Brightlayer Software Suite

Web Interface User Guide

Release 7.2.0

July 2024

Version 1

Eaton

Proprietary and Confidential

www.Eaton.com/VCOM

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Contact Support

For your convenience, Eaton provides one site where you can access the information that you need for our BLSS products. You can access the resources listed below by going to https://support.optimumpathinc.com.

- Online and telephone contact information for technical assistance and customer services
- Product and documentation downloads
- Other helpful resources appropriate for your product

Contents

1. Introduction

Brightlayer Software Suite (BLSS) 7.1 marks the introduction of the new HTML5 web interface, which provides an enhanced user experience for our users. The HTML5 redesign includes a streamlined and consistent interface to allow users to manage and monitor devices in a much more efficient way. As we progress with more releases of the application, we will include an increasing number of pages and features in the HTML5 interface.

1.1. HTML5 Web Interface

This guide provides instructions to users for the current version of the web interface. As subsequent releases are provided, this guide will be updated to include the new instructions for the HTML5 pages. The web interface can be accessed through the Google Chrome/Microsoft Edge web browser.

The Administration Guide provides detailed instructions to help you implement and maintain the application using the web interface of the application. A detailed review of the features and functions of the web interface is provided in the sections below.

1.2. Application Overview

The application portal lets you access a wide array of data information from several disparate sources in one consolidated interface. The power of this aggregation is the simplicity it provides to operators to monitor and control both Facilities and IT devices in the data center environment. Since this application is vendor-neutral, any device can be included in the interface and monitoring capabilities.

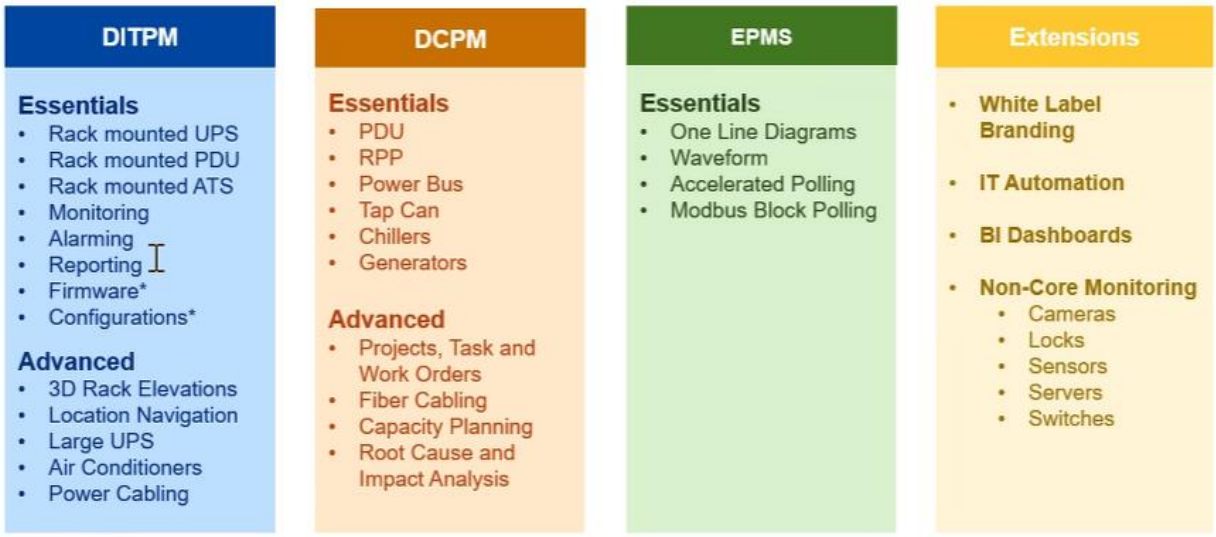
The application provides the following features for data center operators:

- Visual Navigation and Information to multiple floorplans
- Navigation to the Main Data Center floorplans or Remote IT closets
- Real-time data metrics related to any device in the system
- Historical trend analysis for metrics defined for devices
- Reporting capabilities for user, device, performance, and executive reporting requirements.
- Integration with third-party software solutions. For example, Power Strip controls, IP Camera Systems, Card Access Security Systems, Other Vendor Support and Maintenance portals, third-party Monitoring applications, and more are supported.
- Complete Design management of navigation and floorplans. Administrators can assign new devices to floorplans and customize the images and menu links associated with them.
- Full featured Rack Builder. This feature permits administrators to create online graphical representations of their rack layouts. Key information related to devices and racks can then be viewed individually or at the rack level to understand the Weight, Power, and physical characteristics of that rack.
- Port mapping capabilities for both power and network ports.
- Complete Administrator command of the Access Control Rights of users on the system. Floorplans, Devices, and Reports are all controlled by standard User and User Group access rights in the System Administrator area of the application.

1.3. Products Metrics

Brightlayer Software Suite (BLSS) 7.1 offers six products – Distributed IT Performance Management (DITPM) Essential/Advanced, Data Center Performance Management (DCPM)) Essential/Advanced, Electrical Power Monitoring System (EPMS) Essential, Asset Performance Management (APM) Advanced for industrial use, and many Extensions.

The features available in the application vary depending on the products and extensions users purchase.



1.4. Web versus 3D Client

The application provides both a web and 3D client interface to use for performing actions and managing devices. This User Guide defines the functions which are contained in the web interface. For information on the client features please consult the related Visual Data Center 3D Client User Guide.

The following is a high-level list of functions that are available in the web interface. Note, the functions are varied depending on different products.

- BI Dashboard – Provide various dashboards and visualization charts that which is valuable for decision-making.
- Graph - View all graphs related to device performance and application information.
- Reports – View all reports related to device performance and application information.
- One Line Diagrams – View and draw One Line Diagram.
- Waveforms – View power meter device's waveform information.
- Alarms – View all alarm information for locations and devices.
- Calendar – View and manage calendar events for all devices and users in the system.
- Access Rights Control – Manage user rights to view, modify, create delete certain components of the application.
- User management – Add, modify, and delete all users in the application, and reset passwords.
- Device management – Add and remove devices from the application. Update attributes and device settings.

- Device placement – Assign, remove and relocate devices on floorplans.
- Device Data Viewing – View all data related to a device including alarms, graphs, trend charts, port mappings and more.
- Services – View and manage calendar events and warranty data for all devices in the system.
- IT Devices – View and manage virtual machines performance and status.
- IT Automations - Define triggers and actions, create automation based on users' own needs.
- Rack Building – Place devices within racks.
- Port Mapping – Define and manage port connections for power and network ports.
- Network and Power Paths – Create one-line summary of the network, a power tree of a facility, or both. This feature allows logical and physical definitions.
- Discovery – Define discovery jobs which will poll networks and create devices based on network discovery.
- Monitoring profiles – Define the data points to monitor for devices.
- Project Wizard – Create work order-based device actions and assign tasks to users of the application.
- Camera Studio – Allows users to configure and manage camera interfaces.
- Firmware – Bulk upload firmware files to supported device types and models.
- Navigation Tree – Build and configure the navigation tree for all locations managed by the application. Create floorplans to assign devices to the floor.
- Root Cause | Impact Analysis – Analyzes the port connections to determine impacts and dependencies for devices connected on the power and network paths.

1.5. Accessing the Web Interface

The web interface is designed with an easy-to-use framework that is consistent throughout the application. The web interface can be accessed in one of two ways:

- Direct Web Access – You can type the URL directly into a browser and login with your standard user/password combination. The available functions presented to the user will be based on the user's access rights permission levels for the application instance.
- Access from 3D Client Interface – You can click the Web Interface icon on the main page of the 3D client interface to display a separate web browser window with the web interface to the application.
  Note: Since the user is already logged into the 3D client, the application will perform an encapsulated logon to the web interface with the current client user credentials

2. Login

The Web interface is a web-based portal that is accessible through a standard web browser. If you do not know the URL to access the login page for the application login, please contact your company system administrator for this information. Some companies allow access to the login page from remote locations. Others restrict access to internal computing devices or allow access through the company virtual private network (VPN).

2.1. Logging In to the Application

Follow these steps to log into the application:

1. Access the URL for the application in a supported browser. The application must be accessed using the URL configured during installation. Attempting to access the application with only the IP Address will be rejected with a message that ask users to use the URL provided during installation.
2. Enter the username in the Login field.
3. Enter your password in the Password field.
4. Choose the language to be used for labels, buttons and other strings presented in the application.
5. Select the Remember Me checkbox to automatically populate the Username field when the login page is accessed again. When the browser cache is cleared this name will be purged and users will need to fill this field in again.
6. Select the Sign In button or press Enter to Login.

If you successfully log into the application, the main portal interface appears with a series of tabs for accessing the application features.

2.2. Login Issues

There are a series of issues which could prevent a successful login to the application. This User Guide assumes that the application web server and database are functioning properly. Detailed Technical Support related to the actual processes and database is not covered in the scope of this document.

2.2.1. Incorrect User/Password Combination

If you submit the incorrect Username and Password combination, a pop-up window with message "Username/password combination is not valid." will display.

Click OK to return to the login screen and try to enter the Username and Password combination again. Please note that repeated login failures will result in a locked account which needs to be unlocked by an administrator. The number of allowed failed attempts can be configured in the application.

2.2.2. Account Already Logged on System

Logins are restricted to a single concurrent logon session for each user account. If another computer has already logged on to the portal with a user and password combination, you are asked if you want that user to log out.

- Clicking the Yes button continues the login process on the current device and displays the application portal interface. The remote who user already logged in with that account will have their session terminated. In addition, no other functions are allowed against the database by that other user.
- Clicking the No button returns you to the Login prompt and lets you try to log in with a different set of login credentials.

Note: The same username can be logged into the 3D client, web interface and mobile device at the same time without forcing session terminations on those devices.

2.2.3. License Quota Overage

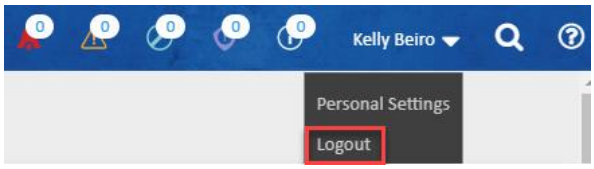
When logging into the web interface, the application checks the system usage and compares the usage to the license quotas purchased by the customer. If there is an excessive number of licenses consumed, then the access to the web interface will be restricted to the **admin** account only. This user will be granted access to the web interface to purge excessive quota items or purchase additional licenses to apply to the server. Once the quota check complies, then standard login functionality is restored for all users.

2.2.4. Grace Period for Licenses

In some cases, users will receive a warning message related to the quota usage in the application. There is a Grace Period which allows users a period of time to address quota overages prior to the system shutdown. The message clearly indicates the amount of time remaining to address license issued before the system is locked to administrators only.

2.3. Logging Out of the Application

To log out of the session, select the Logout menu item on the Personal menu and confirm the message to log out of the application. This will return the user to the Login page of the web interface.



2.4. Session Timeouts

The maximum inactive login session duration is managed with a configuration setting defined on the server. Please reference the Administration Guide for instructions on how to access and update this setting using the vdctools command. When the maximum inactive session time has been reached then

the user will be prompted to supply the password to continue with a function. The session and page functions will be maintained, and the selected function will be executed.

Note: If the web interface has an active window opened on the browser page, then the sessions will not timeout. This feature is designed to assist with NOC users who will open and view dashboards for long periods of time with no other application access.

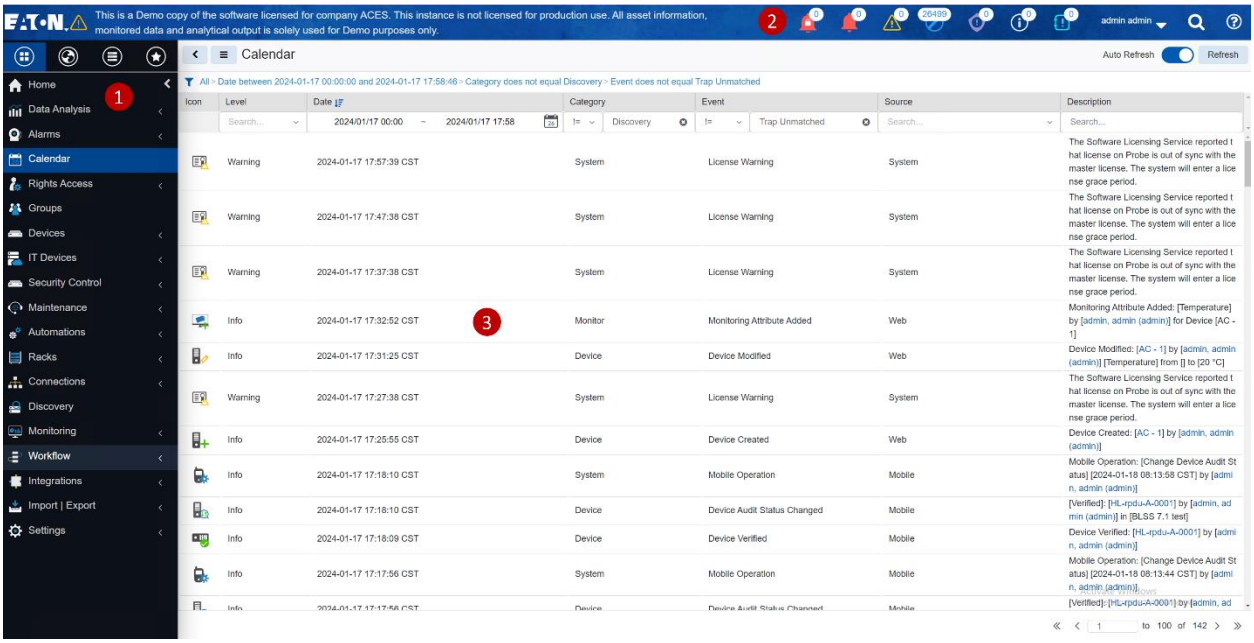
3. Page Layout Overview

The application page layout is designed to optimize usability and efficiency for completing common tasks and accessing information related to locations and devices. Please use this section of the documentation to review the details of the main page components to help improve your ability to navigate the features and information in the application.

Please note that the user's working session is maintained in a single browser tab. New browser tabs are not automatically spawned to support the access of new information. Instead, users can easily navigate back through page history using tools provided in the application.

3.1. Components

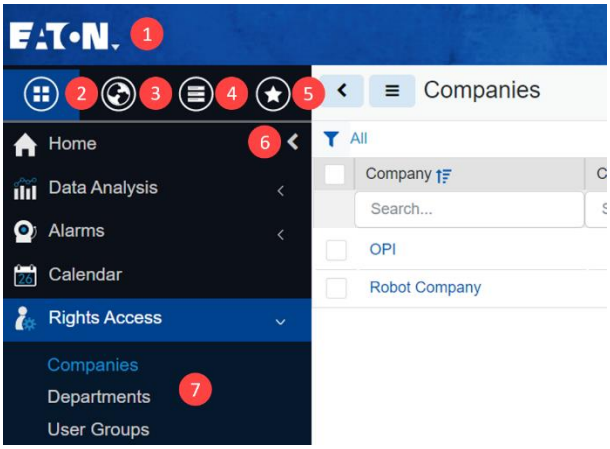
The following components are arranged on the application interface. These components are consistently available to users throughout the working session to allow easy access to key functions and data.



1. Navigation Panel – used to access Feature Menus, Navigation Tree, Devices Navigator, or Favorites List defined by users.
2. Banner – Alarm Indicators, User Menu, Search Widget and Help Widget are available in the Banner.
3. Content Area – displays the content associated with the Navigation Panel selection.

3.2. Navigation Panel

The Navigation Panel is the key component for users to access pages with features and data maintained in the application. Several functions are available to assist users in easily finding key content in the application.



3.2.1. Application Logo

1) The application logo serves as a toggle button to fully hide or show the Navigation Menu. This action will provide full screen capability for the main data content and tables when needed by the user.

3.2.2. Feature Menus

2) Feature Menus are the default view presented to the user when logged into the application. This contains the core menu groups and items users access to manage the application. Each of the Menu Groups and Menu Items is defined in detail in this User Guide.

The features available in the application vary depending on the products and extensions users purchase.

3.2.2.1. Menu Groups

Common functions and pages are grouped together in the Feature Menus' navigation panel to facilitate access and use by the users. In some cases, the Group name serves as the only page for that group and will launch the content when selected by the user. The following Menu Groups are available in the application.

Note: Details of Main Menu Items and the functions of each page are defined in this User Guide in other sections.

Main Menu Group	Description	Component	Available Product(s)
Home	Default view of the application interface which shows the World Map and location navigation tree for accessing floorplan views with devices.	Location Filter	All products
		Graphs	All products
		Audits	DCPM-ADV
		Workflow Items	DCPM-ADV
		PUE	All products
		10 Most Recent Reports	All products
		10 Most Recent Frequent Alarms within the Last 24 Hours	All products
		10 Most Recent Events	All products
Data Analysis	Access to defined BI Dashboards, graphs, trend charts and report features.	BI Dashboard	Purchasable extension for all products
		Graphs	All products

		Reports	All products
		Capacity Planning	DITPM-ADV DCPM-ADV EPMS-ADV
		Power Project Plans	DITPM-ADV DCPM-ADV
One-Line Diagrams	Tools for viewing and editing One Line Diagrams.	One-Line Diagrams	EPMS-ESS & EPMS-ADV APM-ADV
Power Quality Analysis	Tools for viewing power meter's waveform.	Waveforms	EPMS-ESS & EPMS-ADV APM-ADV
		Power Alarms	EPMS-ESS & EPMS-ADV
Alarms	Opens the alarm panel for a detailed view of alarm conditions of devices managed in the application.	Alarm Panel	All products
		Traps	All products
		Smart Alarms	DITPM-ADV DCPM-ADV EPMS-ADV
		Service Levels (SLA)	DITPM-ADV DCPM-ADV EPMS-ADV
		OPC UA Events	All products
Calendar	Full audit history of devices and users managed in the application. All actions and changes to the application can be viewed in this tool.	Calendar	All products
Rights Access	Access to features needed to control rights access to locations and devices managed in the application. This feature manages all User provisioning activity for the application.	Companies	All products *Sub-component "Site" is not available for DITPM-ESS
		Departments	All products *Sub-component "Devices" and "Areas" are not available for DITPM-ESS
		User Groups	All products
		Users	All products
		Owners	All products
		Current Users	All products
Groups	Defines Device Groups and Rack Groups in the application. These are used for rights access and reporting purposes in other parts of the application.	Device Groups	All products
		Rack Groups	DITPM-ADV DCPM-ESS & DCPM-ADV
		Associated Devices Group	All products
		Camera Group	Purchasable extension for all products except APM-ADV
Devices	Central set of menu items to manage devices in the application including Firmware uploads to the devices.	Devices	All products
		Polling Range 1: 1-30 seconds	EPMS-ADV
		Polling Range 2: 30 seconds – 1 minute	DCPM-ADV EPMS-ESS & EPMS-ADV APM-ADV
		Polling Range 3: 1 minute – 5 minutes	DITPM-ADV DCPM-ADV EPMS-ESS & EPMS-ADV APM-ADV

		Polling Range 4: 5 minutes – 30 days	All products
		Ports – Circuit trace & Power Path	All products except DITPM-ESS
		Ports – Network Path	DCPM-ESS & DCPM-ADV
		Network Root Cause & Network Impact Analysis	DCPM-ADV
		Power Root Cause & Power Impact Analysis	DCPM-ADV EPMS-ADV
		Types	All products
		Manufacturers	All products
		Product Lines	All products
		Models with rack UPS, rack PDU, rack ATS, sensor	All products
		Models with full model library	All products except DITPM-ESS
		Consumables	DCPM-ADV EPMS-ADV
		Manage	All products except APM-ADV
Security Control		Access Control	All products
		Smart Rack Locks	All products
		Cameras	Purchasable extension for all products except APM-ADV
Maintenance	View and manage calendar events, service, and warranty data for all devices in the system.	Calendar	DCPM-ESS & DCPM-ADV EPMS-ESS & EPMS-ADV
		Service Schedules	DCPM-ESS & DCPM-ADV EPMS-ESS & EPMS-ADV
		Service History	DCPM-ESS & DCPM-ADV EPMS-ESS & EPMS-ADV
		Warranty	DCPM-ESS & DCPM-ADV EPMS-ESS & EPMS-ADV
IT Devices	Set of dashboards to manage virtual devices including VMware VCenter, VMware Hosts, VMware Guests, Configuration Groups and Action History.	Connectors, VM Clusters, VM Guests, Hosts, Operating Systems, Action History	Purchasable extension for all products
		VMware vCenter, VMware Hosts, VMware Guests, VMware Groups, Action History	DCPM-ESS & DCPM-ADV
Automations	Tools for configuring automation actions	IT Automation	DCPM-ESS & DCPM-ADV
Racks	Allows users to manage placement of devices on Racks and to manage Audit services of IT devices mounted to the Racks using the Mobile Asset Manager application.	Rack Manager	DITPM-ADV DCPM-ESS & DCPM-ADV
		Audit Manager	DCPM-ADV
Connections	Provides features related to port mapping and the analysis of the connected devices.	Cables	All products except DITPM-ESS
		Fiber Cables	DCPM-ADV
		Port Mapping	All products except DITPM-ESS

		Port Types	All products except DITPM-ESS
		Cable Types	All product except DITPM-ESS
		Port Settings	DCPM-ESS & DCPM-ADV
		Port Allocations	All products except DITPM-ESS
		Network Layers	DCPM-ADV
Discovery	Menu group to manage tools for discovering devices.	SNMP Configuration	All products
		RF Code Configuration	Purchasable extension for all products except APM-ADV
		VMware Configuration	DCPM-ESS & DCPM-ADV
Monitoring	Allows users to define monitoring profiles, notification triggers and escalation actions for all data to be collected from devices.	Monitoring Templates	All products
		Triggers	All products
		Actions	All products
		Probes	All products
		Remote Data Gateway	All products
		CSV Mapping	DITPM-ADV DCPM-ESS & DCPM-ADV EPMS-ADV APM-ADV
		Data Mapping	DITPM-ADV DCPM-ESS & DCPM-ADV EPMS-ADV APM-ADV
		MIB Browser	DITPM-ADV DCPM-ESS & DCPM-ADV EPMS-ADV APM-ADV
		Script Management	All products
Workflow	Tools for creating projects with tasks and generating work orders.	Workflow Management	Purchasable extension for all products
		My Activity	DCPM-ADV
		Projects	DCPM-ADV
		Tasks	DCPM-ADV
		Work Orders	DCPM-ADV
Integrations	Allows configuration management for integrations with third-party applications or data sources.	Integrations	All products
		ITSM Integration	Purchasable extension for all products except APM-ADV
Import | Export	Allows user to access bulk import tools for various configuration options in the application and to view the history and audit details of these import activities.	Import Central: Attributes, Devices, Discovery Jobs, Graphs, Models, Monitoring Templates, Triggers	All products
		Import Central - Device Firmware	All products except APM-ADV
		Import Central - Inventory	DCPM-ADV EPMS-ADV
		Import Central: ITSM Attribute Mapping, ITSM Model Mapping	Purchasable extension for all products except APM-ADV

		Import Central: Location, PDU/RPP Panels	All products except DITPM-ESS
		Import Central: Advanced Analytics Import, Connector	Purchasable extension for all products
		Import Central - One-Line Diagram	EPMS-ESS & EPMS-ADV APM-ADV
		Export PDU	All products except DITPM-ESS
		Export History	All products
Settings	Provides a series of system level attribute and list management capabilities for the user to define configurable options available in the application.	Attribute Manager	All products
		Unit Manager	All products
		Applications	DCPM-ADV
		System Settings	All products
3D			DCPM-ADV EPMS-ADV

3.2.3. Navigation Tree

3) The Navigation tree is where you create and display all the sites managed in the application. These are visible as nodes for countries, cities, buildings, floors, areas, and devices. The navigation tree is used to browse, manage, and modify the nodes in the tree.

Note: Details are in the Navigation Tree section of this document.

3.2.4. Devices Navigator

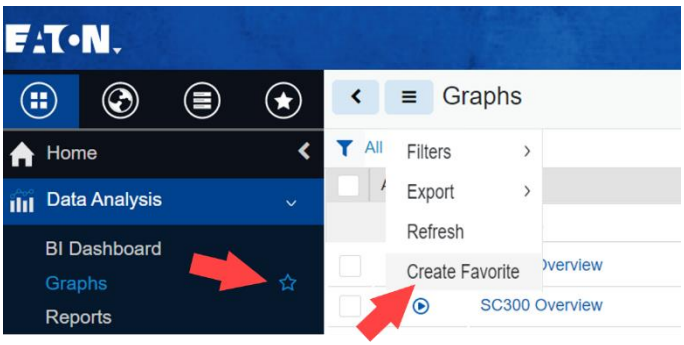
4) The Devices Navigator provides users with an easy way to search and find devices to access the Device Central page. This feature organizes the devices based on the Device Type or the Lifecycle Status. The Search filter allows users to filter the grouped list by entering a string to use for matching against the device attributes. The search filter will execute a “contains” search against the Device Name, Asset Tag and Serial Number fields.

If user selects the device type air conditioner, the Devices Table List will be presented with a full list of all devices which match that type. If user expands the Type list and selects a specific device, the user will be directed to the device’s Device Central page.

3.2.5. Favorites List

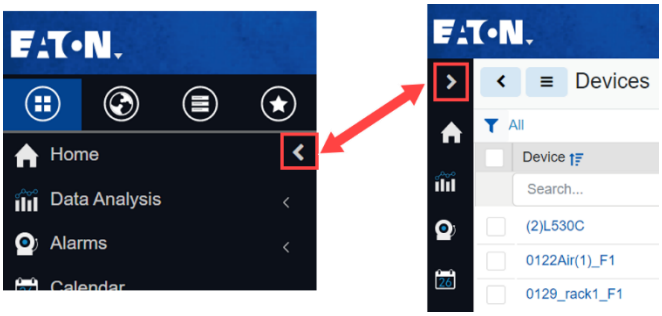
5) The Favorites List provides a list of folders and shortcut links to pages defined by the user as Favorites. This Favorites List is defined individually for each user and there is no sharing of Favorites between users or groups in the application. There are two methods a user can perform to define a Favorite to this Favorites List:

- Mouse over the Feature Menu Item and click on the Star icon
- Click the Create Favorite menu item in the List Options menu



3.2.6. Minimize Button

6) The Minimize button will toggle between expanding and collapsing the display of the Navigation Panel between icon only and icon plus description views. This feature will allow users to utilize more screen space for the Content Area information and tables when needed. This feature is only available on the Main Menu view of the Navigation Panel.



3.2.7. Main Menu Item

7) Under each of the Menu Groups is a series of menu items that provide users access to the specific function or information for the application. When selected, the component of the application will display the related data tables, forms, dashboards, etc. for use by the user.

For Menu Groups which have multiple Menu Items, an expand/collapse icon is available to the right of Menu Group name. This icon serves as a toggle button to expand and collapse the menu group to show the underlying menu items. Only one menu group can be expanded at a time.

3.3. Banner Functions

The Banner Widgets provide access to common features needed by the user regardless of the pages being accessed in the Main Data view. The following functions are available to the user in this part of the interface.

3.3.1. Alarm Counters

The alarm counters provide an up-to-date count of alarm conditions reported in the application. The refresh frequency is 3 minutes, and the counts include both the device alarms and the location alarms. This set of icons is interactive, so the user can click an icon to open the Alarm panel and view only the selected alarm types. The icons in this Header Function represent the following alarm conditions:

- Red with a lock – Latch alarm. The alarm remains active in the alarm panel even if the monitored data value drops back below the user-defined threshold until manually deactivated.
- Red – Critical
- Yellow – Warning
- Blue – Unreachable
- Purple - Minor
- Lite Blue - Information
- Aqua - Exceptions

Data collection, thresholds and other alarm related rules are all managed in the Monitoring Main Menu Group of the Feature Menus. The alarm counts are only related to devices and locations for which the user has access as defined in the User Rights section of the Navigation Tree.

3.3.2. Personal Menu

The Personal Menu allows users to customize their application experience with a series of options designed to tailor the behavior and views of the application based on user preferences. In addition, this menu allows users to Logout of their current session for the application.

3.3.2.1. Personal Settings

Selecting the Personal Settings menu option presents the following options for users to manage the application:

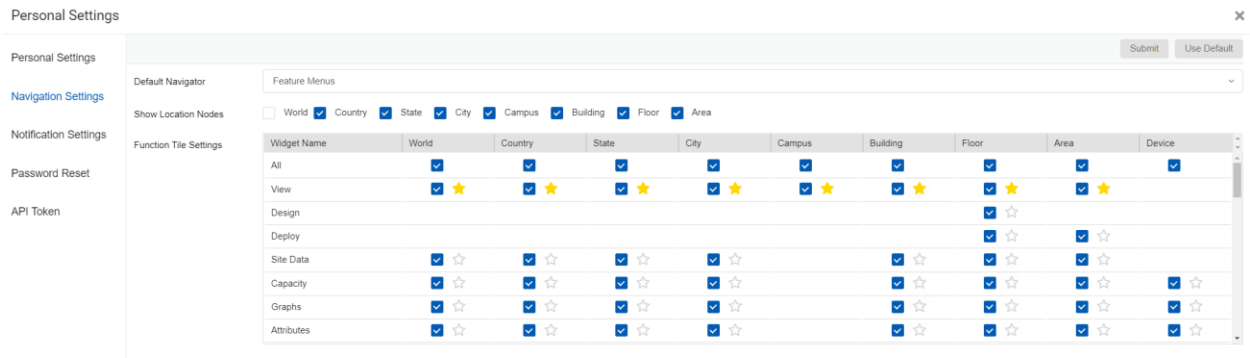
Personal Settings Item	Description
Auto Align	When set to ON users can place Racks on the floorplan and they will auto align with a nearby Rack.
Number of Generic Entries per Page	Controls the number of items to present in a list for each page. By default, this value is set to 10 for new users.
Unit	Allows the user to control the units listed for attributes and values in the application. Option available are Metric and US (Imperial).
Location Path Display Format	Allows the user to select location path display format. Short path - Area, Floor, Building. Full Path - Area, Floor, Building, City, State, Country. Default is Short Path.
Port Mapping Default Search Option	Allows the user to set the default search option for port mapping. Default is Ports in Same Rack.
Rack Capacity Error Message	When set to On users will be notified about space, power and port capacity issues for racks when rackmount devices are placed into rack locations.
Device Basic Information	Allows the user to select Collapse or Expand for device basic information display.
Floor View Default Layer	Allow the user to set the default display layer on the floor view page.
Homepage Dashboard	Allows the user to set the default dashboard on homepage.

Following changes, users must logout and then log back into the application for these updated setting to take effect.

3.3.2.2. Navigation Settings

This Navigation Settings enables users to conveniently access their preferred pages with ease and offers the flexibility to configure nodes according to individual preferences.

Any changes of settings will only take effect after re-login. Note, when you change the default navigator, please re-login using the default URL without suffix.

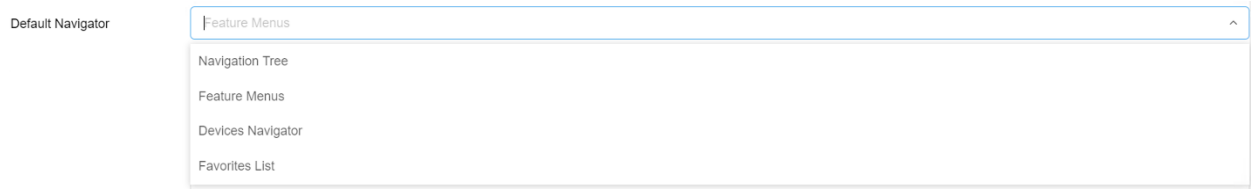


The same setting also has a system level which can be configured in the Settings Menu Group – System Settings Menu Item. The configuration done in the System Settings will be applied to the whole system no matter which account is logged in.

Users can still make their personal level settings when the system-level navigation setting is applied. The personal level setting has a higher priority, and it will overwrite the system-level navigation setting.

Click the “Use Default” button in the Personal Settings and then the system-level navigation setting will be re-applied.

3.3.2.2.1. Default Navigator

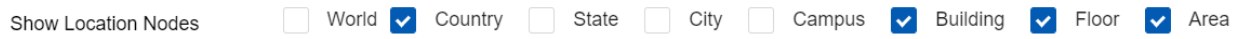


The BLSS application has four navigation panel components, which are:

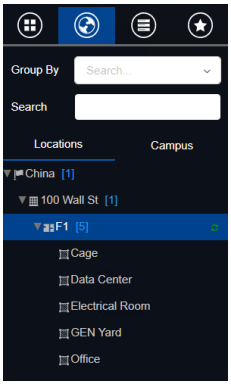
- Feature Menus
- Navigation Tree
- Device Navigator
- Favorites List

The default navigation panel of our system was Feature Menus. Users are allowed to select any one of the four navigation panel components from the dropdown list and set it as the default navigation panel.

3.3.2.2.2. Show Location Nodes



This feature allows users to freely choose the location nodes they want to display on the “Navigation Tree” navigation panel, instead of listing all location nodes hierarchically.

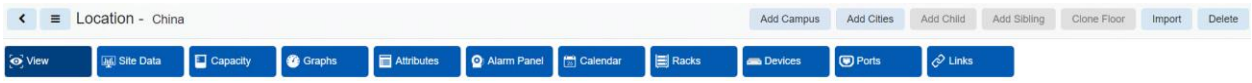


If users select none of the checkboxes, the “Navigation Tree” navigation panel will be empty.

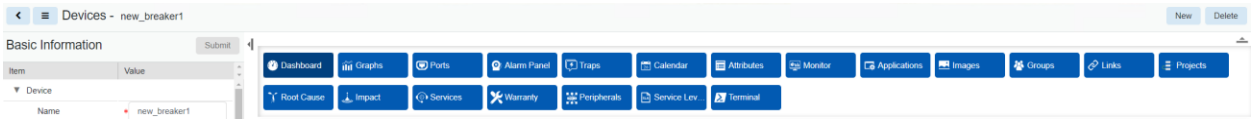
This feature will only hide the display of the unwanted location nodes but will not affect the content/data of the location node.

3.3.2.2.3. Function Tile Settings

In BLSS application, there are many function tiles available for a location node and Device Central for users to view various information related to this location node/device.



location node



Device Central

If users have specific function tiles they’d like to view and don't want to see others, they can enable/disable them by selecting the checkbox of “Function Tile Settings”.

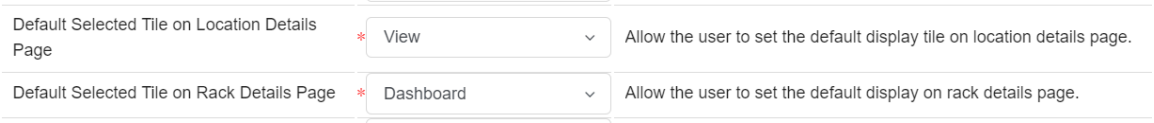
- By default, all the checkboxes are selected. If users want to disable a function tile on the location node/Device Central, they can unselect the checkbox of this function tile under the location node/Device.

  Users can select none of the checkboxes.

  If there is no checkbox of a location node/Device, it means this location node/Device doesn't support this function tile at all.

- The favorite icon ★ means when you select a location node/device, this is the default function tile you will see. Users must select one and only one function tile as the favorite under one location node/Device.

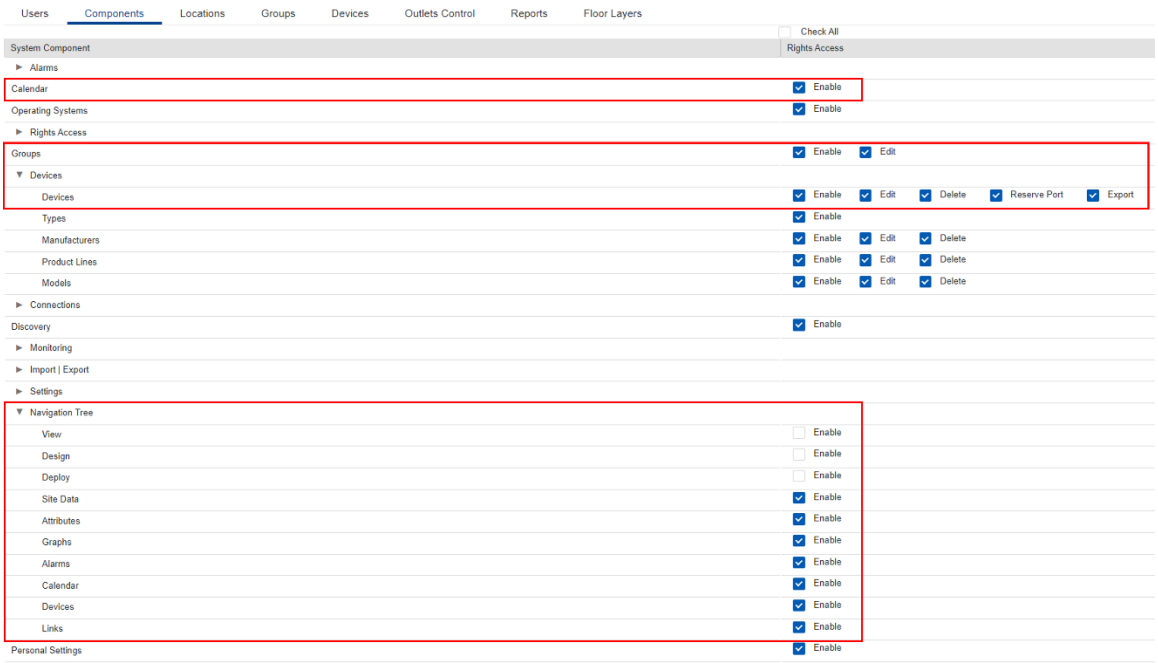
  The favorite icon ★ of the function tile is inherited from Personal Settings of the latest version.



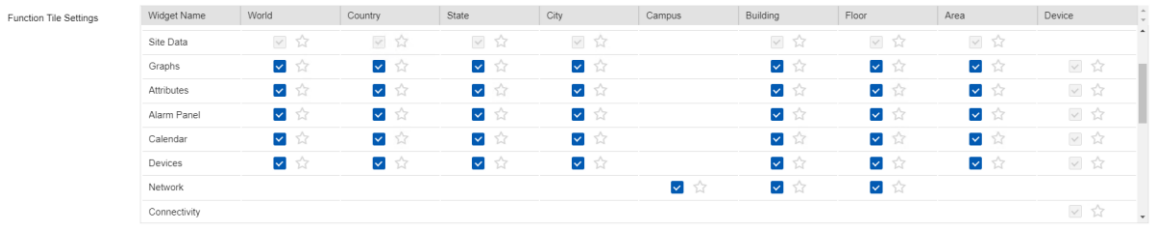
  If the checkbox beside a favorite icon ★ has been unclicked, this favorite icon will be cancelled automatically, and the favorite icon ★ of the first row of function tiles from top to bottom among all the selected function tiles will be selected automatically.

  This function has permission control schema. If the user has no access rights of the below component, the checkboxes of these function tiles will be grey and non-accessible ☑ . Also, the favorite icon will be grey and unclickable. In this case, when users enter a location node/Device Central page, the default page will be the first function tile.

  - "Navigation Tree" component -> affect the function tile of all location nodes
  - "Groups – Devices" component -> affect the access of the Device Central
  - Calendar component -> only affect the access of the Calendar function tile of the Device Central

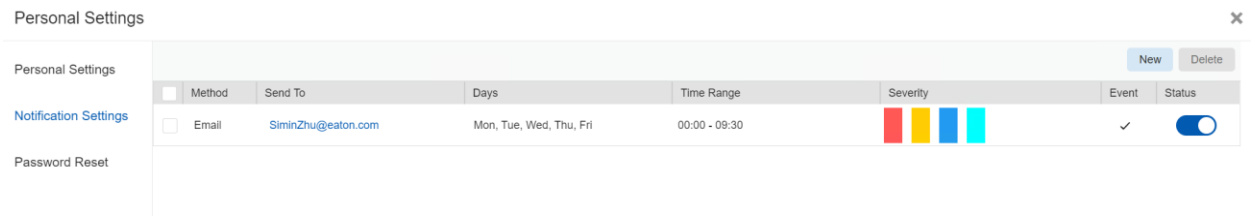


For example, this user has no access rights of the Groups – Devices and Navigation Tree – Site Data function tile. Thus, in the Navigation Settings panel, the checkboxes of Site Data and Device are grey.

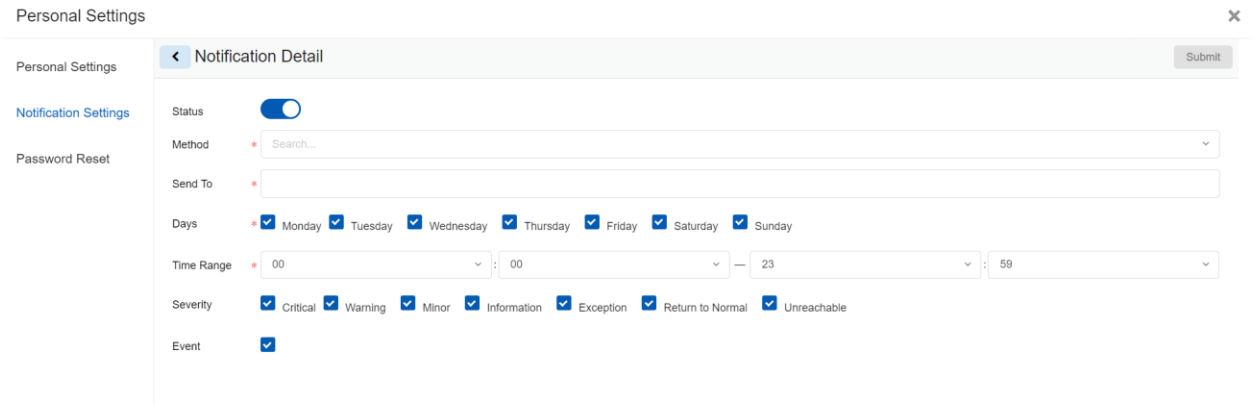


3.3.2.3. Notification Settings

The Notification Settings feature allows users to manage the times they will receive alarm notifications from the application to either their SMTP (Email) or SMS (Phone) addresses. This feature is useful for preventing overnight notifications from being sent to resources that work during the days.



By default, if there are no Notification Settings defined, the user will receive ALL notifications destined for their user account or user group. The following options are available for users as they define a new Notification Settings Profile:



Notification Setting Option	Description
Status	When set to ON the notification setting is enabled and notifications destined for this user will need to match the options defined in the notification profile.
Method	Defines if this rule will deliver notifications to the user SMTP (Email) or SMS (Phone) information. The Email and Phone settings are managed on the Users page in the Rights Access Main Menu Group.
Send To	Allows the user to define the Email address or Phone Number to use for delivery of the SMTP or SMS message.
Days	Defines which days the notification rule will allow the selected messages to be delivered to the user.
Time Range	Defines the time range on the selected days to allow the messages to be routed to the user.
Severity	Allows the user to manage the delivery of notification messages based on Severity. A detailed review of the alarm levels is in the Alarms section of this document.
Event	Allows user to control whether Event based Actions will deliver emails when initiated by Calendar events which match the rule.

3.3.2.4. Password Reset

The Password Reset feature is the primary option for users to change their password for accessing the application. Users must enter their Current Password and New Password to make the change.
Note: The following rules are required for passwords created by users:

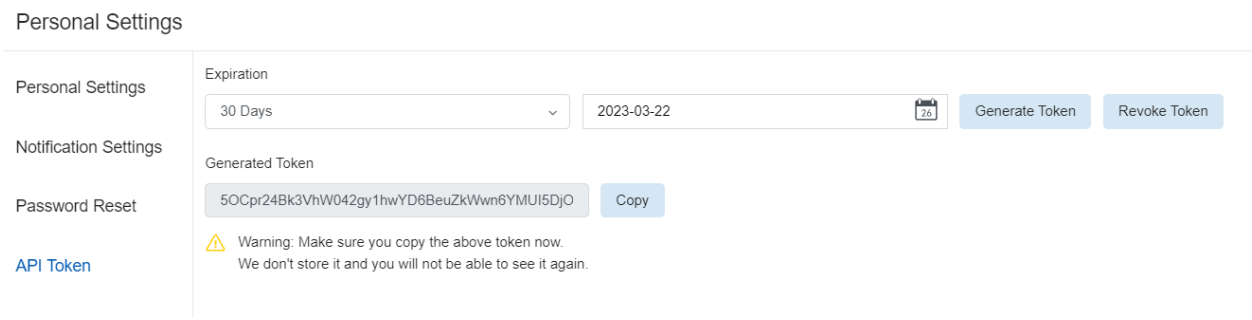
- Minimum 8 characters
- At least 1 Upper Case letter
- At least 1 Lower Case letter

- At least 1 Number
- The new password shall not contain the user's username. The check is not case-sensitive.
- The new password shall not repeat with the previous five password.

When the Confirm Password is being entered, the application will check to ensure it matches the New Password. The Change Password button will not be enabled until the New Password and Confirm Password fields are populated with compliant passwords and match.

3.3.2.5. API Token

The API Token feature allows users to call RESTful API after enabling SAML2.0 authentication. Users can call APIs using the API Token instead of the Username and Password. To generate API Token:



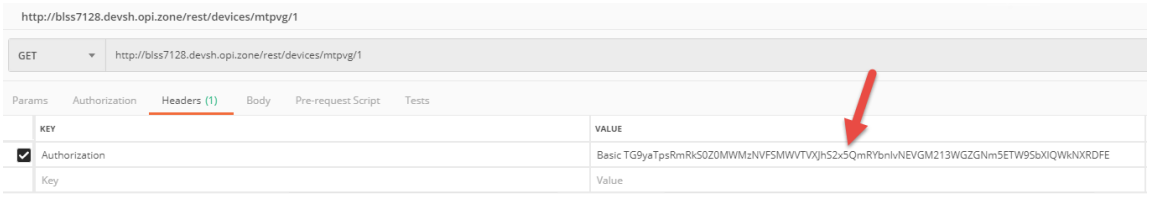
1. Go to Personal Settings – API Token
2. Choose the expiration date of the token. The pre-defined options are 30 Days, 90 Days, and 365 Days. Users can select any day as the expiration date by selecting the Custom Defined option.
3. Click the “Generate Token” button.
4. Copy the generated token.

Users can click the “Revoke Token” button if they want to revoke the current token.

Note, only one active token can be existed at the same time. Thus, if you generate more than one token, the previous tokens will be expired.

To use token in an API platform such as Postman:

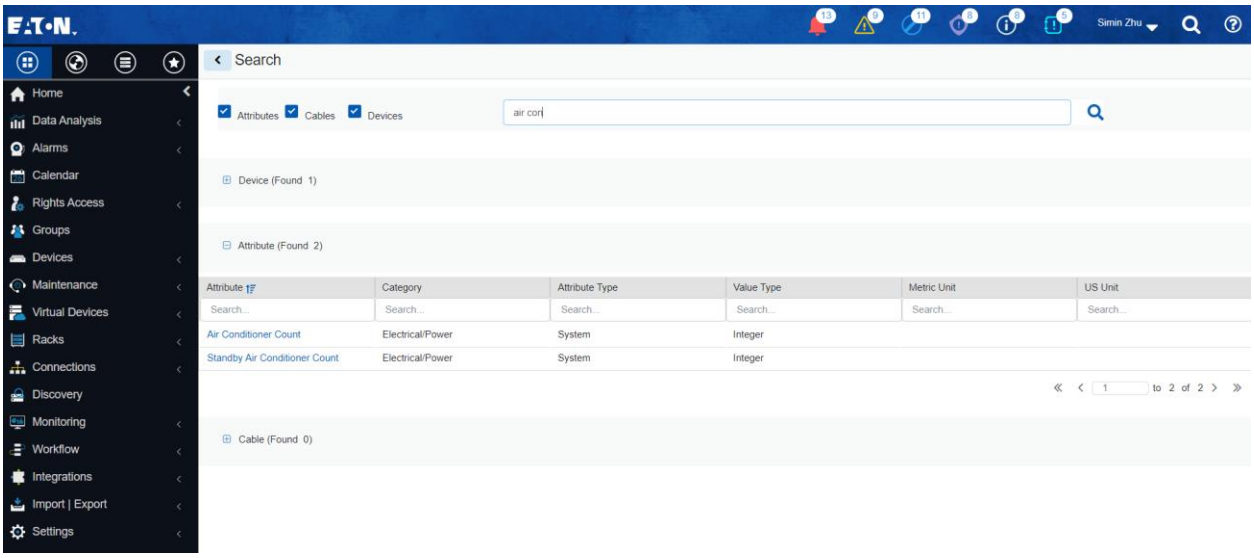
1. Choose the “No Auth” type.
2. Set KEY = Authorization, VAULE = Basic + Generated Token



3.3.3. Search

The Search function supports users to easily find Attributes, Devices and Cables which are defined in the application. Users can enter text in the search field at the top of the page and click the search icon to conduct the search operation. The system performs a “contains” search against defined objects in the

application. Search looks in the following attributes: Device name, Asset Tag, Serial Number, and IP Address.



