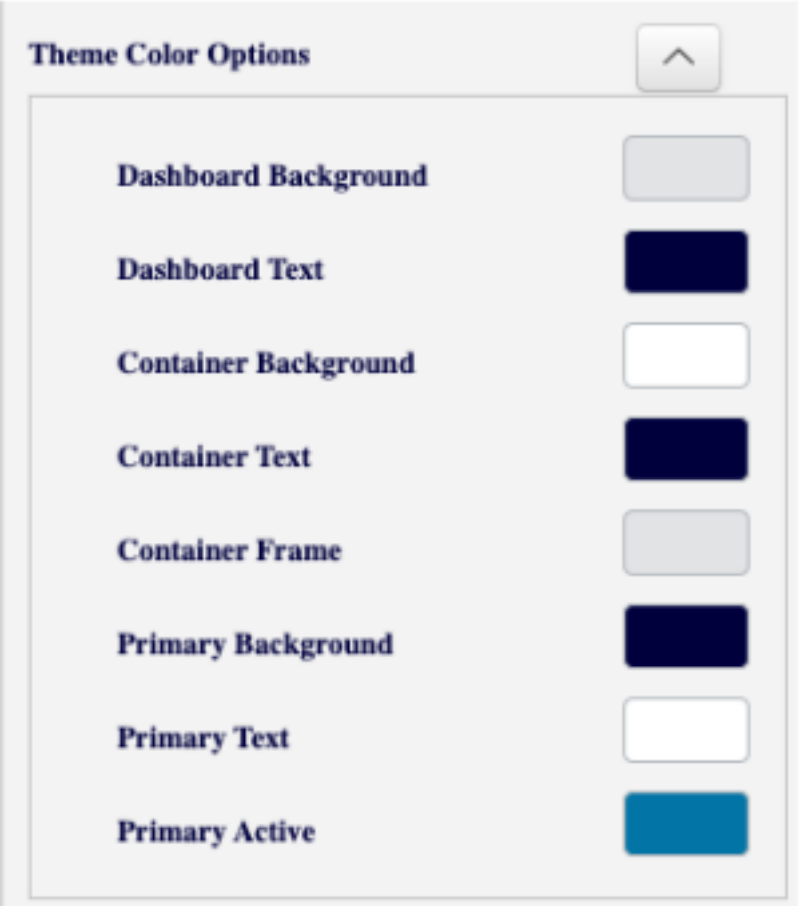

Additional Arbitrator Configurator colors are also available:

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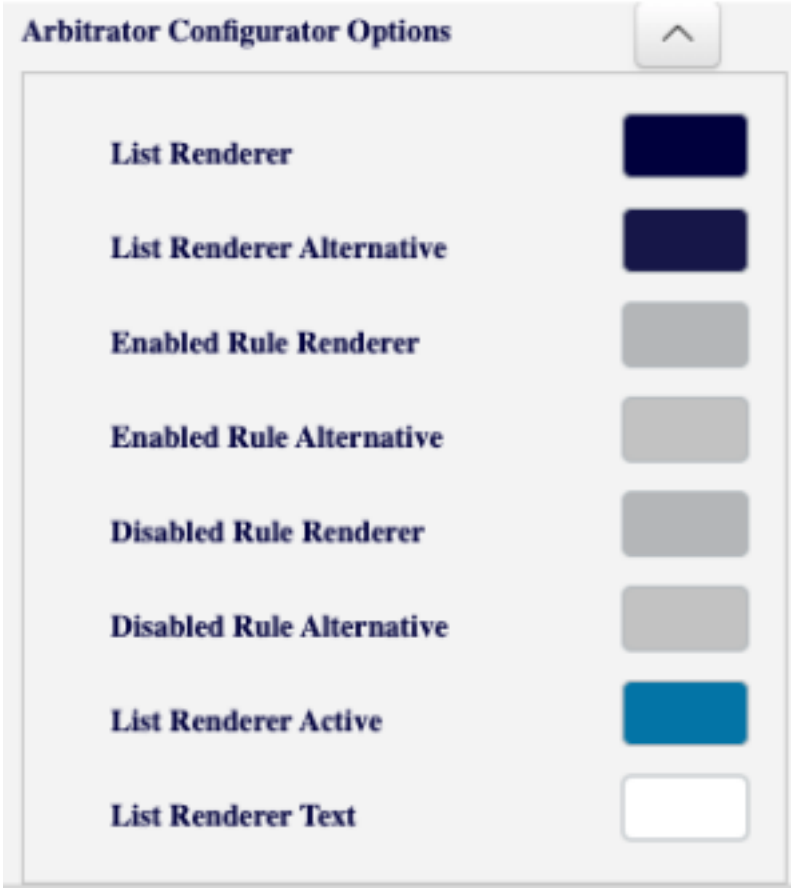
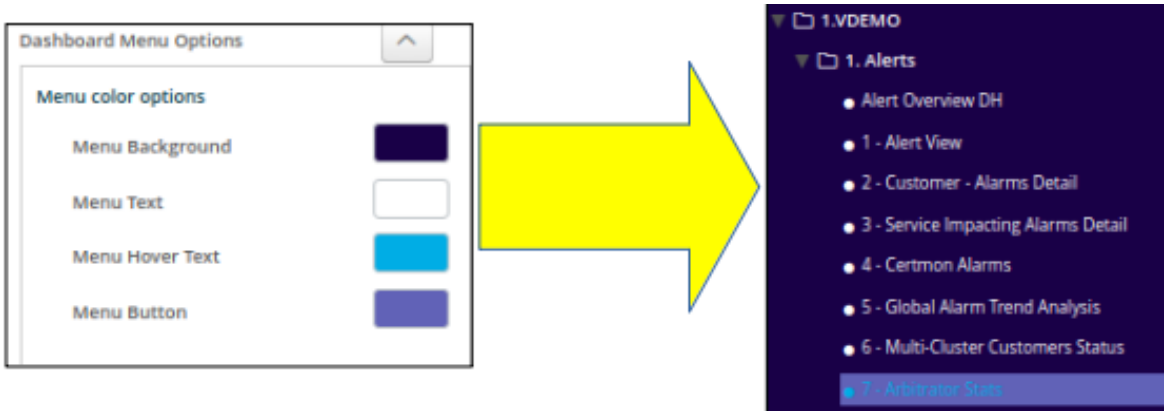


b. Select an image from **Import logo image** to use as a logo on the banner. The image can be scaled and positioned using **Logo Image Ratio** and **Logo Image Top Padding**. An option is also available for a browser tab icon: **Import Favicon image**.

6. **Dashboard Menu Options**: the **Menu color options** group of settings are available to customize the colors of the menu and its text (Menu Background, Menu Text, Menu Hover Text, Menu Button) - using the color pricker widget.



7. **Widget Options**:: refer to the **Dashboard sample** for a preview of changes. The widget sample is shown on the dashboard.

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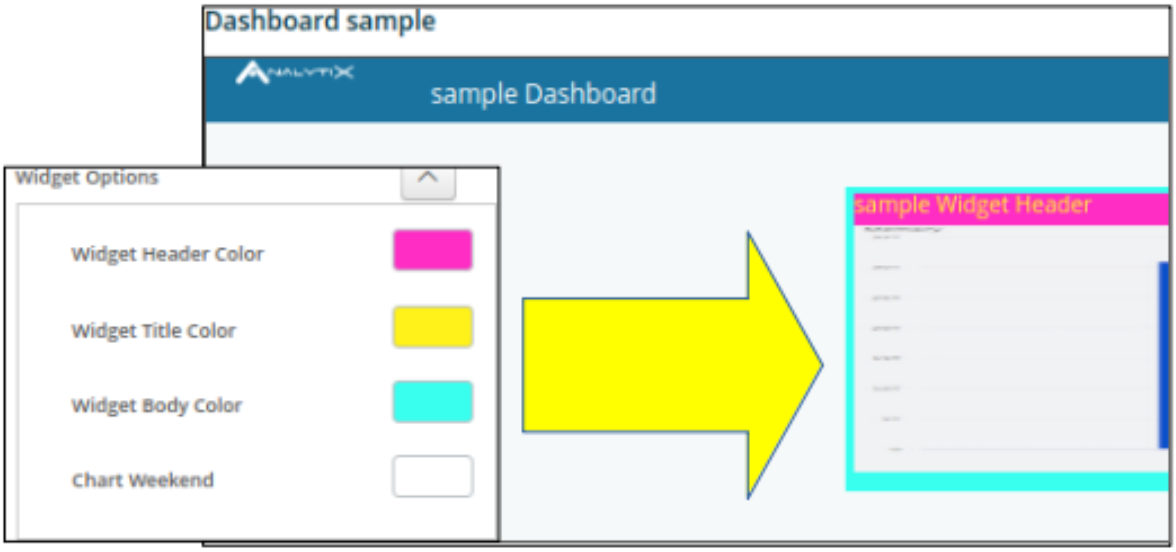
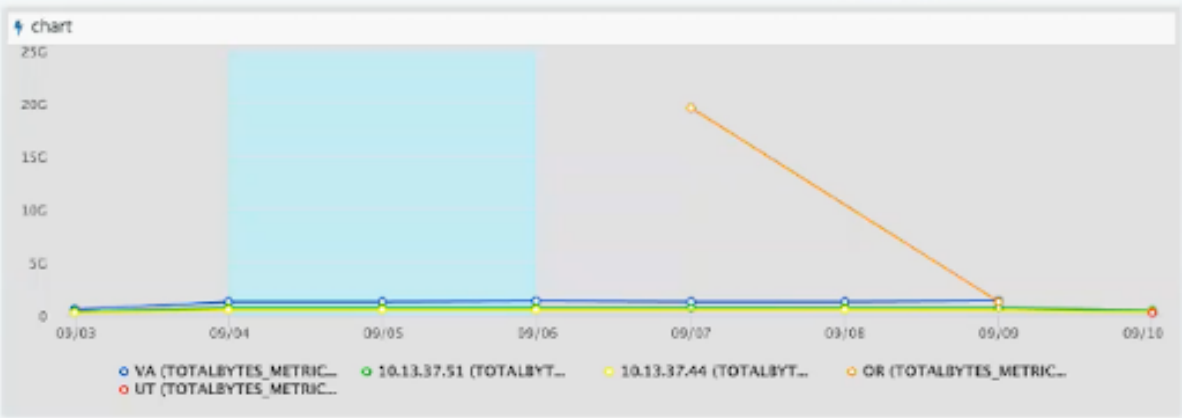


Set the **Widget Header Color**, **Widget Title Color** and **Widget Body Color** using the color picker widget.

The **Chart Weekend** setting can be used to set a different chart color for charts that show daily data over a number of weeks.



8. Click **Save**. When done, the **Status** shows 100% and a message shows “Theme saved successfully”.

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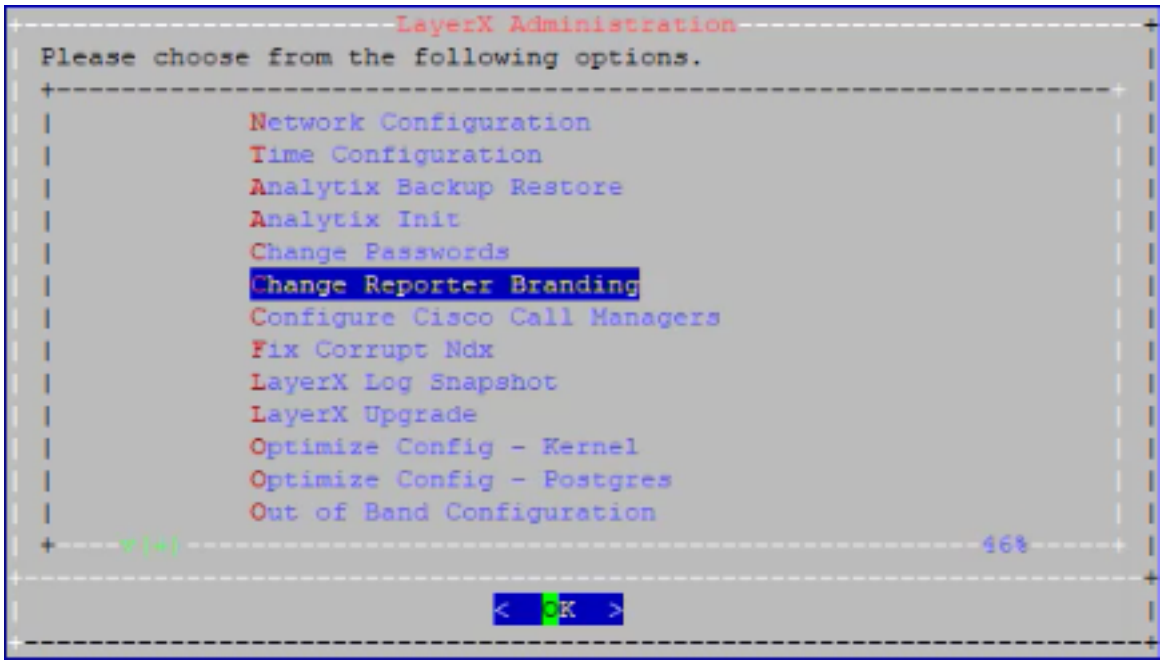
7.7.2. Apply a Theme to the Dashboard

1. Log in on the command line and navigate to the **Change Reporter Branding** menu.



2. At **Enter Branding Theme:** input box, enter `themes/<your-theme-name>` and select **OK**. A console message shows: `Putting THEME:themes/<your-theme-name>`.
3. If you log in on the reporter now, the theme is shown.