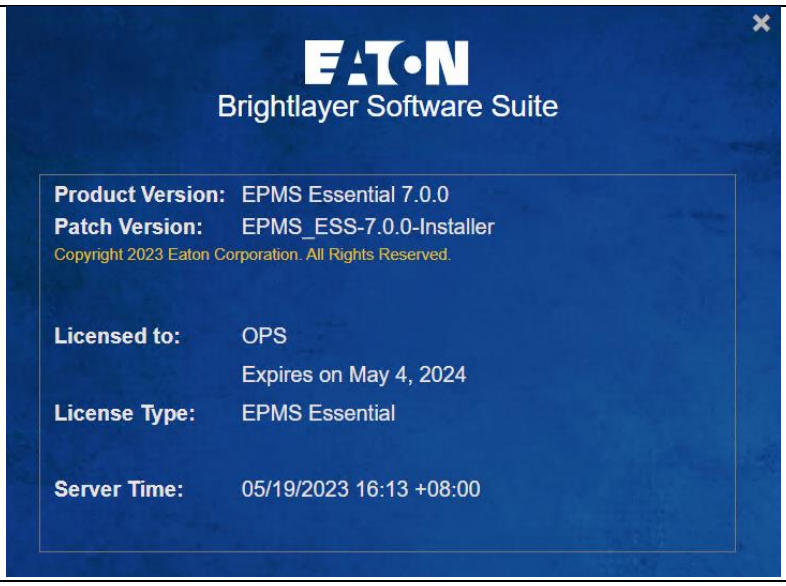
By default, all the Search categories are enabled. Users can deselect the blue checkboxes at the top of the page to limit the search against a specific list of objects. Once run, the matching search results will be listed below the search criteria, and they will be grouped based on the type of object. Click the **+** icon next to the object group to expand the list and view the results in the standard item list table.

The search results table behaves like all tables displaying the number or rows set for the number of generic entries per page. The pagination tool on the lower right is used to navigate through all the results. Further filtering of the list can then be performed using the column filter fields at the top of each column to find specific items in the list which are not currently displayed.

3.3.4. Help

The Help icon serves as a toggle to show/hide the contents of the Help menu. In the Help menu, there are multiple categories of support topics available for the user to access:

Help Topic	Description
File Download	3D installation client files and Model Request Spreadsheet are available for users to download here.
Documentation and Videos	Links to an online repository with the documentation set and videos.
About the Application	A window with the server's software version and licensing information.

	
Eaton Privacy Policy	Links to the Eaton Data Protection and Privacy Notice.
Certificate Signing Request	Generate and download the CSR certificate. This certificate can be used for MQTT monitoring and configuration upload.
Support	• Support Portal: Link to the support portal so users can log into the portal to access more detailed Knowledgebase topics or manage support tickets. • Contact Brightlayer Technical Support: Provides the email address and the phone numbers for users to contact.

3.4. Content Area

The content area displays the data, dashboards, tables, forms, etc. as users choose pages from the menu items and feature icons available in the Navigation menu and Header Functions. This content area has been designed to help ease the user experience for navigating the different features of the application. Some key notes related to the content page are below:

- All pages are displayed in this content component of the application. There are no newly spawned pages or tabs of the browser which could make navigation difficult to track.
- Standard tables and forms are used where possible, so users have a consistent user experience as they access different features. A description of the key aspects of these tables and forms is provided in the section below.
- A Back button is available to easily allow users to return to the previous pages which have been recently accessed.

3.4.1. Standard Table Features

Many of the pages and features of application result in a list of items presented to the user. These lists will be displayed in a common table format with consistent and repeatable behavior. The usability of these features is very important to master and simplify the management of data in these tables on the various pages of the application. The following table provides an overview of the features which are built into these table views:

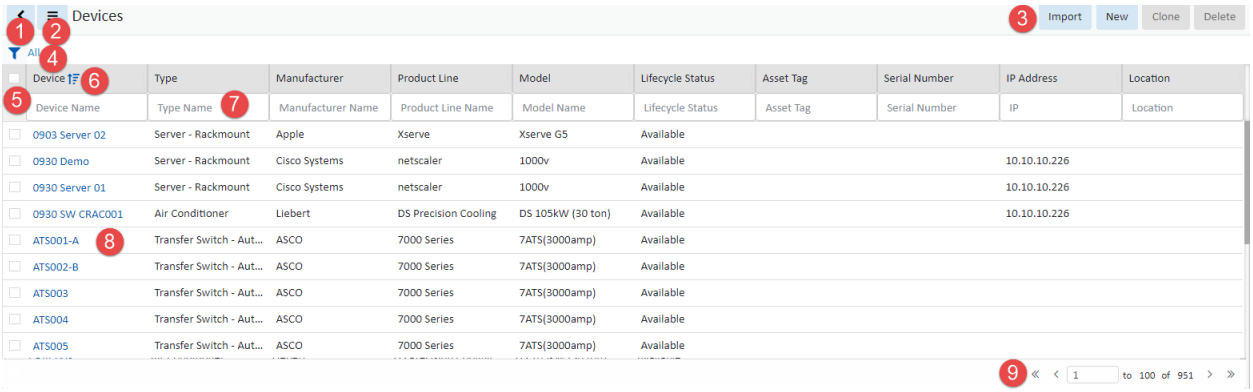


Table Feature	Description
1 - Back Button	Allows the user to return to recent pages viewed.
2 - Table Menu	Easy access for users to manage the table. Options available on this menu are defined in Section 3.4.1.1. Table Menu of this user guide.
3 - Functional Buttons	Buttons related to the content provided on the page will typically be located on the top, right of the page. Specific buttons and features will be defined in the sections related to each feature.
4 - Filter Options	Allows users to define complex filters to limit the records displayed in the table. These filters can be saved and easily accessed in the Table Menu. This feature is defined in Section 3.4.1.2. Filter Options of this user guide.
5 - Select All Checkbox	Allows users to easily select all records in the table for bulk processing with a functional button on the page.
6 - Sort Order	Click the column heading to sort by that field. Clicking the column heading a second time will reverse the sort order of that column. An icon next to the column name will indicate which field is used for Sort Order and which direction is currently being viewed.
7 - Column Filter Fields	Allows for easy filtering of the records in the table. Strings entered in the column filter fields are used to run a “contains” search for the values in the field. Only records which match the search will be presented. Multiple column filters can be used in combination to filter the table list.
8 - Links to Objects	Some values in the table result will be represented with a hyperlink to the object. Click the hyperlink to jump to the object page to view more detail, troubleshoot, etc. the object of interest.
9 - Pagination	Standard pagination tools are provided on all tables. Note: The number of entries per page can be set in the Personal Settings menu for each user.
10 – Select and Arrange Table Columns	Some tables have a gear icon indicating that the columns shown in the table can be selected and rearranged. This feature is defined in Section 3.4.3. Select and Arrange Table Columns of this user guide. **Note**: Not all tables have these features.

3.4.1.1. Table Menu

The Table Menu options may differ on some tables based on content or allowed functions, but the following list defines the standard menu items contained in this common feature on the tables.

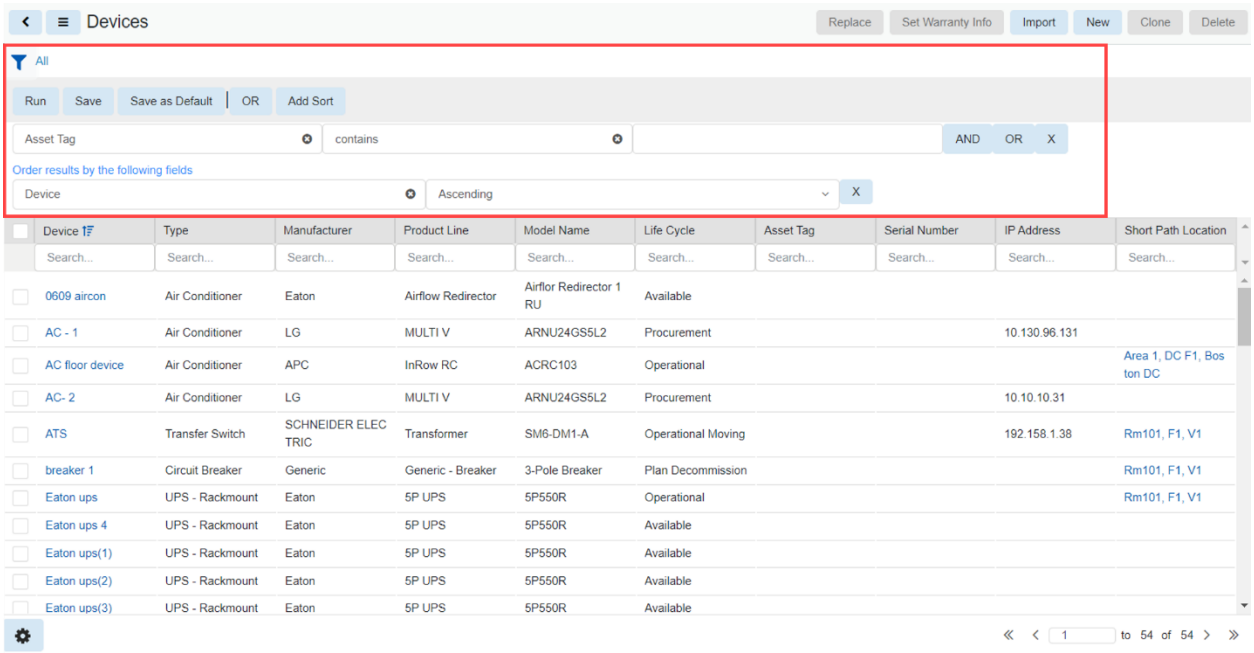
Table Menu Item	Description
Filter	Displays a list of saved Filter views.

Export	Allows users to export the table to a supported export file type. If the table records are filtered, the exported records will match the filtered view.
Refresh List	This action will force a full refresh of the table. If filters are applied to the table, they will remain after the Refresh List action is performed.
Create Favorite	Adds the current page to the Favorites list. User will be prompted for the Favorite name and folder. If filters are applied to the table view, they will be included in the Favorite.

3.4.1.2. Filter Options

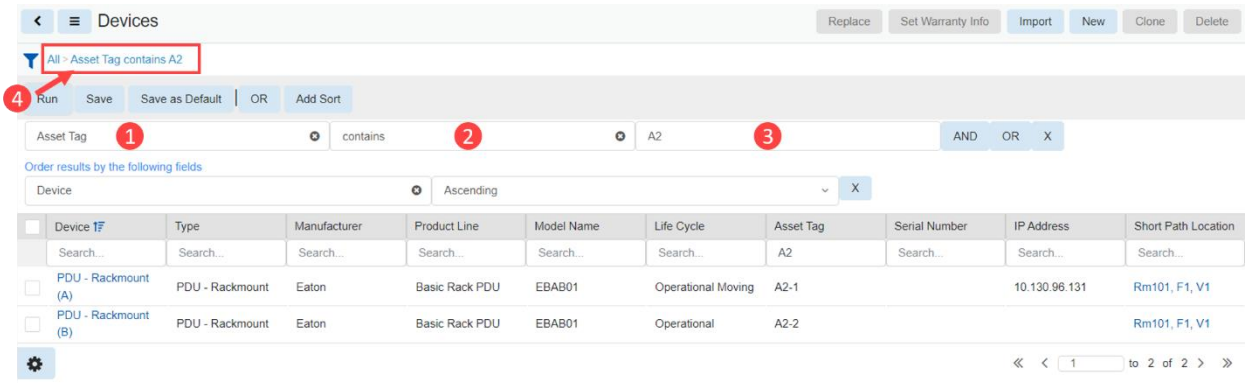
The filter option located above the tables allows users to define simple or complex filter rules to limit the records presented in the table. These filters can then be saved and reused easily on subsequent views of the table.

As filters are defined and applied to the table, a breadcrumb is created from All records and then progresses based on the filter criteria applied in the filters. Users can click any level of the breadcrumb to easily return to a previous view of the table.



3.4.1.2.1. Creating a Simple Filter

Clicking the filter icon reveals the fields and actions available to the user to define a new filter.



1. The first field will contain a list of columns presented in the table. Users can select one of the columns and define a filter for that column.
2. The second field provides a list of operators to apply to the selected column. Examples of these operators are equals, contains, starts with, etc.
3. The third field allows users to enter the criteria to match based on the operator defined in the second field.
4. Click the Run button to execute the filter rule against the records in the table. The breadcrumb will display the filter rule applied to the table.

3.4.1.2.2. Creating a Compound Filter

If users would like to apply multiple column filter criteria with multiple levels of OR logic, they can use the following steps.

- Follow the steps in the section above to define a simple filter rule.
- Click the AND|OR options at the end of the first criteria row to show another row.
- Define filter criteria for the next column.
- Choose additional AND|OR columns to assign to the filter rule.
- Click the Run button to execute the filter rule against the records in the table. The breadcrumb will display the filter rule applied to the table.

3.4.1.2.3. Sorting Filtered Tables

When the filter icon is selected, a row is presented to the user to define the sort order of the records. Users can choose the column of the table to sort and the sort direction (Ascending or Descending) to sort the records.

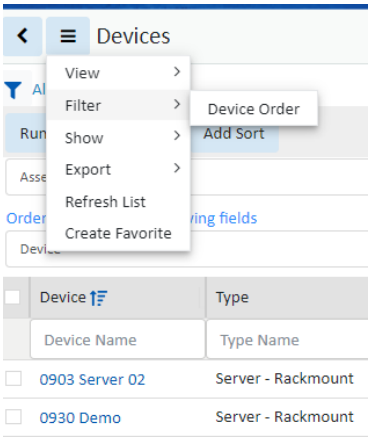
To include additional sort criteria, users can select the Add Sort button at the top of the filter tool. This action will provide an additional sort option for the user to define. Several sort criteria options can be defined as needed to provide primary, secondary, and other sort orders to the records presented in the table.

Note: The first sort criteria defined, which is on the top of the sort criteria options if multiple options are defined, is the primary sort order. The second sort criteria defined is the secondary sort order, etc.

3.4.1.2.4. Saving Filter Rules

For common filter options that users will need to run repeatedly on table data, the filter rules can be saved so they can be easily generated on subsequent views of the table. Once the various filter options are fully defined, users can select the Save button at the top of the filter tool to define the filter shortcut. This shortcut will be saved to the Filter menu located in the Table Menu at the top of the page.

Note: The filter is only saved for the table being viewed. Other tables will have different fields and data and will maintain their own set of filter shortcuts in the Table Menu.



3.4.2. Search String Formats

Format	Description
String	Contains the string anywhere in the field, case insensitive
*	Wildcard
!String	Does not contain the string
String*	Starts with string
*String	Ends with string
String*String	Begins and ends with string but unknown text in middle
=String	Equals exactly
!=String	Does not equal

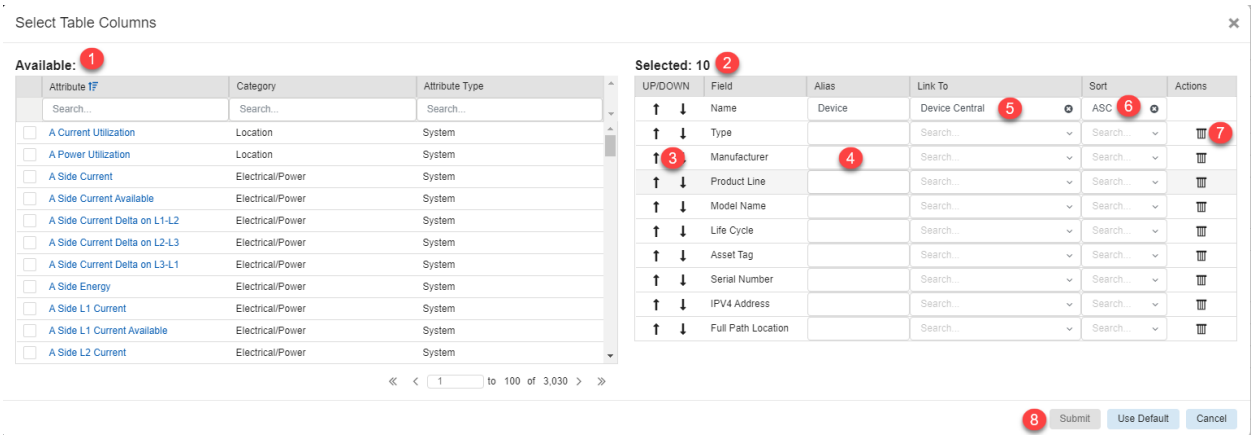
3.4.3. Select and Arrange Table Columns

Some tables have a settings icon found at the bottom left of the table. Selecting this icon opens a list of columns which can be selected and re-ordered for the table. In the Select Table Columns window, the table on the left lists the columns available to be added to the current table. The list of columns on right are the ones defined for the current table. The following actions can be taken with this list of columns:

- Add columns to the table – Select the checkbox next to the column in the list on the left and click Submit.

- Remove columns from the table – Click the Trash icon next to the column name on the list on the right.
- Change Order of columns on table – Click the Up | DOWN arrow icons next to the column name in the list on the right to set the order of columns on the current table.

Note: A horizontal scroll bar will be added if too many fields are selected to fit on the page.



Select Table Columns Feature	Description
1 – Available Columns	The table on the left lists the available columns for the current table. **Note**: The column filter fields operate the same as they do in a regular table.
2 – Selected Columns	Displays the list of selected columns for the current table in the order they will appear.
3 – Move Column Arrows	Click on the up and down arrows to move a column in relation to the other columns in the table. The top entry will be on the left followed by the other columns to the right.
4 – Alias	Displays the column's alias if it has.
5 – Link To	The column can link to other pages in the application. The user can select the page to link to from the drop-down menu.
6 - Sort Order	Selects the sort order for the column.
7 – Trash Icon	Clicking on the trash icon removes the column from the current table.
8 – Submit Button	Saves the column order information and updates the current table.

3.5. Table Item Detail Page

When users are presented with a Table List there are typically hyperlinks to view the details of one or more items in the list. By clicking the links, users can view the Table Item Detail page for the object. The detail pages can be comprised of different types of data, but the standard components of the Table Item Detail page are defined below.

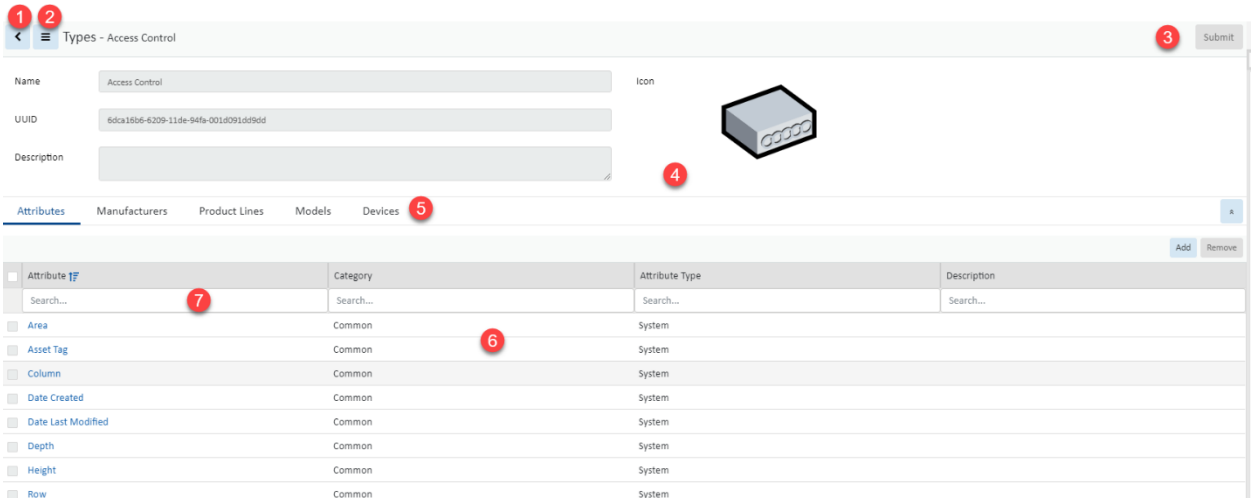


Table Item Detail Feature	Description
1 - Back Button	Allows the user to return to recent pages viewed.
2 - Table Menu	Easy access for users to manage the table. Options available on this menu are defined in this section of the user guide.
3 – Functional Buttons	Buttons related to the content provided on the page will typically be located on the top, right of the page. Specific buttons and features will be defined in the sections related to each feature.
4 – Form Data	The top portion of this page typically has attributes which can be defined for the selected object.
5 – Table List Tabs	The lower portion of this page may have various Table Lists available for the user to view. If multiple table lists are available, then there will be a series of table list tabs to allow the user to change table list views.
6 – Table List	List of items related to the Table List Tab.
7 - Column Filter Row	The first row of each table list lets you enter a name to filter the column. You can enter names in multiple columns to refine the list results.

4. Home Menu Group Page

The Home Menu Group displays the home page that contains a summary of key activity in the application related to the logged-in user.

4.1. System default Home Page

The system default home page consists of several fixed components. Please view the below introduction.

4.1.1. Location

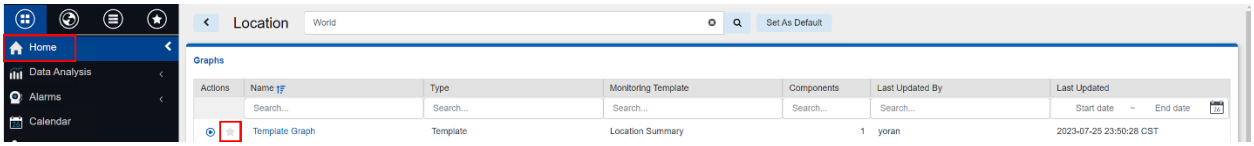
Users can set a default location which filters the information listed in the data tables on this Home page based on the chosen location. By default, the location is World. Users can choose a different location with the dropdown menu. Click the Set as Default button to set the personal settings for this feature to use the selected location on each subsequent login session.

4.1.2. Graphs

Items listed in the Graphs table are those related to the location specified at the top of the page.

Users can set one of the graphs from the table list as a default graph. Next time when users enter the Home page, they can see the details of the default graph directly.

Users can click the favorite icon ⭐ of graphs to quickly set a graph as the default graph or click the "Play" button under the Actions column/Select a graph from the dropdown list and click the "Set As Default" button.



If users want to cancel the default setting of this graph, they can either click the Back icon to go back to the graphs list and unclick the favorite icon ⭐, or click the "Remove Default" button on the top right corner.

4.1.3. UPS Power Dashboard

This is an out-of-box UPS Power Dashboard which allows users to view all UPS devices' status, locations, and operation indicators.

Table List Column	Description
Status	Shows the device level alarm status. The data source is from Alarms – Alarm Panel
Name	Shows the UPS device name. Click the hyper link will direct users to the device's detailed central page.
Network Address	Shows the IP address of the device. Click the hyper link will direct users to the device's login page.
Model	Shows the model name of the UPS device.

Location	Shows the location where the device is deployed.
Load (%)	Shows the “Output Load” reading.
Output Power (W)	Shows the sum of the “Output Power”.
Battery Charge (%)	Shows the “Battery Capacity” reading.
Battery Status	Shows the “Battery Status”. Options are Battery Charging, Battery Floating, Battery Resting.
Battery Runtime	Shows the “Battery Time Remaining” reading.

4.1.4. My Workflow Items

Items listed in the My Workflow Items table are related to the Workflow activities. Tasks, Work Orders and Authorizations assigned to the user appears in this list for easy review.

4.1.5. My Audits

Audits which are created by the user in the Audit Manager feature are listed in the My Audits table. Users can easily track the status of their Audits and jump to the Audits page by clicking the icon next to the table name.

4.1.6. PUE

The PUE trend chart shows the PUE value for the select Location at the top of the Home page. The default trend duration is for the current day. Users can choose the calendar icon and select other predefined or custom intervals to view the historical PUE values of the selected location.

4.1.7. 10 Most Recent Reports

A listing of the reports which were run by the logged-in user appears in this section of the Home page. The table provides a link to the Reports page by clicking the icon next to the table title. Each report is also a hyperlink to quickly re-generate the report output to PDF format.

Note: If the report is run from the Home page reports sections, the contents of the report are filtered based on the original filters run on the actual reports page.

4.1.8. 10 Most Frequent Alarms Within the Last 24 Hours

This section displays the Alarm Triggers which have had the highest count of alarm conditions in the most recent 24-hour interval. The list of alarms is filtered based on the Location which is defined at the top of the Home page. The icon next to the table title will take the user to the Alarm page to investigate all Triggers and Alarms in the application.

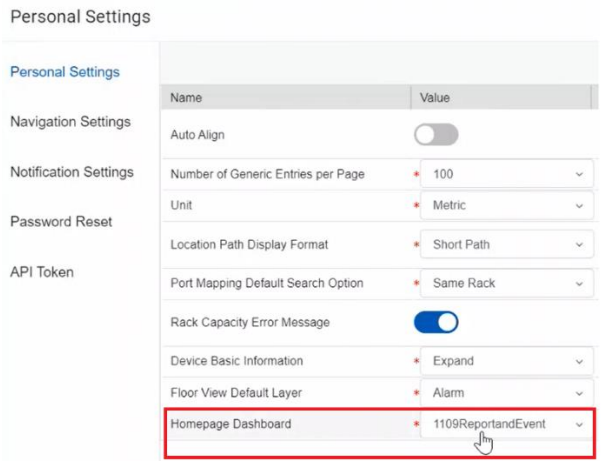
4.1.9. 10 Most Recent Events

The Most Recent Events table displays the 10 most recent events from the Calendar tool of the application. The icon next to the table title takes the user to the Calendar page to view the full set of historical events tracked in the application.

4.2. User Customizable Home Page

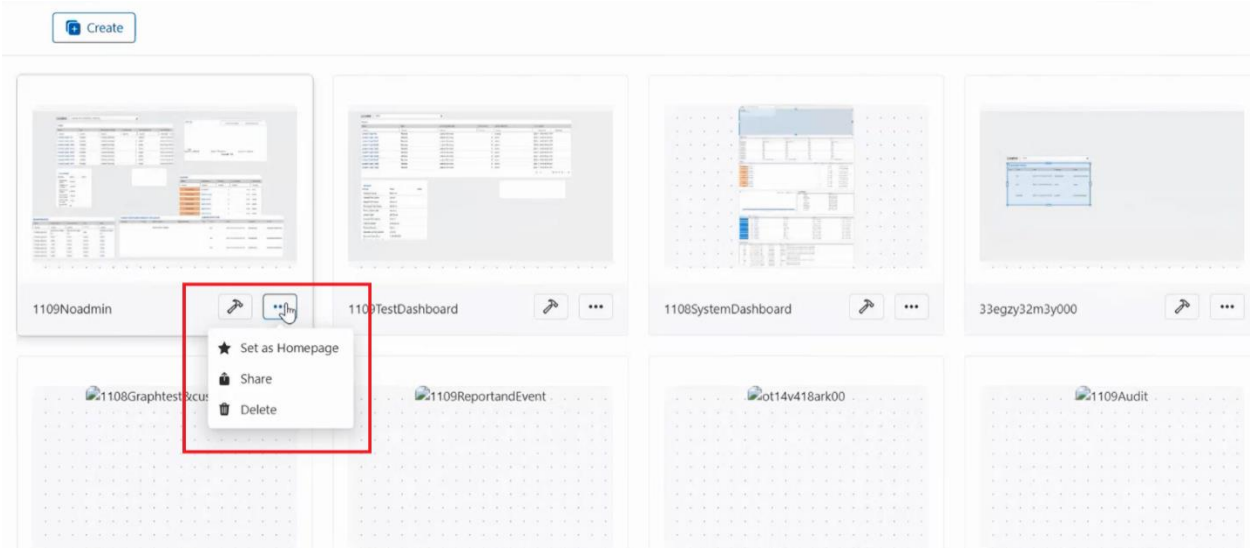
We support customers to raise the visibility of their unique performance and status metrics on the home page, and thus, we raise the customizable Home Page function. Users can drag the components they care about the form their own home page dashboard. The system default home page will still be kept and used until the user manually replaces it in the Personal Settings.

In the Personal Settings page, users can select a dashboard as Home Page from the dropdown list of the "Homepage Dashboard" and then click the "Submit" button.



4.2.1. Design the customized home page dashboard

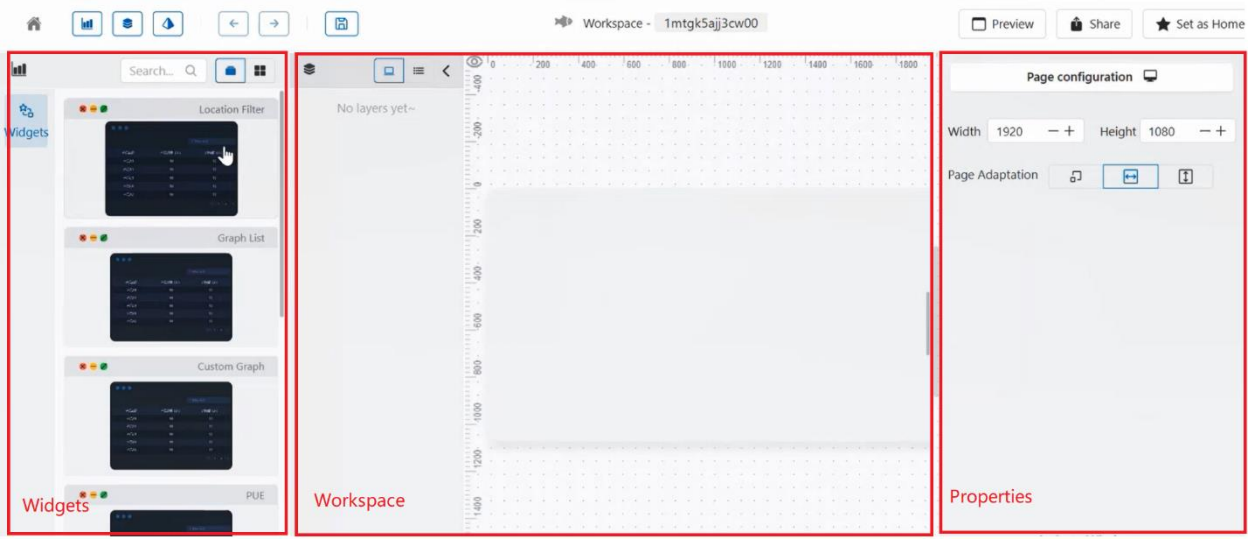
Click the "New Dashboard" button at the top right corner of the Home page to enter the Home Page Dashboards management page. It will display all existing home page dashboards in the system.



Users can select an existing home page dashboard and click it's sub menu to:

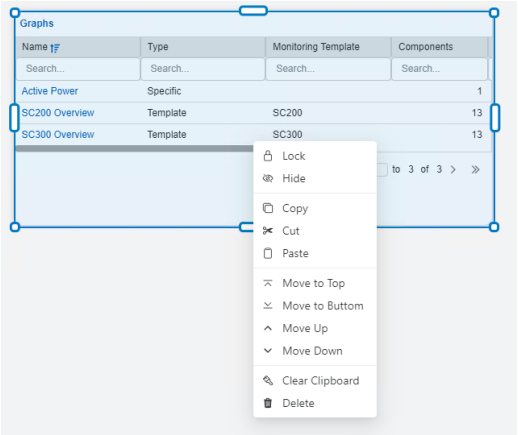
- Set as Homepage: Set a customized dashboard as Home page. Same as the setting in the Personal Settings panel.
- Share: Share the dashboard to other user groups.
- Delete: Delete the dashboard.
- Edit : Edit the existing home page dashboard.

Click the “Create” button on the top-left to open the below page to design a new dashboard.



The widgets support out-of-box lists or filters, such as ‘Alarm List’, 'Event List”, “PUE” etc. Users can perform the steps to create a dashboard:

1. From the Widgets panel, drag the widgets you’d like to present on the Home Page to the Workspace.
   - Users can search a specific widget in the search box by name.
   - The icon besides changes the Widgets panel’s display mode.
   - Click the “Chart Component” icon can hide/unhide the Widgets panel.
2. On the Workspace panel, users can drag and drop to adjust widgets’ position and size. Right-click the widget, there are more operations available.



- The icons on the top left of the Workspace panel also changes the selected widgets' display mode (Layers panel) of the Workspace panel.
- The arrow icon can hide the Layers panel.

Click the “Layer Controls” icon can unhide/hide the Layers panel.

- Users can use undo and redo icon to edit their Workspace canvas.

3. Click the “Information Settings” icon  to configure the canvas properties. A configuration panel will display.
    - Page Configuration: Click the canvas to adjust the page setting. Users can adjust the page’s width and height, and also the adaptation style.
    - Widget: Click a specific widget to adjust the widget information. User can change the widget’s name, size, position and choose it’s binding filter (Location).
4. Rename the dashboard. 

5. Click the “Save” button  to save the dashboard.

On Home page, users can select existing customized dashboard and click the Star icon to set it as Home page. This has the same effect as in the Personal Settings.

5. Data Analysis Menu Group

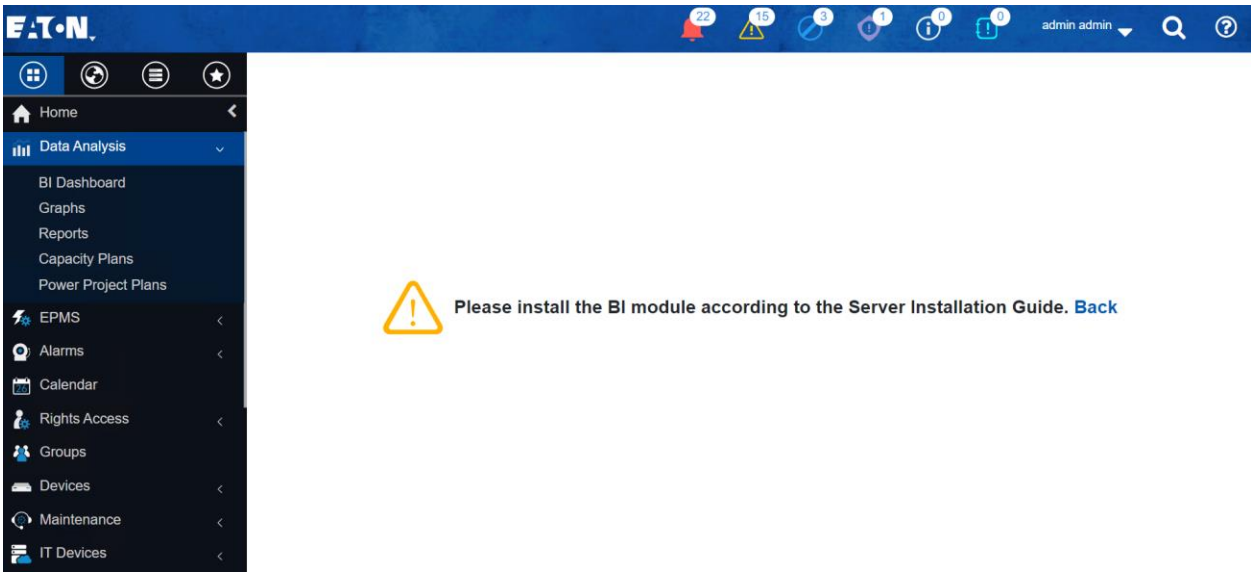
The Data Analysis Menu Group allows users to access features that analyze the objects and data created in the application. The items available to users in this group permit the visual analysis in the forms of graphs, trend charts, etc. as well as the generation and delivery of standard reports.

5.1. BI Dashboard Menu Item

The Business Intelligence (BI) Dashboard is an extension. Only users who have purchased this extension and installed the BI Extension package can access this menu item.

If users don't purchase this extension when they purchase the license, they won't see the "BI Dashboard" in the Feature Menus.

If users purchase the extension but didn't install the BI Extension package, they will see the below screenshot.



The BI Dashboard Menu consists of various dashboards and visualization charts that demonstrate the data center's current asset status. The powerful BI tools utilize the existing data imported by users to generate live charts that enable users to observe and realize the real-time status, development trends, and potential risks of assets visually and efficiently in the data center and help users to make better decisions. All charts and dashboards can be customized by users.

5.1.1. Right Access Control in BI

The right access control is also introduced in the BI Dashboard extension. The scope of permission control is for devices, locations, and ports. All existing and new charts shall be applied to the rules.

- For users in the Administration User Group, they can access all datasets and view all data displayed in Dashboards and charts.

- For non-Administration users, they can access all datasets, but when they view the dashboards and charts, only the device/location/port data they have access to will be displayed in Dashboards and charts.

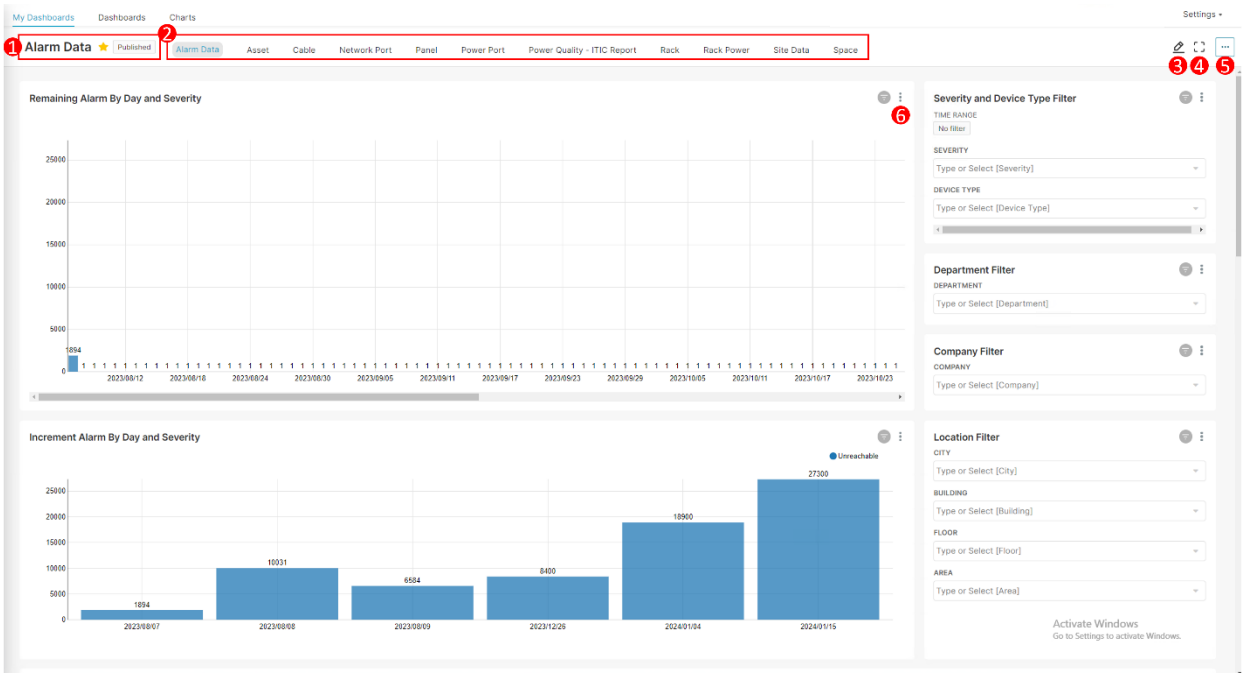
There is an exceptional case for the following eight datasets and all charts/dashboards generated from those datasets. The exception case is as long as users have access to the location nodes, all data on the location node will be displayed, regardless of whether the user has permission to access some specific devices/ports.

For example, two device groups - Device Group A and Device Group B, each has five devices, are deployed on a location node “China - Shanghai - Shanghai - RHQ - F4”. Jane, as a user, has the right access to the location node F4 and Device Group A, but not to Device Group B. In this case, Jane can see all 10 devices even though she only has the right access to 5 devices among them.

- area_capacity
- floor_capacity
- s_space
- s_space_power
- s_space_weight
- s_space_hum_temp
- s_space_pue
- dm.location

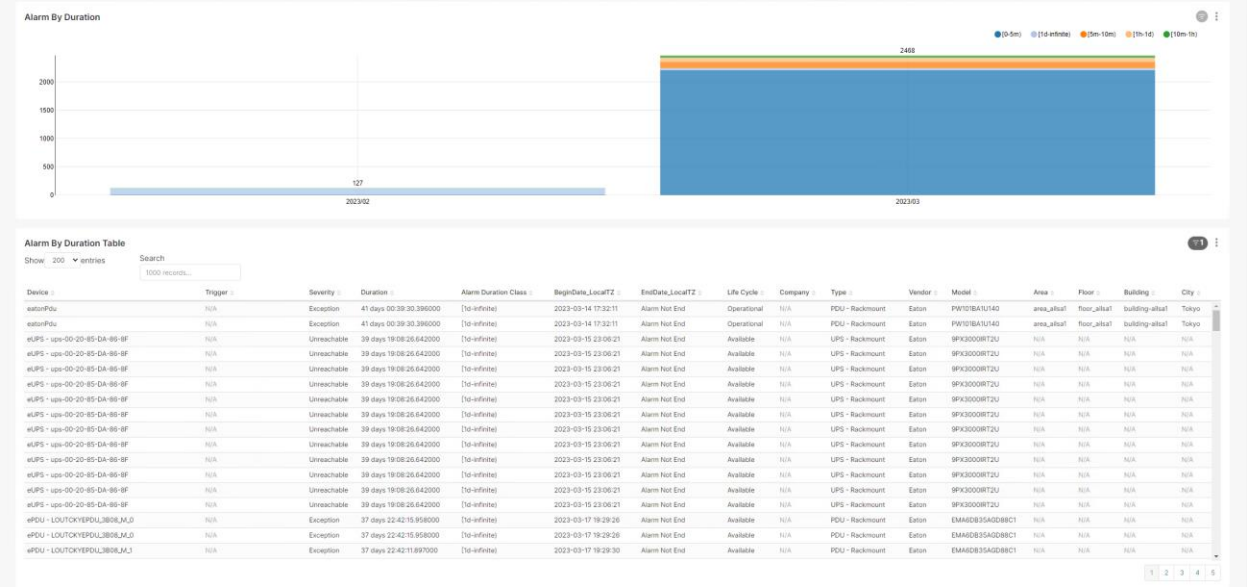
5.1.2. My Dashboards

There are several pre-defined dashboards under the My Dashboards tab, including Alarm Data, Asset, Cable, Network Port, Panel, Power Port, Power Quality – ITIC Report, Rack, Rack Power, Site Data, and Space. Charts under these dashboards are also preset, but users can always edit them by clicking the pencil icon on the top-right corner.



1. Displays the name of the current dashboard, its status, and a button to favorite or unfavorite the dashboard.
2. Pre-defined dashboards
3. The button to edit and manage the current dashboard's charts and components. Users can add, delete, and move charts in the dashboard.
4. The button that to maximize the page.
5. The button to reach more functions includes:
    a. Refresh dashboard: Manually refresh the current dashboard.
    b. Save as: Save as a new dashboard or overwrite the current dashboard.
    c. Set auto-refresh interval: Set an auto-refresh interval for the current dashboard. The refresh frequency options are Don't refresh/10 seconds/30 seconds/1 minute/5 minutes/30 minutes/1 hour.
    d. Download as image: Download the current dashboard as a .jpg file.
    e. Remove in my dashboard: Remove the current dashboard from the My Dashboards tab.
6. The button to reach more functions includes:
    a. Force refresh: Refresh the current chart.
    b. Enter full screen: Maximize the current chart.

5.1.2.1. Alarm Data



This dashboard contains ten charts and four filters. The detailed charts description is provided below. Users can filter the dataset according to time range, severity, device type, department, company, and location (city, building, floor, area) to get a meaningful result.

The retrieved data will be stored in the database for 36 months by default. Users can change the data retention by themselves in the 3-12 years range by changing the parameter "ALARM_DATASET_RETENTION_MONTH" value of the configuration file. The path of the configuration file is /opt/VDC/.conf

Charts	Type	Description
Remaining Alarm by Day and Severity	Bar Chart	Displays the number of alarms of each severity that that haven't been fixed by the end of the day.
Increment Alarm by Day and Severity	Bar Chart	Displays the number of alarms of each severity newly generated by the end of the day.
Resolved Alarm by Day and Severity	Bar Chart	Displays the number of alarms of each severity resolved by the end of the day.
Increment Alarm by Floor and Severity Today	Bar Chart	Displays the number of alarms of each floor newly generated today.
Increment Alarm by Floor and Severity Before Today	Bar Chart	Displays the number of alarms of each floor generated before today.
Top 10 Vendors with Most Increment Alarms	Area Chart	Displays the top 10 manufacturers with the most newly generated alarms in the selected period.
Top 10 Device Types with Most Increment Alarms	Area Chart	Displays the top 10 device types with the most newly generated alarms in the selected period.
Top 10 Devices with Most Increment Alarms	Area Chart	Displays the top 10 devices with the most newly generated alarms in the selected period.
Alarm by Duration	Bar Chart	Displays the number of alarms of each severity of different duration. The duration types are [0-5m], [5m-10m], [10m-1h], [1h-1d], [1d-infinite].
Alarm by Duration Table	Table	Displays the records of the alarm duration from abnormal to the latest back to normal.

The Time used for this dataset's retention period is end_date. The purpose is to ensure the data accuracy of the Remaining Alarm chart. For example, today is 11/9. The retention period is 3 months. Then the data stored in the dataset is the data with alarm's end_date after 8/10. In other words, all alarms that have not been turned off after 8/10. We don't care about the start time of the alarms.

5.1.2.2. Asset

Chart	Description
Lifecycle	A pie chart displays the number and proportion of devices' at each lifecycle stage. Options are Operational, Available, and Reserved Procurement.
Device Group	A bar chart displays the number of devices within each device group. The x-axis represents the device group, which are Public and Private. The y-axis represents the device count.
Count by Device Type	A bar chart displays the number of devices of each device type. The x-axis represents the device type, such as UPS, AC, PDU, etc. The y-axis represents the device count.
Server	Displays the total count of servers.
Racks	Displays the total count of racks.
Total Device	Displays the total count of devices.
Server - Enclosure	Displays the total count of the enclosure server.
PDU - Rackmount	Displays the total count of the rackmount PDU.
UPS - Rackmount	Displays the total count of the rackmount UPS.
Filter	**Description**
Building	Filter devices in a particular building from all data center locations.
Floor	Filter devices on a particular floor from all data center locations.
Area	Filter devices in a particular area from all data center locations.

5.1.2.3. Cable

Chart	Description
Cable Category	A pie chart displays the number and proportion of different cables. Options are Network Cable and Power Cable.
Cable Type	A bar chart displays the number of cables of each cable type. The x-axis represents the cable types, such as Generic Power Cable, Cat 5e, Cat 6, etc. The y-axis represents the cable count.
Cables	A table displays all cables' information, including Category, Type, Source Device, Source Port, Source Port Type, Destination Device, Destination Port, and Destination Port Type.
Filter	**Description**
Color	Filter cables based on the cable color.
Source Port Type	Filter cables based on their source port type.
Destination Port Type	Filter cables based on their destination port type.

5.1.2.4. Network Port

Chart	Description
Switch Network Ports	A stacked bar chart displays the number and proportion of used and available switch network ports.
Patch Panel Network Ports	A pie chart displays the number and proportion of used and available patch panel network ports.

Copper Network Ports	A bar chart displays the number and proportion of used and available switch and patch panel network ports that are made by copper.
Fiber Ports	A bar chart displays the number and proportion of used and available switch and patch panel network ports that are made by fiber.
Total Switch Ports	Displays the total count of the switch ports.
Total Switch Ports Usage	Displays the percentage of the switch ports that have already been used.
Total Patch Panel Ports	Displays the total count of the patch panel ports.
Filter	Description
Building	Filter network ports in a particular building from all data center locations.
Floor	Filter network ports on a particular floor from all data center locations.
Area	Filter network ports in a particular area from all data center locations.

5.1.2.5. Panel

Chart	Description
Power Consumed (kWh)	A bar chart displays the power consume of each department.
Power Consumed by Time	A bar chart displays the daily power consume.
Total Cost	Displays the total accumulated cost of power.
Power Consumed (kWh)	Displays the total accumulated power.
Filter	Description
Building	Filter power panels in a particular building from all data center locations.
Floor	Filter power panels in a particular floor from all data center locations.
Company	Filter power panels based on companies.
Department	Filter power panels based on departments of companies.

5.1.2.6. Power Port

Chart	Description
Power Port Usage	A bar chart displays the number and proportion of used and available power port of three types of devices, including PDU – Rackmount, Transfer Switch – Rackmount, and UPS – Rackmount.
Breakers by Company &Dept	A bar chart displays the number of breakers of each company and its associated department.
Circuits by Company & Dept	A bar chart displays the number and proportion of used and available circuits of each company and its associated department.
Total RPDU Power Ports	Displays the total count of RPDU power ports.
Used RPDU Power Ports	Displays the count of used RPDU power ports.
Total RUPS Power Ports	Displays the total count of RUPS power ports.
Used RUPS Power Ports	Displays the count of used RUPS power ports.
Breakers Created	Displays the total count of breakers.
Circuits Created	Displays the total count of circuits.
Filter	Description
Building	Filter power ports in a particular building from all data center locations.
Floor	Filter power ports on a particular floor from all data center locations.
Area	Filter power ports in a particular area from all data center locations.

5.1.2.7. Power Quality (ITIC) Report

This system dashboard is not displayed in “My Dashboards” tab by default. Users can find it in the “Dashboards” tab and select the “Add to my dashboard” in ··· button to add this dashboard to the “My Dashboards” tab.