7.7.3. Apply a Theme to the Arbitrator

1. On the selected theme on the **Theme Management** menu, ensure that the arbitrator is selected in the **Arbitrators** drop down box and that the theme is saved. (You need to make a change to the theme to save.)

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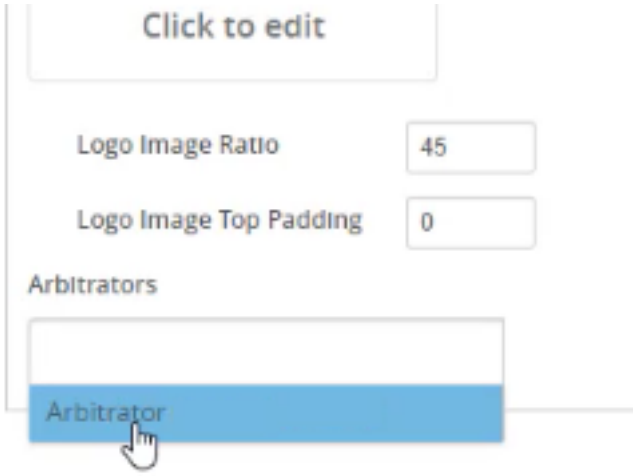
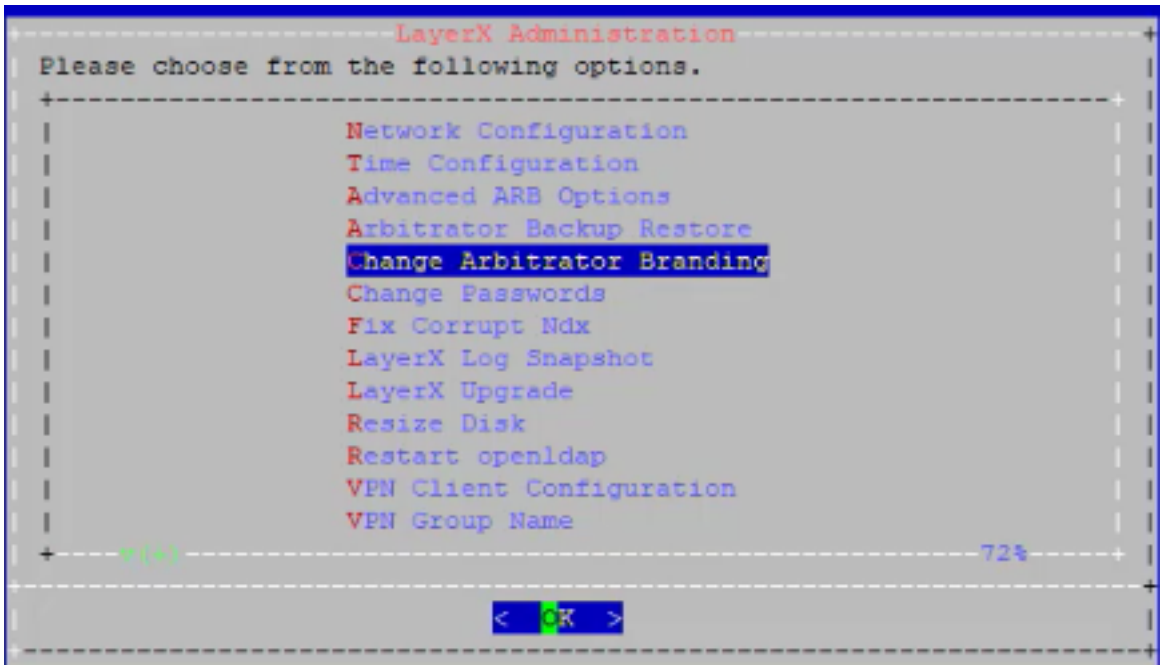


2. Click **Save**. You should now also see an **Output:** message: “Generating Arbitrator <IP> theme <your-theme-name>”
3. Log in on the command line and navigate to the **Change Arbitrator Branding** menu.



4. At **Enter Branding Theme:** input box, enter `themes/<your-theme-name>` and select **OK**. A console message shows: `Putting THEME:themes/<your-theme-name>`.
5. If you log in on the arbitrator now, the theme is shown.

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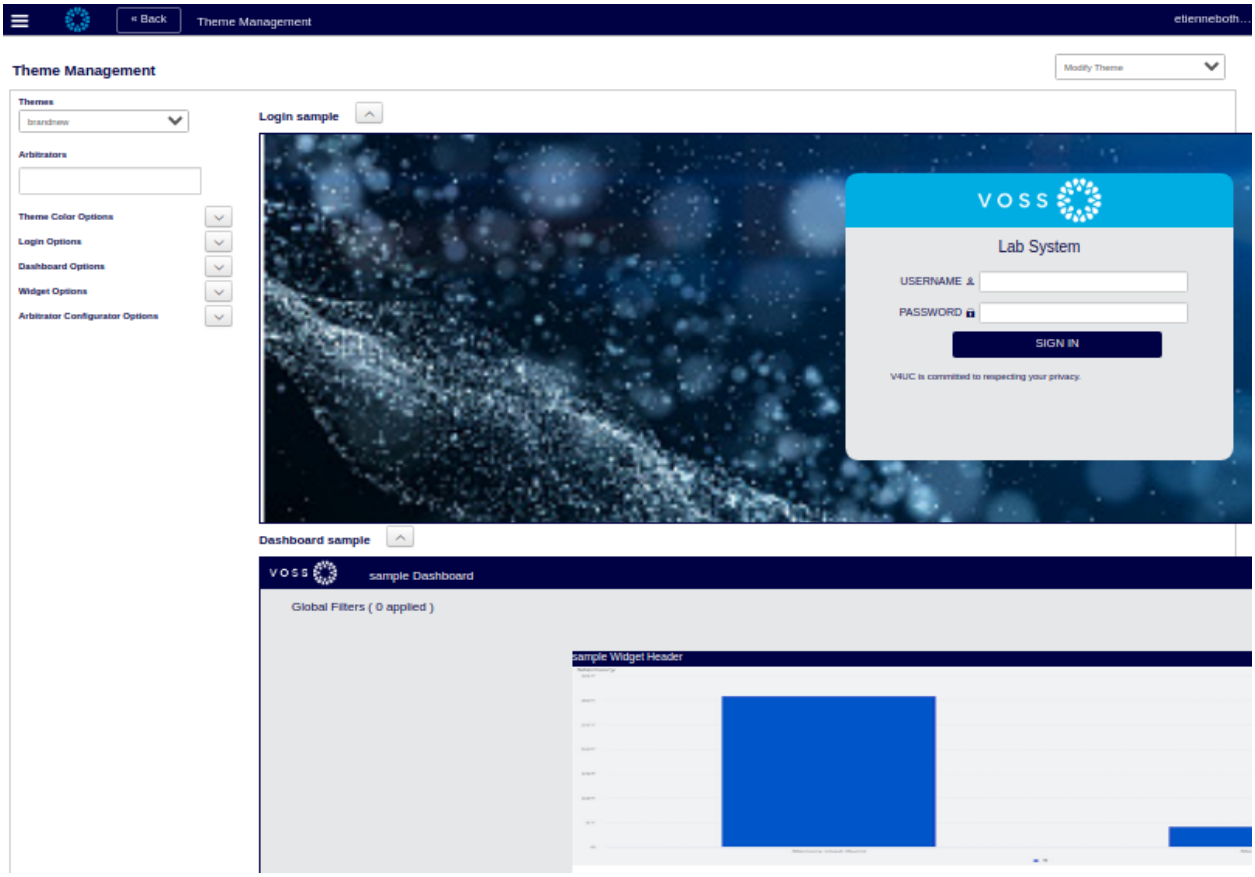
7.7.4. Example Custom Theme



7.8. About

Click the **Admin** drop-down menu and select the **About** option. This will pull up a window that displays the current product key and license details.

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7.9. Help

Click the **Admin** drop-down menu and select the **Help** option. This function will link you to this admin guide loaded on the server or on the website.

7.10. Edit Account

Click the **Admin** drop-down menu and select the **Edit Account** option. This function allows you to change your password profile.

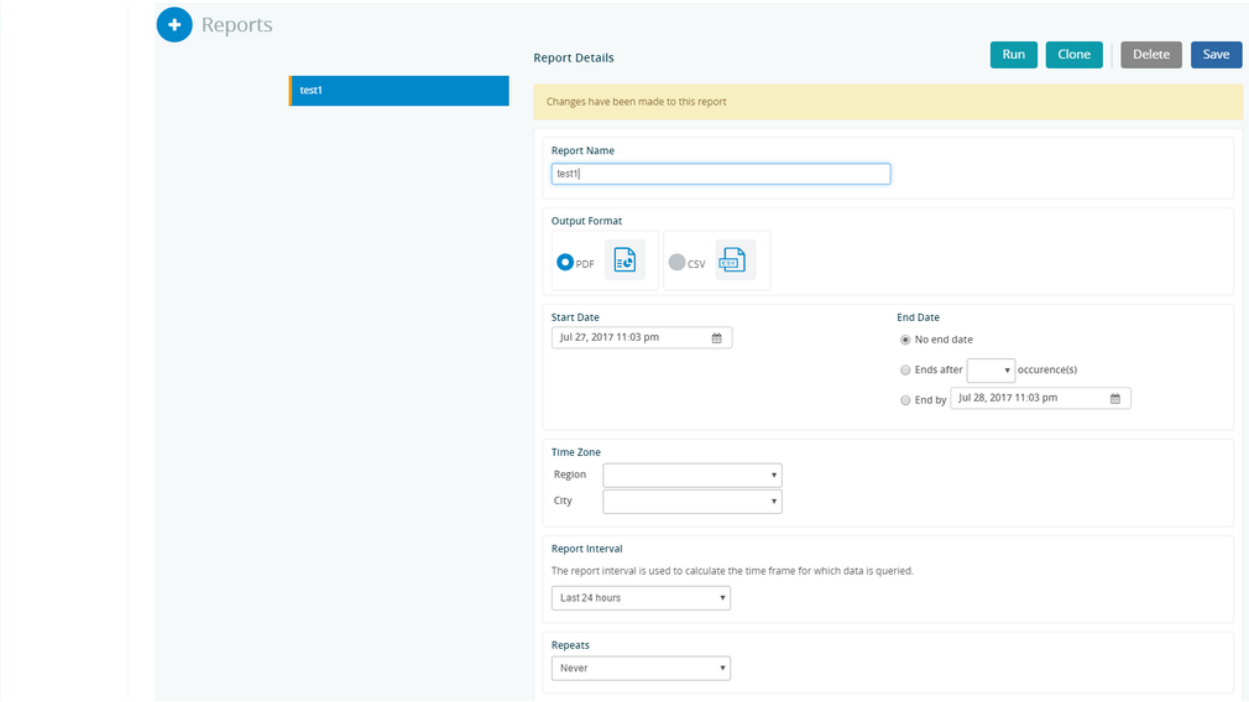
A box will open in the middle of the screen where you will need to enter your old password and put in your new one.

7.11. Sign Out

Click the **Admin** drop-down menu and select the **Sign Out** option to exit the system.

7.12. Reports

Open the Main Menu and select the **Reports** option toward the bottom of the screen. This will open a page that will provide many powerful options to schedule and arrange your dashboards into reports.