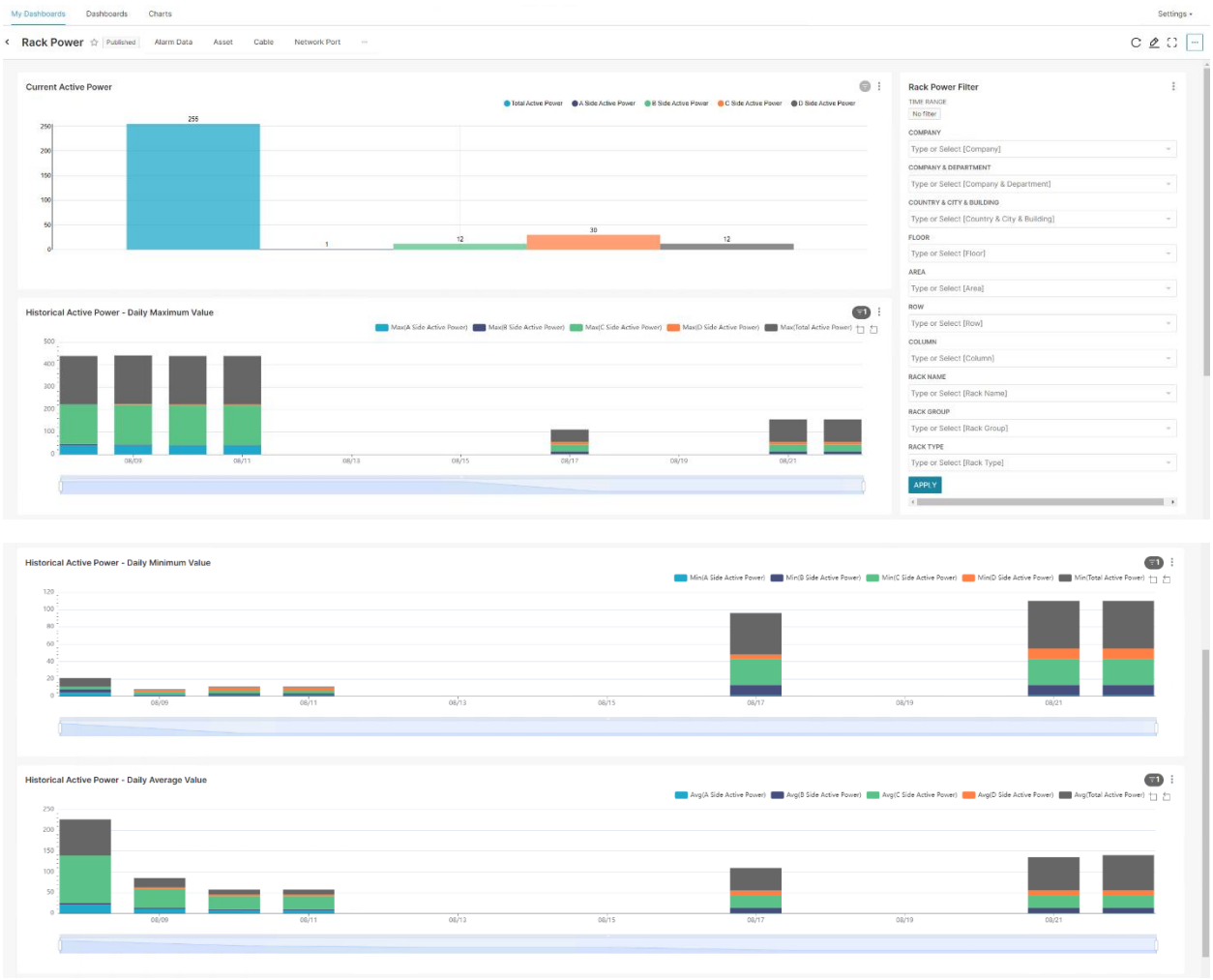
Chart	Description
ITIC Event Count by Month	Displays the number of ITIC events occur each month.
Top 10 Devices with Most ITIC Events	Displays the top 10 devices with the most ITIC events.
ITIC Event Details	Displays the event details in table.
Filter	**Description**
Time Range	Filter the ITIC events occurred in a certain time range.
Device	Filter the ITIC events occurred on a particular device.
ITIC Event	Filter the ITIC events occurred on a particular ITIC event.
ITIC Event Category	Filter the ITIC events occurred on a particular ITIC event category.
Severity Level	Filter the ITIC events occurred on a particular severity level.
Channel	Filter the ITIC events occurred on a particular channel.

5.1.2.8. Rack

Chart	Description
Rack Front U Usage	A bar chart displays the number and proportion of used, remain, and reserved front units of each rack group.
Apparent Power (By Rack Count)	A bar chart displays the apparent power by rack.
Rack Rear U Usage	A bar chart displays the number and proportion of used, remain, and reserved rear units of each rack group.
Weight Usage	A bar chart displays the number and proportion of used, remain, and reserved weight of each rack group.
Front U Total	Displays the total count of front units for all rack groups.
Rear U Total	Displays the total count of rear units for all rack groups.
Power Usage	A pie chart displays the number and proportion of available and used racks’ power usage.
Filter	**Description**
Building	Filter racks in a particular building from all data center locations.
Floor	Filter racks on a particular floor from all data center locations.

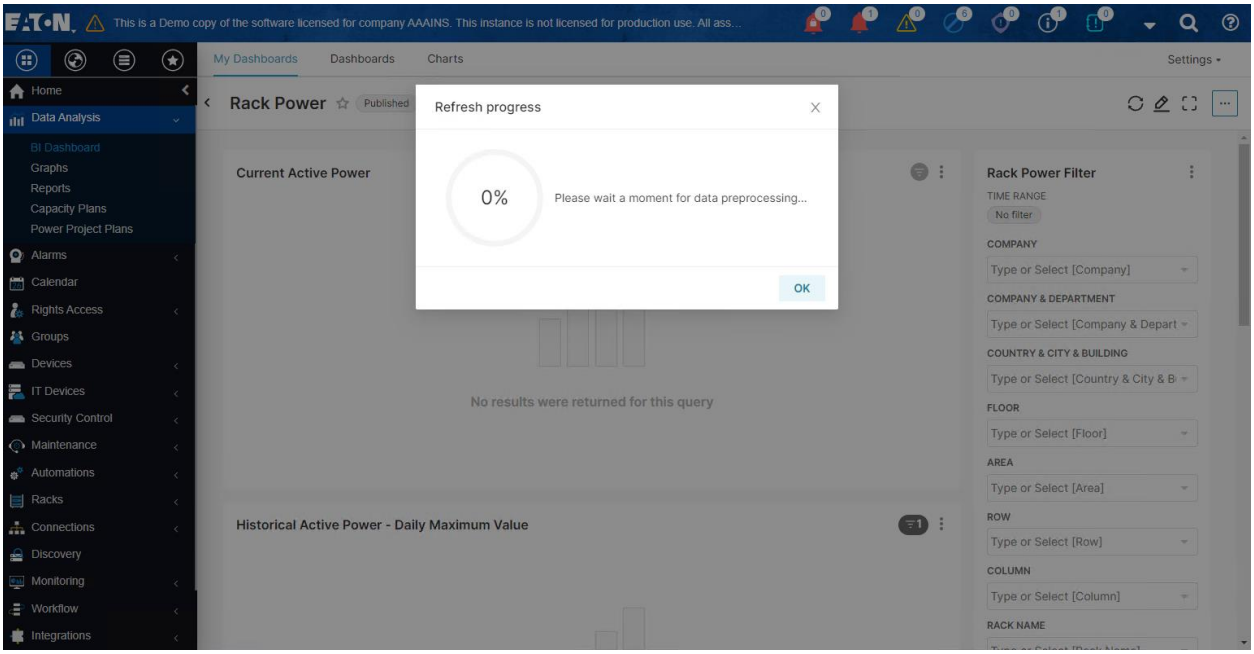
5.1.2.9. Rack Power

This dashboard provides users who use RPPs, PDUs, and other monitored power distribution devices a visual analysis solution for their rack power usage and allows system administrators with more than one customer to more effectively filter power metrics by the customer to better understand how their common power is being distributed.



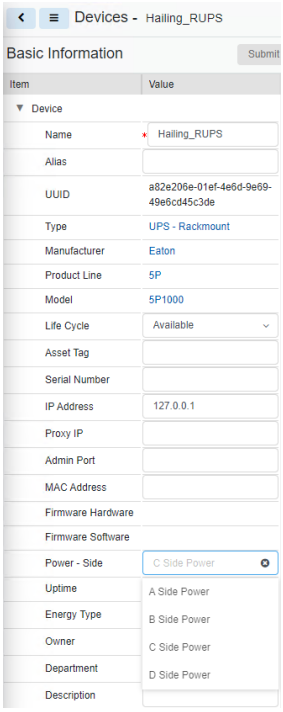
This dashboard contains four active power charts and a comprehensive filter chart. The detailed chart description is provided below. The automatic refresh interval is 15 minutes.

Users can also click the "Refresh" icon to refresh the data manually. Once this icon has been clicked, the system will initiate the process, and the icon will become In Process status. Then a progress bar will pop up. The data will be automatically refreshed after the process has been completed.



Note: Once the refresh process starts, it will take quite a long time to prepare data, which means at the beginning of the progress, the information won't get updated (stays at 0%) until the preparation is done. The Rack Power dashboard will be refreshed after the process completes automatically.

We have a backup mechanism that will rerun the unexecuted data within 30 days due to the server being down.



There are four power sides (A/B/C/D) available for configuration for a power supply device in BLSS. If the attribute "Power - Side" is configured, the active power value belonging to the corresponding power side will be counted and displayed in the corresponding bar on the chart. If the attribute "Power - Side" is not configured, the active power value will be counted and shown in the "Total Active Power".

For example, a rack whose power supply device is an RPDU with 100 watts of power is distributed to this rack. If the RPDU's attribute "Power - Side" is set as "A Side Power", then the 100 watts of the active power of this rack will be counted and displayed in the "A Side Power" bar. If the RPDU's attribute "Power - Side" is not selected, then the 100 watts of the active power of this rack will be counted and displayed in the "Total Active Power" bar.

Charts	Type	Description

Current Active Power	Bar chart	The Current Active Power chart displays all racks' latest active power value by default.
Historical Active Power - Daily Maximum Value	Time series bar chart	This stacked time series bar chart displays the maximum active power for each power side per day for all racks. The maximum data storing and displaying period is 6 months.
Historical Active Power - Daily Minimum Value	Time series bar chart	This stacked time series bar chart displays the minimum active power for each power side per day for all racks. The maximum data storing and displaying period is 6 months.
Historical Active Power - Daily Average Value	Time series bar chart	This stacked time series bar chart displays the average active power for each power side per day for all racks. The maximum data storing and displaying period is 6 months.
Rack Power Filter	Filter	Users can filter the dataset according to the following: • Date and time • Company - Only list the companies that have racks • Company & Department - Only list the departments with racks and their corresponding company • Country & City & Building - Only list the buildings with racks deployed and their corresponding country and city. • Floor - Only list the floors that have racks deployed on them • Area - Only list the areas that have racks deployed on them • Row - Only list the rows that have racks deployed on them • Column - Only list the columns that have racks deployed on them • Rack name - List all the rack names in the BLSS • Rack group - Only list rack groups that have racks • Rack type - Only list rack types with the racks created in the system

Note:

1. This dashboard will give priority to displaying monitoring Active Power values. If there is no monitoring value, the static values will be displayed. If there is no static value, then no result will be displayed.
2. We will not change/overwrite the historical data. For example, If a rack's department was A. On 2023/7/1, its department was changed to B. In this case, when users filter the dashboard by time range before 7/1, they will see this rack's Active Power value belongs to Department A. If users filter the dashboard by time range after 7/, they will see this rack's Active Power value belongs to Department B.
3. When users upgrade from any previous version to v7.1, the historical data will not be inherited because the new dataset does not exist in the previous version. The historical data will be collected on the first day of the system upgrade. (The historical data will be inherited from any upgrade after v7.1)

5.1.2.10. Site Data

Chart	Description

Current PUE	Displays the latest PUE value of the day. The value is refreshed every 15 mins. **Note**: This value might be different with the value in the Site Data Function Tile – Location – Navigation Tree due to the data from the Navigation Tree is refreshed every 5 mins.
Historical PUE	A line chart displays the PUE value for each past day. **Note**, if the PUE value is null, it will be displayed as 0 in the chart.
Power Capacity	Three-line charts display the actual power, derated power and power utilization per day.
U Space Utilization	Five time series columns display the U Space Used, U Space Reserved, U Space Remaining, U Space Total, and U Space Utilization per day.
Cooling Utilization	Three-line charts display the cooling capacity, cooling required, and cooling utilization per day.
Rack Count by Rack Category	Displays the count of each rack category of selected location.
Rack Count by Rack Group	Displays the count of each rack group of selected location
Raised Floor Space Utilization	An area chart displays the Provisioned Floor Space, Sellable Floor Space, and Common Floor Space per day.
Filter	Description
City	Filter the data in a particular city from all data center locations.
Building	Filter the data in a particular building from all data center locations.
Floor	Filter the data on a particular floor from all data center locations.
Area	Filter the data in a particular area from all data center locations.

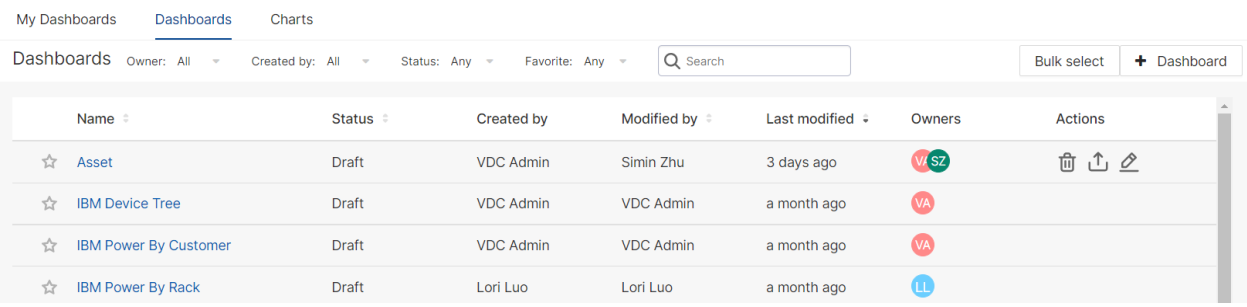
5.1.2.11. Space

Chart	Description
Space Usage by Floor & Area	A bar chart displays the area and proportion of used, remain, and reserved space of each data center floor and area.
Power Usage	A pie chart displays the number and proportion of used and available space's power usage.
Weight Usage	A pie chart displays the number and proportion of used and available space's weight.
Total Area (m^2)	Displays the number of total areas.
Raised Area (m^2)	Displays the number of raised areas.
Solid Area (m^2)	Displays the number of solid areas.
Common Area (m^2)	Displays the number of common areas.
Sellable Area (m^2)	Displays the number of sellable areas.
Provisioned Area (m^2)	Displays the number of provisioned areas.
Filter	Description
Building	Filter space data in a particular building from all data center locations.
Floor	Filter space data on a particular floor from all data center locations.
Area	Filter space data in a particular area from all data center locations.

5.1.3. Dashboards

The dashboard tab displays both system's pre-defined and user-created dashboards. Users can create new dashboards and manage existing dashboards in this tab.

The order of the dashboards is listed by the column "Last modified". Some dashboards will undergo backend changes during the upgrade process. Therefore, after the upgrade, the sorting order of dashboards might change.

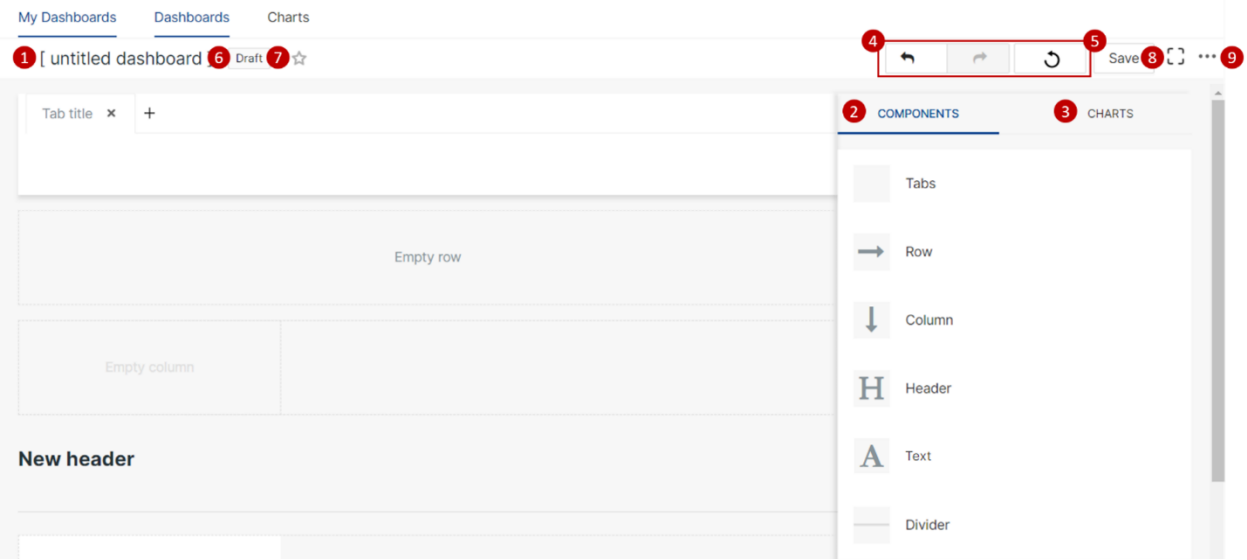


The table list contains the following fields:

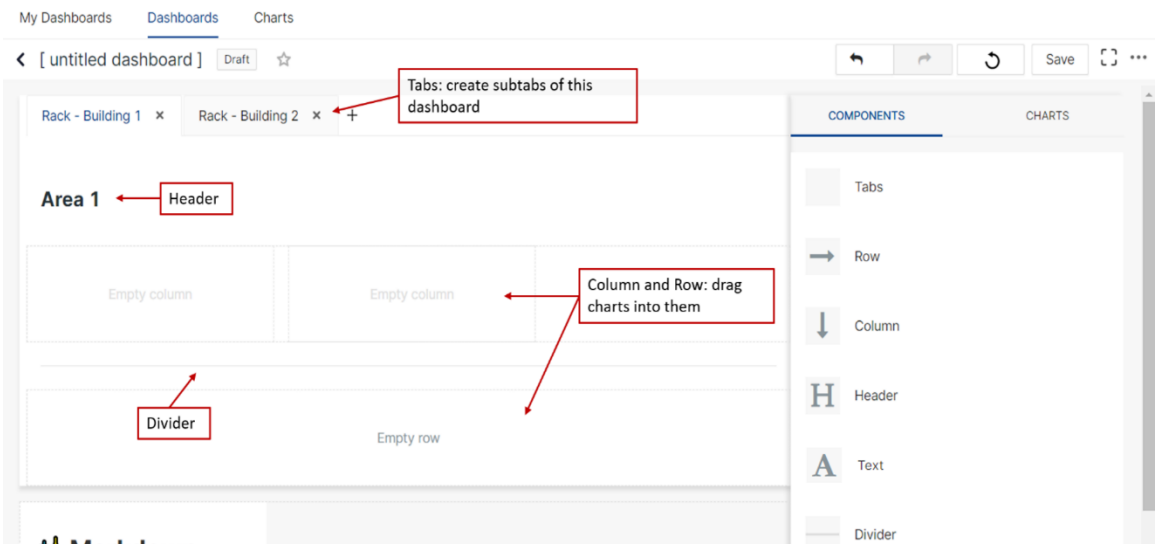
Table List Column	Description
Name	Displays the name of the dashboard.
Status	Displays the status of the dashboard.
Created by	Displays the person who creates the dashboard.
Modified by	Displays the last person who modified the dashboard.
Last modified	Displays the period that the dashboard has been modified.
Owners	Displays the dashboard owner.
Actions	Displays three options – delete, export, and edit. The icons are only visible when the mouse hovers on.

5.1.3.1. Create New Dashboards

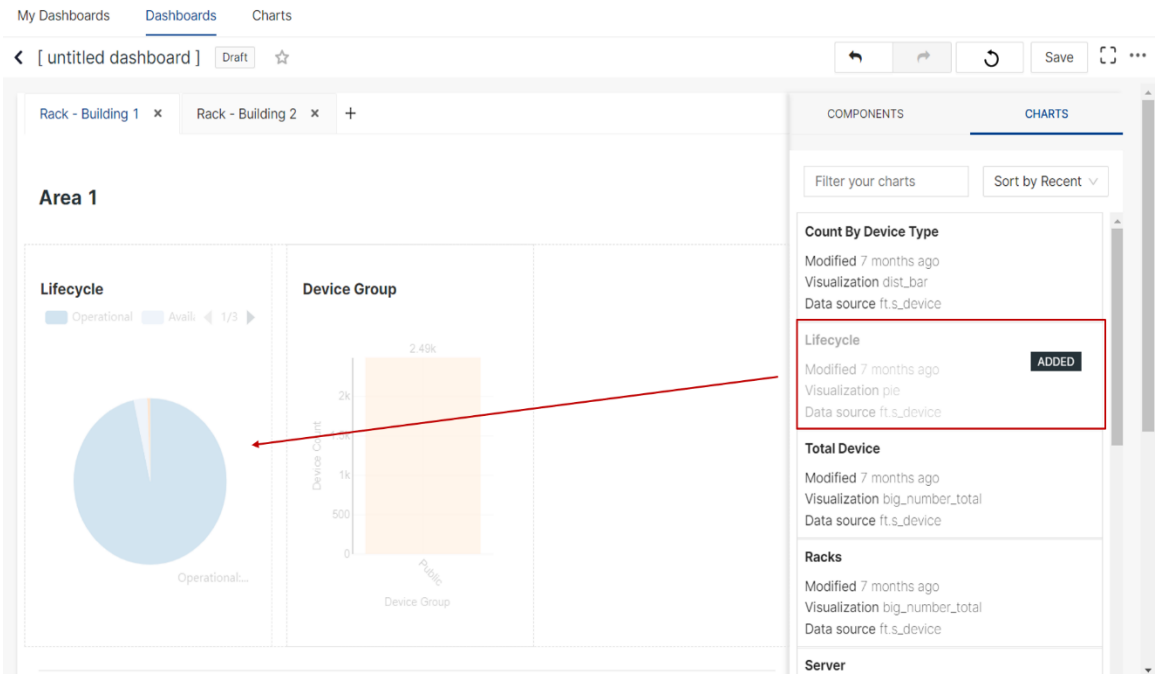
Click the +**Dashboard** button on the top right corner to create a new dashboard design panel.



1. Enter the dashboard name.
2. Component configuration panel: Drag components into the display area to design a dashboard.



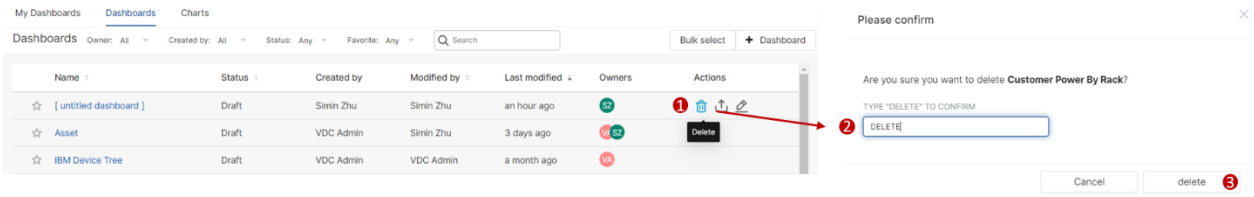
3. Charts panel: Drag charts into the dashboard to complete the design. The Charts panel lists both system's pre-defined and user-created charts.



4. Users can undo and redo the previous actions and clear the dashboard if needed.
5. Click the Save button once finishing the design.
6. Click the button to publish the dashboard if needed.
7. Click the button to favorite the dashboard if needed.
8. Click the button to maximize the page if needed.
9. Click the more button if needed. The button includes:
    a. Save as: Save as a new dashboard or overwrite the current dashboard.
    b. Refresh dashboard: Manually refresh the current dashboard.

c. Set auto-refresh interval: Set an auto-refresh interval for the current dashboard. The refresh frequency options are Don't refresh/10 seconds/30 seconds/1 minute/5 minutes/30 minutes/1 hour.
d. Set filter mapping: Configure filter scopes - which charts are applied or not.
e. Edit dashboard properties: Edit the dashboard properties such as dashboard title, access right, and color scheme.
f. Add to my dashboard: Add the current dashboard to the My Dashboards tab.

5.1.3.2. Delete Dashboards



1. Hover the mouse on the action column of the chart you want to delete. Click the rubbish bin icon to delete the dashboard.
2. Enter DELETE in the text field to confirm the deleting action.
3. Click the delete button to delete the dashboard.

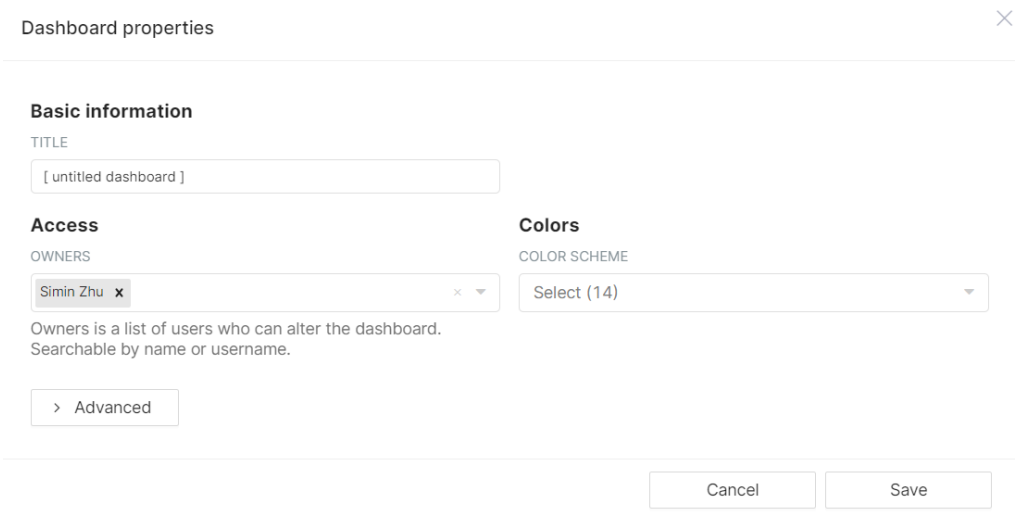
Click the **Bulk select** button to delete multiple dashboards at once.

5.1.3.3. Export Dashboards

Click the **Export** button in the action column, and a JSON file is automatically downloaded.

5.1.3.4. Edit Dashboards

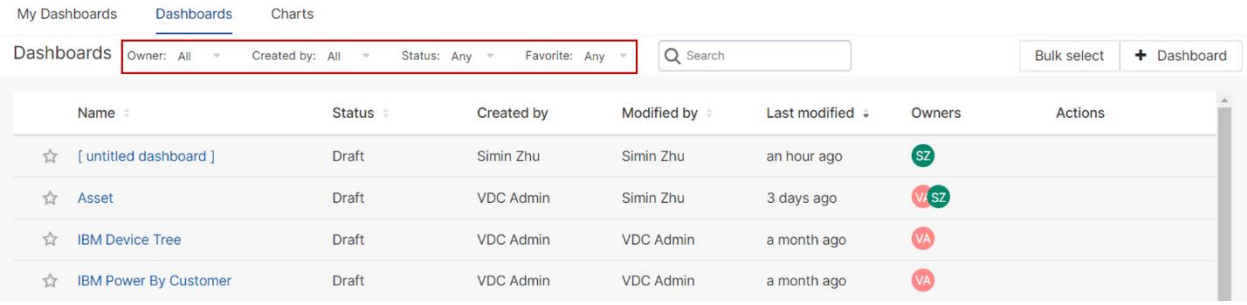
The **Edit** button in the action column gives users a quick way to edit dashboard properties such as dashboard title, access right, and color scheme.



To edit the dashboard details, such as layout, charts, etc., users need to click the dashboard name to enter the configuration panel to make changes.

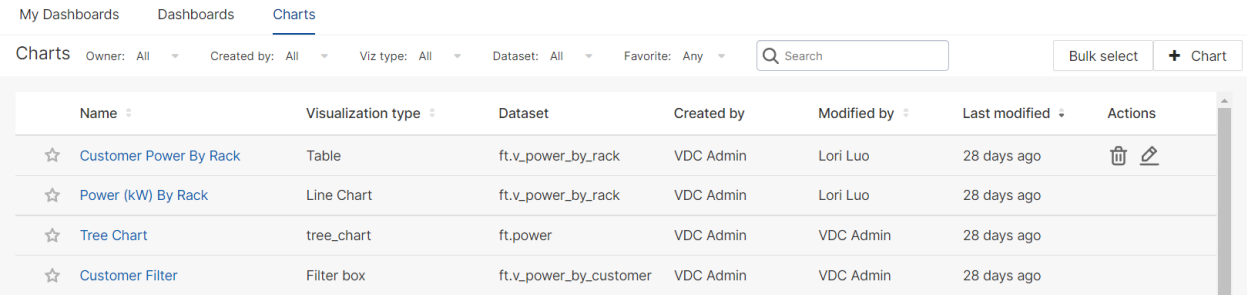
5.1.3.5. Filter & Search

There are four filters available: Owner, Created by, Status, and Favorite. Users can type the keyword in the search text field as well.



5.1.4. Charts

Charts tab displays all created charts. Users can create new charts and manage existing charts in this tab.

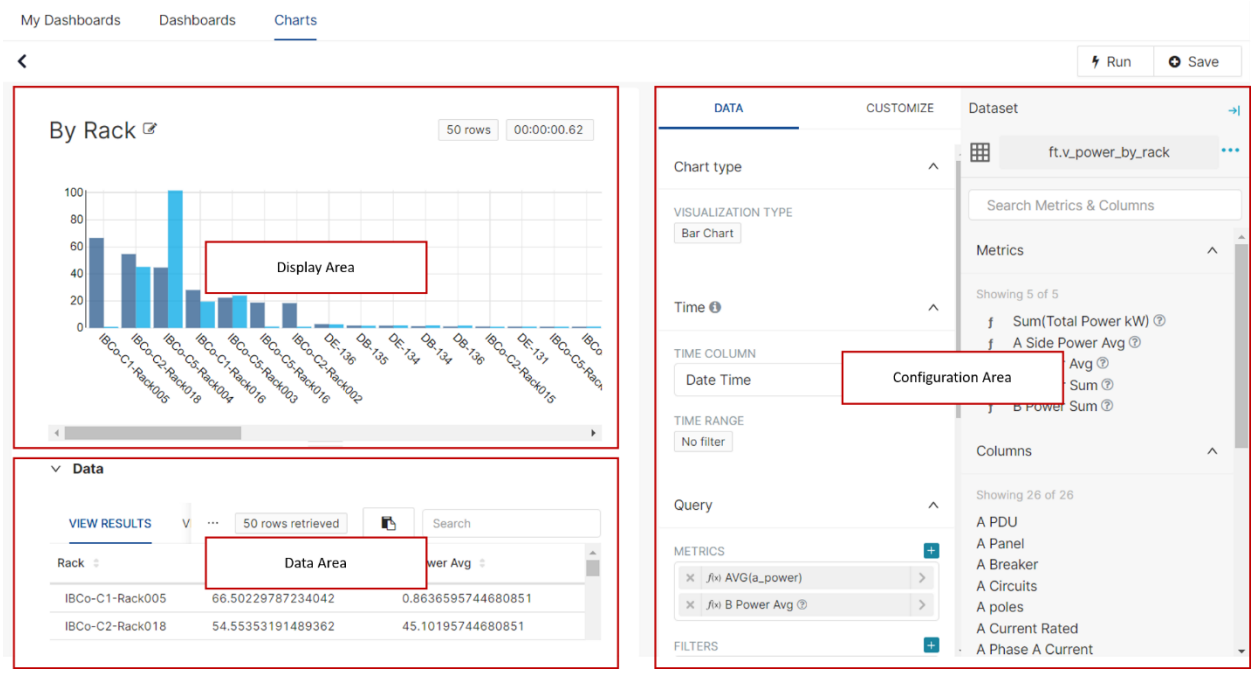


The table list contains the following fields:

Table List Column	Description
Name	Displays the name of the chart.
Visualization	Displays the visualization type of the chart.
Dataset	Displays the dataset used to create the chart.
Created by	Displays the person who creates the chart.
Modified by	Displays the last person who modified the chart.
Last modified	Displays the period that the chart has been modified.
Actions	Displays two options – delete or edit. The icons are only visible when the mouse hovers on.

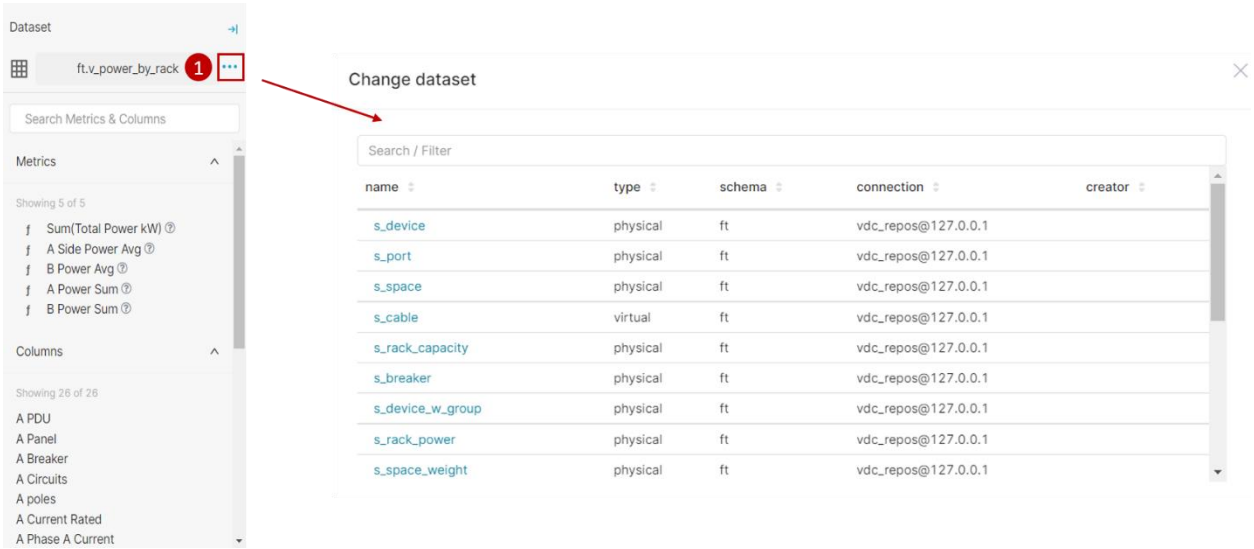
5.1.4.1. Create New Charts

Click the **+Chart** button on the top right corner to create a new chart design panel. The design panel consists of three areas. The detailed configuration instructions are listed below.

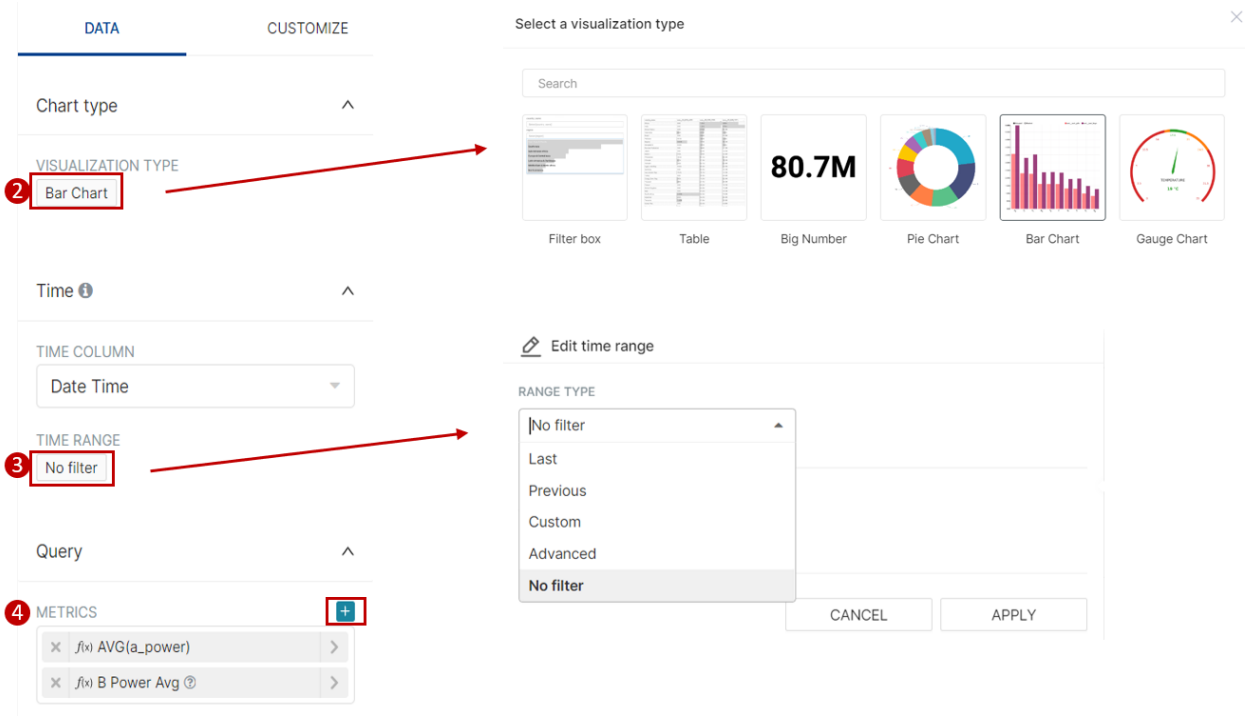


5.1.4.1.1. Dataset

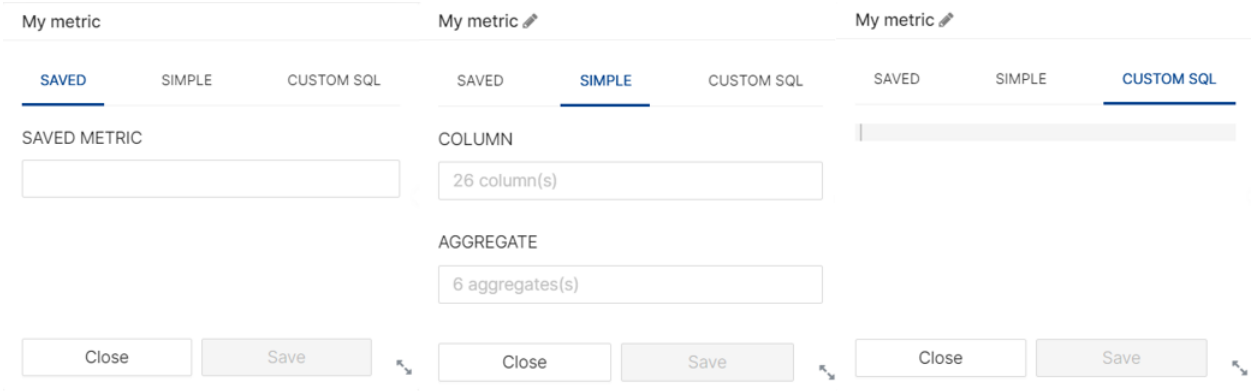
1. Click the ··· button to choose the correct dataset that contains the data you need for the chart. The associated metrics and columns of the dataset are displayed accordingly.
   ***Note**: Ignore the warning message and click Proceed.*

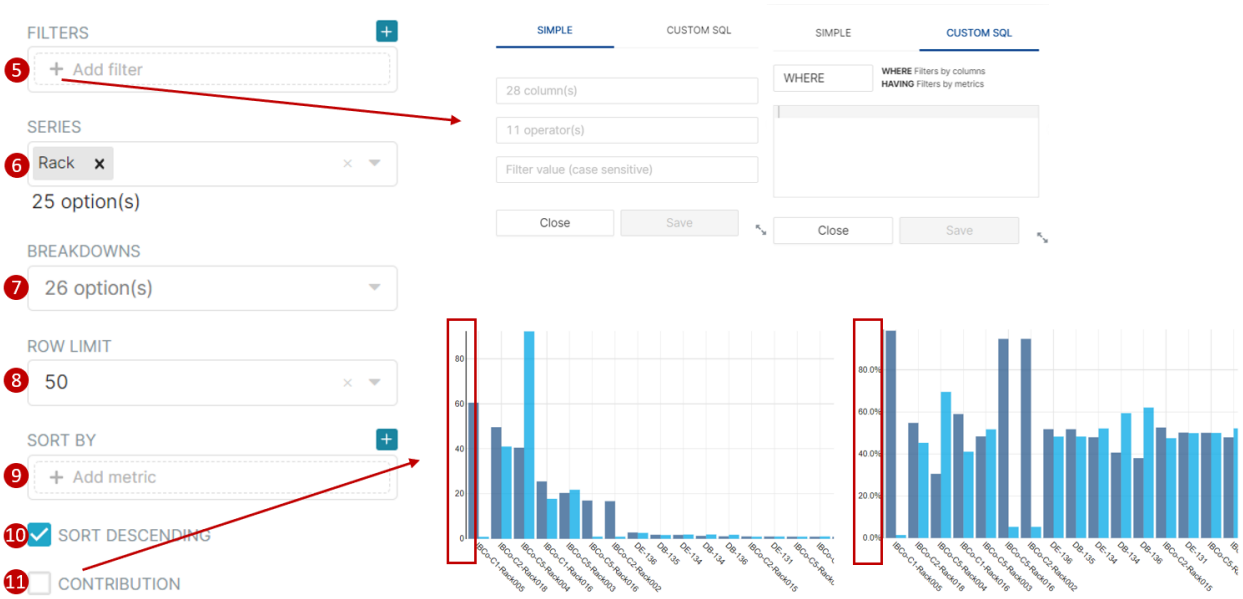


5.1.4.1.2. Data



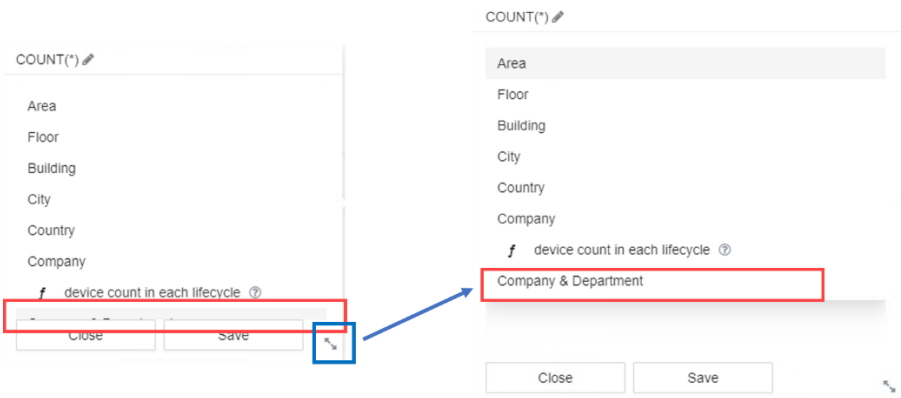
2. Choose the chart type. Options are Filter Box, Table, Big Number, Pie Chart, Bar Chart, and Gauge Chart.
3. Filter the time range of data if needed. The filter is applied to the time attribute column in the dataset. It is possible that TIME COLUMN is empty if there are no time attributes in the dataset.
4. Define metrics to apply aggregate functions on the dataset.
    a. SAVED: metrics pre-defined in the system. Available to see after selecting the dataset.
    b. SIMPLE:
        i. COLUMN: choose the column that you want to aggregate data. All columns from the dataset that can be applied to an aggregate function are available.
        ii. AGGREGATE: apply the aggregate function to that column. Available options are AVG, COUNT, COUNT_DISTINCT, MAX, MIN, SUM.
    c. CUSTOM SQL: write user-defined SQL functions if you can't find a proper aggregate function from the SIMPLE configuration panel.





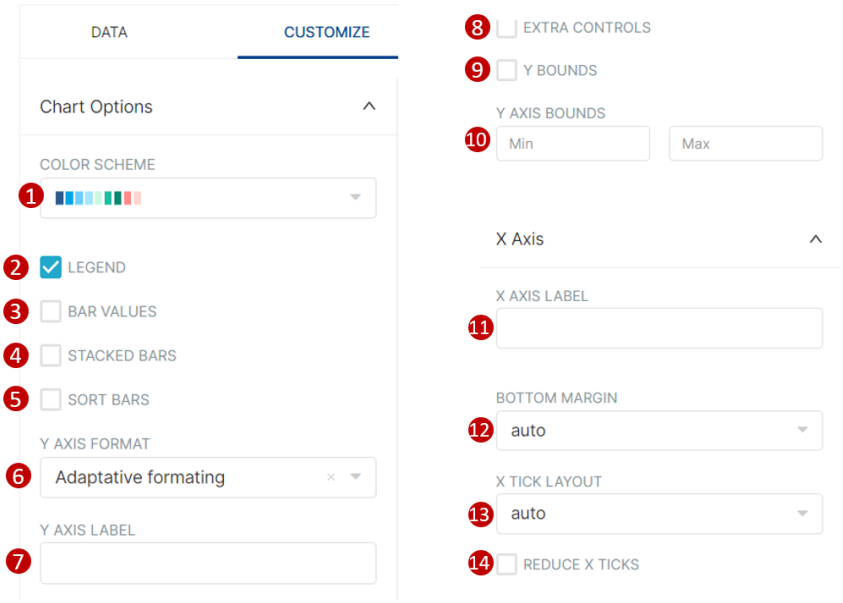
5. Apply filters to the chart by columns or by metrics.
    a. SIMPLE:
        i. Choose the column you want to filter.
        ii. Select one of the operations you would like to apply. Options are equals, not equal to, >, <, >=, <=, IN, NOT IN, LIKE, IS NOT NULL, IS NULL.
        iii. Enter the filter value. It can be either numeric or non-numeric value.
    b. CUSTOM SQL: write user-defined SQL functions if you can't set a filter from the SIMPLE section.
6. Click the dropdown list to choose one or many columns to apply the group by function.
7. Break down series by a segmented column.
   ***Note**: The Series column must contain the Breakdown column*.
8. Limit the rows of data that are used to display. Options are 10, 50, 100, 250, 500, 1000, 5000, 10000, 50000.
9. Apply sort functions to the chart. The configuration panels are the same as in step 4.
10. The system sorts the value ascending by default. Click the checkbox to sort value descending.
11. The y-axis legend changes to percentage format.

Note: While the clicking button blocks the pop-up selection window, users can toggle the zoom-out icon to enlarge the window size.



5.1.4.1.3. Customize

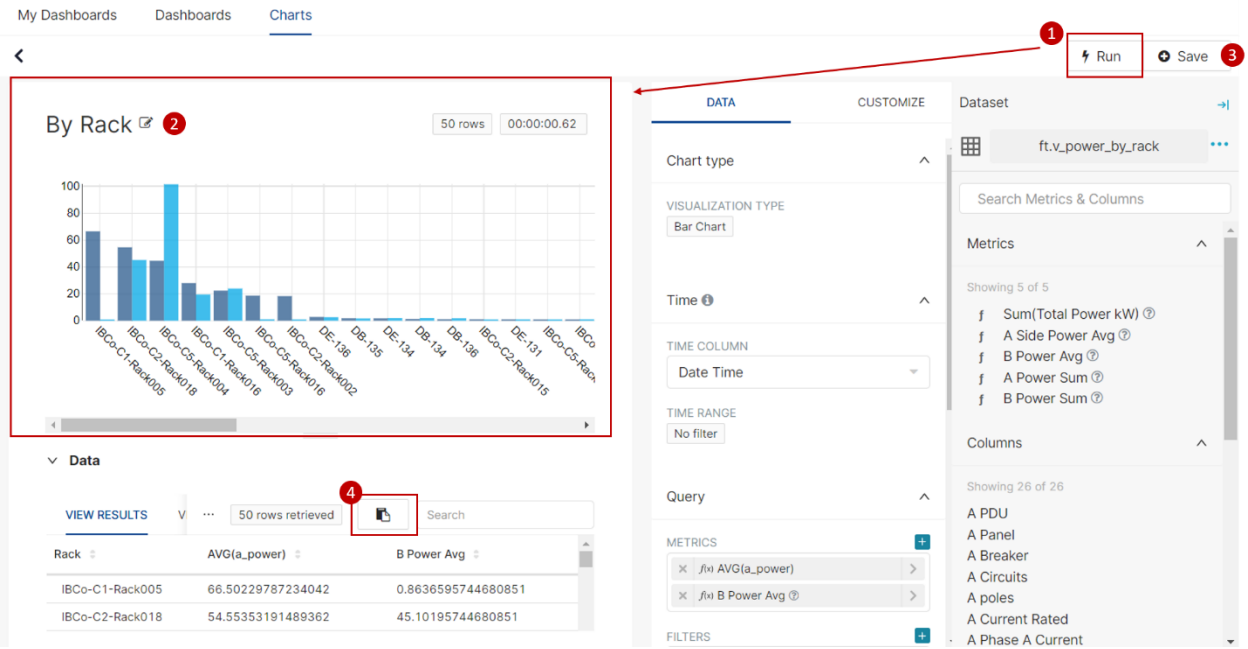
The **CUSTOMIZE** panel allows users to customize the charts' appearance.



1. Click the dropdown list to change the chart color.
2. Select/unselect the checkbox to enable or disable the chart legend.
3. Select the checkbox to show the bar value on the chart. Vise versa.
4. Select the checkbox to change the bar chart style to the stacked bar.
5. Select the checkbox to sort the bar chart by the x-axis.
6. Click the dropdown list to select the format of the y-axis.
7. Enter the y-axis label in the text field.
8. Select the checkbox to enable the extra control. Extra control works on the multi-bar chart and gives options to manage the chart format as a stacked bar chart or side-by-side bar chart.
9. Select the checkbox to display the minimum and maximum boundary of the y-axis value.
10. Set the y-axis boundary manually.
11. Enter the x-axis label in the text field.
12. Click the dropdown list to choose the bottom margin. Options are auto, 50 ,75, 100, 125, 150, 200. The larger the number, the more space in the bottom.

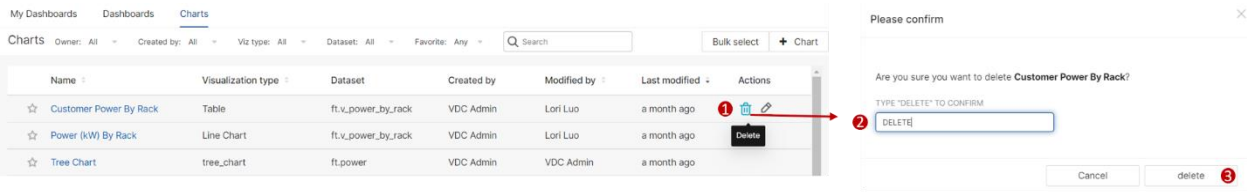
13. Click the dropdown list to choose the x-axis tick layout. Options are auto, flat, 45°, staggered.
14. Select the checkbox to reduce the x-axis tick.

5.1.4.1.4. Chart & Data



1. Click the **Update Chart** button to apply the configuration setting and observe the chart changes. Some configuration steps take run effect automatically, and users do not need to click the Run button manually.
2. Name the chart by clicking the edit icon.
3. Click the **Save** button to save the chart once finished.
4. The data used to generate the chart is listed in the Data area. Users can copy these data by clicking the Clipboard button.

5.1.4.2. Delete Charts

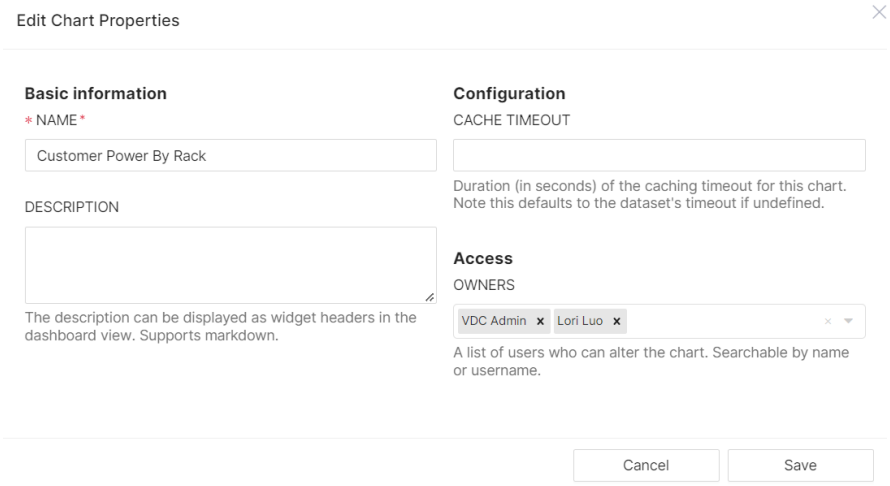


1. Hover the mouse on the action column of the chart you want to delete. Click the rubbish bin icon to delete the chart.
2. Enter DELETE in the text field to confirm the deleting action.
3. Click the delete button to delete the chart.

Click the Bulk select button to delete multiple charts at once.

5.1.4.3. Edit Charts

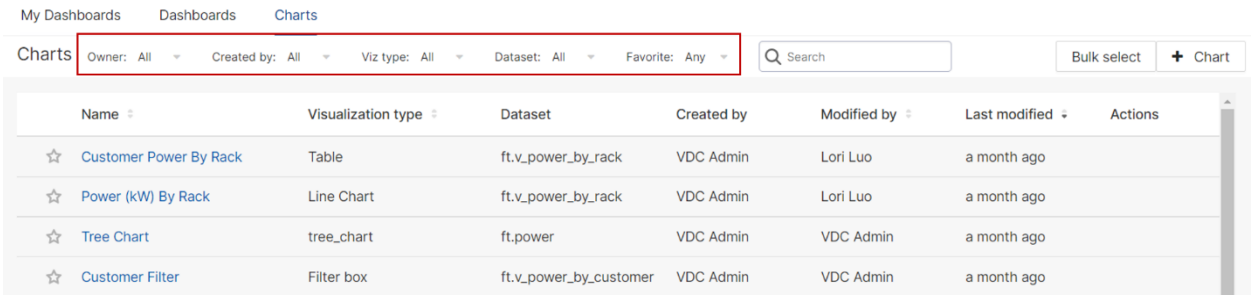
The **Edit** button in the action column gives users a quick way to edit chart properties such as chart name, description, cache timeout, and access right.



To edit the chart details such as type, aggregate functions, etc., users need to click the chart name to enter the configuration panel to make changes.

5.1.4.4. Filter & Search

There are five filters available, which are Owner, Created by, Viz type, Dataset, and Favorite. Users can type the keyword in the search text field as well.



5.1.5. Frequent Question & Answer

1. Some of the charts use Adaptive formatting, , and the numbers on the charts will be represented by unit abbreviations. For example, 5003 will show as 5k. Users can change value format in chart – CUSTOMIZE.
2. Compatibility rules for chart type and data type (what is not compatible):

Chart Type	Data panel configuration	Chart Type
Table	Query Mode – aggregate percentage metric	Enum
		Text
		Varchar (256)
		UUID
		Timestamptz

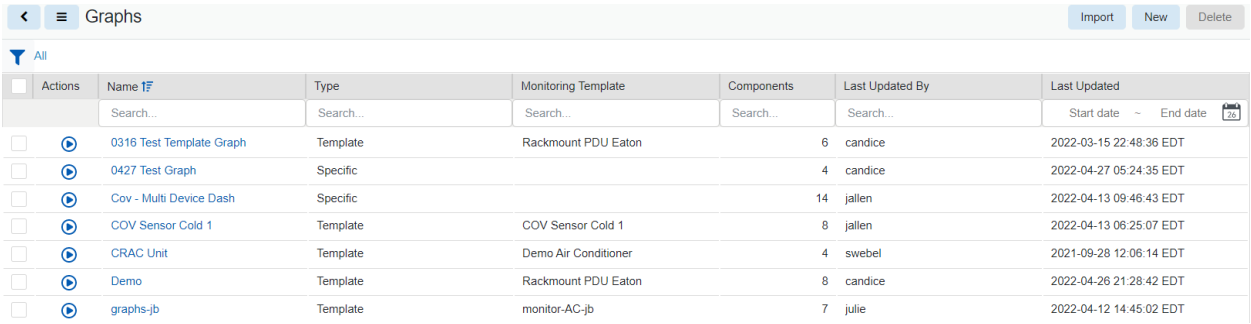
Time-series Table Line Chart Big Number Big Number with Trendline Pie chart Area chart Time-series Bar Chart Filter Box	Time Column	Enum Text Numeric(20,5) Int4 Varchar (256) UUID
Time-series Line Chart Time-series Bar Chart v2	Time Column	Enum Text Numeric(20,5) Int4 Varchar (256) UUID
	Metric	Enum Text Varchar (256) UUID
Bar Chart	Time Column	Enum Text Numeric(20,5) Int4 Varchar (256) UUID
	Metric	Enum Text Varchar (256) UUID Timestamptz
	Dimension	Numeric(20,5) Int4 Timestamptz

5.2. Graphs Menu Item

The Graphs option allows users to assemble data in the application into dashboards using a variety of available components. These Graphs can then be associated with Monitoring Templates to apply them to multiple devices. For previously defined Graphs, users can view the data as it relates to devices in the application and make edits to the Graph definitions.

5.2.1. Graph Table List

The initial view presented when the Graphs menu item is selected is a list of defined Graphs.



The table list contains the following fields:

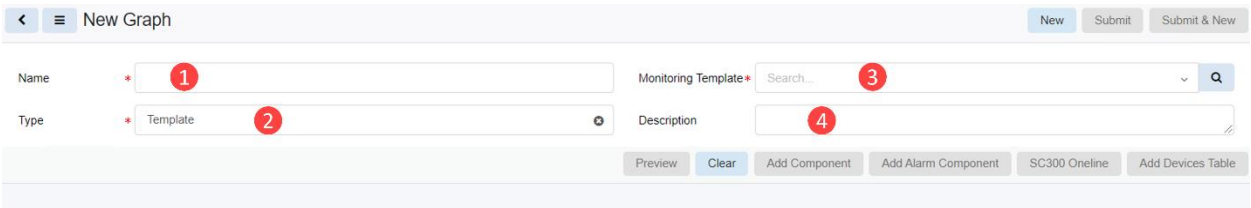
Table List Column	Description
Actions	Runs the Graph to show actual data as configured with the components.
Name	Name of the Graph. Selecting this link will open the definition of the Graph and allow user to make edits.
Type	Shows the type of Graph defined. Options are Template or Specific Devices.
Monitoring Template	Lists the Monitoring Template associated with the Graph.
Components	Number of Graph components defined in the view.
Last Updated By	Last user to update and save the Graph.
Last Updated	Time the Graph was last updated and saved.
Table List Button	**Description**
Import	Bulk import graphs
New	Create a New Graph to be viewed by users.
Delete	Deletes the selected Graphs from the list.

5.2.2. Create Graphs

Select the New button at the top of the Graph Table List page to create a New Graph configuration form. The following screen is presented to the user with the functions defined below. The top of the page contains fields for standard form data to define attributes of the Graph and the bottom of the page represents the Graph canvas where components can be placed, aligned, and defined to create the Graph view.

5.2.2.1. New Graph Properties

When defining a new Graph, there are properties defined with the Graph which manage where and how a user may access the Graph for viewing live data related to devices managed in the application.



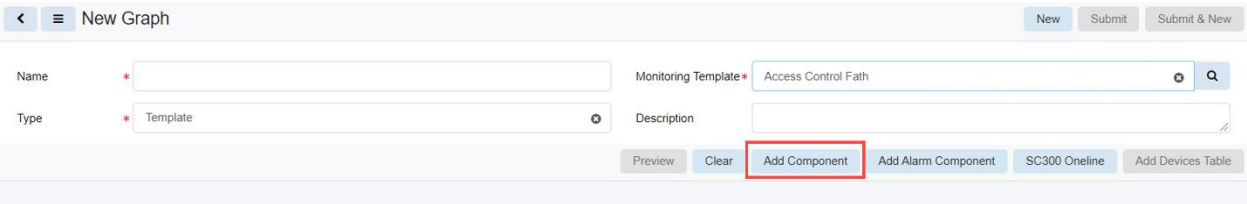
1. Name: Name of the Graph. This is visible at the device level so users can launch the Graph to view real time data.
2. Type: User can choose from two options to manage availability of the Graph

- Template – Graph is associated with a Monitoring Template. Monitoring Templates are applied to devices defined in the Monitoring Template. Components of the Template option are only associated to an Attribute and not to a specific device.
- Specific Devices – Each component of the Graph will specify the Device and Attribute of the device. These Graphs will be associated with devices that have components included in the Graph. There is no association of a Specific Device Graph with a Monitoring Template.

3. Monitoring Type: If Type is set to Template, then this property is used to associate the Graph to an existing Monitoring Template.
4. Description: Description of the graph.

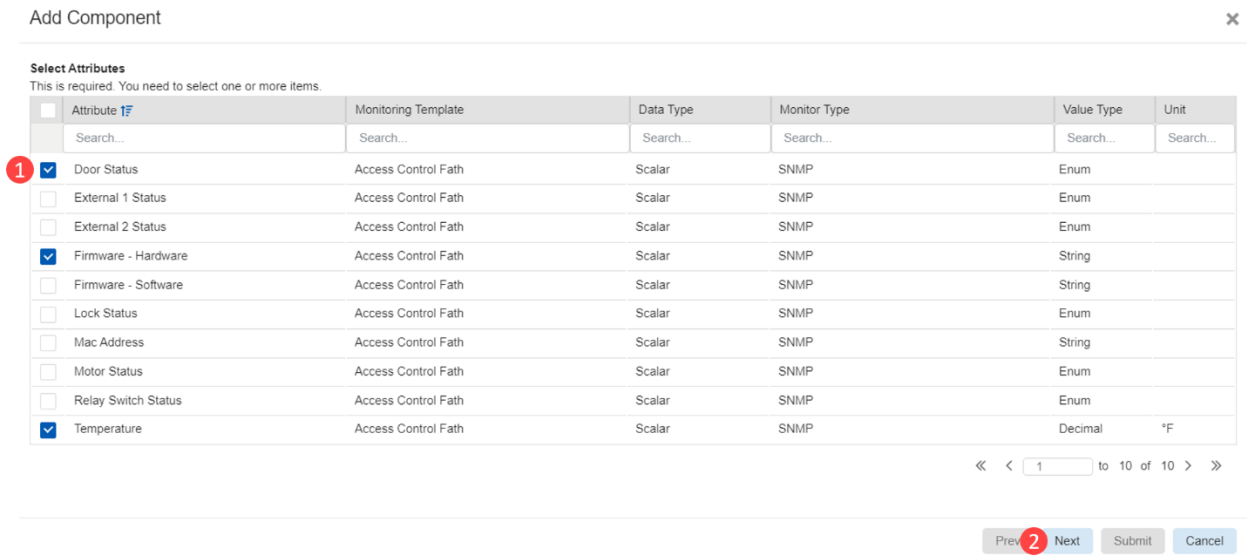
5.2.2.2. Add Components

After filling the mandatory fields, users can click the Add Component button to create a new component on the Graph.



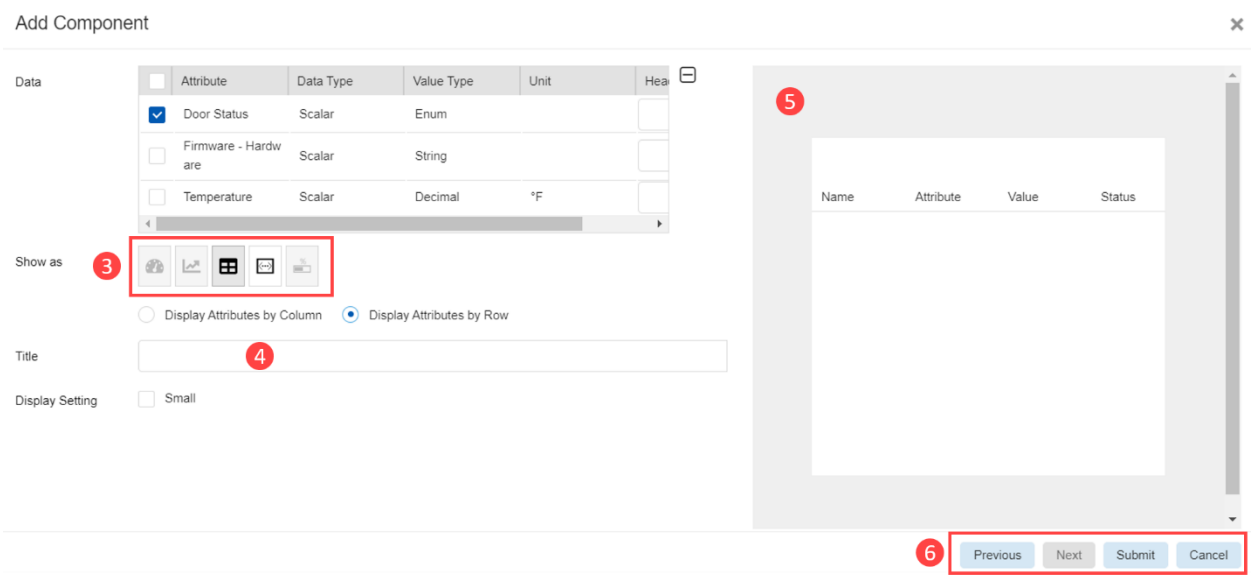
5.2.2.2.1. Add a Template Component

When the New Graph type = “Template”, adding a component for a Template:



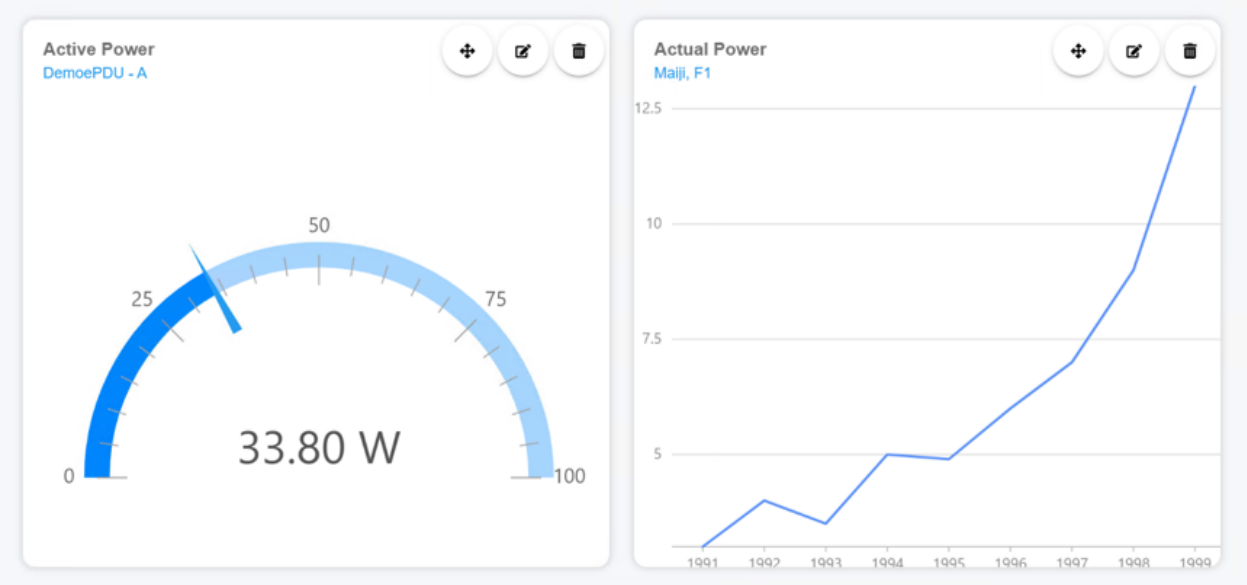
1. Users need to choose from the list of Attributes defined on the Monitoring Template. Multiple Attributes can be selected from this list to add multiple attributes to the Graph in one step. **Note**: Selecting a Table attribute will only enable the Table component option.

2. Click Next to choose the component type.



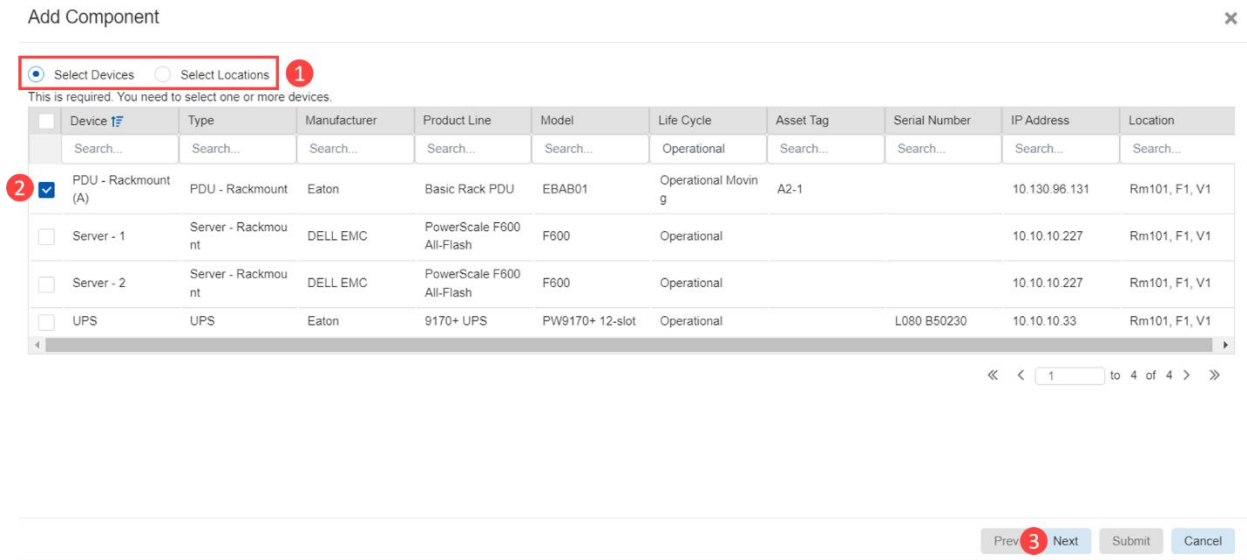
3. Choose the component type of the attributes you choose. The available component types are described in Section 5.2.3.3. Component Type. If users select multiple attributes at once in the previous page, all the selected attributes will be applied on the same component type.
4. Enter the title of this graph. If users left this field empty, the attribute name will be used as the title.
   Note: If users enter the title in this field and select multiple attributes in the previous page, this title will be applied to all attribute graphs.
5. Users can preview the graph of the selected attribute in the Data field on the right.
6. The buttons on the bottom right perform the following tasks:
   a. Previous – Go back to the previous Select Attribute page.
   b. Submit – Submit the graph.
   c. Cancel – Cancel this operation.

A device link/location link is displayed under the graph's name which allows users to easily jump to the device/location detailed page.

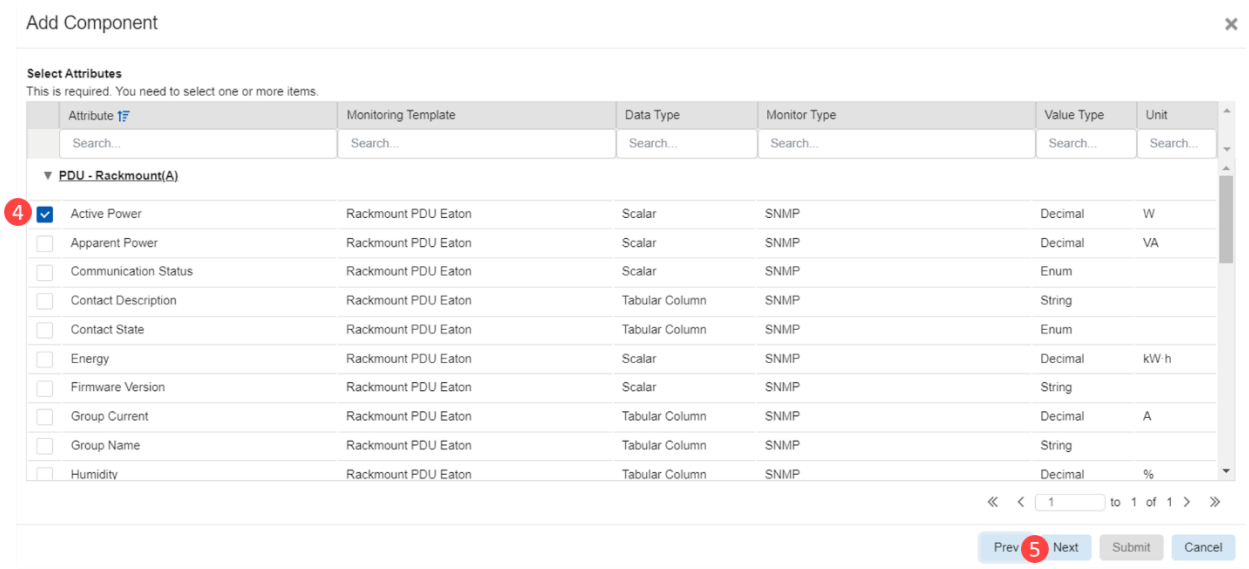


5.2.2.2.2. Add a Specific Devices Component

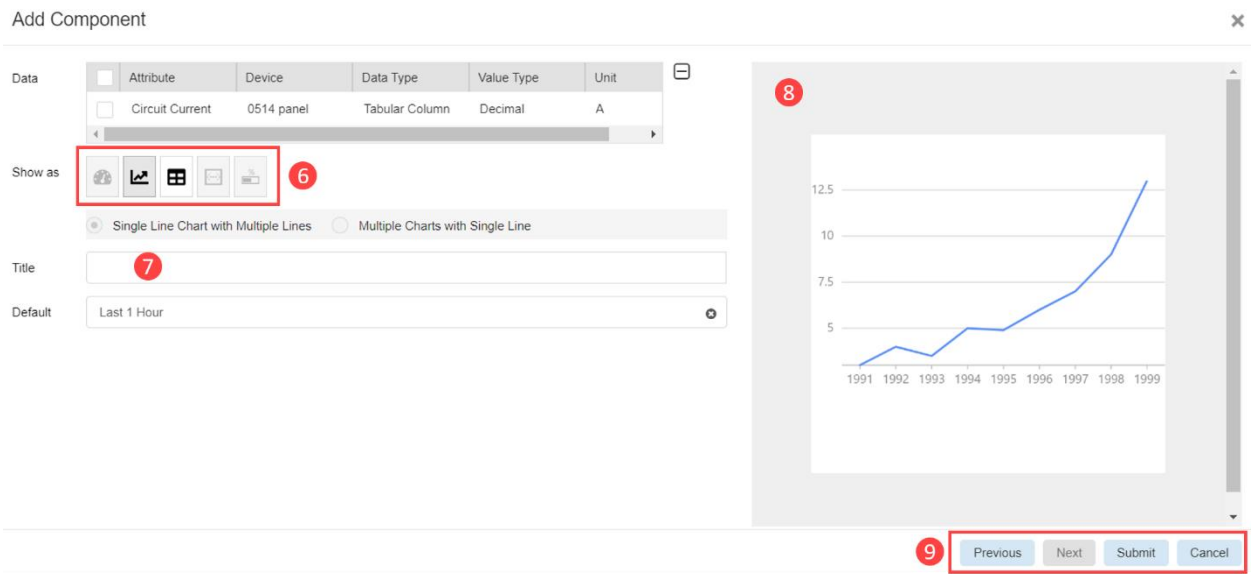
When the New Graph type = “Specific”, adding a component for a specific device:



1. Select the checkboxes – Select Devices or Select Locations.
2. Select the devices from the device list or locations from the location list.
3. Click Next to select attributes.



4. Select the attributes of the device or the attributes of the location.
5. Click Next to select the desired type of component.



6. Choose the component type of the attributes you choose. The available component types are described in Section 3.2.2.3. Component Type. If users select multiple attributes at once in the previous page, all the selected attributes will be applied on the same component type.
7. Enter the title of this graph. If users left this field empty, the attribute name will be used as the title.
   Note: If users enter the title in this field and select multiple attributes in the previous page, this title will be applied to all attribute graphs.
8. Users can preview the graph of the selected attribute in the Data field on the right.
9. The buttons on the bottom right perform the following tasks:
   a. Previous – Go back to the previous Select Attribute page.
   b. Submit – Submit the graph.

c. Cancel – Cancel this operation.

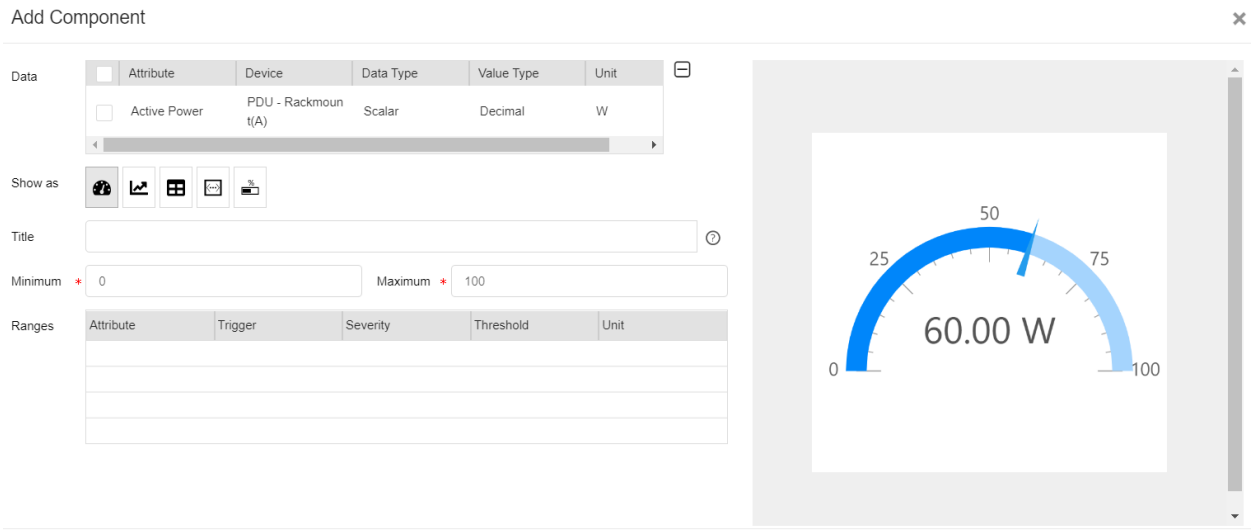
5.2.2.3. Component Type

The Graph is comprised of one or more graphical components to display data related to a device. Graphs are accessed from the Device Central page for a selected device, so the data displayed in the Graph is related to the device from which the Graph is generated. If the Graph is based on specific devices, then the components will show the data related to the defined device and attribute combination.

The following components are available for users to add to a Graph.

5.2.2.3.1. Circular Gauge

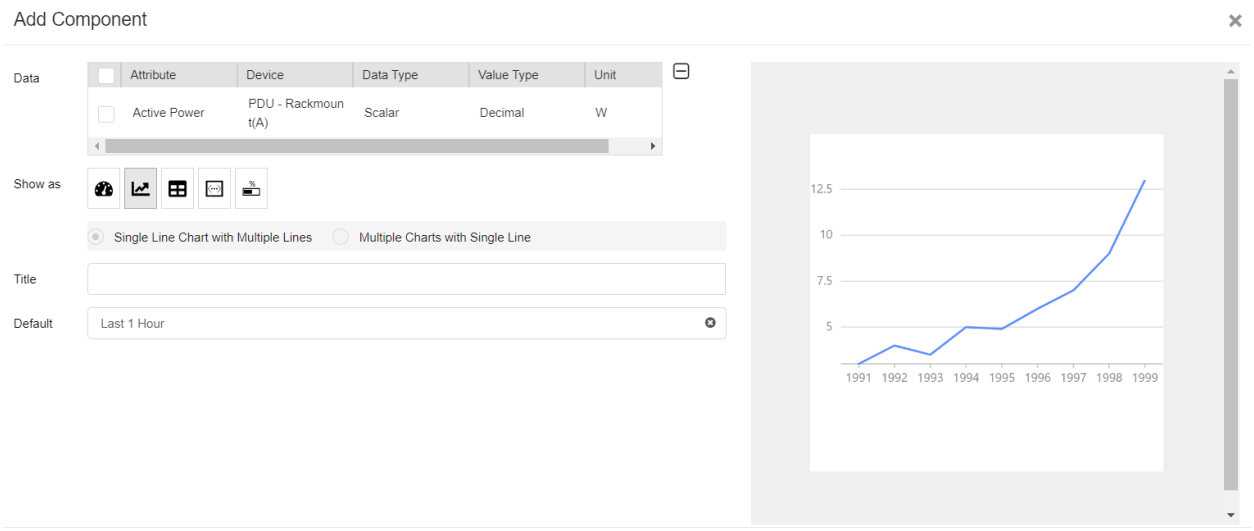
The Circular Gauge provides a value for a single attribute of data related to a device. The attribute must be numeric to be properly used with this component.



Property Name	Description
Title	String to be displayed on the top left of the component when viewed in a Graph.
Minimum | Maximum	The smallest and largest values to be displayed on the gauge.

5.2.2.3.2. Trend Chart

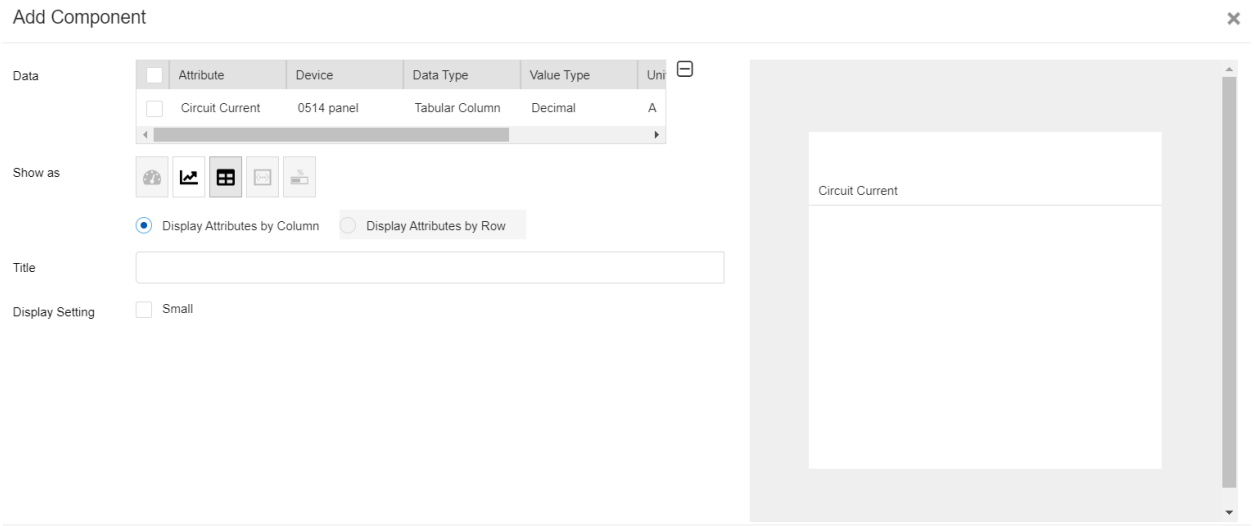
The Trend Chart displays historical time series data of one or more attributes of data related to the device. The attribute must be numeric to be properly used with this component.



Property Name	Description
Title	String to be displayed on the top, left of the component when viewed in a Graph.
Default	Default time interval to be displayed with the trend chart when viewed on a Graph. Users may change this interval by clicking the calendar icon on the trend chart component.

5.2.2.3.3. Table

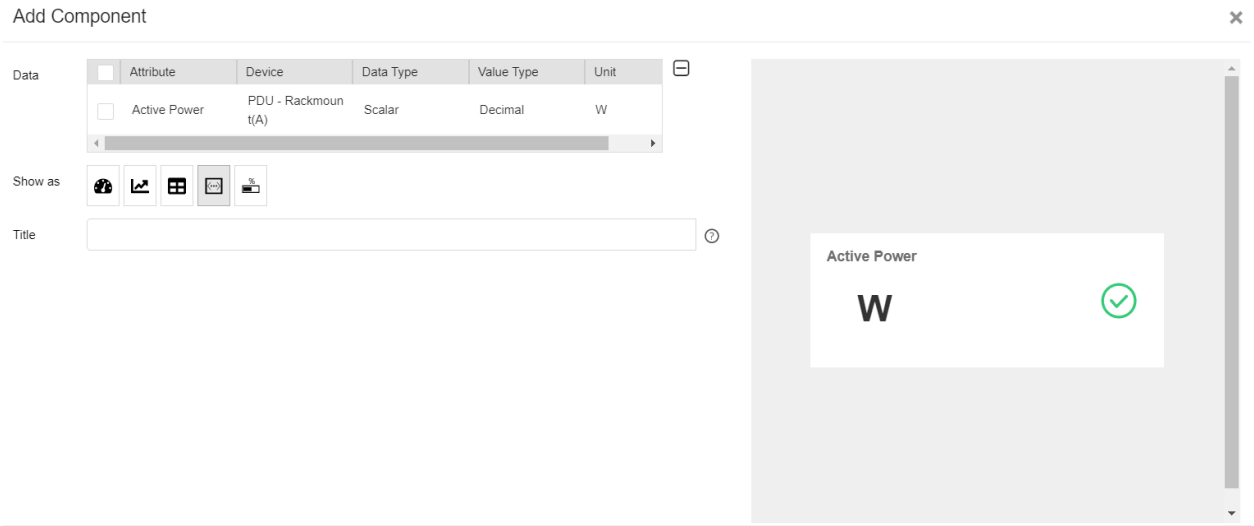
The Table component allows users to present table data which is commonly reported with SNMP Table and Table Column OID attributes. This option is only enabled when Tabular Column data attributes are selected.



Property Name	Description
Title	String to be displayed on the top, left of the component when viewed in a Graph.
Display Setting	Selecting the checkbox to display the diagram in small size. This option will change the height of the Table component.

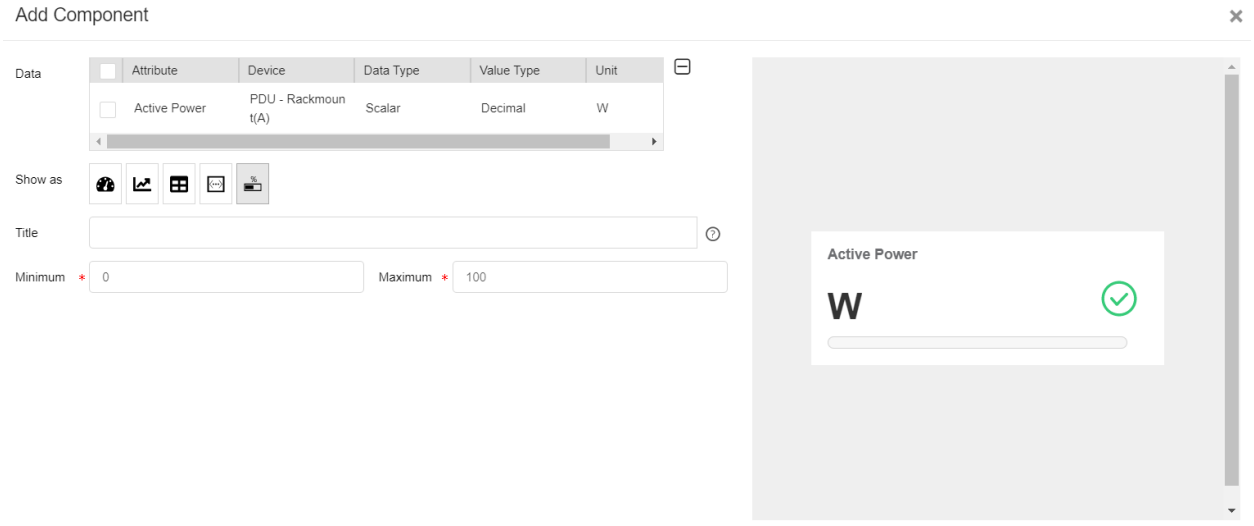
5.2.2.3.4. Number Gauge

The Number Gauge will display the device name, attribute, value and unit for the device and attribute associated to the component. The only property managed with this component is the Label which will appear on the top, left of the component when viewed in a Graph.



5.2.2.3.5. Percentage Gauge

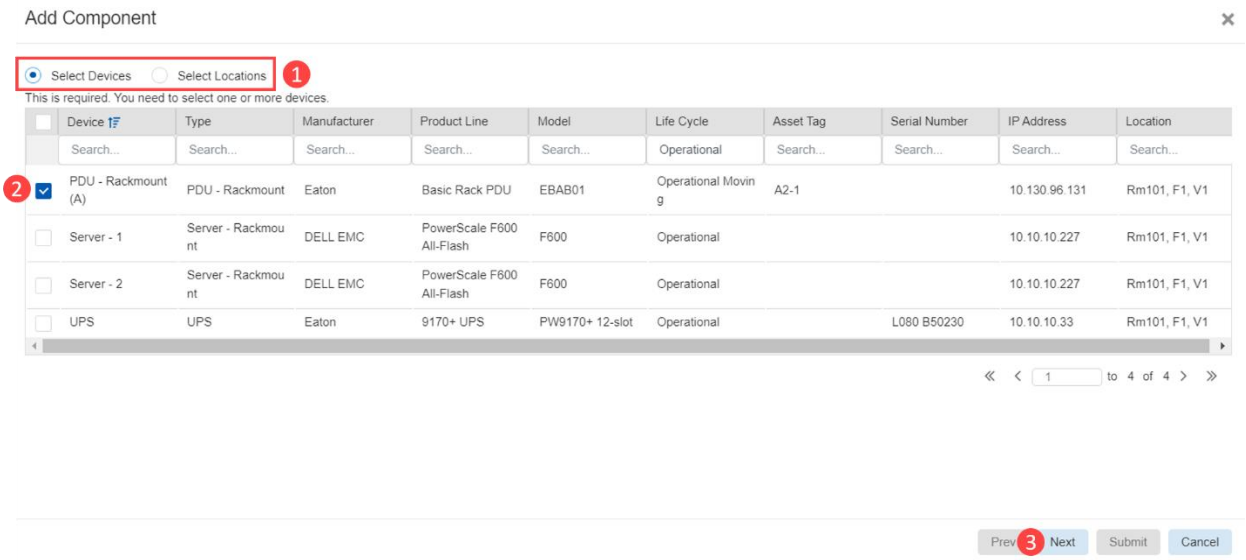
The Percentage Gauge will show the value of the attribute compared to a minimum and maximum range defined with the graph component. A bar indicator will show the percentage of the actual value of the attribute with the defined minimum and maximum values.



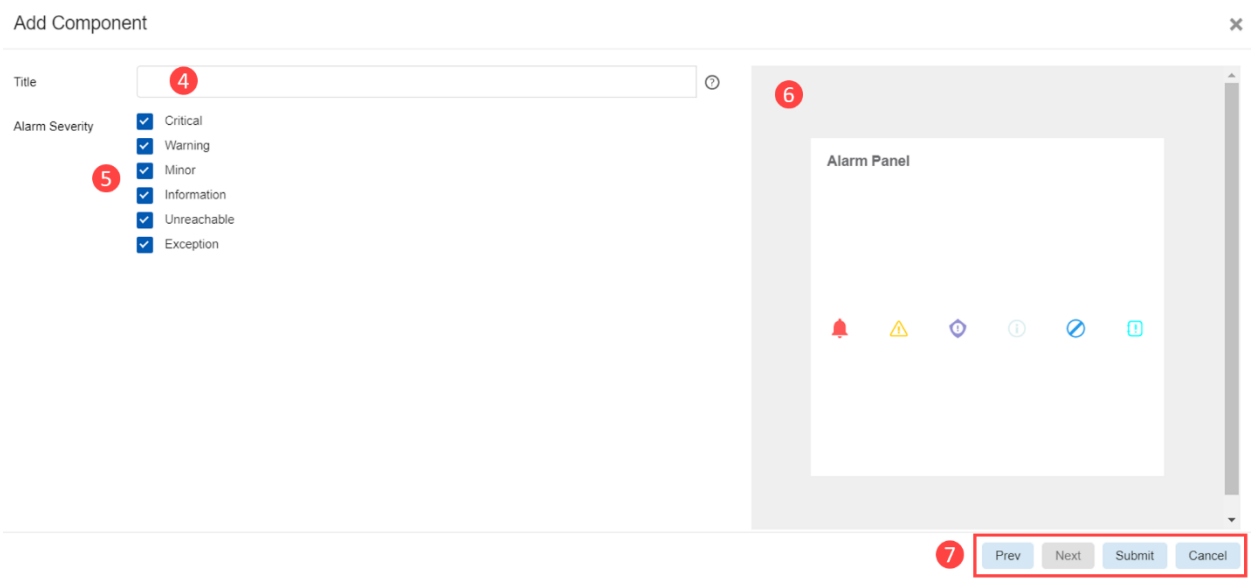
Property Name	Description
Label	String to be displayed on the top, left of the component when viewed in a Graph.
Default	Default time interval to be displayed with the trend chart when viewed on a Graph. Users may change this interval by clicking the calendar icon on the trend chart component.

5.2.2.4. Add Alarm Component

Click the Add Alarm Component button to create a new alarm component on the Graph. Then the following configuration page will show.



1. Select the checkboxes – Select Devices or Select Locations.
2. Select the devices from the device list or locations from the location list.
3. Click Next to add the alarm component.



4. Enter the title of this graph.
5. Select the alarm severities you'd like to display in the Alarm Panel.
6. Users can preview the graph on the right.
7. The buttons on the bottom right perform the following tasks:
    a. Previous – Go back to the previous Select Attribute page.
    b. Submit – Submit the graph.
    c. Cancel – Cancel this operation.

The alarm refresh frequency is 30 seconds, and the data source is from trigger alarms.

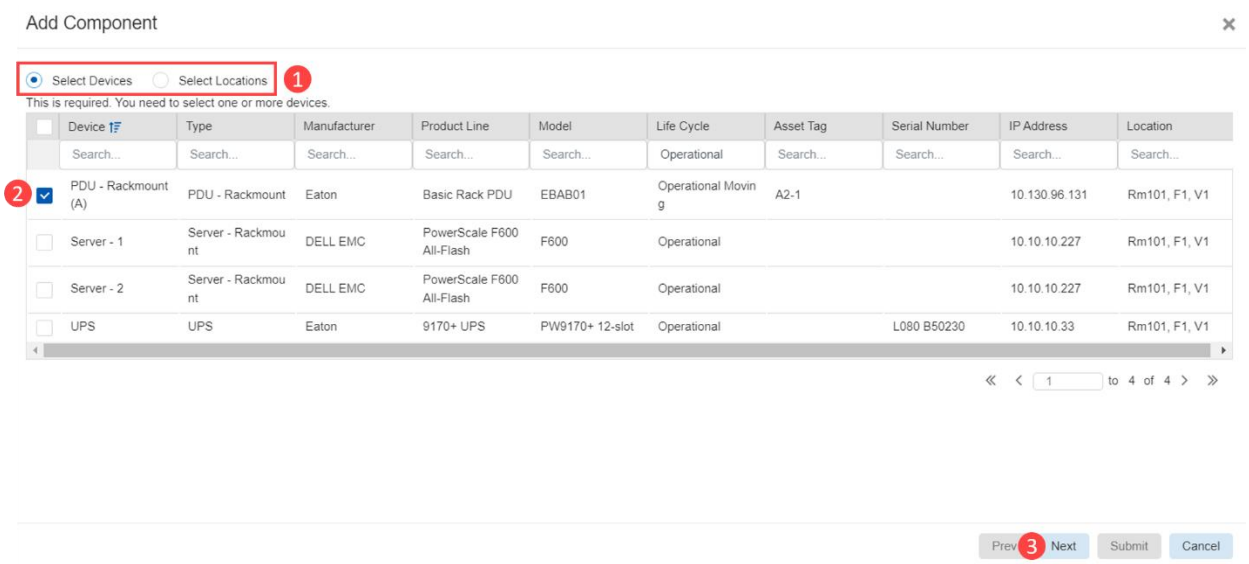
5.2.2.5. Add SC300 Oneline Component

The component is a specific component to show a one-line diagram for SC300 devices. It contains five attributes: AC Input Voltage, Battery Voltage, Battery Current, Battery Temperature, Load Current. These attributes are pre-defined on the system monitoring template 'SC300'.

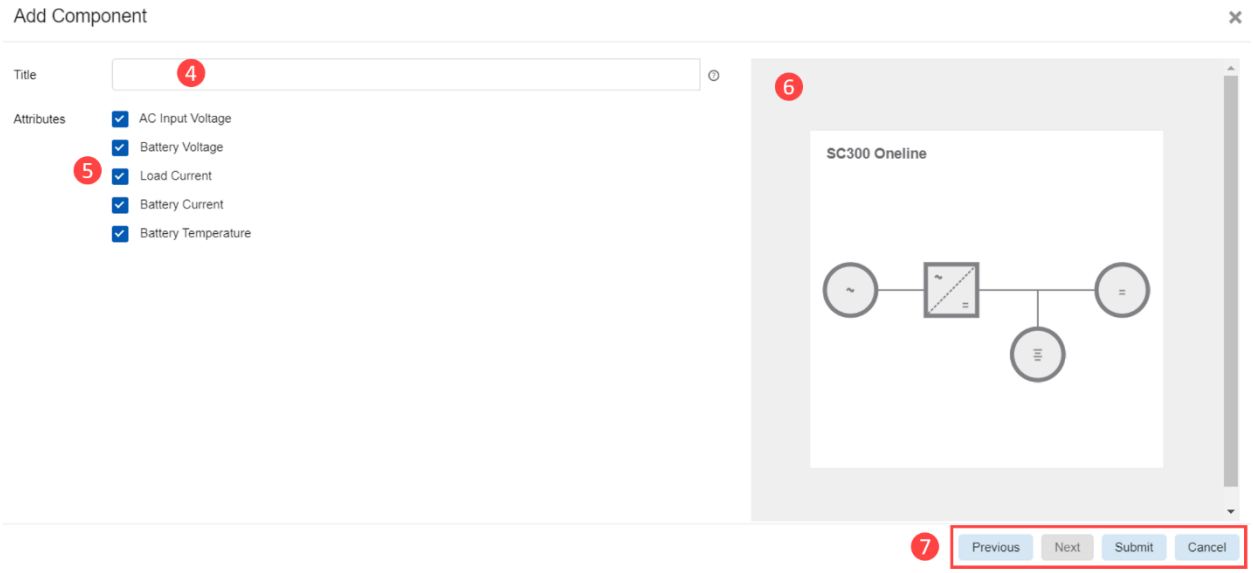
To ensure the attributes' name can be displayed correctly as the Display Name, users should import the attached monitoring templated to add an alias for attributes AC Input Voltage, Battery Voltage, and Load Current. The table below provides an example.