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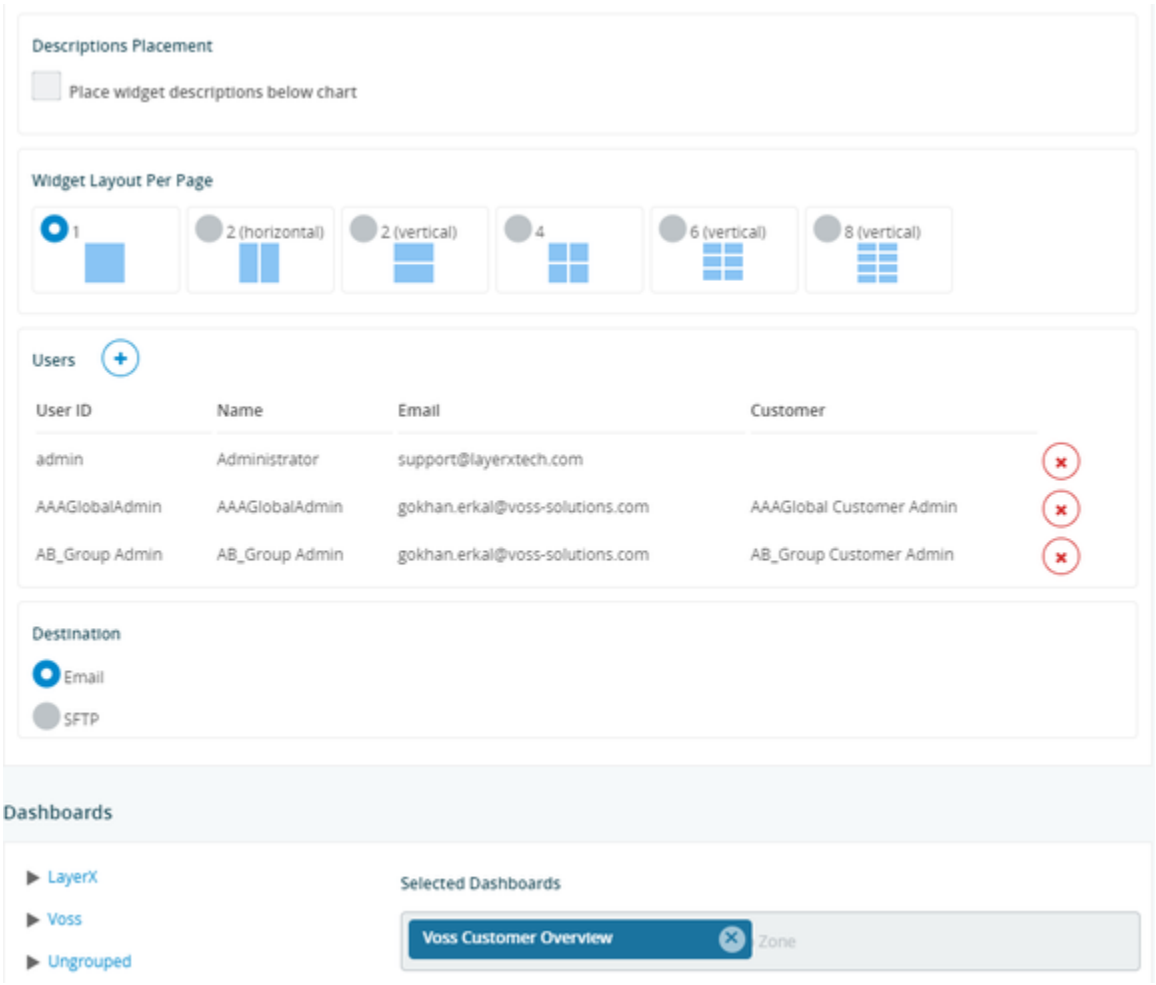

This allows you to schedule and arrange your dashboards into reports as follows:

1. Click **+ Reports** in the top left corner to add a report.
2. In the **Report Name** window give your report a customized name.
3. Select the start date using the calendar window.
4. Select the ending criteria for your report under **End Date**.
5. Select the time zone in the windows under the **Time Zone** label. Note: We utilize a city library that represents the majority of time zone locations thus your particular city may not be present but choose one that represents the time zone you desire, i.e. Chicago for Central Standard Time.
6. Select the report interval. This is the timeframe over which the data that comprises your report will be queried, for example, **Last 12 hours**.
7. Select how often you want the report to be repeated utilizing all of the options under the **Repeats** section.
8. Click the add button next to **Recipients** and enter all of the email addresses of the individuals you wish to receive the report(s).

   Non-admin users can also add other users to reports.
9. Click to add a cover page logo if desired. This will open a window that will allow you to select a logo file to include.

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10. Select the option on where you want the descriptions to be located on the report. Selecting places the descriptions below the charts.
11. Select how many widgets to print on a page plus the output as either PDF or CSV.
12. Add the email addresses for the report recipients.
13. Under the **Dashboards** section drag and drop all of the desired dashboards that you want as reports.
14. Use the text editor below the dashboard list to design a summary page (including images) that will be placed at the top of the report.
15. Click **Save** at the top of the screen.

The buttons at the top of the report page allow you to Run the report, Clone the report so modifications can be made (i.e. new recipients in different timezones) and to Delete a report. The user has the option of outputting the reports in:

- `.pdf` format
- saving them as `.csv` to a destination
- outputting the data via JSON format.
- output Excel workbooks (`.xls`) creating a new tab for each widget inside a single excel workbook file.

The reports can be sent via email or via sftp to a host destination.

7.13. Data Sources

Open up the Main Menu window and select **Data Sources** toward the bottom. This will open the **Data Source Editor** page which provides many options to connect to outside data sources.

The system has the ability to extract data from any SQL data source as well as all VOSS systems. The **Data Sources** window will show all of the data sources from which the system is currently configured to extract. To add a new data source click the blue **New Data Source** button and enter a Name for it.

Next choose the type in the **Data Source Type** window. This window is context sensitive and will display options based on the data source type selected (i.e. MySQL versus Sqlite). Enter the required credentials and name of the data source and click **Save**. This source will now be available extract data and define Resources.

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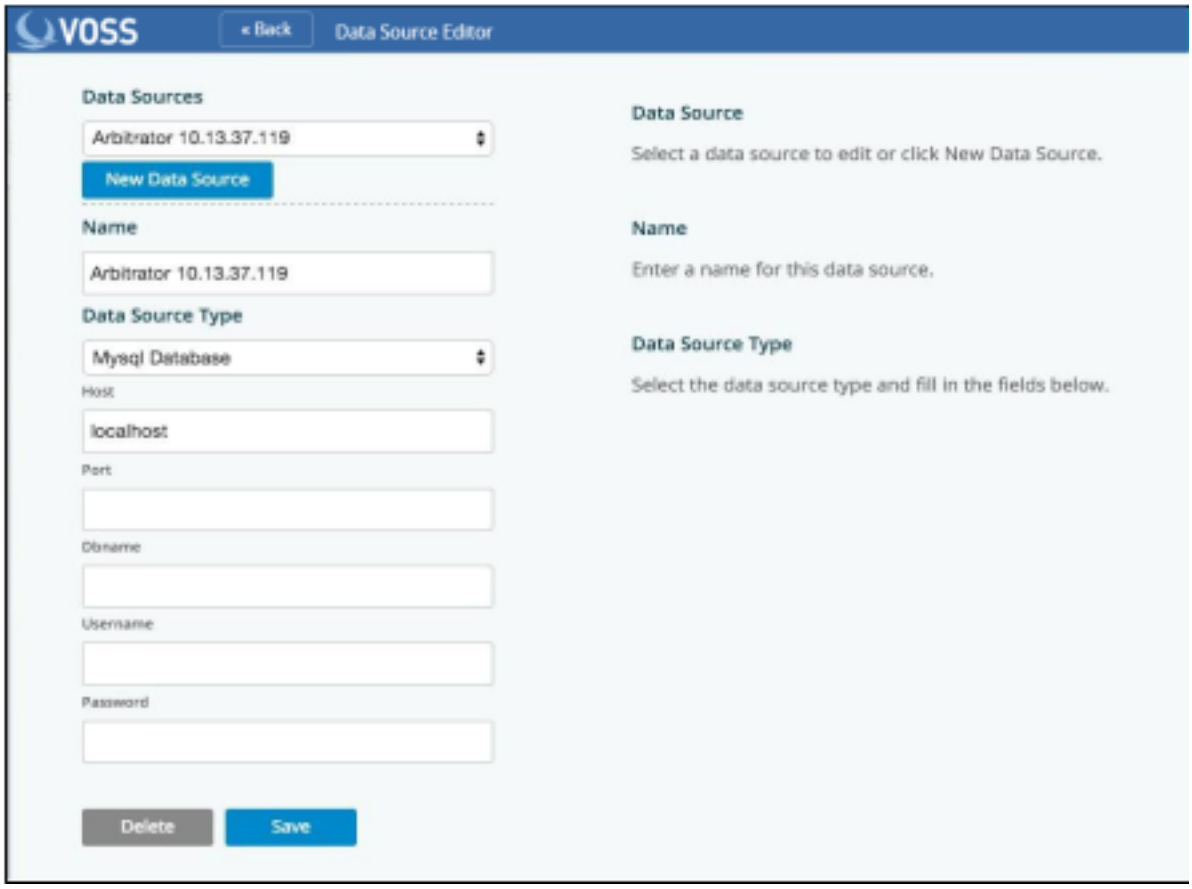