Monitoring Templates - SC300 - A

Display Name	Attribute Name
AC Input Voltage	SCx00 - AC Input Voltage
Battery Voltage	Bus Voltage
Battery Current	Battery Current
Battery Temperature	Battery Temperature
Load Current	SCx00 - DC_Output Load Current

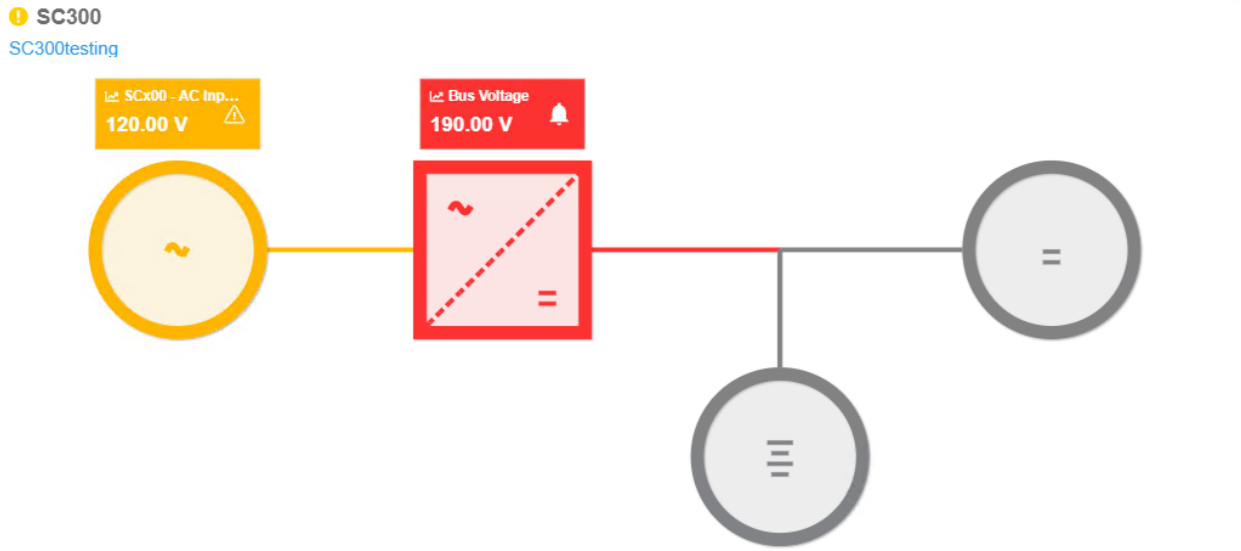


1. Select the checkboxes – Select Devices or Select Locations.
2. Select the devices from the device list or locations from the location list.
3. Click Next to add the SC300 oneline component.



4. Enter the title of this graph.
5. Select the attributes you'd like to display.
6. Users can preview the graph on the right.
7. The buttons on the bottom right perform the following tasks:
    a. Previous – Go back to the previous Select Attribute page.
    b. Submit – Submit the graph.
    c. Cancel – Cancel this operation.

When an SC300 device is discovered and added to the application for monitoring, these attributes are auto monitored. Users can see the data on the graph created by this component. It also shows the alarm severity on the graph. By clicking the trend chart icon, users can view its historical data as well.

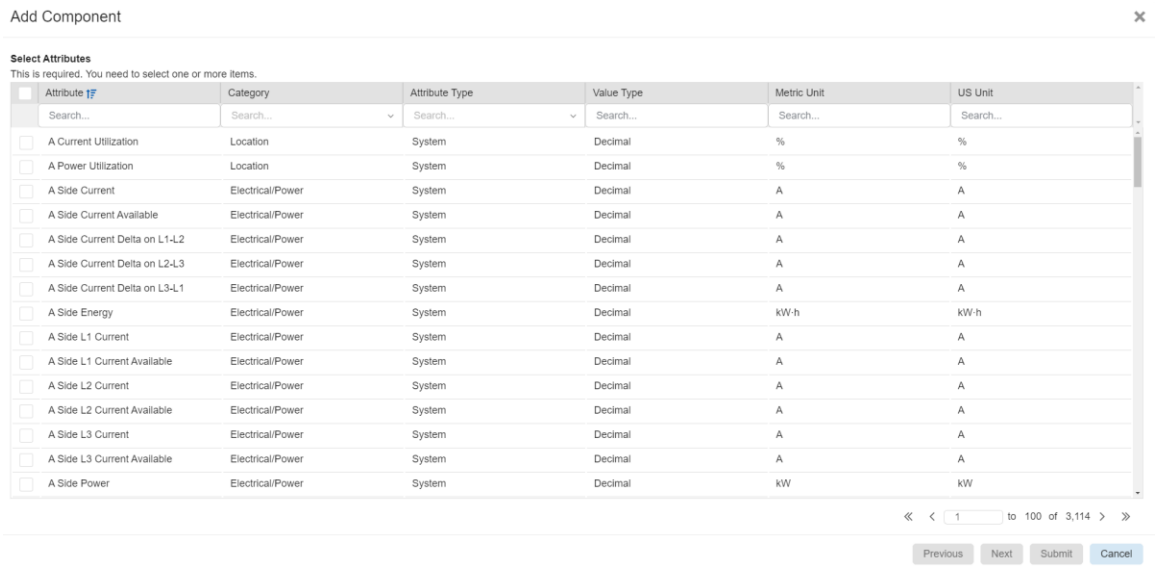


5.2.2.6. Add Devices Table

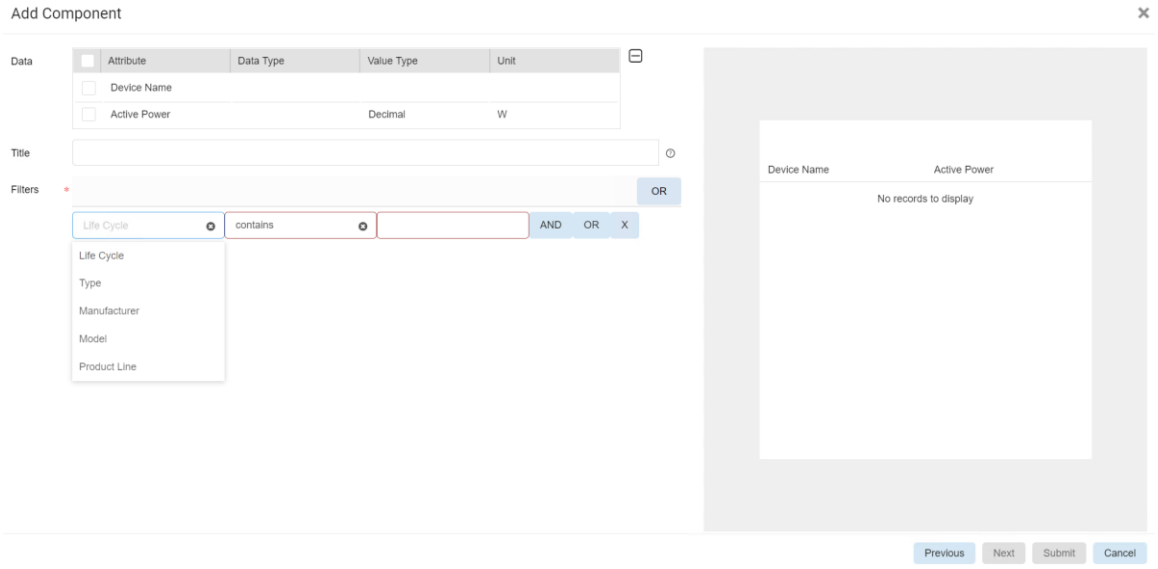
The component is a specific component only works for location-related template. The purpose of this function is to allow users to view device attribute in batches on the selected location node.

The configuration page shows below.

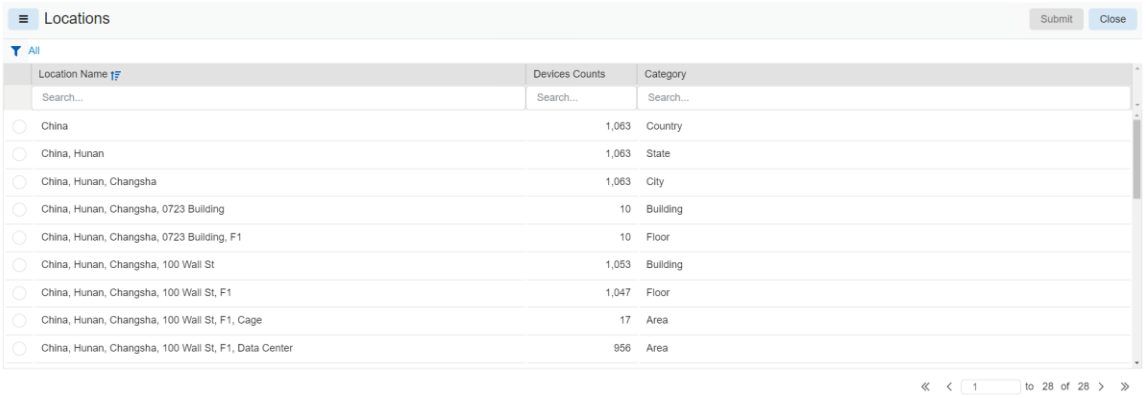
1. Users need to choose from the list of Attributes defined on the Monitoring Template. Multiple Attributes can be selected from this list to add multiple attributes to the Graph in one step. Click “Next” button.



2. Select the filters that will apply to your graph. Users can filter the Life Cycle, Type, Manufacturer, Model, and Product Line of devices on the location node. Then click the “Submit” button.



3. Submit the graph.
4. Click the Run button in the Action column. Select the location node you want to apply this graph to.



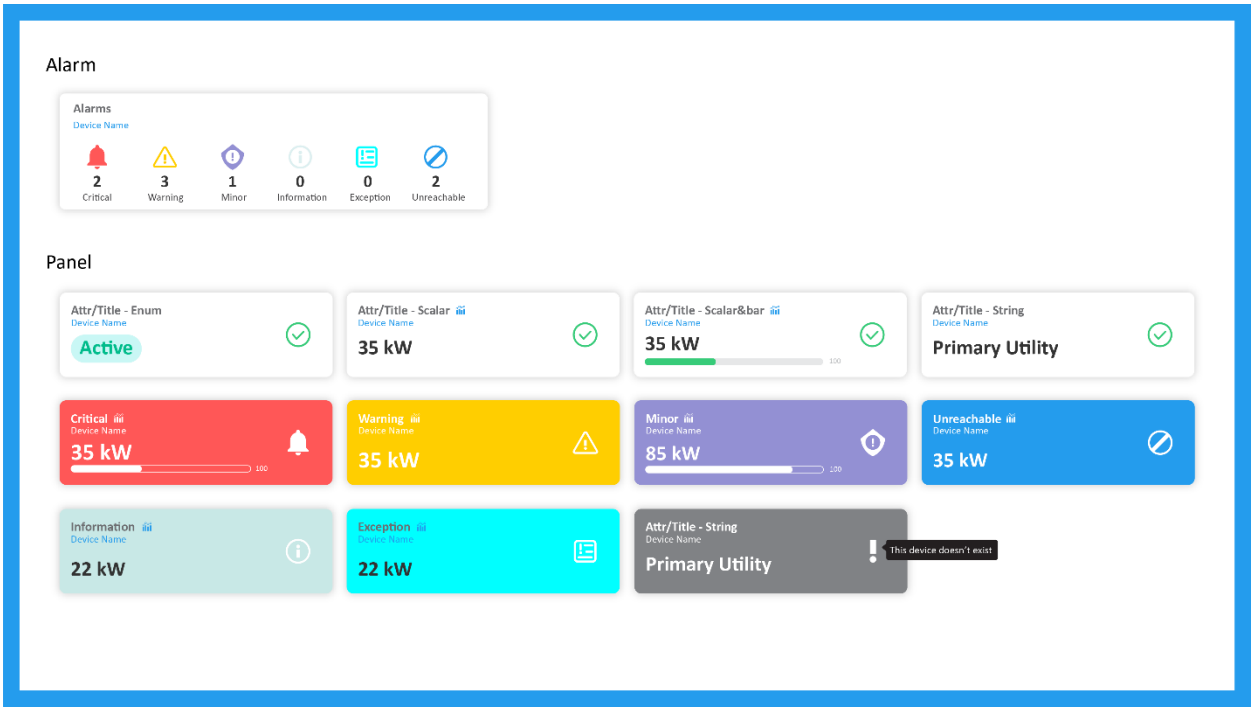
5. Then you can see the attribute you selected on the location node.

5.2.2.7. Edit Components on a Graph

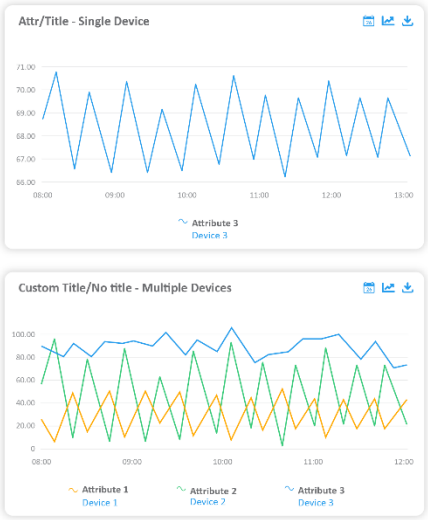
Each component on the graph has three icons for editing:

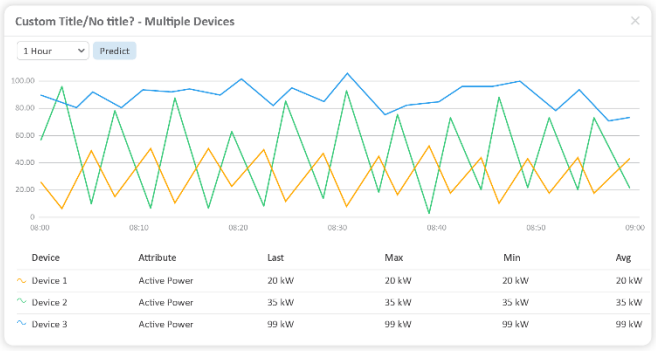
- The Move Icon allows the user to drag the component to the desired location.
- The Edit Icon allows the user to modify the component using the same tools used for creating the component.
- The Remove Icon allows the user to remove the component from the graph.

5.2.3. Graphs Reflect Alarm Level Colors

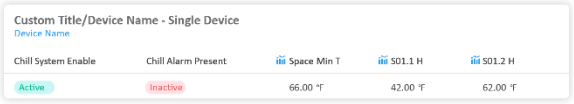


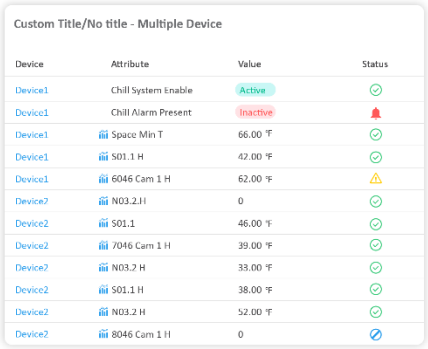
Trend Chart

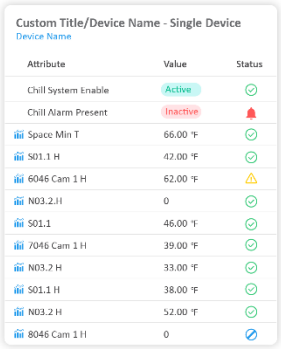




Table







5.3. Reports Menu Item

The application is provided with a set of predefined reports for common asset management and monitoring use cases along with features to allow users to tailor reports for specific users, administrative capabilities related to reports and an ad hoc report creator tool to create new device reports. Users can access the Reports by selecting the Reports menu item under the Data Analysis menu group.

Reports are a very important component of the overall system. Output from this feature provides a wealth of information related to the physical assets managed by the application. System operators can use this information to make decisions related to management of the overall data center infrastructure.

The Reports menu item displays a pre-defined set of reports and functions defined below. Reports can be generated in the standard PDF format for easy saving. They can also be generated in Microsoft Excel file format for managing the data outside of the application.

The availability of certain report menu functions is based on user privileges established by the administrative user. All members of the administrators' user group see five report tabs which provide specific functionality related to the Reports feature:

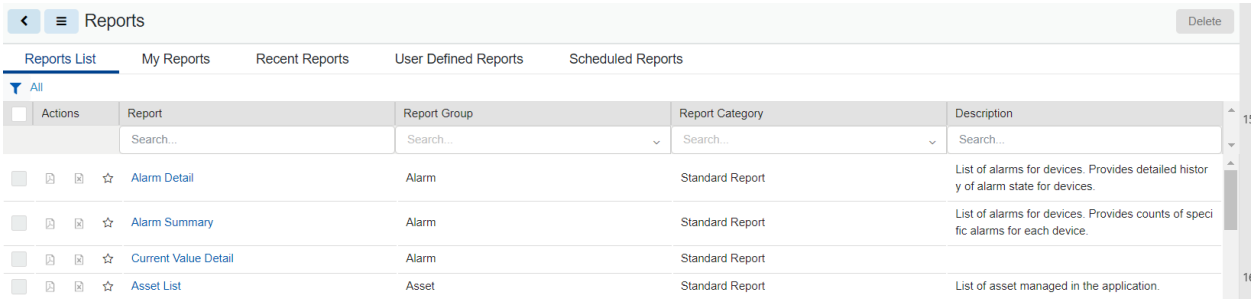
- Reports List – List of all available reports in the application. This list will contain a combination of Standard Reports which are provided by default with the installation as well as Custom Reports which are saved by the users.
- My Reports – List of users saved favorite reports.
- Recent Reports – List of the most recent reports which have been run by the user.
- User Defined Reports – Ad hoc report tool to create custom reports.
- Scheduled Reports – Tool to manage delivery of reports to users.

Note: Report access control is set in the User Group. Rights Access menu group > User Groups menu item > User Group.

5.3.1. Reports List

The Reports List contains the list of predefined and common reports needed to view asset and monitoring information related to the devices managed by the application. This list represents a full list of all reports a user can generate.

Note: Users in the administrators User Group will have rights to manage ALL reports for ALL users.



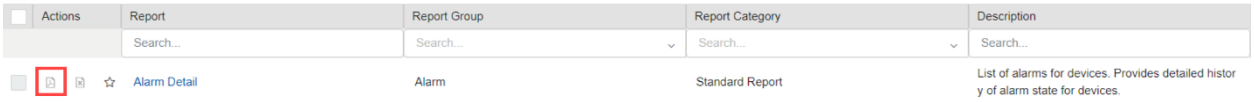
The reports in this list can originate from the following Report Categories:

- Standard Report – List of reports implemented with the installation of the product.
- Custom Report – This report is a Standard Report saved with predefined filter options.
- User Defined Report – This report is created in the User Defined Reports page of the Reports feature.
- Inherited Report - If another user shares one of their Custom reports or User Defined reports, it will also show as an Inherited Report in the report list.

5.3.1.1. Generate PDF Report Output

Click the PDF icon next to the report name to generate the report output to PDF format.

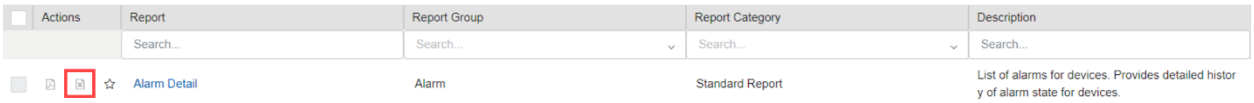
Note: user can filter the report output with customizations prior to running the report by clicking the report name hyperlink.



5.3.1.2. Generate XLS Report Output

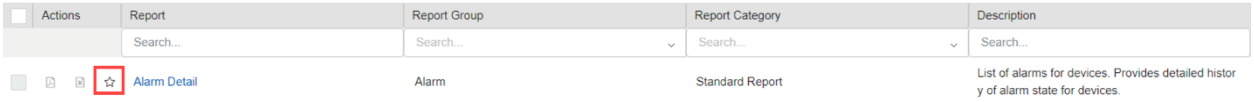
Click the XLS icon next to the report name to generate the report output to XLS format.

Note: user can filter the report output with customizations prior to running the report by clicking the report name hyperlink.



5.3.1.3. Define Favorite Reports

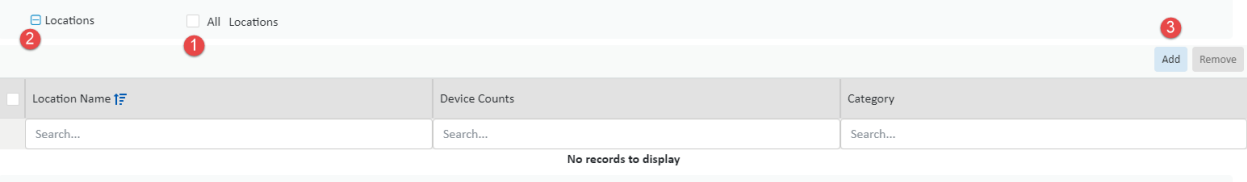
Click the Star icon next to the report to save the report as a favorite. The list of favorite reports can be reviewed on the My Report tab. To remove the report from the Favorites list simply click the Star icon again to toggle the report off the favorites setting.



5.3.1.4. Customize Reports

Users have control over the output of the report by customizing user defined filters which apply to the selected report. Each report has a different set of filter controls which may be checkboxes, dropdown lists or inclusion or removal of attributes such as Locations, Device Groups, Device Types, etc. Users may create customized version of reports by following these steps:

- Click the hyperlink of the report name from the Reports List.
- Define filter options to set criteria for the report output. Options such as Locations or Device Groups provide a checkbox to quickly include all items for that attribute. To filter based on these attributes:
    1. Uncheck the All checkbox.
    2. Click the + icon to add items to the table.
    3. Choose the Add button to select the items to be applied to this filter.



- Click the Save As button and define a name and Report Group for the Report.

5.3.1.5. Delete Reports

Select the checkbox next to the report and click the Delete button. Multiple reports can be selected for a single Delete action. Please note that the default reports provided with the product cannot be removed from the list using the Delete function. To hide these default reports from users, use the Rights Access features to limit View access to individual reports in the report list.

5.3.1.6. Report Category

All Standard and Custom reports are assigned one of the following report groups to help group reports and allow for the table filters to find reports easily.

- Alarm – Alarm summary and detail reports for devices in the application.
- Asset – Standard Asset reports.
- Capacity – Capacity information for groups of devices in the system.
- Efficiency – Performance and efficiency reports for different sets of devices.
- Metrics – Reports designed to generate specific metrics based on user criteria.
- Service – Warranty, Maintenance Schedules, and other items from the Service page.
- System – Information about Users and Groups in the system.

5.3.1.6.1. Alarm Reports

The list of default Alarm reports including the following:

- Alarm Detail – Displays the details for alarms including first time, last time, duration, and values occurring during the date range specified.
- Alarm Summary – Displays a summary of the alarms for devices that includes number of occurrences and alarm cycles during the date range specified.
- Current Value Detail - Provides the current value of polled data for the selected devices.

5.3.1.6.2. Asset Reports

The list of default Asset reports include the following:

- Asset List – Reports on all assets in the system and sorts the output by optional settings for the device.
- Cable Connection – Lists power and network cable connections for devices in the application. The report also displays the color of the Cable.
- Data Mapping List – Lists all devices that have mapped data points.
- Decommission Device List – Lists decommissioned assets in the application
- Device List By Area – Lists the devices associated with a specific area.

- Device List by Rack – Reports on all assets located within a rack and sorts the list by rack name.
- Device Port Details – Lists power and network ports defined on devices in the application.
- Device Port VLAN – Shows devices and ports grouped by VLAN definitions.
- Device Status Report – List of location footprint for devices.
- Monitor Attribute – List of monitoring attributes for devices in the system.
- Rack Details – Summary information for racks which are grouped by location.
- Rack Lock Summary – Summary information for rack access control devices.
- Redundancy – Lists the devices with redundant power and network redundancy.
- Relationship Summary – Provides detail on all network and power port mappings for selected devices.
- Software Application By Owner – Provides a report on software applications by Owner.
- Software Audit – Provides a list of software deployed to servers compared to counts purchased.
- Software License Compliance – Lists software installed and counts across all devices.
- UPS Last Battery Replacement – List UPS devices, seconds on battery and the battery last replace date within the defined date range.
- Virtual Machine – List of guests discovered by the application.
- VM Power Source - Lists rackmount UPSs and the connected VMs. Battery Replace Date and run time are shown in the report. The priority of VMs are displayed to identify the critical VMs. If a VM is in multiple Configuration Groups, the Priority is the highest one.

5.3.1.6.3. Capacity Reports

The list of default Capacity reports include the following:

- Blade Enclosure Capacity – Reports on the blade enclosures and the capacity information pertaining to them.
- Building Capacity – Tracks the average and peak utilization of the Generator and Main Switch devices in the system.
- Cooling Capacity – Tracks the cooling capacity of devices compared to cooling required. The required cooling is based on the total load of the building measured at the main switch devices.
- Cooling Capacity Summary – Summarizes the cooling utilization by area.
- Cooling Utilization – Shows the sum of cooling capacity for all the air conditioner and air handler units on the floor.
- Customer per PDU – Provides a list of PDU devices with customer specific information.
- Daily Customer Power Summary – Provides a list of customer information related to power data.
- Generator Capacity – Tracks the average and peak utilization of the Generator devices in the system.
- IT Redundancy – Shows which devices have redundant paths defined for network and/or power connections.
- Panel Power Summary – Summary of PDU|RPP power panels and related configurations.
- PDU Capacity – Tracks capacity power information for floor standing PDU and RPP devices.
- PDU Power Summary - Summarizes power information for floor standing PDU and RPP devices.
- Port Capacity – Lists all switches and routers with their port capacity, port usage, and utilization %. These values are based on the configurations completed in the Relationship Editor part of the application.

- Power Assignment – Provides a list of devices with their power and power utilization information.
- Project Capacity – Lists all projects and their information.
- Project Device Capacity – Lists all project devices and their information.
- Rack Amps Capacity - Shows the Amp capacity for specified racks.
- Rack Capacity – Shows the rack capacity, rack space used, and the largest contiguous space for each rack in the system. At the location level, rack capacity figures are aggregated to provide capacity information for a site. The grand total capacity is also provided so that you can see rack capacity and rack usage statistics for the company as a whole.
- Rack Power Capacity – Tracks the A and B power loads for all racks in the system.
- Rack Space – Provides a list of areas with total, used, and remaining floor area designated for racks.
- Rack Unit Occupied Area – Shows the rack density by area for locations in the system.
- Rack Weight – Shows the rack weight capacity and utilization for all racks in the application.
- UPS Capacity – Tracks the average and peak utilization of the UPS devices in the system.

5.3.1.6.4. Efficiency Reports

The list of default Efficiency reports include the following:

- A-B Energy – Provides a summary of power based on the A or B power designation for a device. This report lets managers evaluate A versus B power consumption for each branch of the power tree. Input for the report lets you specify start and end dates and locations for the report output.
- Carbon Emissions – Provides a default CO2 output rate setting for the states in the navigation tree when you click the CO2 Rate button. By default, the application looks up the 2-letter abbreviation or full name of a state and matches it to the corresponding CO2 rate. If the State node of the navigation tree has a name that does not match one of these default state definitions, you can map the node to the appropriate state by using the CO2 Rate button. The rate and navigation node name are displayed by default. If a custom state assignment has been created, that state name appears in brackets at the end of the node name.
    - For reference, the CO2 rates used in this application are based on the Energy Information Administration from the Department of Energy report published on April 2002. You can access the rates at this URL:
    - http://www.eia.doe.gov/pub/oiaf/1605/cdrom/pdf/e-supdoc.pdf.
- Customer Billing Interval Comparison – Provides a way to report on day to day, week to week or month to month comparisons of power, energy, or cost metrics for a department.
- Customer Connected Load – Displays Allocated Amps and KW on breaker grouped by Customer.
- Customer Power Consumption – Displays power consumption by customers in a period.
- Customer Power Summary – Provides a summary of customer power consumption. This information is typically tracked at the branch circuit level of a PDU device.
- Customer Rack Power – Lists racks, customer, power, energy, and cost information for all racks in the application.
- Customer Server Power – List of power, energy, and cost information for rackmount devices.

- Detailed Customer Energy – List of power, energy, and cost for devices groups by customers and locations.
- Device Customer Energy – Summary of power, energy, and cost by customer.
- Electric Costs By Rack - List racks based on location and the monthly and yearly power costs.
- Energy - Lists all devices that have a defined Energy Source attribute and provides actual kWh consumption and cost of using the device.
- Energy Source Summary – Provides energy source information for all devices.
- Environmental Summary – Provides temperature and humidity information for devices.
- Location Occupancy Summary – Summary of types of Floorspace areas and utilization.
- Monthly Rack Power Report – Provides a summary of rack power in a month period.
- PDU Breaker Summary - Provides a summary of PDU breaker information.
- PDU Circuit Summary – Provides a summary of PDU circuit information.
- PUE Report – Review of key PUE data based on time duration and location.
- Rack Power Summary – Summary of power consumption and costs for racks in the application.
- Server CPU Idle – Collects and shows the CPU loads for devices under management. This information helps you understand which assets are being over/under utilized. Data for this report is collected from the Monitor Attribute table. For a device to report this data, the target member must be mapped to this monitor attribute table.
- Server Throughput – Collects and evaluates the amount of traffic in and out of network interface cards, and shows devices being utilized. This report provides a list of servers and switches and lets you see the amount of network traffic being processed by the device. Data for this report is collected from the Monitor Attribute table. For a device to report this data, the target member must be mapped to this monitor attribute table.
- Trend Chart - Trend charts for selected devices and attributes.

5.3.1.6.5. Metrics Reports

The list of default Metrics reports include the following:

- CUE – Carbon Usage Effectiveness
- EDF – Energy Distribution Factors
- Eff UPS – UPS System Efficiency
- ITL - IT Server Equipment Load Density
- LD – Lighting Density
- PUE – Power Usage Effectiveness
- RH – Ambient Relative Humidity
- RTI – Return Temperature Index
- TMP – Temperature Supply and Return
- ULF - UPS Load Factor

5.3.1.6.6. Service Reports

The list of default Service reports include the following:

- Service Events Overdue – Provides a list of all events that have not been completed on schedule, which is similar to the Services Scheduled report. The filter controls for this report and the

scheduled events report are the same. The output of this report is grouped by week and sorted by day within the week grouping.

- Service Events Scheduled – Provides an easy way to query the scheduled events and view in a report format. You can define a date range to view Scheduled Services and select a specific City-Building combination to filter the report output. The report output is grouped by week and then sorted by day within the week grouping.
- SLA Report – Displays the Service Level Agreement in the system.
- Warranty Expiration – Lists all warranty expiration dates stored in the system.

5.3.1.6.7. System Reports

The list of default System reports include the following:

- License Compliance – Shows the device count quota being enforced by the license key and the current total of devices managed in the application.
- License Detail – Provides list of devices which are using purchased licenses.
- Sizing Report – Summary of key application metrics such as devices, pots, cables, etc.
- User Account List – Defines all users and their basic attributes in the system.
- User Group List – Defines the User Groups and the members of the user group.

5.3.2. My Reports

My Reports is a user's personal report shortcut list. This report list contains reports that are marked as a favorite by the user on the Reports List page. The Star icon next to the report name on the Reports List page is used to toggle reports on and off the My Reports list. Users have the same Actions available for reports on the My Reports list as they do for the full Report List page which are defined in the sections above.

5.3.3. Recent Reports

The Recent Reports list shows a list of recent reports that have been run by the user and the time that each report was run. Users can easily select the report from the list to view customizations, further customize or save the report. By clicking the PDF or XLS icons next to the report name, users can generate the output of the report once again.

5.3.4. User Defined Reports

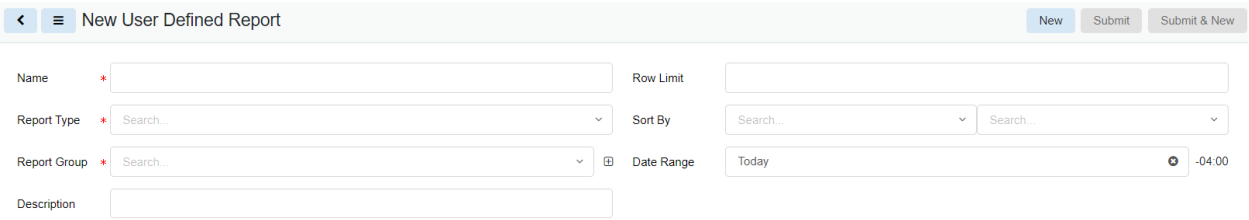
The User Defined Reports feature allows users to define their own ad hoc reports by choosing fields, applying filters, sort order, grouping and math to the resulting output as needed. When the menu item is first selected, users will be presented with a list of previously defined reports. Fields in the table presented for this report list include:

- Actions – User can click the PDF or XLS icon to generate report output in the selected format.
- Report – Name of the custom report.
- Report Type – There are three types of reports which can be created with the User Defined Report feature.

  - Device Data allows users to report on any attribute defined in the application related to devices.
  - Location Site Data allows users to report on actual, capacity and utilization data for locations.
  - User Account allows users to view the accounts information in the system.
- Report Group – Lists which group was defined to this custom report when it was saved.
- Description – Lists the description that was defined to this custom report when it was saved.

5.3.4.1. Create New Report

Click the New button to open the report configuration page which allows users to define standard properties of the custom report. The following properties will be defined for the custom report.

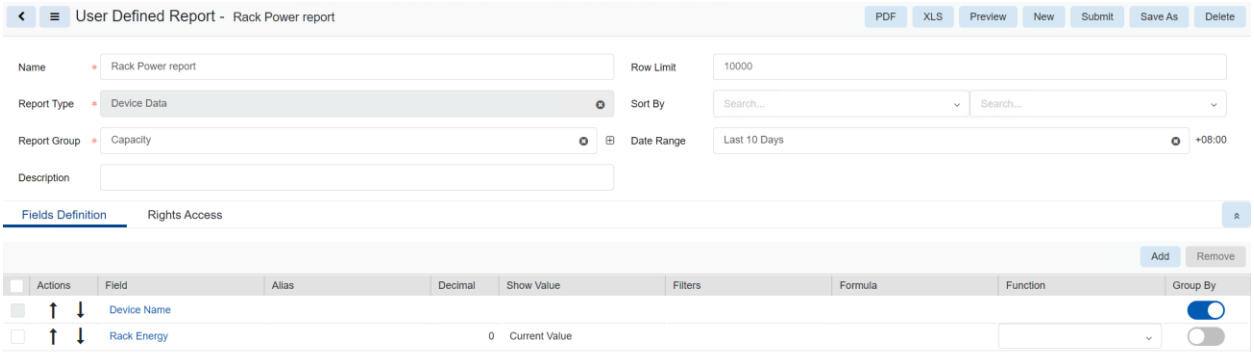


- Name – Name of the custom report. This name will be listed in the Reports List for the custom report.
- Report Type - Device Data allows users to report on any attribute defined in the application related to devices. Location Site Data allows users to report on actual, capacity and utilization data for locations.
- Report Group – List of groups which can be used to organize the reports. This list by default is the list of report groups included with the installation of the product.
- Description – Text string used to define the details included in the report.
- Row Limit – Defines the maximum number of records to return in the report output.
- Sort By – When first creating the custom report with the New function, this feature is not available. Once the report has been created, this feature allows users to choose which attribute included in the report output will act as the primary sort key for each group of records in the report. Users can select the attribute and the Ascend|Descend option to define this sort order.
- Date Range – Allows users to select a date range for evaluating monitored data. This setting don't have an impact on standard attribute output such as Asset Tag, Serial Number, etc. If users include Temperature, Humidity or Power, for example, in their output, the Date Range can help to determine the Min, Max and Average of these data attributes for the report.

Once these fields are defined, users click the Submit button and the new custom report will be added to the report list. The user can then modify the report contents and configuration using the Fields Definition and Rights Access features.

5.3.4.2. Edit Custom Reports

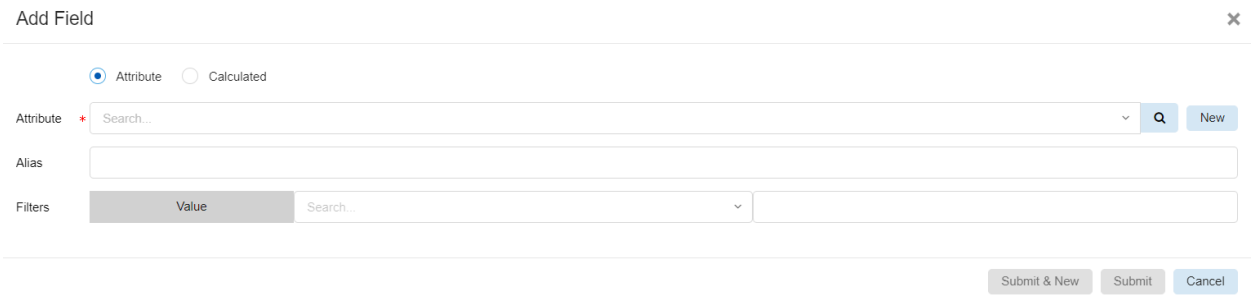
From the User Defined Reports list of custom reports, users can click the hyperlink of the report name to view the configuration page for the report. The configuration page allows users to select fields, change field order, define group by setting, filter report values, define calculated report fields and more.



5.3.4.2.1. Fields Definition

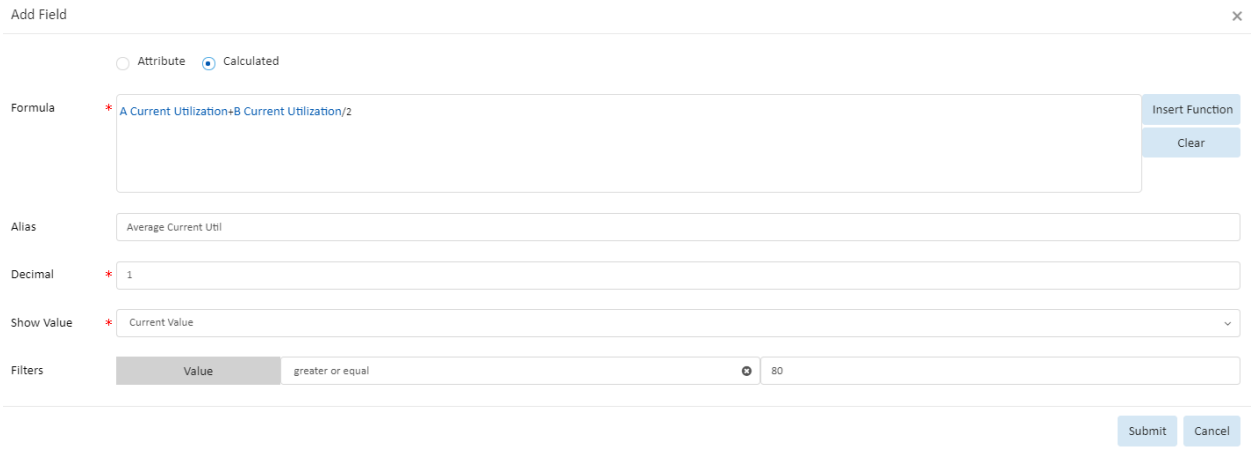
By default, the field definition list includes the Device Name field when the Device Data report type is created and the Location Name field when the Location Site Data report type is created. Users can then add more fields to the report and configure those fields by using the other report features.

To add more fields which are already defined in the application to the report output, choose the Add button, select the attribute to add in the Attribute field. By default, the attribute name will appear as the column title for the field in the report, but users can assign an Alias to change the column title for the selected attribute. Depending on the data type of the selected attribute (decimal, string, etc) additional information can be defined such as the number of decimals to present.



To add a new calculated attribute to the report, select the Calculated radio button when adding a new field. Define the formula to be used in the Formula section of the Add Field form by clicking the Insert Function button. Choose the attribute to be used in the calculation and apply the math functions directly in the Formula section.

In the example, below a new Calculated Attribute is created for the report which will add the A and B side Current Utilizations and divide the sum by 2. This attribute has an Alias of Average Current Util, will display 1 decimal in the report output and will show the Current Value of the calculation when the report is generated. Data in the report output will be filtered to only show records where this calculated attribute has a value of 80 or greater.



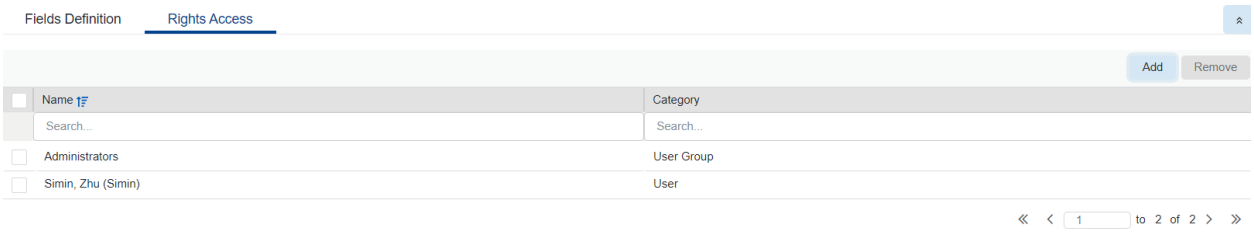
The Filters option allows users to limit the output in the report to records which only match the defined filter criteria for the attribute. For example, filters can be Temperature is greater than 80 or Asset Tag contains “POM”. This is an effective way to isolate data output in the reports to focus only on relevant details for the custom report output.

Once the list of fields has been defined for the report, the following actions can be performed to further configure the output of the report data:

- Configure the sort order by defining the Sort By attribute and direction. These settings are in the top part of the user define report configuration page.
- Users can change the order of the fields in the report by using the up|down arrow icons to the left of the field name.
- Users can group records in the output by one of the defined fields. Toggle on the Group By indicator for the attribute which should provide the group category in the report. **Note**: only one attribute can provide Group By status.
- If the attribute is a value the user can define whether to use the Current Value, Min Value, Max Value or Average Value. If an option other than Current Value is used, then the setting in the top of the user defined report configuration page named Date Range will be used to determine the Min, Max or Avg value to display in the report.
- The Function column allows users to view the average or sum value.

5.3.4.2.2. Rights Access

The Rights Access tab allows users to define which users or user groups in the application should have access to run the report.



Click the Add button to be presented a list of Users and User Groups defined in the application. Choose the users and user groups to grant access for the report and then click the Submit button.

To remove access for users simply select the user or user group to remove from the list and click the remove button.

Note: Only View access can be granted to User Defined Reports. Other users can view and run the report, but the report configuration can only be updated by the user that defined the report.

Users that are granted permission to run a User Defined report defined by another user can see the report listed in their general Reports List. These reports can be set as favorites, scheduled for delivery and other standard report features.

5.3.4.2.3. Preview Custom Report

The Preview button at the top of the report is available to generate a preview of the report output. The user will be presented with an on-screen display of the report output with only 20 records of data. The data contained in the preview report are actual data taken from the application database. This is a useful way to ensure the fields, order, calculations, etc. are configured properly on the report.

5.3.4.2.4. Save Custom Reports

As configuration changes are made to the custom report, users can select the Submit button at the top of the page to save the report.

5.3.4.3. Clone Custom Reports

In some cases, users want to make slight changes to an existing report. Instead of starting with a new, blank user defined report template, uses have two options for reusing an existing report definition:

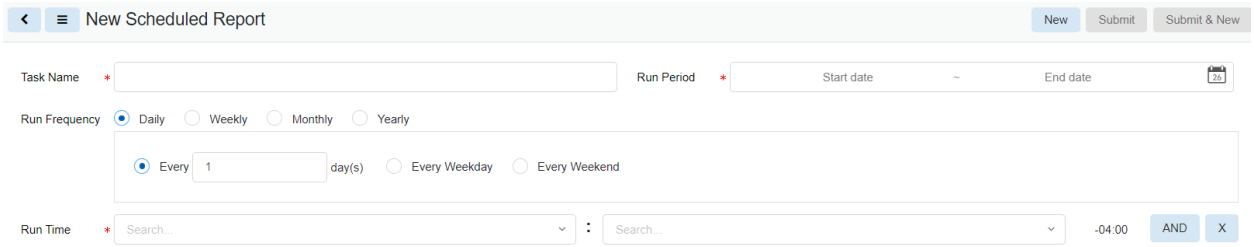
1. On the User Defined reports list select a report and click the **Clone** button at the top of the page. A new entry will be added to the report list with the same name as the cloned report with a (1) appended to the end of the name.
2. In the user defined report detail configuration page, users can choose the **Save As** button to save the report with a different name. The new name will be added to the reports list on the User Defined Reports page.

5.3.5. Scheduled Reports

The Scheduled Report feature allows users to schedule the delivery of reports to any application users. The reports will be sent via email to the email address defined for the users. The email server settings are determined during installation and maintained in the application's configuration files. Destination email addresses for recipients are defined for each user when they are provisioned to the system as a user.

5.3.5.1. Create a New Scheduled Report

On the Scheduled Report page select the New button to define the configurations for the scheduled report job. The following fields will be defined as part of this configuration:

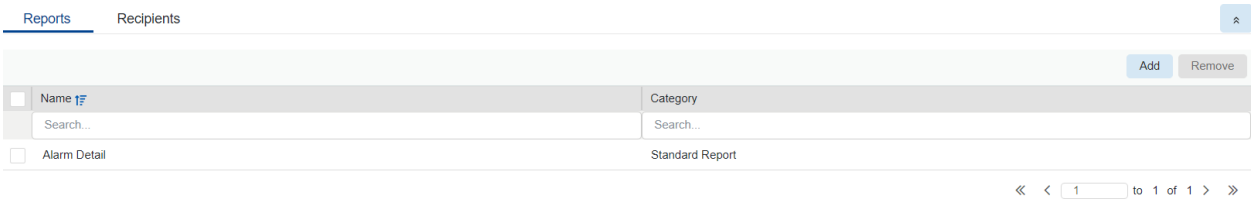


- Task Name – Name of the scheduled delivery job to be processed.
- Run Period – Start and end date when this job should be processed.
- Run Frequency – Allows the user to control the frequency of the report delivery. Options allow the user to define Daily, Weekly, Monthly and Yearly job times.
- Run Time – Allows the user to define the time of day to run the job. **Note:** The time defined is based on the Master server's time zone. Users can define more than one time of day to generate and send the report by using the AND button to define more than one time.

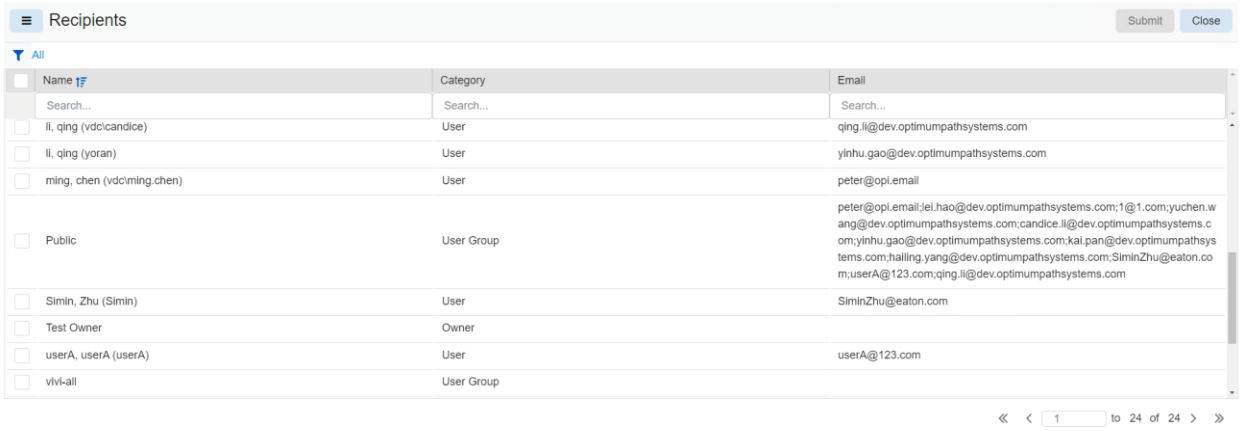
Upon completion of these fields, select the Submit button. This allows the user to specify which reports to run and recipients of the scheduled delivery job.

5.3.5.2. Define Report and Recipients

Users may add one or multiple reports to the scheduled delivery job definition. Click the Add button to be presented a full list of the reports available to the user. Select the reports to be included in the job and click the Submit button.

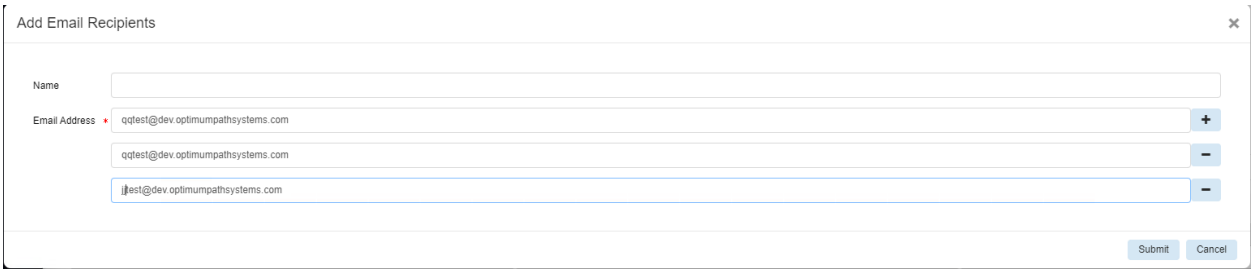


The Recipients tab allows users to define the recipients of the delivered reports. Click the "Add Recipients" button to be presented a list of users, user groups, and owners. Choose the list of recipients and click the Submit button. These users will receive the selected reports based on the configurations of the scheduled delivery job.



Click the “Add Email Recipients” button and an “Add Email Recipients“ panel will pop up. Users can input the name (optional) and the email address that they want to receive the scheduled report. If users want to add multiple email addresses, they can click “+“ button.

When users input duplicate email addresses, It will automatically remove the duplicate email address.



5.3.5.3. Report Delivery Details

The scheduled report is sent to the recipients via the email address configured in the Rights Access Menu Group - Users Menu Item of the application. The recipients will receive attachments of the PDF and Excel output formats in the emails delivered to their email inbox.

5.4. Capacity Plans Menu Item

The Capacity Plan feature allows users to model the impact of installing devices, decommissioning devices, or applying planned projects to locations managed in the application. An analysis of key space, power, and cooling metrics is presented based on the addition or removal of devices and ports as part of the Capacity plan model.

5.4.1. Manage Capacity Plans

When users first access the Capacity Plan page, they are presented a list of previously defined Capacity Plans which have been created and saved in the application. Users can add a New Capacity Plan to the list by clicking the New button on the top of the page and completing the Name and Location fields.

- Name is the name of the Capacity plan configuration to analyze.

- Location defines the node of the location navigation tree to use for analyzing the capacity plan configuration. To analyze capacity impact for all locations in the application select the World node. To analyze capacity impact for a single area then select the Area name from the list.

To delete plans from the list, select one or more with the checkbox and click the Delete button.

5.4.2. Modify Capacity Plans

There are three primary ways to define devices and ports which are applied to the defined Capacity Plan. These options are New Devices, Existing Devices and Projects. Each option provides specific capabilities for users to include Install, Move, Decommission, Port Connect and Port Disconnect functions against the location defined in the plan.

5.4.2.1. New Devices

The New Devices option allows users to include devices which are not created in the application device list to the capacity plan model. Users can select the Add and Remove buttons to define the new devices to include in the capacity plan analysis.

When the Add button is selected the user is presented with a list of eligible Models from the full Model database which can be added to the capacity plan. Users will click the checkbox next to the model name, define the number of devices instances to add for the selected model and optionally define the Energy Type, A-B Side and Power setting for the devices. **Note**: The default Power setting is set to the nameplate Power settings for the selected model.

After adding or removing devices from the model the Submit button will commit the changes to the capacity plan.

5.4.2.2. Existing Devices

The Existing Devices option allows users to either Install devices which are not in the selected location or Decommission devices from the selected location. Using the Add button, the device list presented to the user when this option is selected shows all devices defined in the application. The Action field will indicate if the device would be added to the capacity plan (Install) or if the device will be removed from the capacity plan (Decommission). Users can optionally define the Energy Type and A-B Side settings for the devices as they are added to the capacity plan.Projects

The Projects option allows users to add and remove defined projects in the Workflow feature to the capacity plan. The project may include multiple actions including install, move, decommission, port connect, and port connect. Using the Add and Remove buttons projects will be added or removed from the capacity plan. Actions defined within the selected projects will be applied as part of the Capacity Plan analysis.

5.4.3. Analyze Plan Results

After the New Devices, Existing Devices and/or Projects are applied to the Capacity Plan, users can hit the Analyze button to generate a table of metrics to evaluate the impact of the capacity plan to the selected location node. The Analysis Report will have the following columns of data:

- Current Value – Represents the current value of the metric for the selected location BEFORE applying the devices and projects included with the Capacity Plan.
- Modeled Value – Represents the future value of the metric for the selected location AFTER applying the devices and project included with the Capacity Plan.
- Raw Change – Calculation of the raw data value difference in the Modeled and Current values.
- % Change – Calculation of the percentage difference in the Modeled and Current values.

5.4.4. Export Capacity Plan Results

Users can Export the Analysis Report table and calculations to Excel by using the main menu icon next to the report tile. Click the report icon and then select the Export – Excel menu options to download the report to an Excel file. This export will allow users to manage and further evaluate the data using the Excel spreadsheet functions.

5.5. Power Project Plans Menu Item

Power Project Plans assist users in determining the overall power and rack unit requirements for a list of devices. By leveraging the expansive model library, users can model power and rack space consumption by adding multiple quantities of selected models to a power project plan. This tool is commonly used to define rack and power distribution needs for racks.

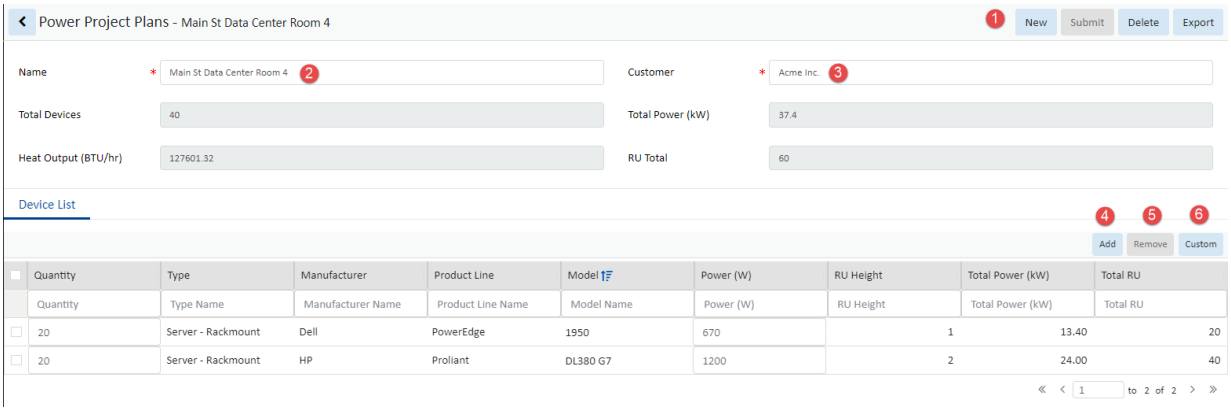
The initial view presented when the Power Project Plans menu item is selected is a list of defined project plans. The table list contains the following fields:

Table List Column	Description
Name	Name of the power project plan – click to view details and edit the plan
Customer	User defined customer name for power plan
Total Devices	Total number of devices identified in the project
Power (kW)	Total power needs for all of the devices in kW
Heat Output (BTU/hr)	Total heat output for all of the devices in BTUs per hour
RU Total	Total number of rack units for the devices identified in the project
Created by	Username of the person who created the plan
Created	Date the plan was created
Last Updated	Date the plan was last modified
Table List Button	**Description**
New	Create a New power project plan
Delete	Deletes the selected power project plans from the list

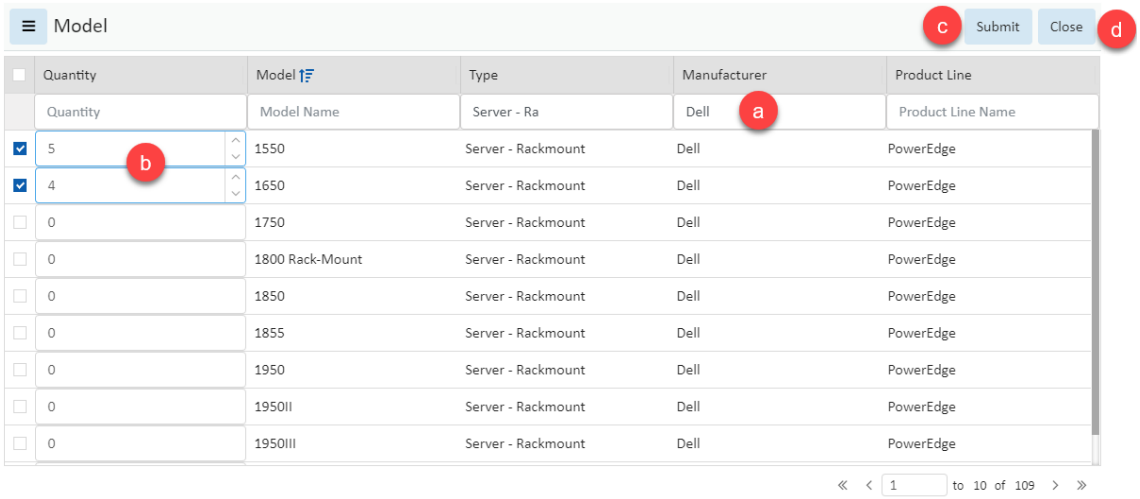
Note: Users can only view power project plans they have created. The admin user can see all power project plans.

5.5.1. Creating a New Power Project Plan

Select the New button and a new Power Project Plan form is opened. The following screen is presented to the user with the functions defined below.



1. The buttons on the upper right perform the following tasks:
    a. New - Opens a form to create a new project
    b. Submit - Submit the currently viewed project to the main project list
    c. Submit & New - Submits the current project and opens a blank form for a new project
    d. Export - Exports the current project to an Excel spreadsheet
2. Name - Enter the name for the power project plan
3. Customer - Enter the name of the customer
4. Add - Opens a window where devices can be selected from the full set of models supported in the power project tool. Selected models along with the defined quantity will be added to the power project plan detail table.
    a. Filter the list to find the desired devices
    b. Select the check box to choose the device and set the quantity. By default, the quantity is set to 1.
    c. Click Submit to add the devices to the device list in the project
    Note: The Power setting can be edited on the device. In some cases, the power reading for the model in the model library may be based on a high-performance power supply, but other power supply options may exist.
    d. Close will close the window without adding devices to the list



5. Remove - Deletes entries from the table where the check box is selected
6. Custom – Adds a new record to the table which allows the user to define a model which is not found in the model library. Users can assign attributes to this custom model as needed to accommodate device requirements.
    a. Please submit a model request to add this model to the application. This will allow all users to leverage the model list for this model once it is updated in the application.
    b. Fields are not mandatory. The values assigned to the new custom entry will be used only if they are defined.

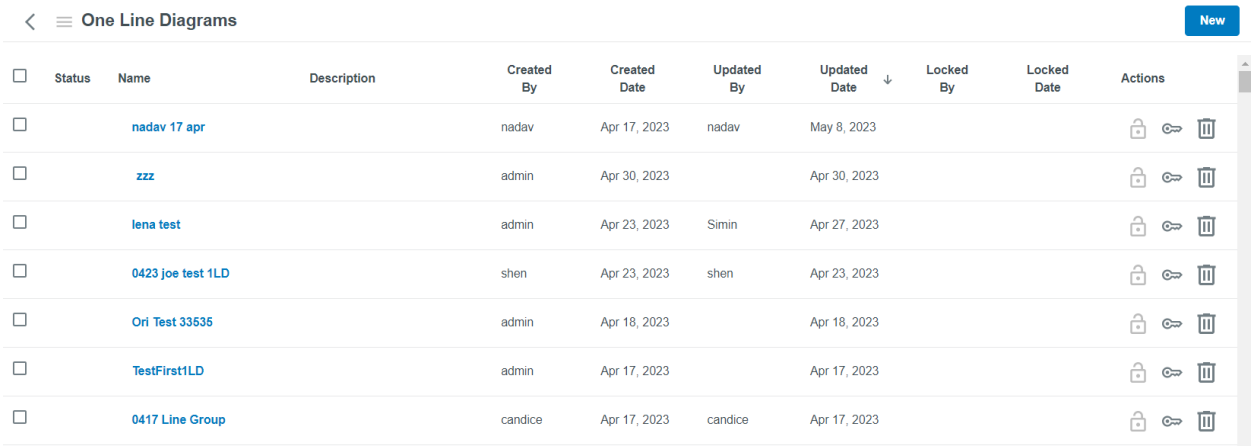
6. One Line Diagrams

6.1. One Line Diagrams Menu Item

The access to the One Line Diagrams function and its edit mode depends on the license type. Suppose the license is not for the EPMS product. In that case, the whole EPMS menu group won't be displayed in the Feature Menus, including the One Line Diagrams menu item, and the One Line Diagrams component won't appear in the list of the "Rights Access Menu Group – User Groups – Components".

If the license is for the EPMS product but does not contain the Edit mode, then users can only view the One Line Diagrams but have no rights to edit them. The Edit checkbox won't appear in the Components tab as well.

The initial view presented when the One Line Diagrams menu item is selected is a list of current One-Line diagrams.



The table list contains the following fields:

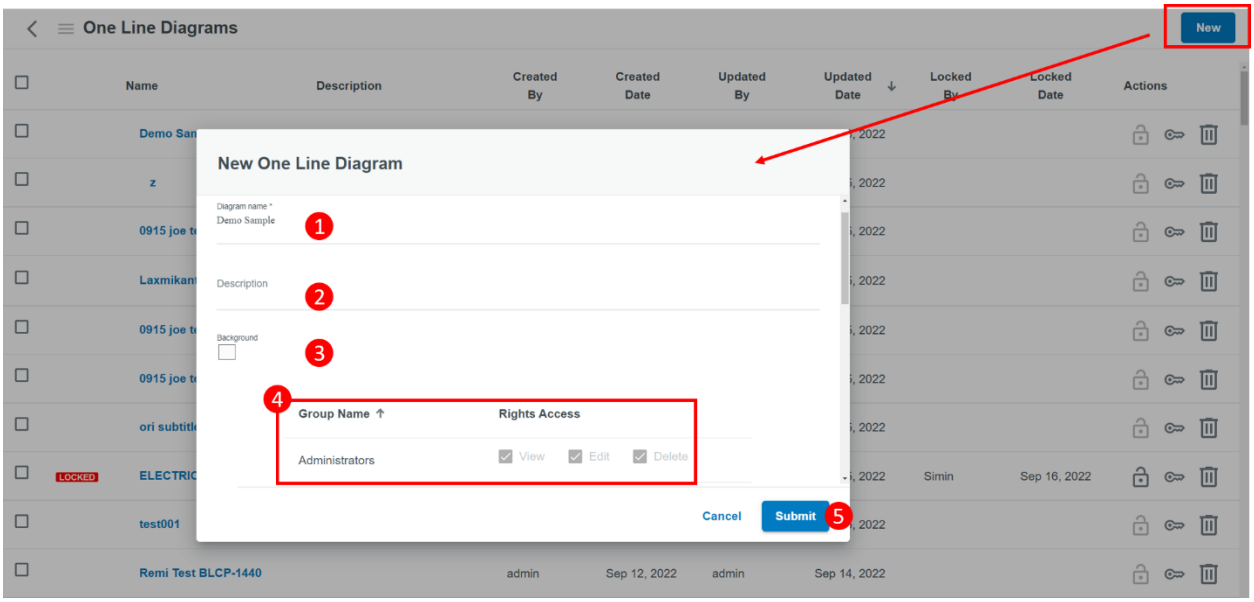
Table List Column	Description
Status	Displays the status of the One-Line diagram.
Name	Displays the name of the One-Line diagram.
Description	Displays the description of the One-Line diagram.
Created By	Displays the user who created the One-Line diagram.
Created Date	Displays the datetime that the One-Line diagram was created.
Updated By	Displays the user who last updated the One-Line diagram.
Updated Date	Displays the datetime that the One-Line diagram was last updated.
Locked By	Displays the user who locked the One-Line diagram. If the field is empty, it means this One-Line diagram is not locked.
Locked Date	Displays the datetime that the One-Line diagram was locked.
Actions	: Unlock the One-Line diagram. : Edit the right access of the One-Line diagram. : Delete the One-Line diagram.
Table List Button	**Description**
New	Create a new One-Line Diagram.

6.1.1. One-Line Edit Mode

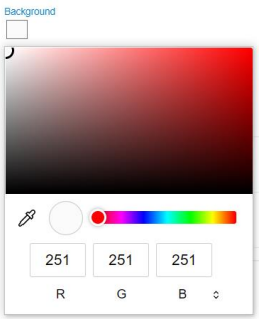
Users who are granted the EPMS with Edit mode license can create and edit one-line diagrams easily by dragging and dropping components onto a UI grid via the edit mode. Full functions are listed below.

6.1.1.1. Create a new One-Line diagram

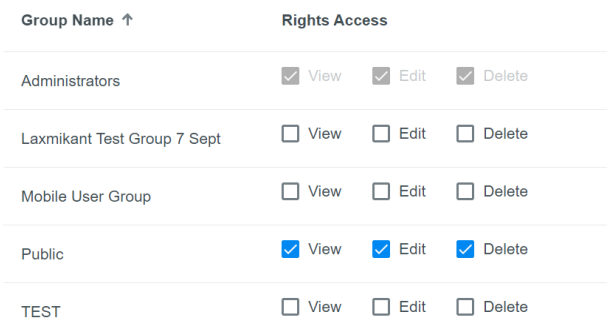
Select the **New** button on the top right corner and fill all necessary fields to create a new diagram.



1. Enter the name of the diagram. This field is mandatory.
2. Enter the description if needed.
3. Change the background color if needed by clicking the Color Circle icon. By default, the background color is transparent.



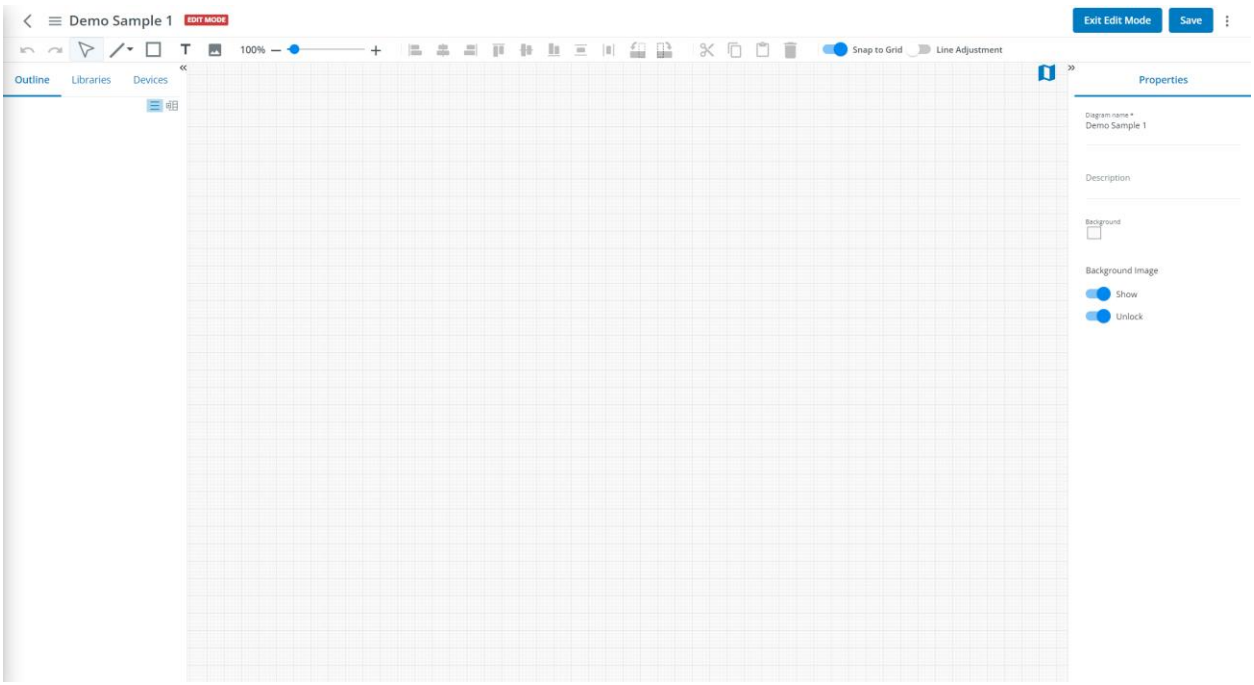
4. Set the access control right for different user groups. By default, users in the Administrators group will have the full access.



Users can change the right access later by clicking the three dots icon , Rights Access button after they enter the edit mode.

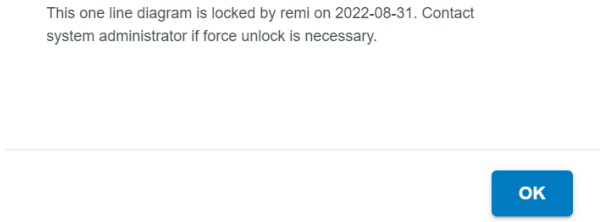
5. Click the Submit button.

The page will jump to the edit mode page automatically after you click the Submit button. Users can also enter the edit mode by clicking an existing One-Line Diagram hyperlink and click the **Edit** button on the top right corner.



The label of current mode is displayed beside the name of the diagram.

A one-line diagram cannot be accessed by two users at the same time in edit mode. After the first user enters the edit mode of a diagram, this one-line diagram will be locked. Other users can see the “LOCKED” label of this diagram in the diagrams list. They can still view this diagram, but if they try to edit this diagram, a warning notification will pop up.

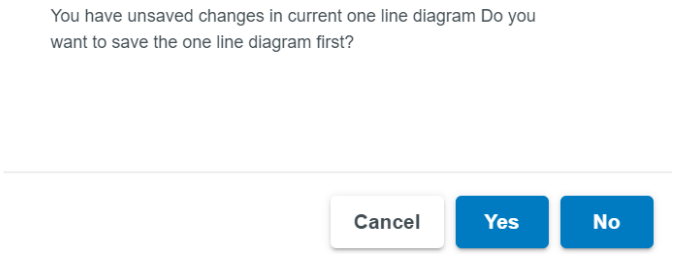


The lock will be released either after the first user clicks the “Exit edit mode” button or when the user has not made any change for 4 hours. The admin users can remove the lock at any time by clicking the **Unlock** icon in the Actions column.

There are three buttons at the top right corner, which are:

- Exit Edit Mode: Users can click the “Exit Edit Mode” button 

to exit the edit session. If users exist the edit mode or jump to another section without saving their work, a message will pop up to ask if they want to save or discard changes or cancel the action.



  - Yes – Save changes and exit the edit mode.
  - No – Discard changes and exit the edit mode.
  - Cancel – Remain in the edit mode.
- Save: Users can manually save any changes they made at any time while in the edit mode by clicking the **Save** button 

. The system will refresh the page automatically after saving. If there are other users who are viewing the diagram, a notification will pop up to inform users that the page they are viewing has been updated and offer them an opportunity to update the view.
- More : Users can delete the One-Line diagram, change the right access of the One-Line diagram and enter the full screen of the One-Line diagram.

6.1.1.2. Import a digital one-line diagram

After entering to the canvas, the first step is to import an image as an electrical circuit base map which can help users to draw the one-line diagram in our system as accurately as possible and much easier. This image will be displayed behind the transparent one-line editor workspace, and the supported format is .JPG/.JPEG/.PNG.

Upload Single Background Image

The steps for uploading an electrical circuit base map are:

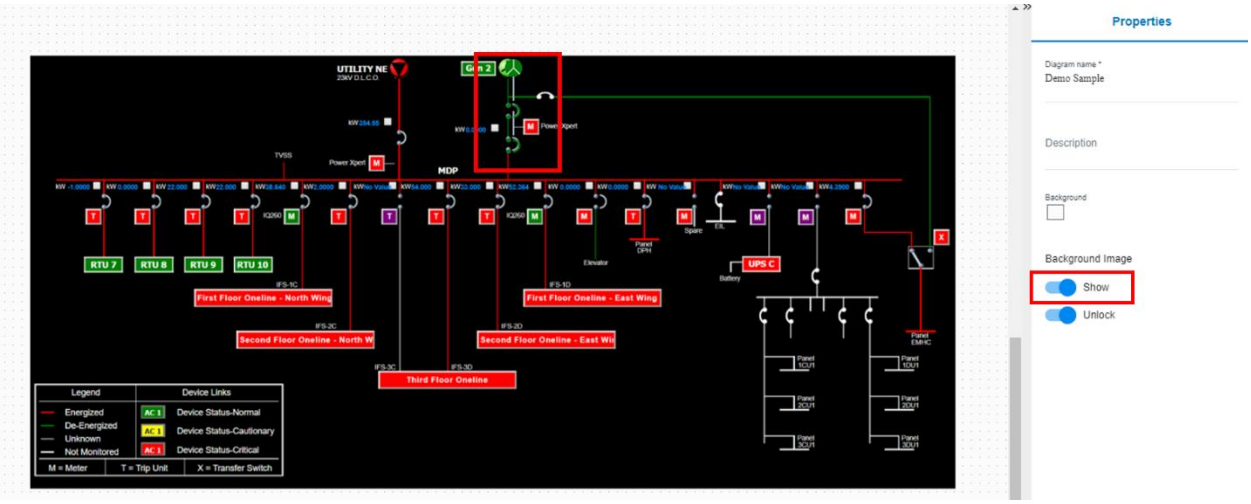
1. Select the “Background Image” icon.
2. Choose the image from your local disk and click the “Open” button to upload.

Move/ Scale the uploaded Image

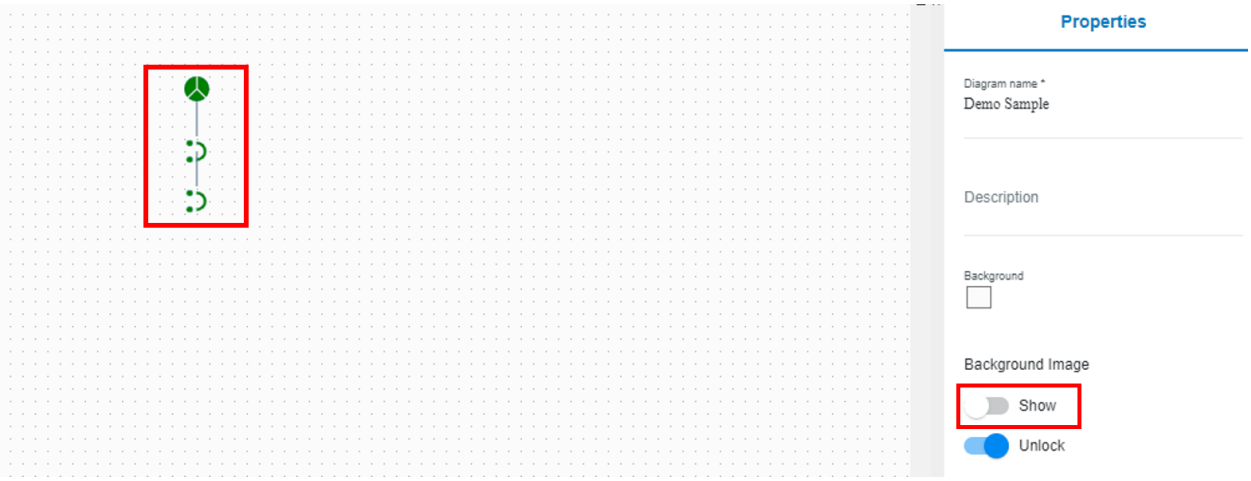
Users can easily move the background image by left-clicking any part of the image and moving the mouse. Users need to select the image to scale it. Once a blue frame appears, users can scale up/down the image by selecting the corner of the blue frame and dragging it.

Visible/Hidden Image

This background image can be hidden by turning off the “Show” toggle button in the Properties panel to only display the user-drawn symbols. By default, the toggle button is turned on.



Toggle button “ON” – Background image is visible



Toggle button “OFF” – Background image is hidden

The toggle button is only available in the Edit mode. Once the selection is made and saved, the result will be displayed in both the Edit and Display mode.

Lock/Unlock

By default, this “Unlock” switch button is ON, and the background image can be freely moved. Turn off the “Unlock” switch button to pin the background image on the canvas.

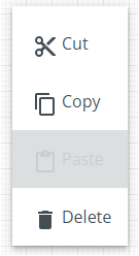
6.1.1.3. Drawing the content of edit-mode panel

The following functions can help users to draw their One-Line diagram,

6.1.1.3.1. Toolbar

In the edit mode, there is a toolbar under the name of the diagram. A tooltip with description and shortcut will show if users hover a mouse over an icon.

Toolbar	Icon	Description
Undo		Undo an action. You can press Undo repeatedly if you want to undo multiple steps.
Redo		Redo something you've undone. You can press Redo repeatedly if you want to redo multiple steps.
Selection Tool		Select one or multiple objects on the canvas. The selection tool is activated when entering the canvas. When users finish drawing a line, a rectangle, or a text box, the selection tool is automatically activated again.
Line Tool		Draw lines/polylines. When the line tool is selected, the mouse cursor changes to +. **Draw lines:** Select the line from the dropdown list. Click the left mouse button on the canvas to draw the first point, next move the mouse (don't hold the mouse button down). Click the left mouse button again to determine the second point. **Draw Polylines:** Select the Polyline from the dropdown list. Click the left mouse button on the canvas to draw the first point, next move the mouse (don't hold the mouse button down) and click the left mouse button on the canvas to draw continuous line segments.
Shape Tool		Draw a rectangle with default size on the diagram canvas. When the shape tool is selected, the mouse cursor changes to + • Hod down the SHIFT key to draw a square.
Text Tool		Add text boxes to the diagram canvas.
Background Image		Upload background image.
Zoom	100%	Zoom in or Zoom out the diagram canvas by controlling the slider.
Align		• Left - Aligns objects along their left edges. • Center - Aligns objects vertically through their centers. • Right - Aligns objects along their right edges. • Top - Aligns objects along their top edges. • Middle - Aligns objects horizontally through their middles. • Bottom - Aligns objects along their bottom edges. • Distribute Horizontally - arrange the objects horizontally. • Distribute Vertically - arrange the objects vertically. We support align symbols, images, line, models, and devices.
Rotate		Rotate the selected element.

Cut, Copy, Paste, Delete		Support Cut, Copy, Paste, and Delete. **Note**, except the toolbar, we also support the Cut, Copy, Paste, Delete function by using the Keyboard (ctrl + c, ctrl + v, ctrl + x, delete/backspace), and mouse right-click.  We also support users to: • Copy, Paste, Cut, and Delete a single element. • Copy, Paste, Cut, and Delete a group of elements. • Copy, Paste, Cut, and Delete between multiple browse tabs.
Snap to Grid Tool		• When the button is turned on, objects' top-left point will always snap to the grid, and they can only be moved by an integer X or Y units a time. • When the button is turned off, objects can be moved by 1 X or Y unit a time. Users can hold down the CTRL + left/right/up/down key to fine-tune objects even though the Snap to Grid tool is turned on. Each adjustment is 1 pixel 1 x or y unit.
Line Adjustment		A switch button to control the line adjustment function. By default, it is off. • If the button is OFF, users can only connect symbols by using simple and straight lines. • If the button is ON, users can adjust the straight lines to any shape they want.

Note: Only one of the Selection/Line/Shape/Text tools can be active at a time. **To exit current tool,** users can click ESC key to back to the Selection tool or select another tool in the toolbar.

Users can long press the right-click or middle-click to move the canvas.

Adjust contents

When users finish drawing the content, the Selection Tool is active. The users can adjust the content.

Below, we use rectangles as an example. Users can adjust lines and text box in a similar way.

- **Highlight**: When the mouse hovers over a line, the rectangle will be highlighted.
- **Select**: When the mouse clicks a rectangle, the rectangle will be highlighted and show eight anchors and a rotation handle.
- **Resize**: When hold down the left mouse button on the anchor and drag, the size of the rectangle will change, then release the mouse to finish resizing. Note: Hold down the shift key to resize the rectangle with the same ratio.
- **Move**: When hold down the left mouse button on the rectangle and drag, the position of the rectangle will change, then release the mouse to finish moving.

- **Change Style**: Users can change the rectangle's opacity, fill color, line color and line weight in the Appearance panel. Please refer to Appearance panel section.

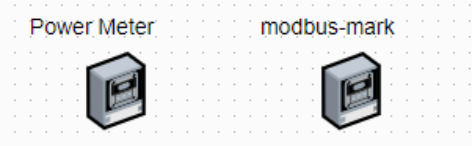
6.1.1.3.2. Drag & Drop contents

Users can drag a symbol/image/model/device from the left side panel and drop it onto the diagram canvas.

6.1.1.3.2.1. Outline tab

The Outline tab lists all elements in the one-line diagram. When users select a component from the diagram canvas, the component's name on the Outline tab will be highlighted, and vice versa.

If a component binds a device, the name displayed on the Outline tab will be the device's name (right). Otherwise, it will display the component's name (left).



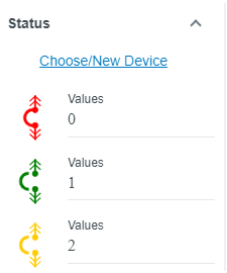
Users can switch the display style by clicking the icons  at the top right corner of the Outline tab. Options are:

- Show flat list.
- Shows elements by Symbol, Image, Shape, Text.

6.1.1.3.2.2. Libraries Tab - Symbols

Users can find all symbols by clicking the Libraries tab. Select a symbol from the Symbols box, drag and drop it to the appropriate position.

The current symbol library supports the ANSI (American National Standards Institute) standard electrical symbols and IEC (International Electrotechnical Commission) standard electrical symbols. There are two types of symbols in the electrical symbol library.



- **Static symbol**: The color of static symbols is black. Changing the values in the Status panel won't change the color. A static symbol can bind to a device and view the device's monitoring attributes through the Attribute panel.
- **Animated symbol**: The color of animated symbol will change with the value of the monitoring attribute. When selecting an animated symbol, a Status panel will appear on the right side which allows users to bind attributes and define the mapping values.

6.1.1.3.2.3. Libraries Tab - Images

Users can upload custom graphic elements into the Images box under the Libraries tab by clicking the  button and selecting .JPG/.JPEG/.PNG/.SVG format files from the local disk. By default, this Images box is empty. Select an image from the Images box, drag and drop it to the appropriate position.

6.1.1.3.2.4. Devices Tab - Models

Users can find all models by clicking the Devices tab. Select a model from the Models box, drag and drop it to the appropriate position. Users can bind the model to a device or create a new device of this model.

6.1.1.3.2.5. Devices Tab - Devices

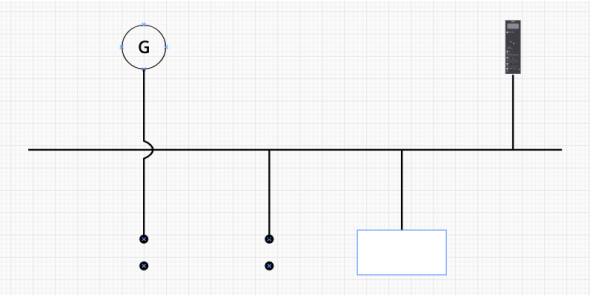
Users can find devices that in available/operational/procurement/operational moving/plan decommission/reserved available life cycle by clicking the Devices tab.

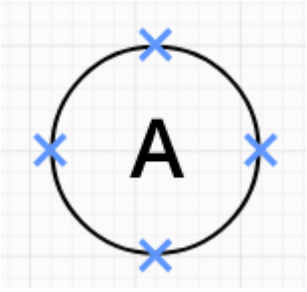
Select a device from the Devices box, drag and drop it to the appropriate position. If the device is already put into a diagram, users can still drag it again from the Devices box and drop it to a new position. The position will change to the new dropping place.

Note: When users drag a device/model to the diagram canvas, if its device type can map to an electrical symbol, the icon that is displayed on the canvas will be the electrical symbol, not the device type.

6.1.1.3.3. Objects Connections

Users can draw point-to-point or bus connections between symbols, images, models, devices, rectangles, lines, and polylines. All symbols dragged and dropped on the canvas have connect points, making connecting between symbols easier.





We enabled an "Object Snap" function to assist with the connection of lines to lines and lines to symbols.

When connecting two lines, the new line should "snap" to the indicated point on the existing line to ensure that the two lines intersect at the exact end of the new line.

When connecting an interconnect line to a symbol, the interconnect line will snap to a connect point on the symbol so that the interconnect line connects to the symbol with alignment to the symbol's graphic.

Note, when connecting a symbol with image/device/text/rectangle, make sure to drag the line until the green outline box comes out.

6.1.1.3.4. Create device on the fly

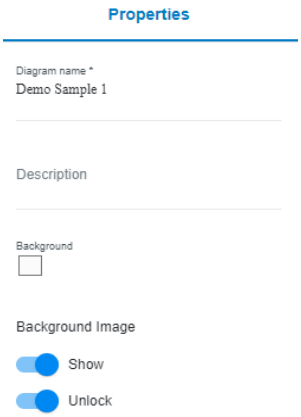
Users can create new devices from symbols/images/models/rectangles/lines/polylines/text boxes while drawing the one-line diagram.

1. Drag or draw a symbols/images/models/rectangles/lines/polylines/text and drop it on the diagram canvas.
2. Click the New button in the component properties sidebar - Binding panel on the right side, and a “New Device” window will pop up.
3. Complete the appropriate fields. A grey asterisk appears next to the required fields. Some fields (Model/Type/Manufacturer/Product Line) are already pre-populated when creating devices from models.
4. Click the Submit button, and the new device will be created in the system.

The newly created device will bind to this symbols/images/models/rectangles/lines/polylines/text.

6.1.1.4. 1L diagram component details sidebar or panel

The component properties sidebar is located on the right side of the One Line Diagrams edit page. It can be hidden by clicking the arrow icon ». Users can edit the information displayed on the sidebar and click the Save button Save to update the changes.



1. When users have just entered the edit mode or select the background image, the Properties sidebar contains:
    a. Diagram name: Displays the one-line diagram’s name.
    b. Description: Displays the description of the diagram.
    c. Background: Change the background color.
    d. Background Image:
        i. Toggle button - Show: Hide the background image if turn off.
        ii. Toggle button - Unlock: Lock the position of the background image if turn off.
2. When users select a component (symbol/image/model/device/rectangle/line/polyline/text), the Properties sidebar contains details information including:
   Note: Different components have different property panels.

6.1.1.4.1. Position & Size panel

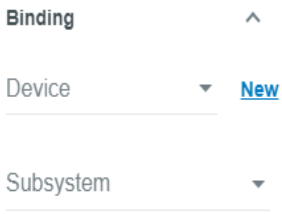
Users can adjust the component’s position, size, and rotation through this panel.

- **X and Y**: Changing the value of X and Y changes the position of the components. The original point (X=0, Y=0) is the bottom left of the canvas.
- **W and H**: W stands for weight and H stands for Height. Changing the value of W and H changes the size of the components. The binding icon indicates whether the aspect ratio is locked or not .
- **R**: R stands for rotation. Changing the value of R changes the rotation degree. The rotation is left rotation.

6.1.1.4.2. Binding panel

Binding panel allows users to bind a device/subsystem to the selected component.

- **Device**: Choose a device from the dropdown list and bind it to the selected component. If users can't find the device from the dropdown list, they can create a new device by clicking the New button.
  Users can view device's information such as attributes value, asset info after binding.

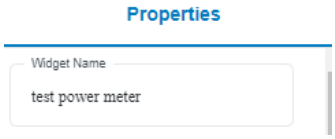


- **Subsystem**: Choose a One-Line Diagram from the dropdown list and bind it to the selected component. A hierarchy icon will appear on the top left of the component to indicate that a One-Line Diagram is bound to this component and this one-line diagram is a sub-diagram of the current One-Line Diagram. Users can view the sub-diagram in the Display mode.

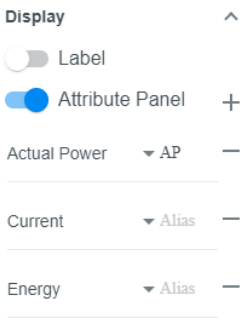
6.1.1.4.3. Display panel

This panel displays the label and attributes value of a selected component. By default, the two toggle buttons are off.

- **Label**: Turning on the toggle button will show the component's name. The label can be freely moved on the canvas. There are two special cases:
  - The widget name has the highest priority. If users set a Widget Name at the top of the component properties sidebar, it will show the widget name.

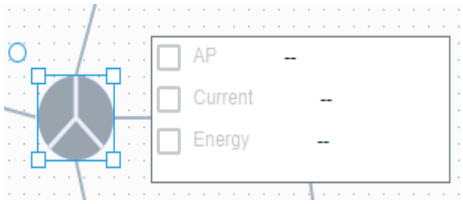


  - If the component is bound to a device, it will show the device's name.
- **Attribute Panel**: Turning on the toggle button and an Add icon + will appear. Users can click the Add icon to select the monitoring attributes they want to display from a dropdown list. Clicking the Remove icon — to removing the displayed attribute.



  There are three default attributes – Active Power, Voltage, and Current that will be automatically added when users click the Add icon if the bound device monitors these attributes.

  When users add attributes, an attribute panel will appear next to the component. By default, it aligns the middle with the component. Users can change its position by dragging and move it to any position in the diagram canvas. If users enter an alias for an attribute, the name displayed on the canvas will be the alias.



  Note: If users can't find the attribute they want, they need to go to the Devices Menu Group – Devices Menu Item – device – Monitor function tile to add/monitor the attribute first.

6.1.1.4.4. Asset Info panel

This panel shows device related information including Device Name, Model, Type, Manufacturer, Lifecycle, Asset Tag, Serial Number, Energy Type, Owner, Department, Location, Groups, Description, Link. Users can edit these device's basic information by clicking the edit icon on the Asset Info panel.

Then if click the save icon, this change will take effect immediately, or click the to cancel this change. Among them, Model, Type, Manufacturer, Location, and Link can't be edited.

- If a component isn't bound to a device, all information is empty.
- If a component is bound to a device, this panel will display the device's asset information that is filled in the Devices Menu Group – Devices Menu Item – device – Device Basic Information panel.

6.1.1.4.5. Appearance panel

This panel allows users to adjust the component's (image/rectangle/line/polyline/text) opacity, color of fill & border, font & size & color.

Note: Only the text components will have the **Font, Size, Color** fields. The image components will only have the **Opacity** field.

6.1.1.4.6. Status panel

This panel shows the components' status.

- The color/icon of the status will change according to the value of the binding attribute. Users can change the binding attribute by selecting attributes from the dropdown list.
- Users can change the value of the status by entering a new value.

6.1.2. One-line Display Mode

The display mode lets users view the one-line diagram and its power distribution hierarchy down to connected loads. Lines on the one-line diagram representing interconnections between devices and buses change color based on whether they are energized.

- Red = Energized branches of the electrical system
- Green = De-energized branches of the electrical system
- Red/Blue dash = Maintenance mode for busbar
- Black = Not monitored branches
- Gray = Monitored but status unknown

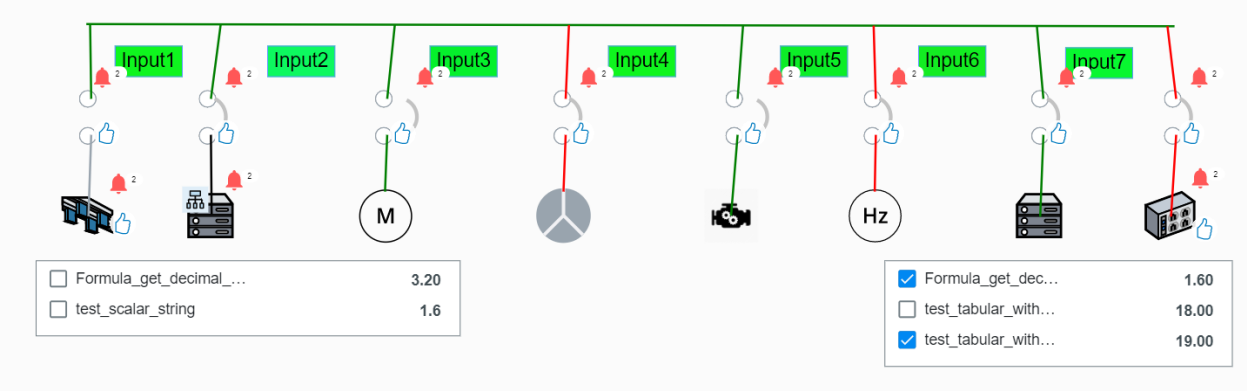
One-line diagram lines support a "Status" attribute as a property for the line. Status maps to color. The "Status" attribute is a mapped data field in which the user can add a calculation to determine the status.

Below is an example block of logic that well defines a use case for an energized bus. For more scenario examples and configuration processes, please refer to the Formula Editor & User Defined Equations section.

```
Energized status:
```

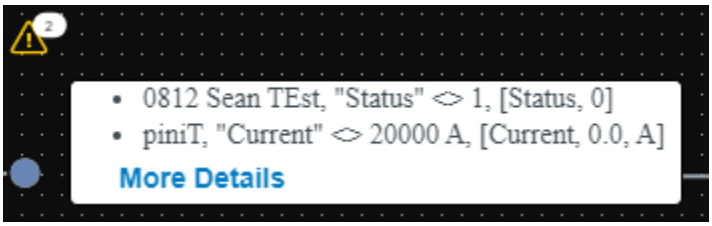
```
if (SYS.getValue(DEVICE.device1.Voltage) < 450 || SYS.getValue(DEVICE.device2.Voltage) < 450
|| SYS.getValue(DEVICE.device3.Voltage) < 450) {
    return true;
} else {
    return false;
}
```

Users can see the branches of the electrical distribution system change colors in response to events (e.g., breakers open/close, gain/loss of power source, loss of communication, transfer switch actuates, etc.)



6.1.2.1. Tooltip

- A tooltip with description and shortcut (if has) will show when mouse over an icon in toolbar.
- A tooltip with the attribute name will show when mouse over attributes in attribute panel.
- A tooltip with the alarms details will show when mouse over an alarm icon.



Click the “More Details” hyperlink will direct users to the Devices Menu Group – Devices Menu Item – device – Alarm Panel Function Tile.

6.1.2.2. Export

We support users to export the One Line Diagram canvas in the View Mode by clicking the ≡ icon - PDF button.

6.1.2.3. Toolbar

In the display mode, there is a toolbar under the name of the diagram.

6.1.2.3.1. Scroll, Zoom capability

Users can zoom in/out of the canvas when viewing a one-line diagram by clicking the Plus/Minus icon, dragging the radio button, or use the shortcut Ctrl+ “+”/Ctrl+ “-”, or use the shortcut CTRL+mouse wheel up/down.

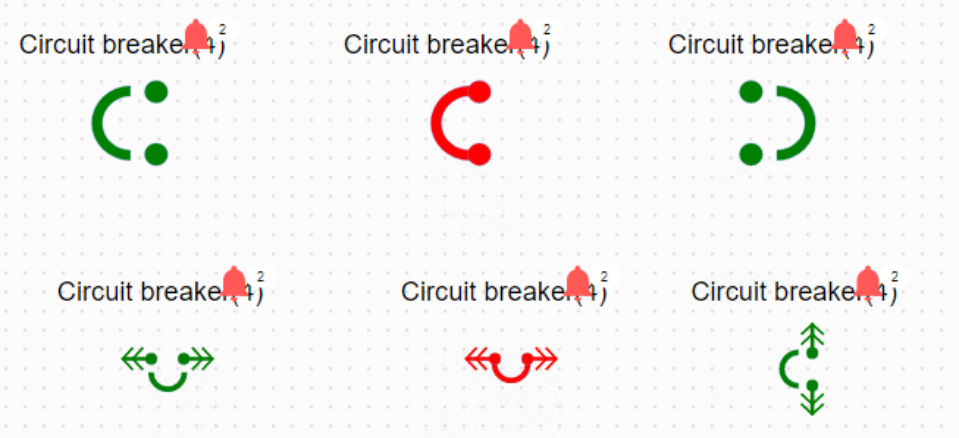
Users can scroll left/right and up/down or click the left/right/up/down arrows on the canvas when viewing a one-line diagram.

6.1.2.3.2. Alarm

Users can view the devices’ and subsystem’s alarm status on the diagram canvas in the display mode. The number of total alarms of this device will show on the top right corner of the alarm icon.

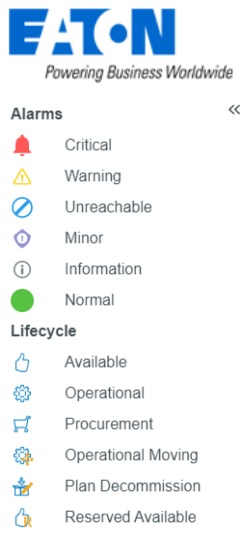
The icon of the alarm changes according to the severity of the alarms generated by the current device/subsystem, showing the icon of the most serious alarm.

Hover the mouse on the alarm icon, a tooltip with attributes’ name will show.



Users can select alarm status they want to view from the Alarm dropdown list, then only the selected alarms and their corresponding devices/subsystems will show on the diagram. The default alarm filter is Critical and Warning.

The legend of alarms and lifecycle is hidden on the top left corner of the canvas. Click the Menu icon to unhide the legend and click the Arrow icon « to hide again.



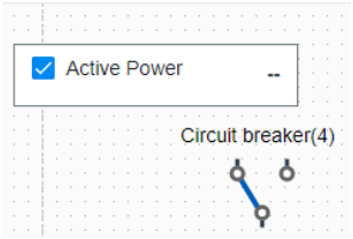
6.1.2.3.3. Lifecycle

The devices in the available/operational/procurement/operational moving/plan decommission/reserved available lifecycle can be displayed on the diagram canvas.

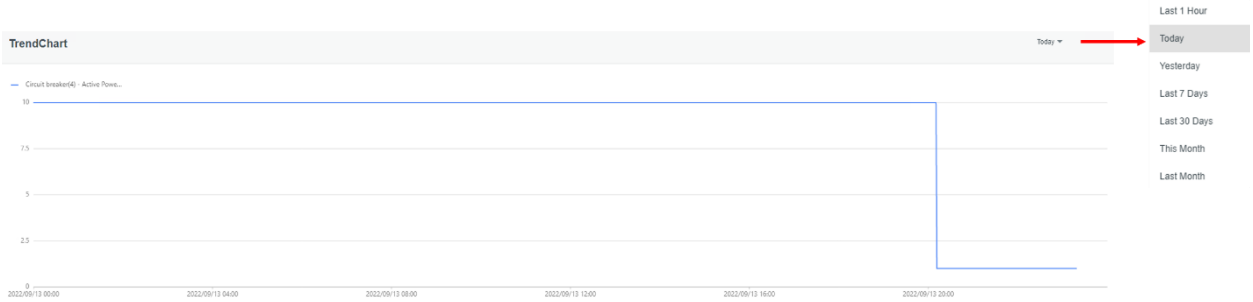
Users can select specific lifecycle status they want to view from the Lifecycle dropdown list, then only the selected Lifecyle status and their corresponding devices/subsystems will show on the diagram.

6.1.2.3.4. Attributes Line Chart

The Line chart icon will be accessible when users select an attribute from the attribute panel



Click the Line chart icon, a line chart window will pop up. By default, this line chart displays today's data. Users can always change the date range to view the historical data by clicking the Data Range button and selecting a date range from the dropdown list.



6.1.2.3.5. Waveform

The icon will be accessible when a power meter device is selected in the canvas of the one-line diagram. Click the icon and you will be direct to the Waveform page and navigate to the selected device.

6.1.2.4. Left Sidebar

In the display mode, only one Outline tab is located on the left. This Outline tab lists all elements in the one-line diagram. When users select a component from the diagram canvas, the component's name on the Outline tab will be highlighted, and vice versa.