7.14. Access Controls

Open up the Main Menu window and select **Access Controls** toward the bottom. This will launch a new window where you can set up Permissions, Users, Customers and SAML configurations.

This is the location to start with setting up multiple tenants so they can have their own view only access to dashboards and receive their own reports.

Use the **Password Policy** screen to enforce a UI user password policy. across all local users.

To set the password policy:

- Under the **Access Control** editor, choose the **Password Policy** tab.

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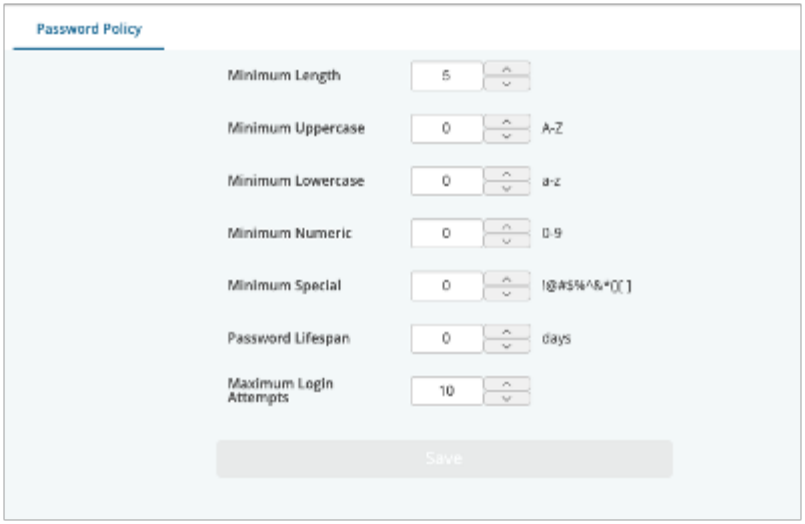

7.15. Permissions

Select **Permissions** at the top of the page. From here you will be presented with options on defining which users or group of users have access to specific attributes of the platform.

The users defined in the system will be available in the lower right corner of the page. Click the blue + button next to **Permissions** to add a new group. Name your group and then drag the users you want in the group into the box just next to the users.

Next select all of the Permissions the group is allowed by clicking and placing a check mark next to the various functions above. Once complete save your group. The users in this group will only have access to the functions given in this **Permission** screen.

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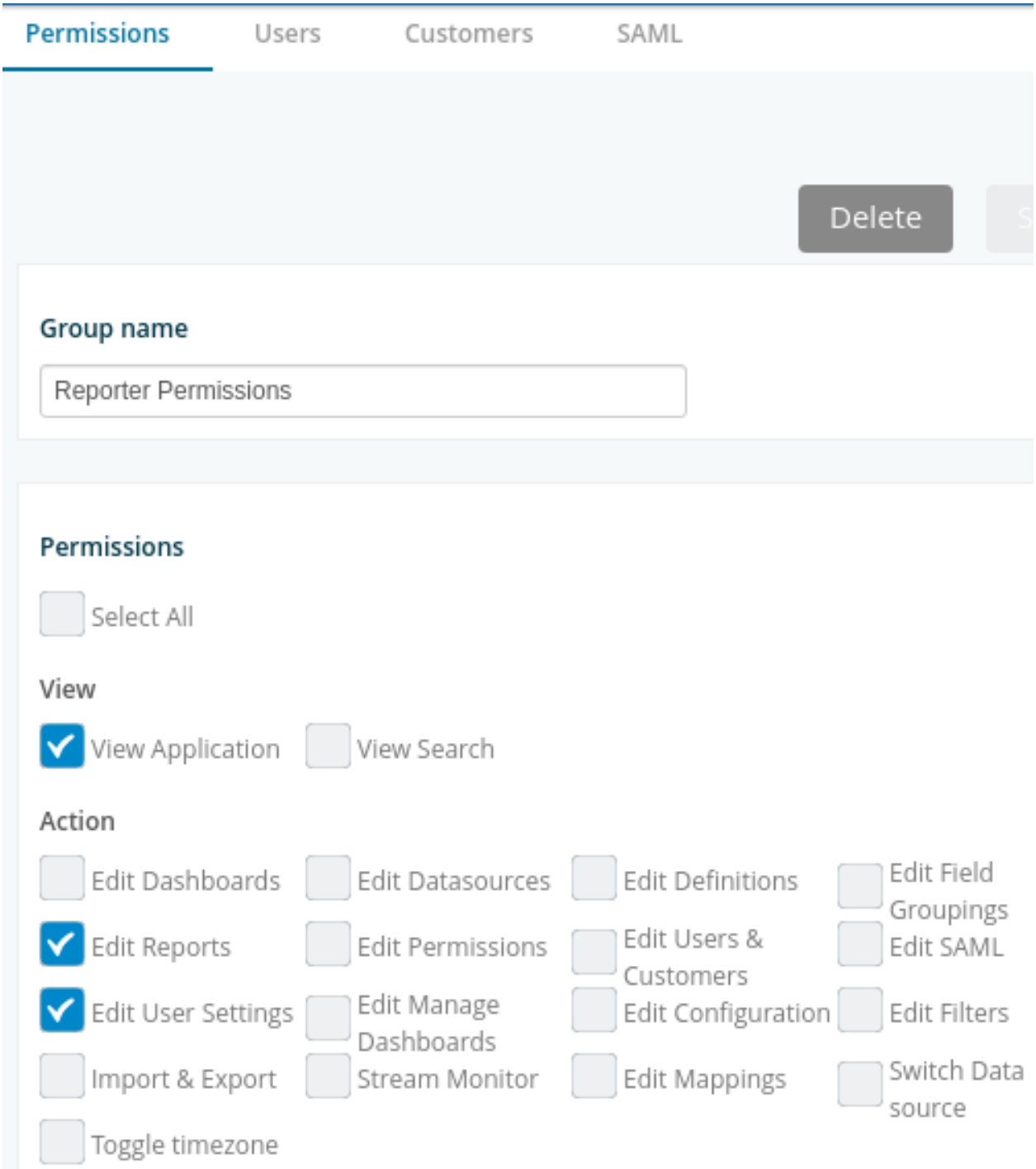

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7.15.1. Syncing dashboards by Permissions Groups

Permission Groups are a way to give users specific permissions in the system. For this feature, the Permission Group is also being used to give specific dashboards to all users in a Permission Group.

To configure this, do the following:

1. Create a Permission Group.
2. Give it a name. The Permission Group should have at least the “View Application” permission checked.
3. Add a user to this Permission Group.
4. Save the Permission Group.

The next step is configuring the dashboards for the Permission Group.

1. Create a Dashboard folder.
2. Give it the same name as the Permission Group.
3. Add dashboards to the Dashboard folder.

When the user logs in, the user will get all dashboards in the dashboard folder that matches the Permission Group.

To enable this feature:

1. Go to the **Admin > Configuration > LDAP** tab.
2. Scroll down to **auto_sync_dashboards_by_permission_groups**.
3. Select “true” from the dropdown box.
4. Click on **Commit LDAP configuration** button and wait for the status window to say “Finished”.

7.16. Customers

Select Customers at the top of the Access Control Editor screen. This will open a window where you can add, clone and delete customers. Customers can be actual companies, if you are an MSP or they can be departments/individuals if you are an enterprise.

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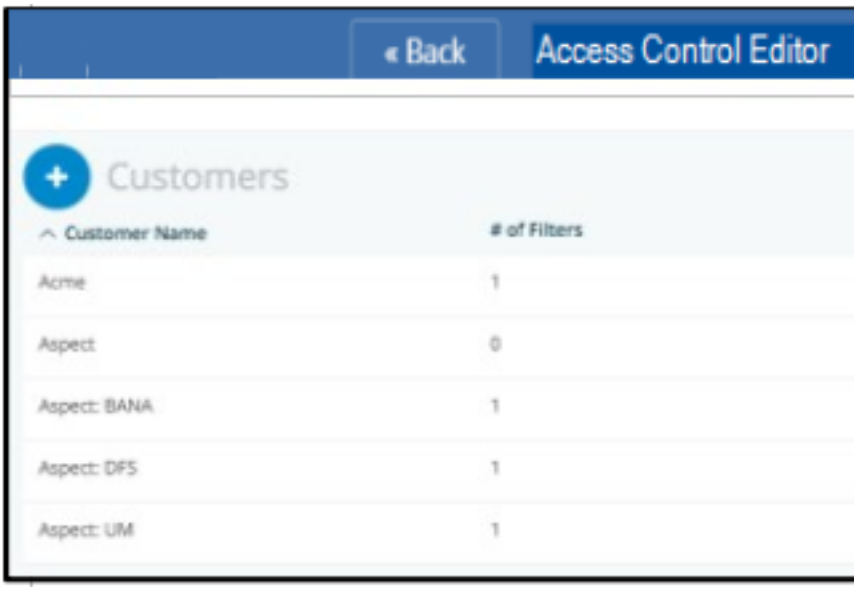
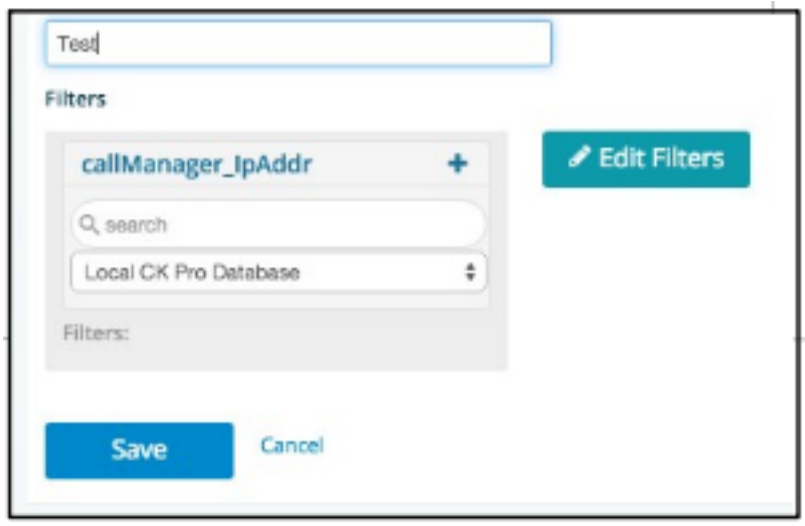


Click **+ Customers** to add a customer. A window will appear where you can enter the Customer Name. The **Edit Filters** button allows you to apply a filter so that only this specific customer will see that specific data (tenanted).



Click **Edit Filters** and the Filter screen is displayed. Select the Resource that applies to the customer. Then select the specific definition that is unique to that customer. Drag and drop that definition into the Filters bar (multiple filter definitions may be used). Once complete click **Update**. You will be returned to the Customer screen where you can click **Save** to save that customer.