If a symbol/model/image binds a device, the name displayed on the Outline tab will be the device's name. Otherwise, it will display the symbol/model/image's name.

Users can switch the display style by clicking the icons at the top right corner of the Outline tab. Options are:

- Show flat list.
- Shows elements by Symbol, Image, Shape, Text, Power Line.

6.1.2.5. Right Sidebar

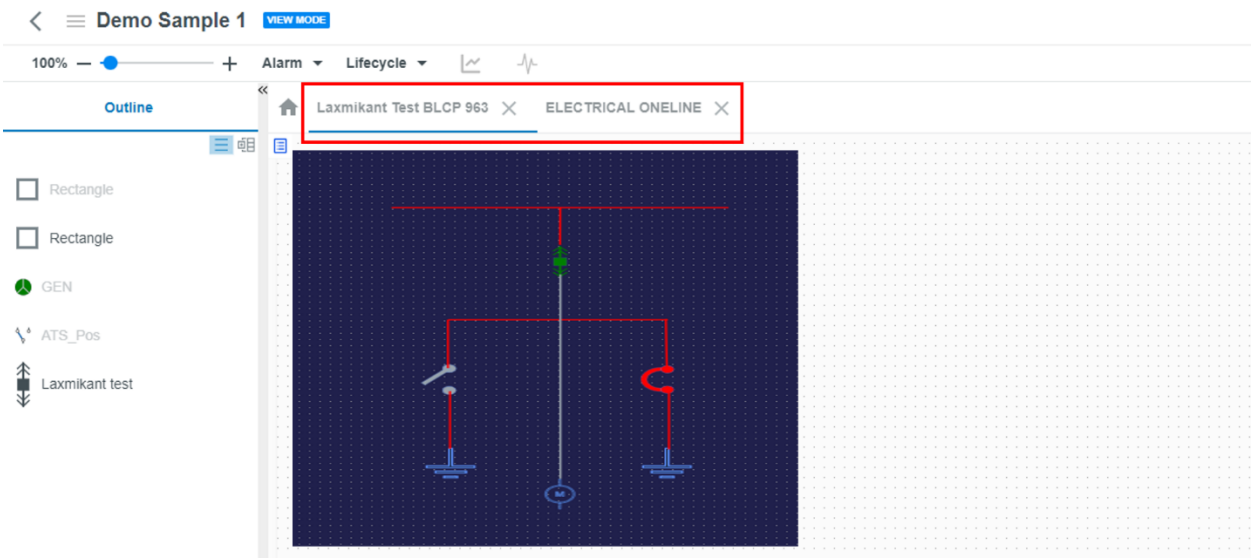
In the display mode, only the Asset Information panel of the component properties sidebar appears on the right when users select element from the canvas or Outline tab. This panel shows device related information including Device Name, Model, Type, Manufacturer, Product Line, Lifecycle, Asset Tag, Serial Number, Energy Type, Owner, Department, Location, Groups, Description, Link.

- If a component isn't bound to a device, all information is empty.
- If a component is bound to a device, this panel will display the device's asset information that is filled in the Devices Menu Group – Devices Menu Item – device dashboard.
- If user clicks on the empty location on the canvas, this panel will display only Diagram Name, Description, Background Color.

6.1.2.6. Drill-down to a subsystem

If a component is bound with a subsystem, a hierarchy icon appears on the top left of the component.

The subsystem can only be opened in the display mode. Click the hierarchy icon to open it. The subsystem shows in a new tab in the current page. Users can back to the main one-line diagram by clicking the home icon and open multiple subsystems. The subsystem can be closed by clicking the remove icon.



6.1.2.7. Attribute Panel

An attribute panel will display beside the component in the display mode if users turn on the “Attribute Panel” toggle button in the edit mode.

This attributes panel displays real-time the values of the monitored attributes. If users enter an alias in the edit mode for an attribute, the name displayed on the attributes panel will be the alias.

This attribute panel displays the real-time value of the monitored attributes. If users enter an alias in the edit mode for an attribute, the name displayed on the canvas will be the alias.

The checkbox of the attribute is unselected by default. Users can select the checkbox and click the Line Chart icon in the toolbar to view the trend chart of the attribute.

6.1.2.8. Navigator panel

The navigator panel icon is on the top left of the canvas. A small navigator panel will appear by clicking this icon, and users can:

- view the current position (outlined in a blue box)
- view the entire one-line diagram
- jump to any other area
    - by selecting the corresponding area in the navigator panel
    - by selecting element in the Outline tab or from the canvas
    - by clicking and dragging the blue box
- adjust the zoom level by clicking and dragging the little circle that appears in the button right corner
- the zoom level changed on the fly consistently to the changed zoom by zoom tool or by hot keys
- collapse the navigator panel by clicking the double right arrow icon »

The selected object is highlighted by yellow border in the navigator panel.

6.1.2.9. Animated symbols

The status of all symbols is shown on the diagram. The color and icon of an animated symbol will change according to the value of the binding attribute. Each animated symbol displays a default icon before it gets status.

6.1.2.10. Formula Editor & User Defined Equations

Function	Description	Example	JavaScript

'if', 'else'	Conditionals	if(voltage < 450)
		alarm = true;
		else
		alarm = false;
			if (voltage < 450) {
			return true;
			} else {
			return false;
			}

'='	Assignment	x = 2;
		alarm = true;
			let x = 2;
			x = 3;
			const alarm = true;

'+', '-', '*', '/'	Normal Math	x = 2 + 2; (result 4)
		x = 12 – 2; (result 10)
		x = 3 * 2; (result 6)
		x = 22 / 2; (result 11)
			const x = 2 + 2;
			const x = 12 -2;
			const x = 3 *2;
			const x = 22 /2;

'+=', '-=', '*=', '/='	Math Operator	(assumes x = 3 prior to equation)
		x += 2; shorthand for 'x = x + 2;' (result 5)
		x -= 2; shorthand for 'x = x - 2;' (result 1)
		x *= 2; shorthand for 'x = x * 2;' (result 6)
		x /= 2; shorthand for 'x = x / 2;' (result 1.5)
			let x =3;
			x += 2; // x = x + 2;
			x -= 2; // x = x -2;
			x *=2; // x = x * 2;
			x /=2; // x = x / 2;

'||'	Logical OR	x = true || false (result true) x = false || false (result false) x = true || true (result true)	let x = false; x = x || true;
'&&'	Logical AND	x = true && false (result false) x = false && false (result false) x = true && true (result true)	let x = false; x = x && true;
'>', '<', '>=', '<=', '==', '!='	Comparison	x = 2 > 1; (result 1 or true, greater than) x = 2 < 1; (result 0 or false, less than) x = 2 >= 1; (result 1 or true, greater than or equal to) x = 2 <= 1; (result 0 or false, less than or equal to) x = 2 = = 1; (result 0 or false, equal to or comparison) x = 2 != 1; (result true or false, not equal to)	let x = false; x = 2 > 1;

'+', '-'	Unary operators	x = +2 (result 2)
		x = -2 (result -2)
			let x = false;
			x = +2;
			x = -2;

'^'	Power	x = 2^2 (result 4)
		x = 2^3 (result 8)
			let x = 0;
			x = 2 ** 2;
			x = 3 ** 3;

'++', '--'	Increment, Decrement	(assumes x = 3 prior to equation)
		x++ (result 4)
		x-- (result 2)
			let x = 3;
			// return ++x;
			return --x;

'!'	Logical Not	x = !false (result true) x = !true (result false)	let x = !false; x = !x;

'%'	Modulus (remainder of a division)	x = 45%8 (result 5)
		x = 40%8 (result 0)
			let x = 0;
			x = 45 % 8;
			x = 40 % 8;

'%='	Modulus applied to left value using right value	(assumes x = 45 prior to equation)
		x %= 8 (result 5)
		x %= 9 (result 0)
			let x = 45;
			x %= 8;
			x %= 9;

'sin'	Sine of a floating point number. The result is a value between -1 and 1 which is the sine of an angle The argument is a floating point number in radians.		Math.sin
'cos'	Cosine of a floating point number. The result is a value between -1 and 1 which is the cosine of an angle. The argument is a floating point number in radians.		Math.cos
'tan'	Tangent of a floating point number. The argument is a floating point number in radians.		Math.tan
'asin'	Arc Sine of a floating point number. The floating point number is a value between -1 and 1 which is the sine of an angle. The result is the angle in radians.		Math.asin
'acos'	Arc cosine of a floating point number. The floating point number is a value between -1 and 1 which is the cosine of an angle. The result is the angle in radians		Math.acos
'atan'	Arc Tangent of a floating point number. The floating point number is a value which is the tangent of an angle.		Math.atan

	The result is the angle in radians.		
'log'	Natural Logarithm (base e) of a floating point number. The floating point number is a value greater than 0. e (2.718) is the base of natural logarithms.		Math.log
'log10'	Common logarithm (base 10) of a floating point number. The floating point number is a value greater than 0. Log is the base 10 exponent of a floating point number.		Math.log10
'exp'	The number e raised to the floating pint number power. The number e (2.718) is the base of natural logarithms.		Math.exp
'PI' (representative numeric value)	3.14159265358979323846		Math.PI import { CONSTANT as CONST } from './define'; CONST.PI
'E' (representative numeric value)	2.71828182845904523536		Math.E import { CONSTANT as CONST } from './define'; CONST.E
'GAMMA' (representative numeric value)	0.57721566490153286060		import { CONSTANT as CONST } from './define'; CONST.GAMMA
'DEG' (representative numeric value)	57.29577951308232087680		import { CONSTANT as CONST } from './define'; CONST.DEG
'PHI' (representative numeric value)	1.61803398874989484820		import { CONSTANT as CONST } from './define'; CONST.PHI
'TRUE' or 'true' (representative numeric value)	1.0		import { CONSTANT as CONST } from './define'; CONST.TRUE
'FALSE' or 'false' (representative numeric value)	0.0		import { CONSTANT as CONST } from './define'; CONST.FALSE
'sqrt'	Square Root	sqrt(9) (result 3)	Math.sqrt
'int'	Integer (Truncation)	int(2.35) (result 2) int(2.98) (result 2)	import { DEVICE } from './global'; import { SYSTEM_FUNCTION as SYS } from './define'; SYS.parseInt Number.parseInt
'abs'	Absolute Value of a floating point number.	abs(2.35) (result 2.35) abs(-2.35) (result 2.35)	Math.abs
'setBit(n)'	Sets Bit 'n' of a channel or variable	(assumes x = 2 prior to equation)	import { DEVICE } from './global';

		a = setBit(3) (result = 8) x += setBit(3) (result = 10)	import { SYSTEM_FUNCTION as SYS } from './define'; SYS.setBit
'clearBit(n, var)'	Clears Bit 'n' of a channel or variable	(assumes x = 10 prior to equation) clearBit(1, x) (result = 8)	import { DEVICE } from './global'; import { SYSTEM_FUNCTION as SYS } from './define'; SYS.clearBit
'checkBit(n, var)'	Returns the status of bit 'n' of a channel or variable	(assumes x = 2 prior to equation) a = checkBit(3, x) (result = false) a = checkBit(1, x) (result = true)	import { DEVICE } from './global'; import { SYSTEM_FUNCTION as SYS } from './define'; SYS.checkBit

'handleNoValue([?chanVal], defaultVal)'	Assigns a fixed value to a channel that equates to no value.	UIE_1_Fault = handleNoValue([?\\Local\UIE Module 1\Device Communications], true);
		UIE_2_Fault = handleNoValue([?\\Local\UIE Module 2\Device Communications], true);
		UIE_3_Fault = handleNoValue([?\\Local\UIE Module 3\Device Communications], true);
		if(UIE_1_Fault || UIE_2_Fault || UIE_3_Fault)
		true;
		else
		false;
		Note: This example would set the value of the channel to true if any of the UIE modules have a Device Communications alarm or if they are disabled.
			import { DEVICE } from './global';
			import { SYSTEM_FUNCTION as SYS } from './define';
			
			const value = SYS.getValue(DEVICE.floorA_PDU.PowerA, 999999);

'abortWithNoValue()'	Aborts processing of a User Defined Equation and assigns 'No Value' to the channel.	voltage = handleNoValue([?\\Local\Generator 1\Voltage Phase A-B], 999999);
		if(voltage = = 999999)
		abortWithNoValue();
		if([\\Local\Generator 1\Voltage Phase A-B] < 400)
		disarmDevice([\\Local\AC 1]);
		else
		rearmDevice([\\Local\AC 1]);
		Note: This example would abort the equation if the Voltage Phase A-B channel has no value.
			import { DEVICE } from './global';
			import { SYSTEM_FUNCTION as SYS } from './define';
			
			const value = SYS.getValue(DEVICE.floorA_PDU.PowerA, 999999);
			if(999999 === value) {
			  return;
			}
			return value;

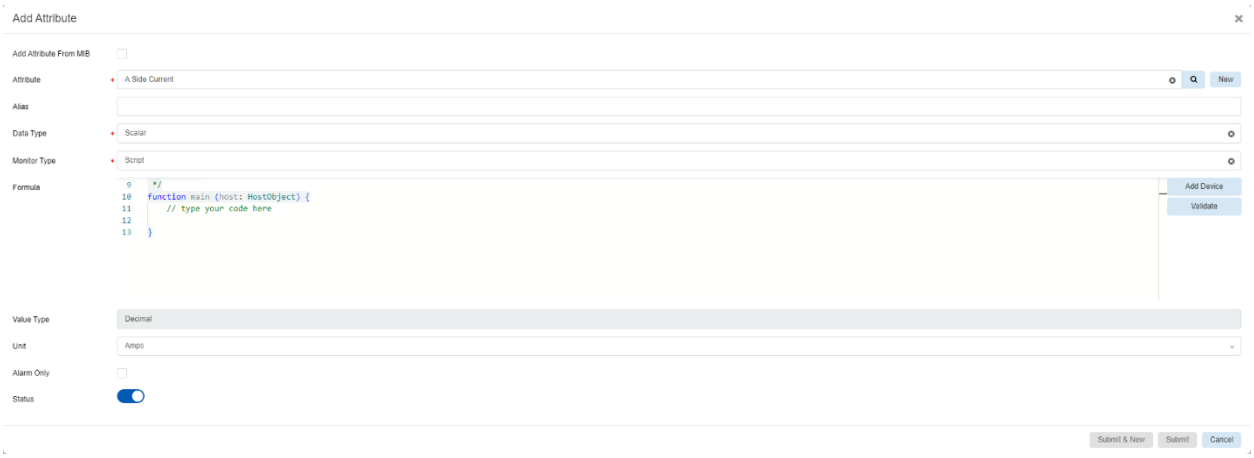
average(param 1, param2, param3 ....)	returns the average value channels		import { DEVICE } from './global'; import { SYSTEM_FUNCTION as SYS } from './define'; // SYS.average(DEVICE.floorA_PDU.PowerA, DEVICE.floorA_PDU.PowerB) SYS.average
sum(param 1, param2, param3 ....)	returns the sum value of channels		import { DEVICE } from './global'; import { SYSTEM_FUNCTION as SYS } from './define'; // SYS.sum(DEVICE.floorA_PDU.PowerA, DEVICE.floorA_PDU.PowerB) SYS.sum
min(param 1, param2, param3 ....)	returns the minimum value channels		import { DEVICE } from './global'; import { SYSTEM_FUNCTION as SYS } from './define'; // SYS.min(DEVICE.floorA_PDU.PowerA, DEVICE.floorA_PDU.PowerB) ? ? 20; // Math.min(SYS.getValue(DEVICE.floorA_PDU.PowerA), SYS.getValue(DEVICE.floorA_PDU.PowerB)) SYS.min
max(param 1, param2, param3 ....)	returns the maximum value channels		import { DEVICE } from './global'; import { SYSTEM_FUNCTION as SYS } from './define'; // SYS.max(DEVICE.floorA_PDU.PowerA, DEVICE.floorA_PDU.PowerB) ? ? 20; // Math.max(SYS.getValue(DEVICE.floorA_PDU.PowerA), SYS.getValue(DEVICE.floorA_PDU.PowerB)) SYS.max

index(array, int)	returns a value of an arrayby index		import { DEVICE } from './global'; import { SYSTEM_FUNCTION as SYS } from './define'; SYS.index([DEVICE.floorA_PDU.PowerA, DEVICE.floorA_PDU.PowerB], 1) SYS.index

6.1.2.10.1. How to use the script language in BLSS

To configure an attribute in script language, you can either do it in the “Monitoring Template” menu item or in the Device detailed page – “Monitor” function tile – “Attribute” tab.

In the “Add Attribute” form, choose the “Monitor Type” as Script. Then in the “Formula” field, type your code on the next line of “//type your code here”



6.1.2.10.1.1. Built-in object

- **SYS**: It is used to reference built-in methods. The built-in methods are defined in the above table.
- **CONST**: It is used to reference built-in constants. The built-in methods are defined in the above table.
- **DEVICE**: This is used to reference the attribute of the other devices.
- **host**: This is used to reference the attribute of the current device.

6.1.2.10.2. Common built-in functions

1. SYS.getValue: Referencing the value of an attribute

```
SYS.getValue(DEVICE.eaton_UPS.Active_Power)
```

2. SYS.getValue(attribute)[index] or SYS.index(attribute, index)

```
 */
function main (host: HostObject) {
    // type your code here
    return SYS.getValue(DEVICE.ePDU___U611E33000.Outlet_Power)[0]
}
```

Example:

To get an “Active Power” attribute value from device “eaton_UPS”, you must click the “Add Device” button to select the device from the system.

Then in the “Formula” field, type “DEVICE.” The device name (eaton_UPS) you just added will be automatically displayed due to the code association. If you didn't add the device first, you cannot find the device when you type “DEVICE.”.

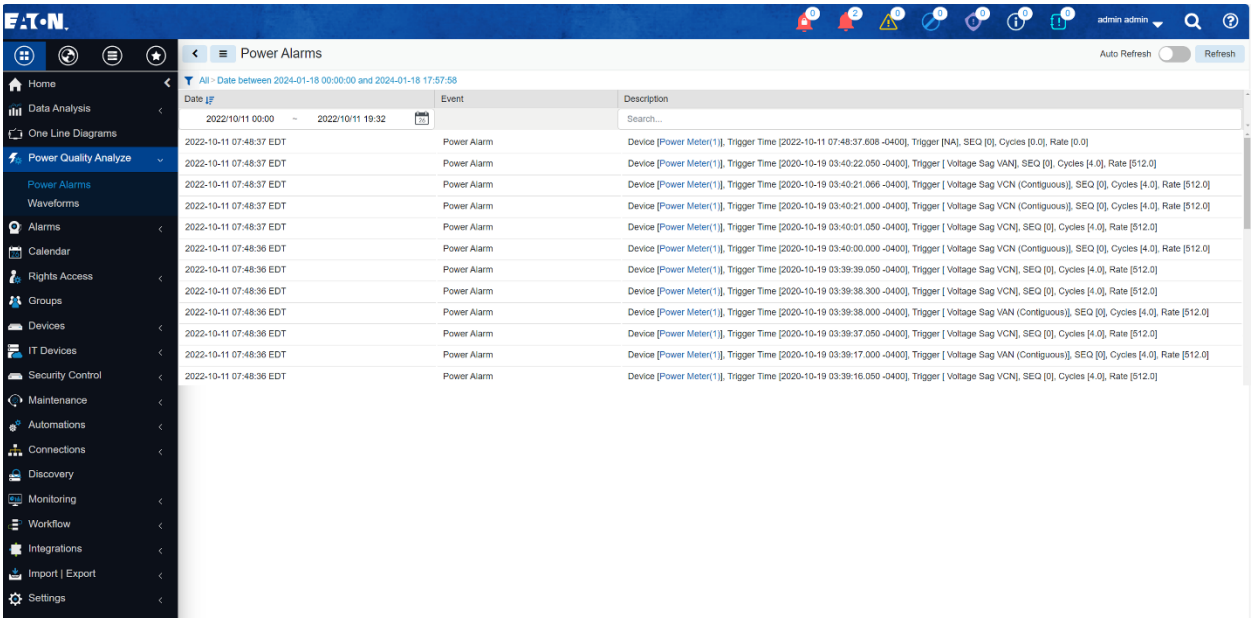
Enter the code “SYS.getValue(DEVICE.eaton_UPS.Active Power” to get the active power attribute value of the device eaton_UPS.

After you finish entering your code, you have to click the “Validate” button before submitting. The Submit button will only be accessible when the validation is all good.

7. Power Quality Analyze

7.1. Power Alarms

The Power Alarms function shows all power alarm events in the system.



The table list contains the following fields:

Fields	Description
Date	Displays the date and time of the power alarm event.
Event	Displays the event name.
Description	Displays the details of the power alarm event, including device name, trigger time, trigger name, SEQ, cycles and rate. The hyperlink of the Device Name will direct users to the page of a specified COMTRADE/waveform event of the EPMS Menu Group – Waveforms Menu Item.

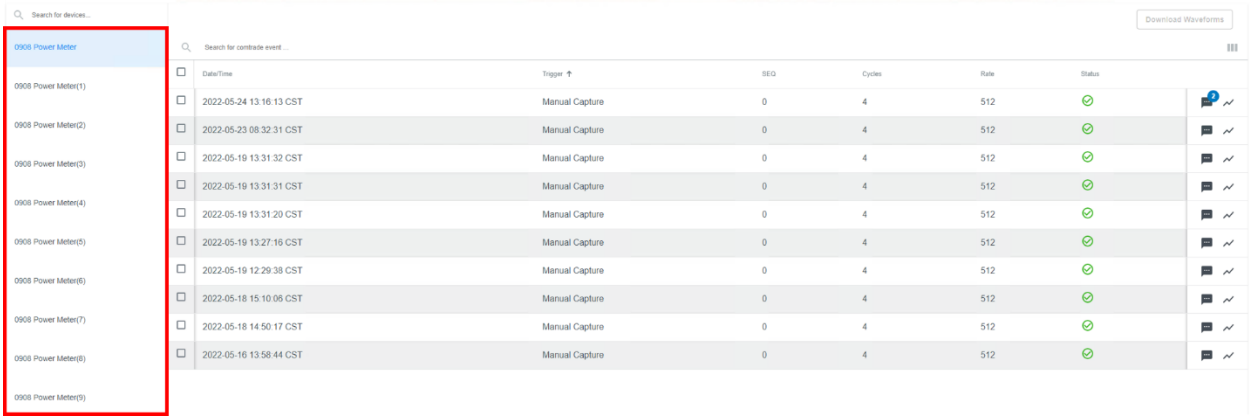
7.2. Waveform Menu Item

The access to the Waveform function depends on the license type. Suppose the license is not for the EPMS product. In that case, the whole EPMS menu group won't be displayed in the Feature Menus, including the Waveforms menu item, and the Waveforms component won't appear in the list of the "Rights Access Menu Group – User Groups – Components".

While entering the Waveforms Menu Item, a Device list presents on the left side. As long as the devices meet the following criteria, the devices can seem on the EPMS -> Waveform page:

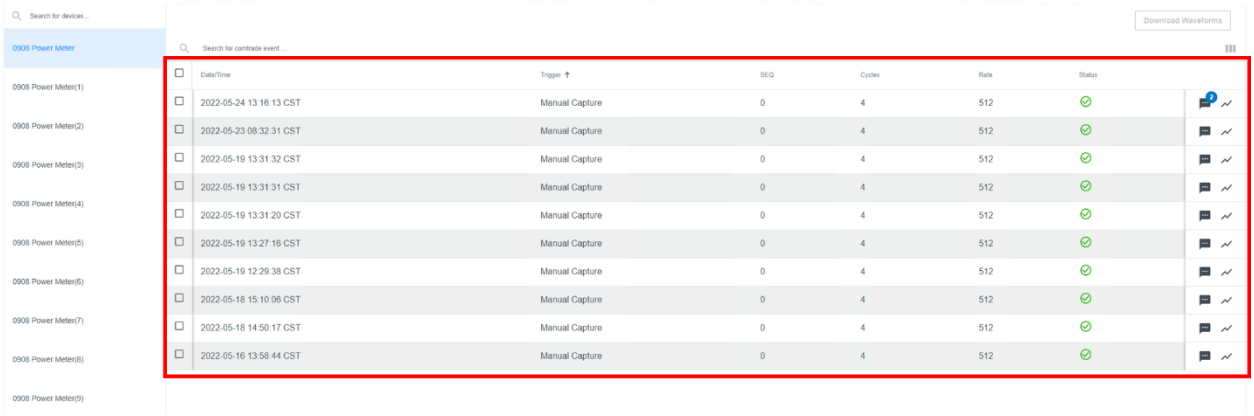
- Device Type = "Power Meter"
- VMS monitoring settings have been activated and configured and VFS monitoring protocol has been selected

- The system has positive confirmation that the sftp/ftp connection was successful



7.2.1. Events of a selected device

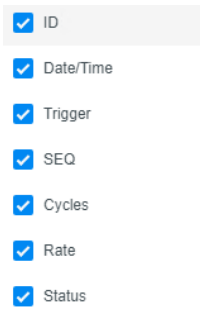
Select a specific device, a COMTRADE event list appears on the right. These are the captured waveforms from this device.



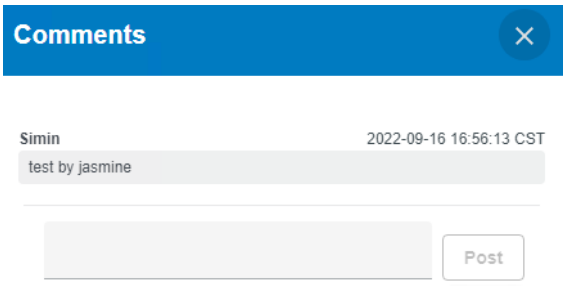
The table list contains the following fields:

Fields	Description
ID	Displays the event id. This column is not visible by default. Users need to click the icon to display this column.
Date/Time	Displays the date and time of the event.
Trigger	Displays the event trigger name.
SEQ	Displays the sequence of the waveform.
Cycles	Displays the captured number of cycles of the waveform.
Rate	Displays the rate of the waveform.
Status	Displays the status of the event.
Table List Buttons	**Description**
Comment	Leave comments.
Graph	Click the icon to view the waveform graph.

Users can use the icon to adjust the displaying columns by clicking/unclicking the checkbox of the column name.



Users can leave comments by clicking the comment icon . Enter your comments in the field and click the Post button. After leaving the comment, the icon will be updated and displays the number of comments . Other users can view your comments by clicking the icon.



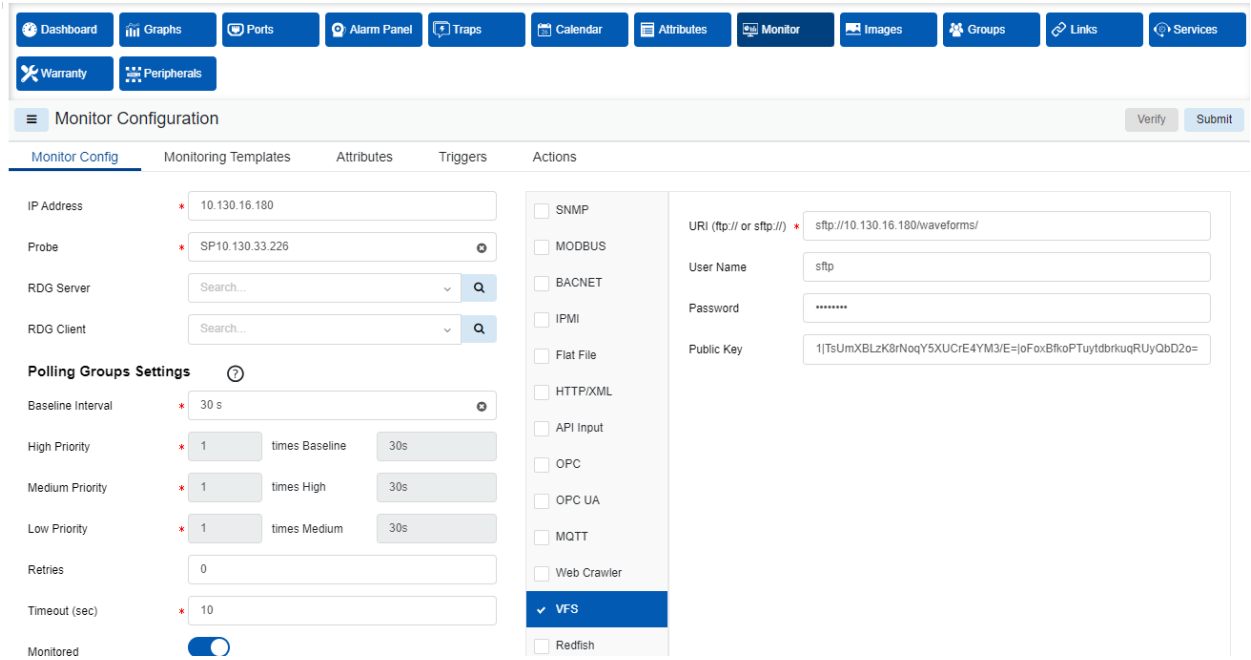
7.2.2. Filter box

A search filter is located on the top of the device list and the COMTRADE event list. Users can quickly find the device/ COMTRADE event they want to view by using the search filter. The search filter will execute a “contains” search.

7.2.3. Download waveforms

Users can download the captured waveforms by selecting the checkboxes and clicking the “Download Waveforms” button. All selected waveform captures will be included in a Zip file.

The system can fetch the COMTRADE files over SFTP. For Eaton customers with modern meters and modern security mindsets who use BLSS EPMS or APM to collect waveform captures from Eaton meters the ability to fetch the COMTRADE files over SFTP enables waveform capture from meters that do not support FTP.



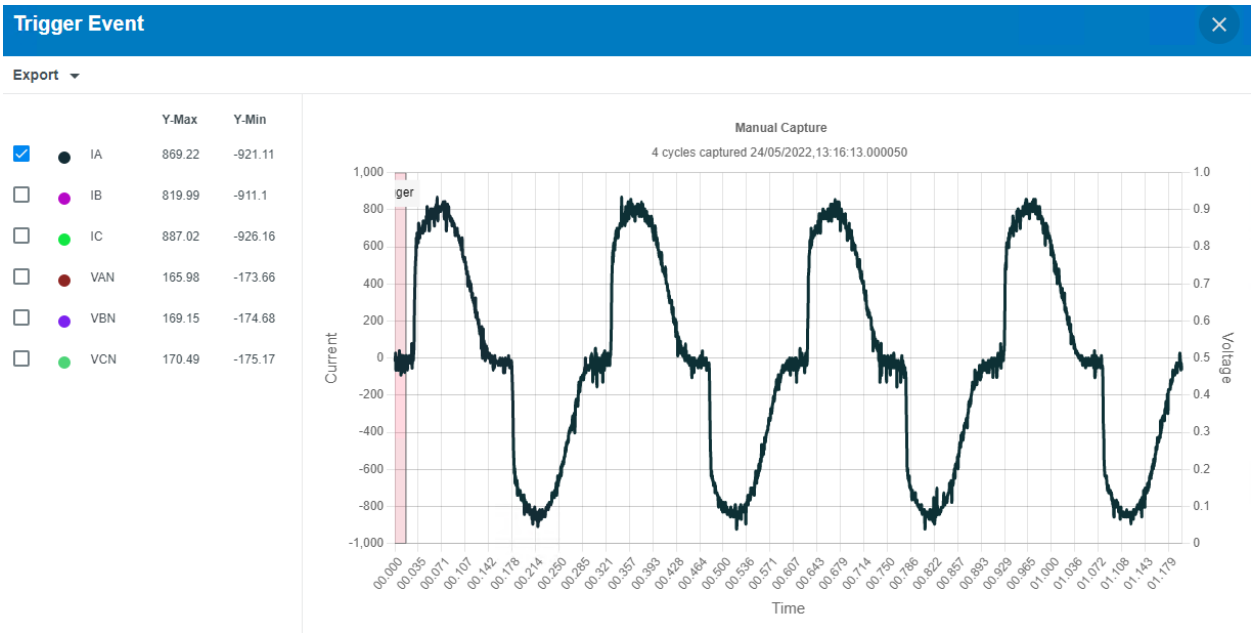
- Protocol - select the checkbox of VFS.
- URI - the URI to connect to the meter. E.g., sftp://10.127.80.174:2222/waveforms
- User Name/Password - the credentials for the meter SFTP service. E.g., ftp / ftp123
- Public Key - used for the authentication between client and server. E.g., 1|TsUmXB.... ssh-rsa AAAAB3Nz.....

7.2.4. Graphing from COMTRADE file

Users can view the graph of the waveform capture by clicking the chart icon . The red area represents the trigger event, which links to the timestamp below the title.

Users can select multiple channels at the same time to view the trace concurrently. By default, only the first channel will be selected.

Users can download the captured waveform by clicking the Export button in the top left corner.


Trigger Event
Export
Y-Max
Y-Min
IA 869.22 -921.11
IB 819.99 -911.1
IC 887.02 -926.16
VAN 165.98 -173.66
VBN 169.15 -174.68
VCN 170.49 -175.17
Manual Capture
4 cycles captured 24/05/2022,13:16:13.000050
Current
Voltage
Time

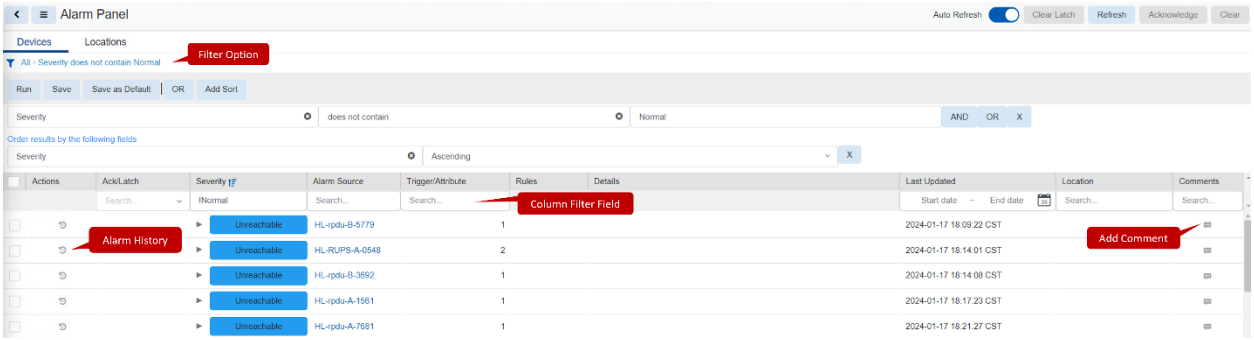
8. Alarms Menu Group

The Alarms Menu Group allows users to view all severity-level alarms generated in the system or pushed by agents. This module also provides functions that help users locate the root device that requires urgent fixing efficiently or prevent users from receiving massive alarm notifications from downstream devices, if there is a hierarchy relation among devices.

8.1. Alarm Panel Menu Item

The initial view presented when the Alarm Panel menu item is selected is a list of current alarms. The Devices Tab shows the count of Device alarms. The Location Tab shows the count of Location alarms.

By default, the alarm list is filtered for all alarms where the Severity does not include normal. The table can be custom filtered using the column filter fields or the filter option.



The table list contains the following fields:

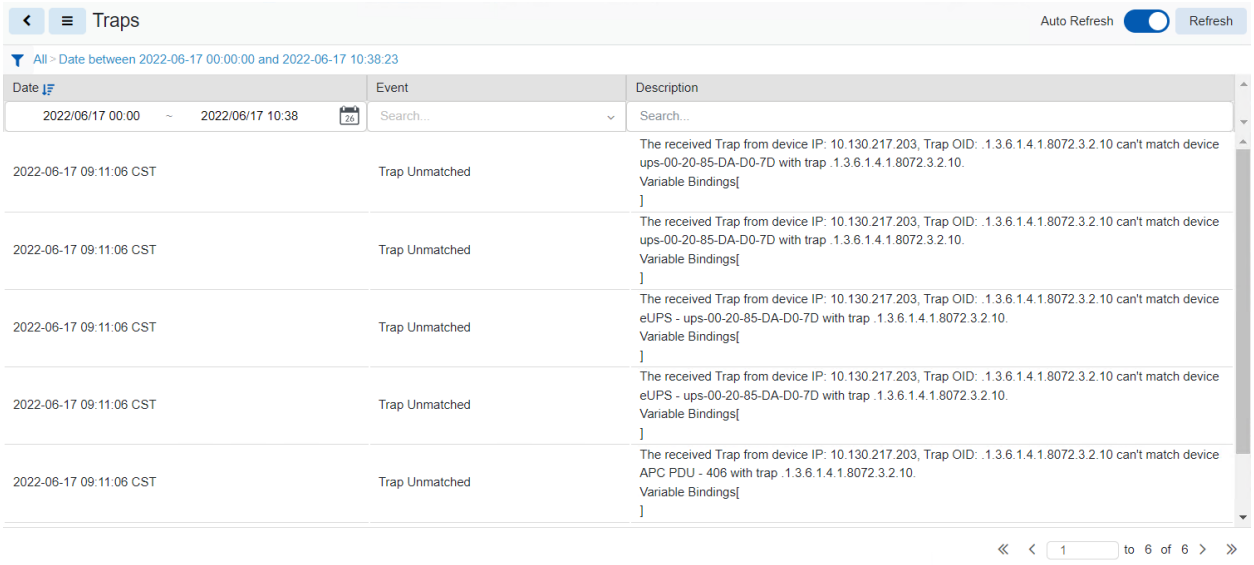
Table List Column	Description
Actions	Click the icon to view the history of the Device or alarm Trigger.
Ack/Latch	Ack ✓: Icon which indicates if the alarm has been acknowledged by a user. Latch : This icon will show when a latch alarm is triggered. The alarm is locked out until the user manually clears it. The latch alarm status is only shown in the Alarm Panel and has no effect on the other alarm functions. For example, there is a critical alarm triggered by a "Latch Alarm" enabled trigger on device eUPS001. According to the rule, this alarm will remain critical in the Alarm Panel even when the alarm is now actually downgraded to a warning level and will only disappear when the user manually clears it. But when users view other pages that show the alarms, this alarm's status should be a warning.
Severity	Shows the color-coded severity of the alarm. Green (Normal), Yellow (Warning) and Red (Critical).
Expansion Triangle	Click on the triangle next to the Severity label expands the alarm's details showing each of the Trigger/Attributes
Alarm Source	The device that is manifesting the alarm. This is a link that will open the device details page.
Trigger/Attribute	Name of the Trigger defined for the device.
Rules	Specific rules included in the Trigger definition.
Details	Information about the data which triggered the alarm.
Last Updated	Timestamp of last data collection.
Location	Location where the device exists
Comments	Click the icon to post comments of this alarm.

Table List Button	Description
Auto Refresh	If the toggle button is ON, the alarm panel list will automatically refresh every 30 seconds.
Clear Latch	Click the “Clear Latch” button to clear the latch alarms. Once cleared latch, the alarm will show real-time alarm severity. If the trigger is back to normal, and later, it is triggered again, it will be latched again.
Refresh	Click the button to refresh the alarm panel list.
Acknowledge	Acknowledging an alarm will prevent further escalation of the alarm notifications if multiple levels of escalation are defined in the alarm notification rules. Users can select the checkbox next to the device or data point and click the Acknowledge button to Acknowledge the alarm. The Alarm LED will maintain its color indicating the severity of the alarm but will have an embedded “A” over the LED to indicate the alarm has been acknowledged. **Note:** The Acknowledged status will be maintained until the alarm is either Cleared or naturally returns to a Normal condition.
Clear	Clears the alarm. **Note:** If the device is still in an alarmed stated during the next polling cycle, the alarm condition will return.

8.2. Traps

An SNMP trap is a monitoring tool in which an agent sends an unrequested message or notification to the probe about critical events regarding objects in the managed device. Compared to the normal monitoring methods, it allows probes to more easily collect, identify, and have alerts sent based on a large number of incoming SNMP trap data received.

The traps menu item displays a list of trap logs containing matched traps and unmatched traps. By default, this page shows the records from 00:00:00 for the day. Users can use this page to verify whether their configurations of trap monitoring template is successful or not.



The table list contains the following fields:

Table List Column	Description
Date	Displays the date and time of the trap event occurrence.

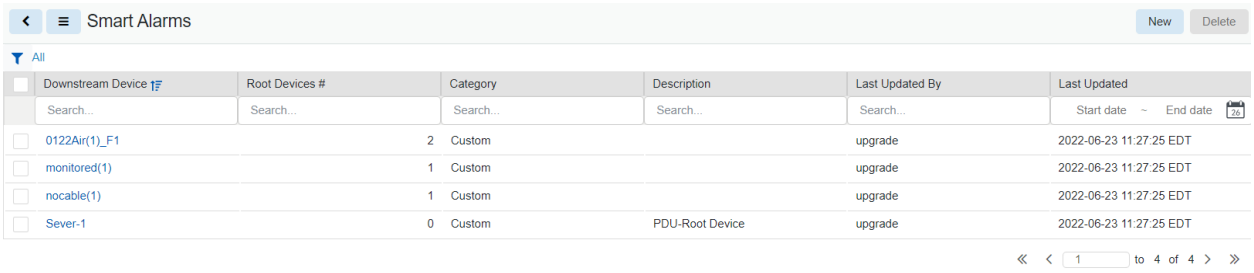
Event	Displays the type of event. Options are Trap Matched and Trap Unmatched.
Description	Descriptions of the trap event. For unmatched trap, display the device IP, trap OID, and the device name it can't match. For matched trap, display the matched device name.
Table List Button	**Description**
Auto Refresh	A toggle button. Once the button is enabled, the page will refresh every 30 seconds automatically.
Refresh	Click the button to manually refresh the page.

8.3. Smart Alarms

While many downstream devices become device-level unreachable[1] due to a device-level unreachable root device, Smart Alarm helps users locate the root device that requires urgent fixing efficiently. Meanwhile, it prevents users from receiving massive alarm notifications from downstream devices by the alarm suppression function.

8.3.1. Smart Alarm Menu

The Smart Alarm Menu displays all the existing Smart Alarm strategies.



The table list contains the following fields:

Fields	Description
Downstream Device	Displays the downstream device name.
Root Device #	Displays the number of the related root devices.
Category	Displays the smart alarm category.
Description	Displays the user-defined description for the downstream device.
Last Updated By	Displays the last user who updated the Smart Alarm strategy.
Last Updated	Displays the date and time the Smart Alarm strategy was last updated.
Table List Buttons	**Description**
New	Presents a configuration form for creating a new Smart Alarm strategy.
Delete	Deletes the selected Smart Alarm strategy.

The system will automatically capture the Smart Alarm strategies if the following criteria are met:

1. The downstream device and it's root devices are both deployed on the same building.
2. There is a port connection between these devices.

[1] The Smart Alarm is only triggered while the whole device becomes unreachable.

3. The location attribute “Smart Alarm Strategy Status” is enabled.

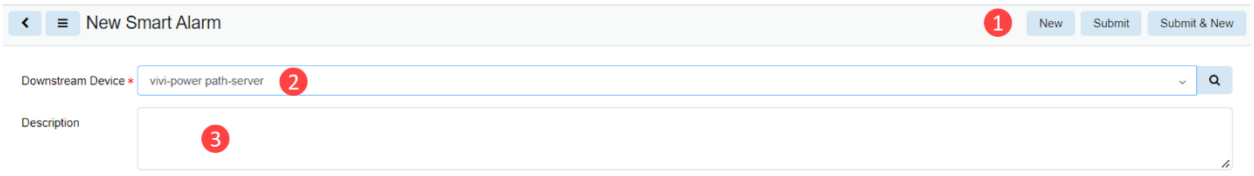
Note: Once the attribute is disabled, all smart alarm strategies of the building will be deleted.

If the devices’ connection or status is updated, or the devices are removed from the building, the smart alarm strategies will automatically update.

The system-created smart alarm strategies are not allowed to be edited or deleted by users.

8.3.2. Create new Smart Alarm

Users can create their own smart alarm strategies as well. Select the New button on the top right corner to create a new Smart Alarm configuration form. The following screen is presented to the user with the functions defined below.

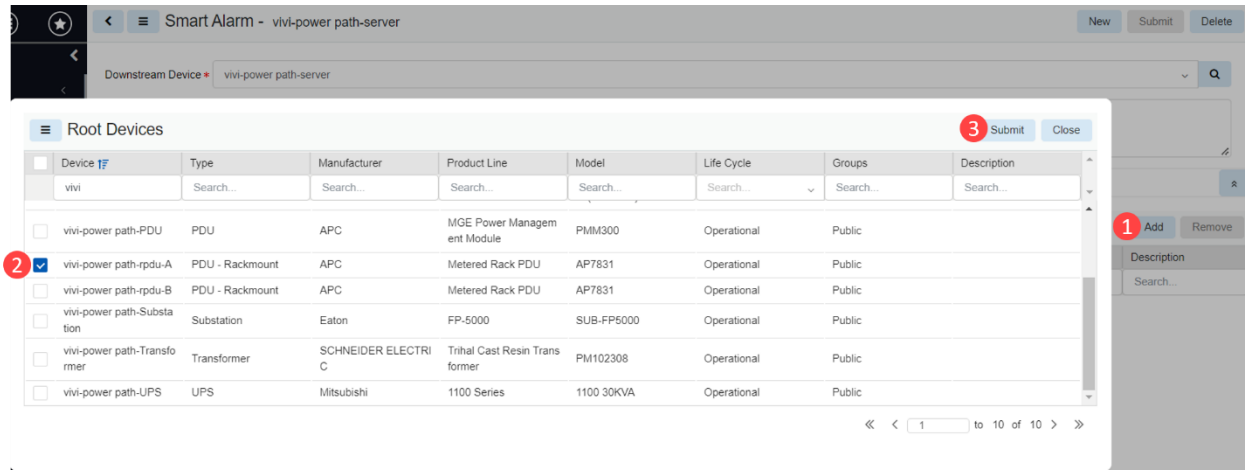


1. The buttons on the upper right perform the following tasks:
   a. New – Opens a configuration form to create a new Smart Alarm strategy.
   b. Submit – Submits the current configuration form.
   c. Submit & New – Submits the current configuration form and opens a blank form for a new Smart Alarm strategy.
2. Downstream Device - Select the monitored[2] downstream device from a drop-down list.
3. Description - Enter the user-defined description for the downstream device.

8.3.2.1. Add root devices

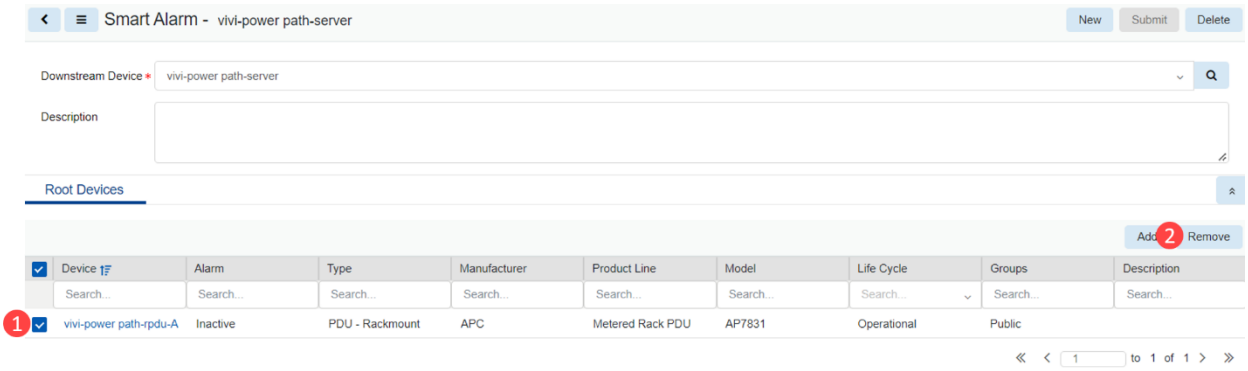
For user-created smart alarm strategies , users need to add the root devices manually by themselves. The root devices won’t be captured and added automatically by the system even there is a Power Path of devices.

[2] The Smart Alarm only applies to monitored devices. Please refer to Section 10.1.4.3.9 – Monitor Function Tile: Configuring Device for Monitoring for details.



1. Click the Add button. A table of devices pops up.
2. Select the devices you would like to add as the root devices.
3. Click the Submit button.

8.3.2.2. Remove root devices



To remove root devices:

1. Select the root devices you would like to remove from the Smart Alarm strategy.
2. Click the Remove button.

8.3.3. Smart Alarm trigger rules

To trigger a Smart Alarm strategy, it must satisfy two nested conditions.

a. Downstream devices are detected as device-level unreachable.
b. The Root device is detected as device-level unreachable.

8.3.3.1. Common Scenarios

Several scenarios are listed below for users' better understanding. Assuming three downstream devices (D1, D2, and D3) connect to one root device (R1) for all scenarios. All devices and their attributes are monitored. The system will send an alarm notification to recipients once an attribute becomes unreachable.

	Downstream Device	Root Device	Outcome
Scenario 1	All three devices are device-level unreachable.	Device-level unreachable	Smart Alarm is triggered. The alarm notifications of three downstream devices are suppressed. Users receive one integrated alarm notification of the root device.
Scenario 2	D1 is device-level unreachable. D2 is attribute-level unreachable. D3 is in normal status.	Device-level unreachable	Smart Alarm is triggered. Users receive alarm notifications of the root device and D2's unreachable attributes.
Scenario 3	All three devices are device-level unreachable.	Not device-level unreachable	Smart Alarm is not triggered. Users receive alarm notifications of D1, D2, and D3.
Scenario 4	All three devices are in normal status.	Root device is attribute-level unreachable.	Smart Alarm is not triggered. Users receive alarm notification of root device's unreachable attributes.

8.4. Service Levels (SLA)

The Service Level Agreement (SLA) Menu tracks the SLA compliance on users' interests. The SLA runs the scheduled process at midnight and detects unreachable devices. Then, the SLA generates alarms, sends notifications, and saves the downtime records for users as needed.