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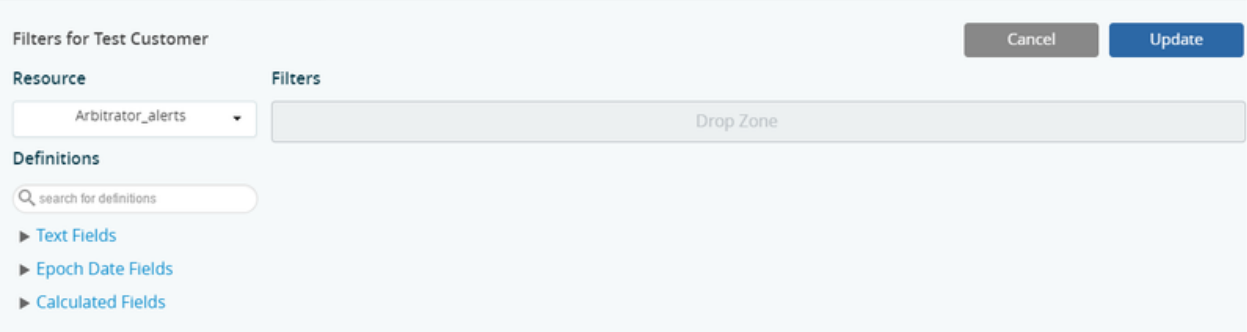


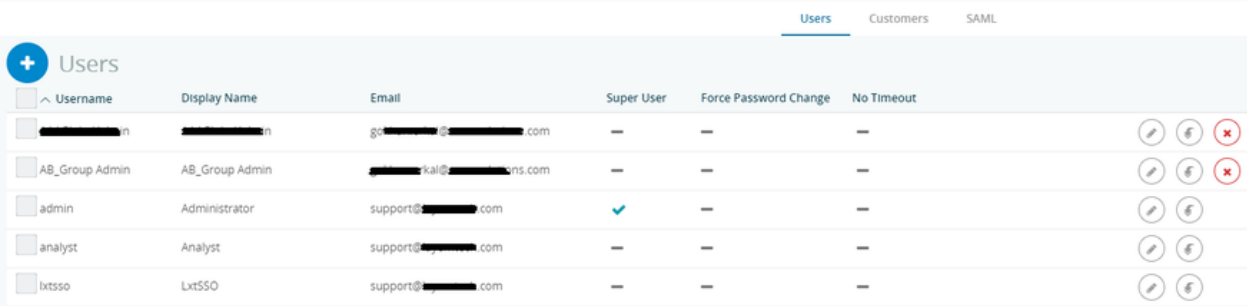
Once the customer is saved, you can use the **Clone** icon at the end of the row next to customer name to quickly add additional customers with these same or similar parameters.

To edit an existing customer, click **Edit** (pencil icon) at the end of the row next to the relevant customer, and modify the settings for that particular customer.

To delete a customer, click **Delete** (X icon) at the end of the row next to the customer you want to delete.

7.17. Users

Select **Users** at the top of the Access Control Editor screen. This will open a window where you can add users to the system.



There are three default users upon installation:

- admin: This is the superuser for the system and is the account that can perform all functions in the system. Set these credentials and only share them with your administrator.
- analyst: This is a read-only account that is set up so the admin can assign anyone this credential without having to add them as a user.
- lxtsso: This is a single sign on credential and is only used when the system is integrated to another platform such as an IT Operations platform.

Click **+ Users** to add a User. This will open up a window where you need to enter the following data:

- Username: This will be the username they will need to enter once logging into the system.
- Display Name: This will be the named displayed in the top right corner. If it is admin then the menu is available. The menu is not available for other accounts.
- Email: Their email address.
- Force Password Change: Checking this check box will force them to change their password when they log in.

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- Customer: Click this drop-down box and select the customer to which this user needs to be assigned.
- Password/Confirm Password: Enter their password and then confirm it.

Click **Save** to save the user.

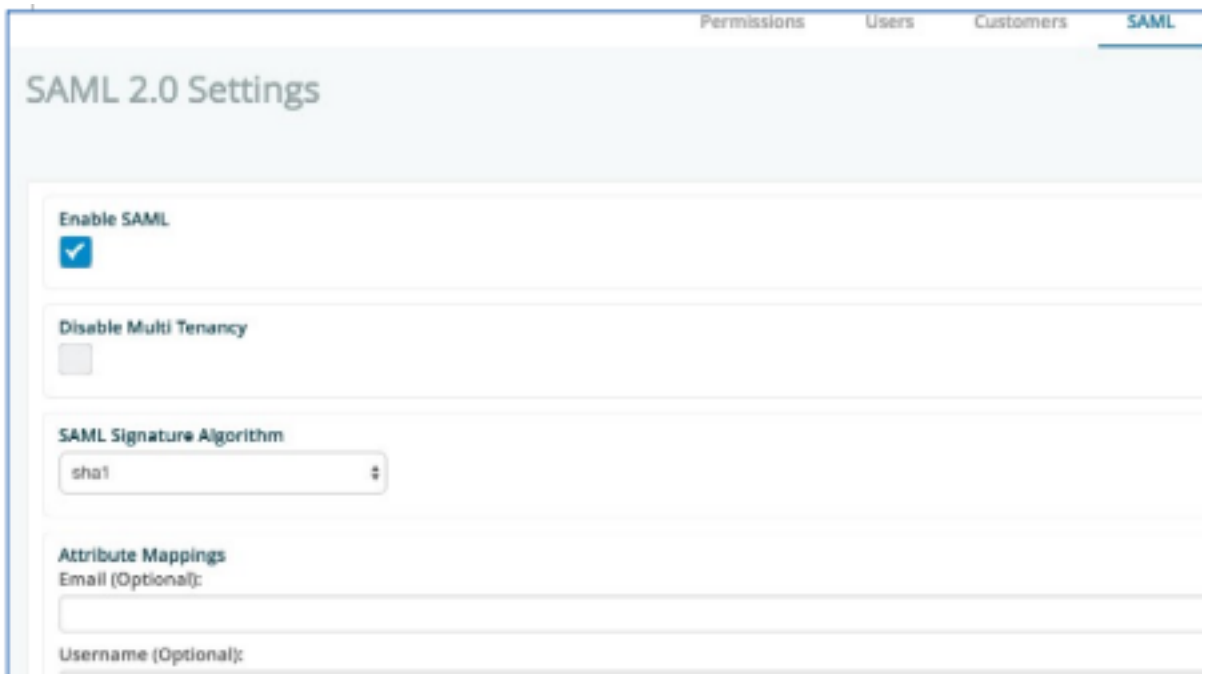
Use the buttons to the right of the users to either manage the user account:

- Pencil icon - to edit the account
- Down arrow icon - to clone the account for quick add
- X icon - to delete a user

7.18. SAML

Security Assertion Markup Language (SAML) is an open standard for exchanging authentication and authorization data between parties, in particular, between an identity provider and a service provider. As its name implies, SAML is an XML-based markup language for security assertions (statements that service providers use to make access-control decisions).

SAML is utilized here to enable single sign-on across security domains. Select **SAML** at the top of the page. This will open a window where you can choose to enable SAML along with the specific signature algorithm and various attributes. This function often requires close interaction between the customer and the VOSS engineer.



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