Note:

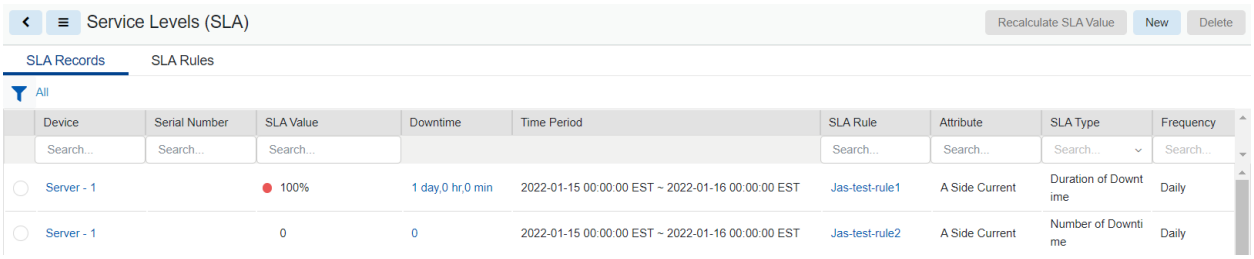
The scheduled tasks will be created when the VMS starts. The time will be 00:05 every day in the local time zone. For example:

- The current time zone is Asia/Shanghai, then the job will be run every 00:05 in the Asia/Shanghai time zone.
- The current time zone is America, then the job will be run every 00:05 in the American time zone.

If users change the time zone after the VMS starts, the running time zone of the scheduled tasks will not be modified. So, the task will still run in the previous time zone.

8.4.1. SLA Records Tab

SLA Records tab displays all the saved SLA Records.

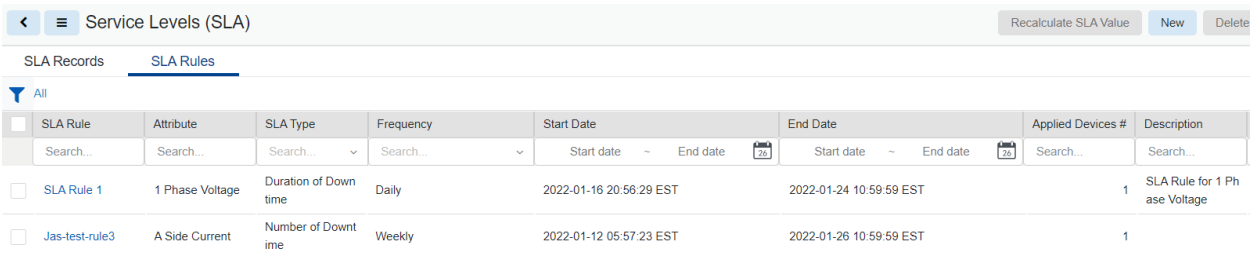


The table list contains the following fields:

Table List Column	Description
Device	Displays the name of the device.
Serial Number	Displays the serial number of the device.
SLA Value	Displays the SLA value of the device. When the SLA Type is Duration of Downtime, the SLA value is Downtime Rate. When the SLA Type is Number of Downtime, the SLA value is Number of Downtime. The colored dot represents the SLA alarm status. Red indicates Critical, and Yellow indicates Warning.
Downtime	Displays the device downtime information. When the SLA Type is Duration of Downtime, the Downtime indicates the device downtime time. When the SLA Type is Number of Downtime, the Downtime indicates the device downtime number. Double Clicking the value directs you to the Downtime History tab under the Devices Menu Group – Devices Menu - Service Levels (SLA) Function Tile. *Please refer to Chapter 10.1.4.3.20 – Service Levels (SLA) Function Tile.*
Time period	Displays the device downtime period.
SLA Rule	Displays the name of the SLA Rule that applied on the device.
Attribute	Displays the attribute selected by users.
SLA Type	Displays the SLA Rule trigger type.
Frequency	Displays the frequency of running and calculating the SLA Rule.
Last Updated By	Displays the last user who operated the SLA value calculation.
Last Updated	Displays the date and time the SLA value was last updated.
Table List Buttons	**Description**
New	Presents a form for creating a new SLA Rule.
Recalculate SLA Value	Recalculates the SLA value for an SLA record.

8.4.2. SLA Rules Tab

SLA Rules tab displays a list of created SLA Rules. Double-clicking the SLA Rule name allows users to manage the existing SLA Rules.



The table list contains the following fields:

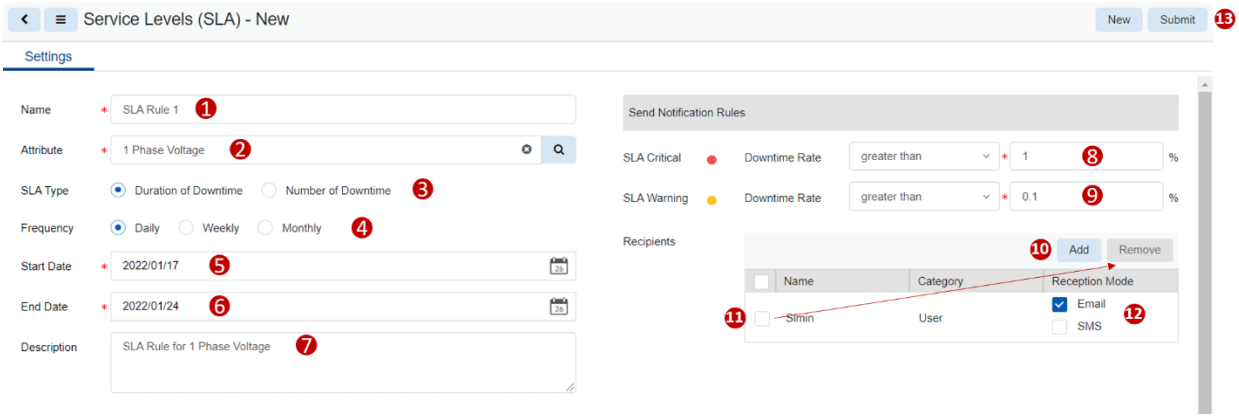
Table List Column	Description
SLA Rule	Name of the SLA Rule.
Attribute	Displays the attribute selected by users.
SLA Type	Displays the SLA Rule trigger type.
Frequency	Displays the frequency of running and calculating the SLA Rule.
Start Date	Displays the SLA Rule start date.
End Date	Displays the SLA Rule end date.
Applied Devices #	Displays the number of devices that applied to this SLA Rule.
Description	Displays the extra information.
Last Updated By	Displays the last user who updated the SLA Rule.
Last Updated	Displays the date and time the SLA Rule was last updated.
Table List Buttons	**Description**
New	Presents a form for creating a new SLA Rule.
Delete	Deletes the selected SLA Rule.

8.4.3. Create new SLA Rules

The first time a user enters the SLA menu, the only button accessible is the New button.

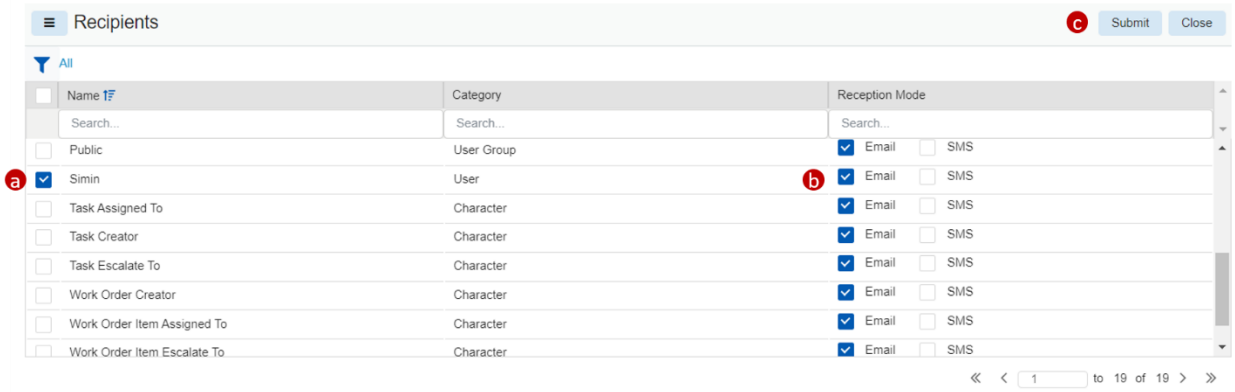
8.4.3.1. Settings - New SLA Rules Form

Selecting the New button displays the new SLA Rules configuration form. The new SLA Rules Form has static fields on the left and a Send Notification Rules setting area on the right with an associated Recipients table.



1. Enter the user-defined SLA Rule name.
2. Select the attribute you would like to be monitored and recorded.

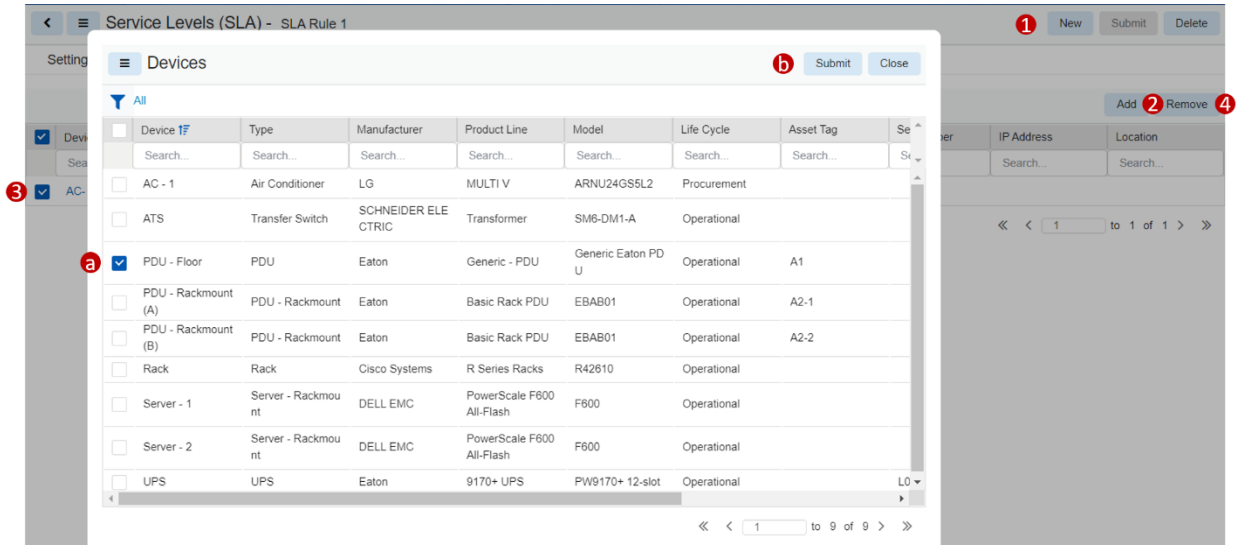
3. Select the trigger of the SLA Rule. Options are Duration of Downtime and Number of Downtime.
4. Select the frequency of reporting and running the SLA Rule.
5. Select the SLA Rule start date from the date picker.
6. Select the SLA Rule end date from the date picker.
7. Enter the user-defined description for the SLA Rule.
8. Set a percentage or number that will trigger a critical level alarm when the Downtime Rate or the Number of Downtime is greater than/greater than or is the ratio or the number.
9. Set a percentage or number that will trigger a warning level alarm when the Downtime Rate or the Number of Downtime is greater than/greater than or is the ratio or the number.
10. Click the Add button. A table of recipients pops up:



    a. Select the recipients who receive the alarm notifications by clicking the checkboxes.
    b. Select the Reception Mode. Options are Email and SMS. Select both is allowed.
    c. Click the Submit button.
11. To remove the selected recipients, click the checkboxes and click the Remove button.
12. It is easy to change the Reception Mode by selecting the corresponding checkbox.
13. Click the Submit button to submit the SLA Rules configuration form.

8.4.3.2. Applied Devices

The Applied Devices panel appears after submitting the new SLA Rule Form.



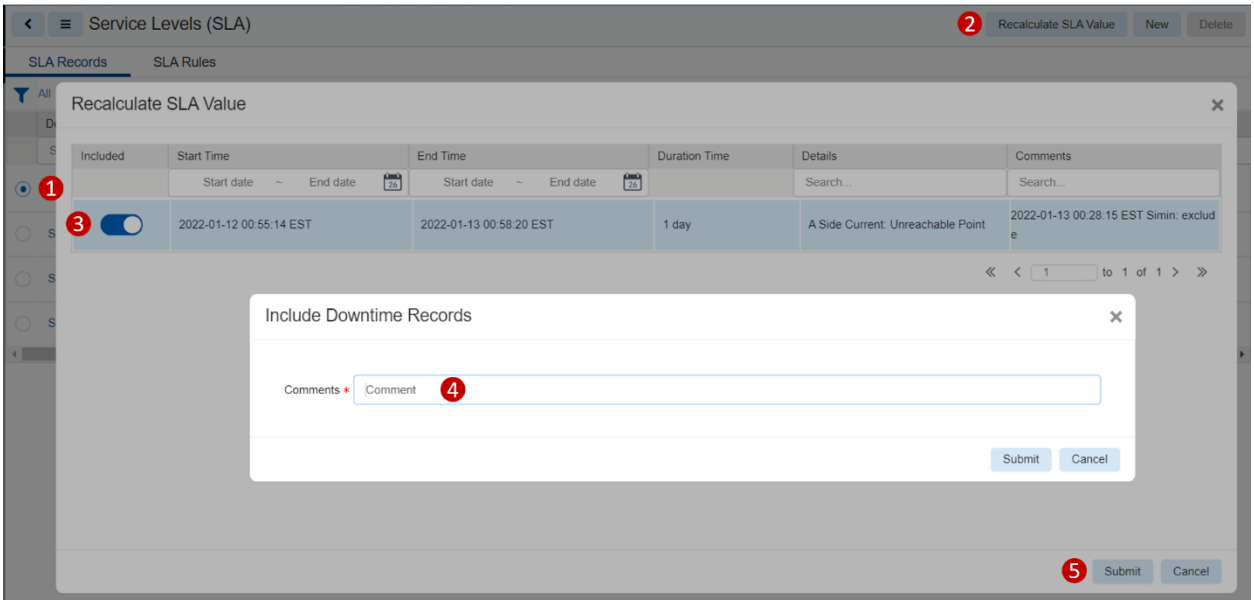
1. The buttons on the upper right perform the following tasks:
    a. New – Opens an SLA Rules configuration form to create a new SLA Rule.
    b. Delete – Deletes the selected SLA Rule.
2. Click the Add button to choose the devices applied to the SLA Rule. A table of devices pops up:
    a. Select the devices by clicking the checkboxes.
    b. Click the Submit button.
3. To remove the selected devices, click the checkboxes.
4. Click the Remove button to remove the selected devices from the SLA Rule.

The devices information lists on the Applied Devices panel and contains the following fields:

Table List Column	Description
Device	Displays the name of the device.
Type	Displays the type of the device.
Manufacturer	Displays the manufacturer of the device.
Product Line	Displays the product line of the device.
Model	Displays the model of the device.
Life Cycle	Displays the life cycle status of the device.
Asset Tag	Displays the asset tag of the device.
Serial Number	Displays the serial number of the device.
IP Address	Displays the IP address of the device.
Location	Displays the location of the device.

8.4.4. Recalculate SLA Value

The Recalculate SLA Value function becomes active after an SLA record generates.

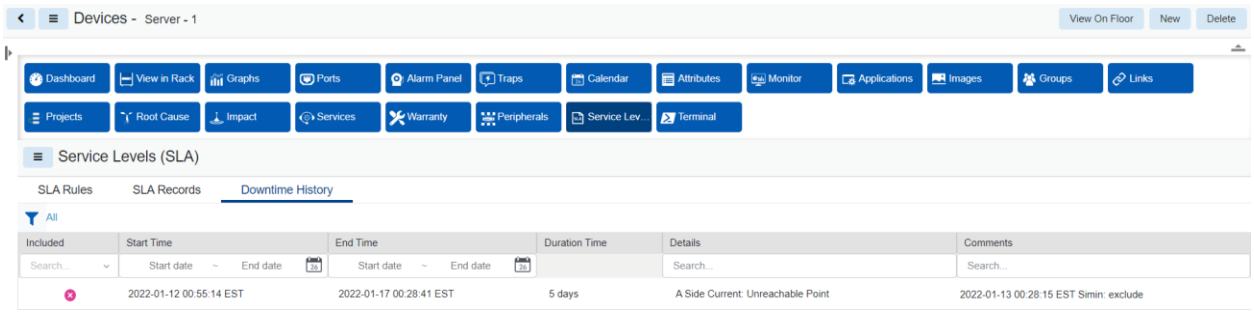


1. Select the device you would like to recalculate the SLA value under the SLA Record tab.
2. Click the Recalculate SLA Value button.
3. Turn off the downtime events you would like to exclude from the time.
4. Write a comment and submit.
5. Click submit button to recalculate the SLA value.

The new SLA value overwrites the original SLA value of the SLA record.

8.4.4.1. Service Levels (SLA) Function Tile

8.4.4.1.1. Devices



- The SLA Rules tab displays all the SLA rules applied on the current device.
  The SLA Rules table is the same as the one under Alarms – Service Levels (SLA) Menu – SLA Rules Tab. Please refer to Section 7.4.2 – SLA Rules Tab for details.

- The SLA Records tab displays all the SLA records generated related to the current device.
  The Recalculate SLA Value function is accessible under this tab.
  The SLA Records table is the same as the one under Alarms – Service Levels (SLA) Menu – SLA Records Tab. Please refer to Section 7.4.1 – SLA Records Tab for details.

- The Downtime History tab displays all the downtime records on the current device. The table list contains the following fields:

Table List Column	Description
Included	Displays the downtime history record status. Options are Included and Excluded.
Start Time	Displays the start time of the downtime history record.
End Time	Displays the end time of the downtime history record.
Duration Time	Displays the downtime duration.
Details	Displays the downtime details, including the attributes and reason.
Comments	Displays the user-entered comments when recalculating SLA value.

8.4.4.1.2. Racks

Rack devices have the SLA Records tab only. It displays the SLA records of all devices in the current rack. The Recalculate SLA Value function is accessible under this tab.

The SLA Records table is the same as the one under Alarms – Service Levels (SLA) Menu – SLA Records Tab. Please refer to Section 7.4.1 – SLA Records Tab for details.

8.5. OPC UA Events

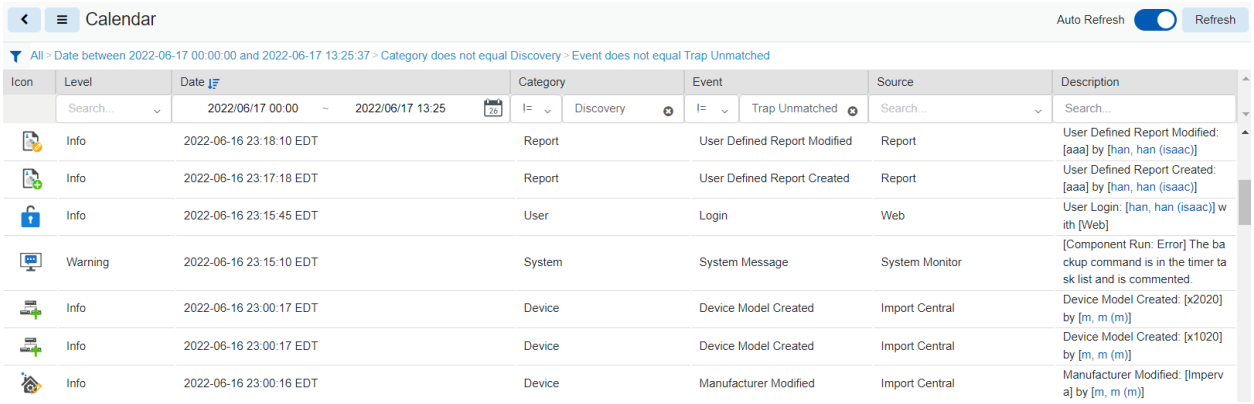
The initial view presented when the OPC UA menu item is selected is a list of events sent from OPC UA server for the current day.

The table list contains the following fields:

Table List Column	Description
Event Type	Displays the event type of the OPC UA event.
Time	Displays the timestamp for the event.
Source Node	Displays the source node.
Source Name	Displays the source name.
Severity	Displays the severity level.
Message	Describe the OPC UA event.
Table List Button	**Description**
Auto Refresh	If the toggle button is ON, the OPC UA panel list will automatically refresh every 30 seconds.
Refresh	Click the button to refresh the OPC UA panel list.

9. Calendar

The initial view presented when the Calendar group menu item is selected is a list of all events for the current day. The user can define complex filters to retrieve data regarding specific types of events during a period and/or related to specific devices or users.



The table list contains the following fields:

Table List Column	Description
Icon	Helps identify the event activity
Level	Indicates the event level. Options include Critical, Info, Minor, Normal, Recovery, Unmonitored, Unreachable and Warning.
Date	The timestamp for the event
Category	Indicates the event category. Options include Alarm, Devices, Discovery, Graphs, Location, Monitor, Project, Service, System, User and Warranty.
Event	Indicates what type of event is being reported.
Source	Indicates the source of the event. For example, the source Web is reported when items are manually created. Devices created through an import report the source as Import Central.
Description	Specific details about the event including the user and device names.

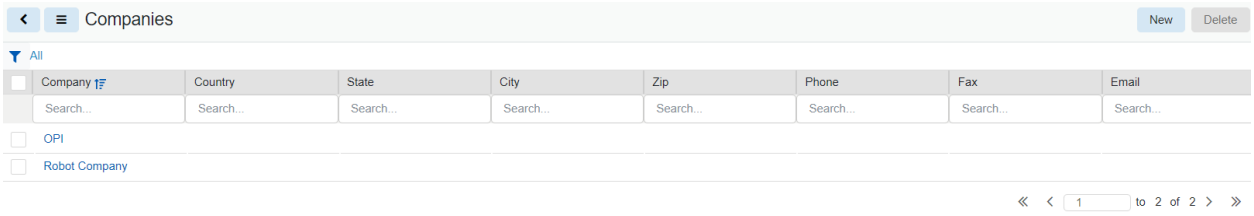
10. Rights Access Menu Group

A key component to any implementation is the management of the users and access control rights they have within the system. The Rights Access Menu Group lets administrators manage detailed access controls for all users created in the system. These controls relate to all devices, locations, reports, and other components of the instance.

10.1. Companies Menu Item

The Companies menu item in the Rights Access menu group lets administrators manage multiple companies in the same instance. When users are created, a company designation is required to allow controls for reports and access rights to be applied at the company level.

The initial view presented when the Companies menu item is selected is a list of current companies.



- To add a new company, click the New button and complete the fields shown in the main portion of the screen.
- To delete a company, select the checkbox next to the company in the list and click the Delete button.

The table list contains the following fields:

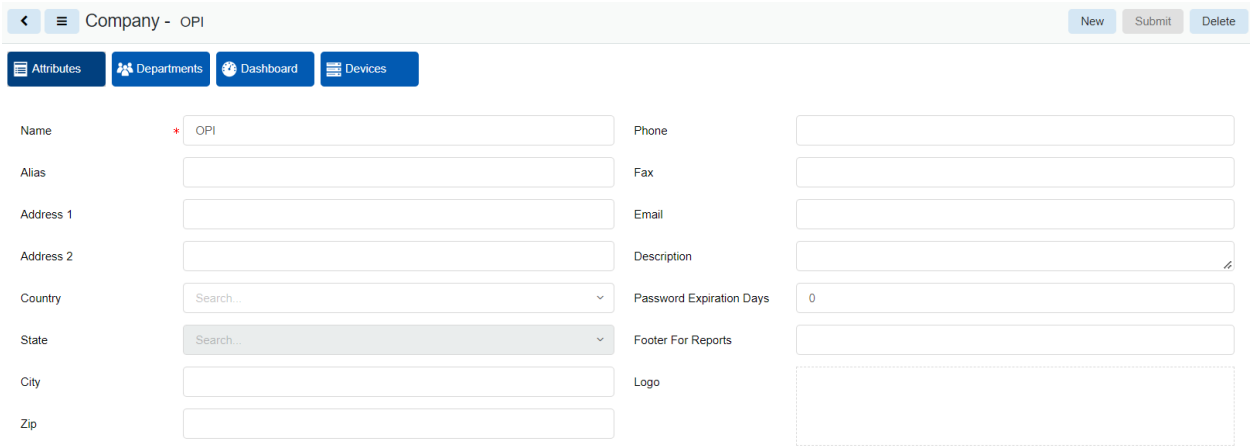
Table List Column	Description
Company	Company name in the list is also a link to open the form with additional details about the company
Country	The country where the company is located
State	The state or province where the company is located
City	The city where the company is located
Zip	The company's zip code
Phone	The company's phone number
Fax	The company's fax number
Email	A general email address for the company
Table List Button	**Description**
New	Presents a form for creating a new Company
Delete	Deletes the selected Company from the list

10.1.1. Companies Function Tiles

Clicking a Company name in the initial table of Companies presents a page with function tiles and data related to that Company. The function tiles for Companies are defined in the sections below.

10.1.1.1. Attributes

The Attributes tile provides a form with fields to define standard information related to the Company.

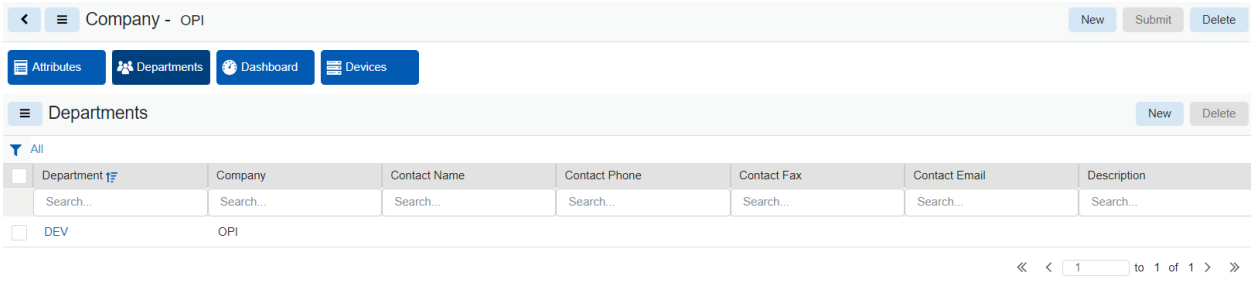


The form contains the following fields:

Form Field Name	Description
Name	Company name
Alias	Alternative name to be used instead of the Company Name. This field can be helpful if the application user has codes or other references for a company in another system.
Address 1	First part of the building address for the Company.
Address 2	Second part of the building address for the Company, if needed.
Country	The country where the company is located
State	The state or province where the company is located
City	The city where the company is located
Zip	The company's zip code
Phone	The company's phone number
Fax	The company's fax number
Email	A general email address for the company
Description	Description of the Company for reference.
Password Expiration Days	Sets the default Password Expiration Days for a new user created which is assigned to the Company.
Footer for Reports	Footer displayed on report output when generated by a user which belongs to the Company.
Logo	Logo to display on reports generated by a user which belongs to the Company.
Form Button	**Description**
New	Presents a form for creating a new Company
Submit	Saves changes made to the form.
Delete	Deletes the selected Company from the list

10.1.1.2. Departments

The Departments function tile provides a list of Departments which belong to the Company. This page also allows for users to manage the Department list with Add, Modify and Delete functions.



The table list presented to the user on this function tile contains the following fields:

Table List Column	Description
Department	Department name
Company	Name of the Company to which the Department belongs.
Contact Name	Name of the primary contact in the Department.
Contact Phone	Phone Number of the primary contact in the Department.
Contact Fax	Fax number of the primary contact in the Department.
Contact Email	Email address of the primary contact in the Department.
Description	Description of the Department for reference.
Table List Button	**Description**
New	Presents a form for creating a new Department
Delete	Deletes the selected Department from the list

10.1.1.3. Dashboard

The Dashboard function tile provides detail on power, space and environmental metrics for devices and locations assigned to the Company. The Dashboard page is organized with summary data at the top in the colored areas followed by a separate section of department specific power, space and cooling data for each Department which belongs to the Company.

The summary data adds the following metrics for each Department which belongs to the Company and presents them in the colored areas:

Summary Data Element	Description
Breakers Provisioned	Total number of Breakers created on PDU or RPP devices which are assigned to the Company.
Circuits Provisioned	Total number of Circuits which belong to Breakers created on PDU or RPP devices which are assigned to the Company.
Current Rated	Sum of the Current Rated value for all Breakers created on PDU or RPP devices which are assigned to the Company.
Current Derated	Sum of the Current Derated value for all Breakers created on PDU or RPP devices which are assigned to the Company.

The Department specific information contains the following summary data:

Power Data Element	Description
Breakers Provisioned	Total number of Breakers created on PDU or RPP devices which are assigned to the Department.
Circuits Provisioned	Total number of Circuits which belong to Breakers created on PDU or RPP devices which are assigned to the Department.
Power	Total power consumed/assigned to the Department.
Current Rated	Sum of the Current Rated value for all Breakers created on PDU or RPP devices which are assigned to the Department.
Current Derated	Sum of the Current Derated value for all Breakers created on PDU or RPP devices which are assigned to the Department.

Each Breaker which is created and is assigned to the Department is listed in the table below this department summary power information.

Space Data Element	Description
Total Area	Sum of all Areas which are defined in the Navigation tree and are assigned to the Department.

Environment Data Element	Description
Sensor Name	Name of sensor device which is assigned to a Department of the Company.
Location	Location in Navigation Tree where the sensor has been placed on a floorplan.
Rack	Device on which the sensor has been placed or attached.
Height	Height off the ground where the sensor is mounted to a device or rack.
Temperature	Temperature value reported by the sensor.
Humidity	Humidity value reported by the sensor.

10.1.1.4. Devices

The Devices function tile provides an asset list of all devices created in the application which have been assigned to a Department which belongs to the Company. The table list provides the standard set of asset fields for the devices.

10.2. Departments Menu Item

The Departments menu item in the Rights Access menu group lets users manage and report on devices, based on the departments that own them. Each device is assigned to a department on the Device Tab, and the options available for this assignment are based on the departments added to this list. In addition, a department setting is assigned to all users added to the system.

- To add a new department, click the New button and complete the fields shown in the main portion of the screen.
- To delete a department, select the checkbox next to the company in the list and click the Delete button.

The initial view presented when the Departments menu item is selected is a list of current departments. The table list contains the following fields:

Table List Column	Description
Department name	Department name in the list is also a link to open the form with additional details about the department
Company	The company to which the department belongs
Contact Name	A contact name within the company
Contact Phone	A phone number for the contact
Contact Fax	A fax number for the contact
Contact Email	An email address for the contact
Description	Additional information about the company
Table List Button	**Description**
New	Presents a form for creating a new Department
Delete	Deletes the selected Department from the list

10.2.1. Departments Function Tiles

Clicking a Department name in the initial table of Departments will present a page with function tiles and data related to that Department. The function tiles for Departments are defined in the sections below.

10.2.1.1. Attributes

The Attributes tile provides a form with fields to define standard information related to the Department. The form contains the following fields:

Form Field Name	Description
Name	Company name
Alias	Alternative name to be used instead of the Company Name. This field can be helpful if the application user has codes or other references for a company in another system.
Company	Name of the Company to which the Department belongs.
Contact Name	Name of the primary contact in the Department.
Contact Phone	Phone Number of the primary contact in the Department.
Contact Fax	Fax number of the primary contact in the Department.
Contact Email	Email address of the primary contact in the Department.
Contracted-PUE	The PUE value promised in the contract.
Electricity Price	Price per kWh for any Breaker devices which are created and assigned to this Department. This rate can be overridden by defining a different electricity price at the Breaker device.
Description	Description of the Department for reference.
Form Button	**Description**
View Company	Link to view the Company page
New	Presents a form for creating a new Department
Submit	Saves changes made to the form.
Delete	Deletes the selected Department from the list

10.2.1.2. Dashboard

The Dashboard function tile provides detail on power, space and environmental metrics for devices and locations assigned to the Department. The summary data adds the following metrics for each Breaker device which belongs to the Department:

Power Data Element	Description
Breakers Provisioned	Total number of Breakers created on PDU or RPP devices which are assigned to the Department.
Circuits Provisioned	Total number of Circuits which belong to Breakers created on PDU or RPP devices which are assigned to the Department.
Power	Total power consumed/assigned to the Department.
Current Rated	Sum of the Current Rated value for all Breakers created on PDU or RPP devices which are assigned to the Department.
Current Derated	Sum of the Current Derated value for all Breakers created on PDU or RPP devices which are assigned to the Department.

Following the summary power data is a table which lists each of the Breaker devices created which are assigned to the Department.

Space Data Element	Description
Total Area	Sum of all Areas which are defined in the Navigation tree and are assigned to the Department.

Environment Data Element	Description
Sensor Name	Name of sensor device which is assigned to the Department.
Location	Location in Navigation Tree where the sensor has been placed on a floorplan.
Rack	Device on which the sensor has been placed or attached.
Height	Height off the ground where the sensor is mounted to a device or rack.
Temperature	Temperature value reported by the sensor.
Humidity	Humidity value reported by the sensor.

10.2.1.3. Devices

The Devices function tile provides an asset list of all devices created in the application which have been assigned to the Department. The table list provides the standard set of asset fields for the devices.

10.2.1.4. Area

The Area function tile allows users to add areas to be assigned to departments and displays the areas assigned to the department along with rack and power information for each area.

10.3. User Groups Menu Item

User Groups are the central location for access rights control definition and are the primary location for managing all Privileges to all components of the platform.

Note: Users inherit their rights access based on their membership in a User Group. If a user belongs to multiple groups, they will have effective rights that represent a superset of the individual User Group rights. Properly defining User Groups helps ensure that administrators have a flexible mechanism for managing all access control rights for all users in the system.

Two system User Groups are installed within the system by default: Administrators and Public. The Administrators user group has rights to ALL components of the application, and this access right cannot be modified. Administrators should add only super-administrators of the platform to this group since they will inherit rights to all parts of the system.

All users in the platform are assigned to the Public user group by default, and this group membership cannot be removed. Any access rights granted to the Public User Group are automatically granted to ALL users in the system. This feature provides an easy way for administrators to grant rights to certain parts of the system to all users without editing all User Groups individually.

- To add a new user group, click the New button and complete the fields shown in the main portion of the screen.
- To delete a user group, select the checkbox next to the company in the list and click the Delete button.

10.3.1. User Groups List

The initial view presented when the User Groups menu item is selected is a list of current user groups. The table list contains the following fields:

Table List Column	Description
Group Name	Group name in the list is also a link to open the form where group rights access is configured.
Users	Number of users in the group.
Description	Description of the group.
Table List Button	**Description**
New	Presents a form for creating a new Group.
Clone	Clone a selected user group. Users must enter the quantity of the user group that they would like to clone. By default, the quantity is 1. Users can give a name to the clonal user group. But it is not compulsory. If the Name field is empty, the system will use the name of the user group that is cloned as the name of the clonal user group. The configurations of the associated Components, Locations, Groups, Outlets Control, Reports, and Layers of the selected user group will be clone as well.
Delete	Deletes the selected Group from the list.

10.3.2. User Group Form

Selecting an existing group or the New button presents the User Groups form. The User Group form has static fields in the top section followed by tabs that present their own lists related to the group.

Fields	Description
Name	Name of the group.
Description	Information about the group.
Table List Buttons	**Description**
New	Presents a form for creating a new Group.
Submit	Submit the updates/Creates the new group with information from form.
Delete	Deletes this user group.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

10.3.2.1. Users Tab

The initial view presented when the Users Tab is selected is a list of current members of the current User Group. Users can add new users to this user group or remove existing users from this group.

The table list contains the following fields:

Users Tab List Column	
User Name	Name of the user is also a link to open the form with additional details about the user.
User Group	List of groups to which the user belongs.
Company	Company to which the user belongs.
Departments	Departments to which the user belongs.
User List Buttons	
Add	Adds user to group. Check users to be added from list and click Submit to save. Close, closes the window and does not save.
Remove	Removes user from the group.

10.3.2.2. Components Tab

The initial view presented when the Components Tab is selected is a list of System Components and Rights Access levels for the current User Group. Users can select/unselect the checkbox to control which component in the system users in this user group can access/edit.

The table list contains the following fields:

Components Tab List Column	
System Component	A list of all the Menu Groups and Menu Items.
Rights Access	Check boxes to assign rights access levels for each component.
User List Option	
Check All	Checks all the Rights Access check boxes, providing full access to everything.

10.3.2.3. Locations Tab

The initial view presented when the Locations Tab is selected is a list of locations from the navigation tree and Rights Access levels for the current User Group. Users can select/unselect the checkbox to control which location node in the system users in this user group can view/edit.

The table list contains the following fields:

Locations Tab List Column	
Location	Hierarchical list of location nodes.
Rights Access	Checkboxes to assign rights access levels for each location.

Please note the following rules for selecting rights on the Location page:

- View selection will be inherited to nodes up the navigation tree. For example, if you choose View for a Floor, then View rights will be automatically granted for Country, State, City and Building related to the Floor selection.
- View rights granted to a floor will automatically grant View rights to Areas within the floor. Users can turn off Area view rights if they are not needed.
- Edit rights for Areas are managed by granting Edit rights to the floor. There is no explicit option to grant Edit rights to an individual Area.
- Edit rights are not inherited to other nodes of the navigation tree with the exception of Areas inherit from the Floor.

10.3.2.4. Groups Tab

The initial view presented when the Groups Tab is selected is a list of Device Groups, Rack Groups and Rights Access levels for the current Group. Users can select/deselect checkboxes to control which devices/racks/cameras/associated device groups in the system users in this user group can see/control.

The table list contains the following fields:

Locations Tab List Column	
Group Name	Name of the group is also a link to open the form with additional details about the group.
Category	Displays if it is a Device Group or Rack Group.
Devices	Lists the number of devices in the group. Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the groups to which that device belongs.
Rights Access	Check boxes to assign rights access to Device and Rack Groups for the current User Group.

10.3.2.5. Devices Tab

The initial view presented when the Devices Tab is selected is a list of Devices that correspond to the Device and Rack Group selected for the current User Group. The table list contains the following fields:

Devices Tab List Column

Device Name	Name of the device is also a link to open the form with additional details about the device.
Device Group	Displays the device groups to which the device belongs.
Lifecycle Status	Displays the device's lifecycle - Operational, Available, etc.
Rights Access	Displays the Rights Access for the device by the current User Group. The values cannot be changed. The values are controlled in the Groups tab at the Device Group level.

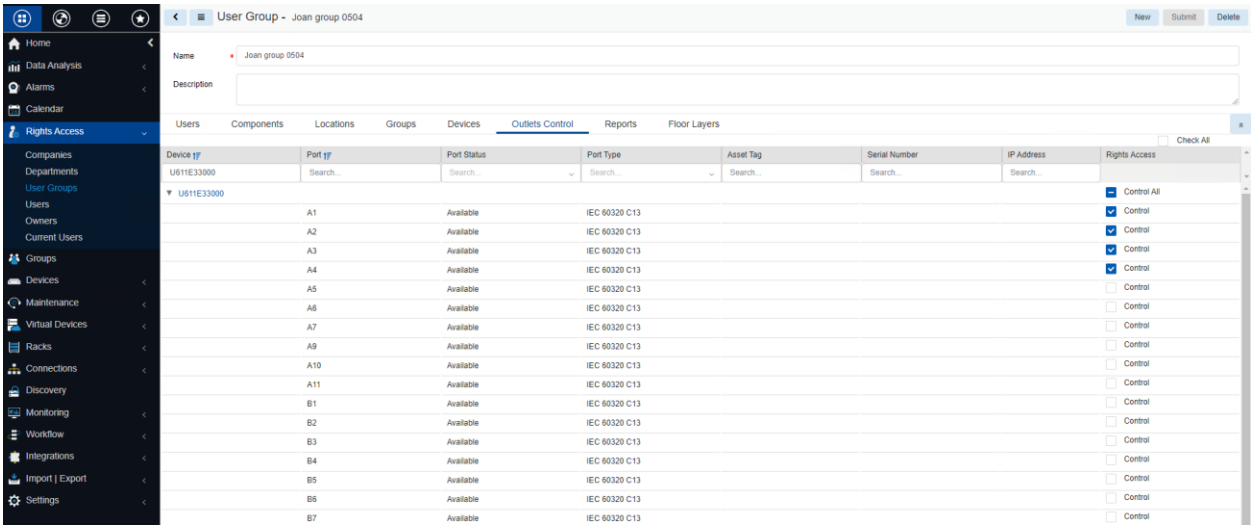
10.3.2.6. Outlets Control Tab

The initial view presented when the Outlets Control Tab is selected is a list of devices. All ports associated with the device will show by clicking the minimize button.

Users can manage their devices' access control rights in port level in this tab. The operation steps are:

1. Select a device from the Right Access Menu Group – User Group Menu Item – A User Group - Outlets Control panel.
2. Click the little triangle icon to drop down all ports of the device.
3. Tick the checkboxes in the Right Access column to select the ports that can be controlled by this user group.

Note: Only devices whose Rights Access allow View in the Devices panel will be listed in the Outlet Control panel.



The table list contains the following fields:

Reports Tab List Column	
Device	Name of the device is also a link to open the form with additional details about the device.
Port	Name of the port.
Port Status	Displays the port status. Options are Available, Broken, Connected, and Reserved.
Port Type	Displays the port type.
Asset Tag	Displays the device's asset tag.
Serial Number	Displays the device's serial number.

IP Address	Displays the device's IP address.
Rights Access	Displays the Rights Access for the device by the current User Group. The values cannot be changed. The values are controlled in the Groups tab at the Device Group level.

10.3.2.7. Reports Tab

The initial view presented when the Reports Tab is selected is a list of the Standard Reports and Rights Access levels for the current Group. Users can select/deselect checkboxes to control which system report in the system users in this user group can access.

The table list contains the following fields:

Reports Tab List Column	
Report Name	Name of the report.
Rights Access	Check boxes to assign rights access to Reports for the current User Group.

10.3.2.8. Floor Layers Tab

The initial view presented when the Reports Tab is selected is a list of the Standard Reports and Rights Access levels for the current Group. Users can select/deselect checkboxes to control which Floor Layers in the system users in this user group can access.

The table list contains the following fields:

Floor Layers Tab List Column	
Layer Name	Name of the floor layer.
Rights Access	Check boxes to assign rights access to Floor Layers for the current User Group.

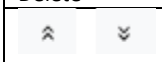
10.4. Users Menu Item

The initial view presented when the Users menu item is selected is a list of current users. The table list contains the following fields:

Users List Column	Description
User Name	Name of the user is also a link to open the form with additional details about the user.
First Name	Displays user first name.
Middle Name	Displays user middle name.
Last Name	Displays user last name.
Company	Company to which the user belongs.
Department	Departments to which the user belongs.
Phone Number	Displays phone number.
Email	Displays email address.
Description	Displays description.
Table List Button	**Description**
New	Presents a form for creating a new User.
Delete	Deletes the selected User from the system.

10.4.1. User Form

Selecting an existing user or the New button presents the User form. The User form has static fields in the top section followed by tabs that present their own lists related to the user.

Fields	Description
User Name	Login username.
First Name	Displays user first name.
Middle Name	Displays user middle name.
Last Name	Displays user last name.
Company	Company to which the user belongs.
Department	Departments to which the user belongs.
Description	Displays description.
Phone Number	Displays phone number.
Email	Displays email address.
Password	Enter or reset a password for the user. It is not displayed.
Confirm Password	Re-enter the password for the user. It is not displayed. You will get an error if it does not match.
Require change to password Checkbox	Check the box to require change to password after the first login.
Password Expiration Date	Displays when the password will expire. Linked to Password Expiration Days in the Settings menu group, System Settings menu item.
Account Expiration Date	Displays the date that the account will expire.
Table List Buttons	**Description**
New	Presents a form for creating a new Group.
Submit	Creates the new group with information from form. Submit also saves changes to an existing user's form.
Delete	Deletes this User from the system
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

10.4.1.1. User Groups Tab

The initial view presented when the User Groups Tab is selected is a list of system user groups.

Group – Lets administrators assign User Group membership to a user. All access control rights for a user are inherited based on the User Groups to which they belong. All users are members of the Public group by default, and this setting cannot be changed.

You can manage User Group membership by selecting User Groups from the group lists and selecting the Add or Remove buttons as needed. You can select multiple User Groups by using the Shift or Ctrl shortcut keys. Check the box next to the groups where you want to add the User and click Submit to save.

The table list contains the following fields:

User Group Tab List Column	
Group Name	Name of the group is also a link to open the form with additional details about the group.

Users	Lists the number of users in the group
Description	Displays description of the group.

10.4.1.2. Components Tab

The initial view presented when the Components Tab is selected is a list of System Components and Rights Access levels for the current User based on the User Groups to which they belong. These cannot be edited here. The table list contains the following fields:

Components Tab List Column	
System Component	A list of all the Menu Groups and Menu Items.
Rights Access	Check boxes displaying the user's rights access levels for each component.

10.4.1.3. Locations Tab

The initial view presented when the Locations Tab is selected is a list of locations from the navigation tree and Rights Access levels for the current User based on the User Groups to which they belong. These cannot be edited here. The table list contains the following fields:

Locations Tab List Column	
Location	Hierarchical list of location nodes.
Rights Access	Check boxes indicate the rights access for the current user. View rights indicate the user will be able to view the node in location lists and can view location level data. Edit rights allow users to update settings for the location, create subnodes on the location and place devices to the location if it is a Floor or Area.

10.4.1.4. Groups Tab

The initial view presented when the Groups Tab is selected is a list of Device Groups, Rack Groups and Rights Access levels for the current User based on the User Groups to which they belong. These cannot be edited here. The table list contains the following fields:

Locations Tab List Column	
Group Name	Name of the group is also a link to open the form with additional details about the group.
Category	Displays if it is a Device Group or Rack Group.
Devices	Lists the number of devices in the group. Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the groups to which that device belongs.
Access	Check boxes indicate the rights access for the current user.

10.4.1.5. Devices Tab

The initial view presented when the Devices Tab is selected is a list of Devices that correspond to the Device and Rack Group selected for the current User based on the User Groups to which they belong. These cannot be edited here. The table list contains the following fields:

Devices Tab List Column	
Device Name	Name of the device is also a link to open the form with additional details about the device.
Device Group	Displays the device groups to which the device belongs.
Lifecycle Status	Displays the device's lifecycle - Operational, Available, etc.
Rights Access	Check boxes indicate the rights access for the current user.

10.4.1.6. Outlet Controls Tab

The initial view presented when the Outlets Control Tab is selected is a list of devices that correspond to the Device and Rack Group selected for the current User based on the User Groups to which they belong. All ports associated with the device will show by clicking the minimize button. These cannot be edited here.

The table list contains the following fields:

Reports Tab List Column	
Device	Name of the device is also a link to open the form with additional details about the device.
Port	Name of the port.
Port Status	Displays the port status. Options are Available, Broken, Connected, and Reserved.
Port Type	Displays the port type.
Asset Tag	Displays the device's asset tag.
Serial Number	Displays the device's serial number.
IP Address	Displays the device's IP address.
Rights Access	Displays the Rights Access for the device by the current User Group. The values cannot be changed. The values are controlled in the Groups tab at the Device Group level.

10.4.1.7. Reports Tab

The initial view presented when the Reports Tab is selected is a list of the Standard Reports and Rights Access levels for the current User based on the User Groups to which they belong. These cannot be edited here. The table list contains the following fields:

Reports Tab List Column	
Report Name	Name of the report.
Rights Access	Check boxes indicate the rights access for the current user.

10.4.1.8. Floor Layers Tab

The initial view presented when the Reports Tab is selected is a list of the Standard Reports and Rights Access levels for the current Group. These cannot be edited here. The table list contains the following fields:

Reports Tab List Column	
Report Name	Name of the report.
Rights Access	Check boxes to assign rights access to Reports for the current User Group.

10.5. Owners Menu Item

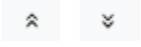
The Owner attribute serves the purpose of allowing users to track the ownership of devices and projects. On this page, owners can be created, and devices can be bulk assigned to them for tracking. An owner must be created before it can be associated with a device on the device's form.

The initial view presented when the Owners menu item is selected is a list of current owners. The table list contains the following fields:

Table List Column	Description
Owner Name	Displays owner name.
Phone Number	Displays phone number.
Email	Displays email address.
Devices	Displays the number of devices belonging to the owner. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the owner to which that device belongs.
Projects	Displays the number of projects belonging to the owner. The Projects filter in the filter bar allows you to enter a Project Name and it will filter to show only the owner to which that project belongs.
Table List Button	**Description**
New	Presents a form for creating a new Owner.
Delete	Deletes the selected Owner from the system.

10.5.1. Owners Form

Selecting an existing owner or the New button presents the Owner form. The Owner form has static fields in the top section followed by tabs that present their own lists related to the owner.

Fields	Description
Name	Owner name.
Phone Number	Displays phone number.
Email	Displays email address.
Description	Displays a description of the owner.
Table List Buttons	**Description**
New	Presents a form for creating a new Owner.
Submit	Creates the new owner with information from form. Submit also saves changes to an existing owner's form.
Delete	Delete this owner from the system.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

10.5.1.1. Devices Tab

The initial view presented when the Devices Tab is selected is a list of Devices that belong to the current owner. Users can add and remove devices. The table list contains the following fields:

Devices Tab List Column

Device	Name of the device is also a link to open the form with additional details about the device.
Type	Displays the device's type name.
Manufacturer	Displays the device's manufacturer name.
Product Line	Displays the device's product line name.
Model	Displays the device's model name.
Life Cycle	Displays the device's lifecycle status - Available or Operational
Device Group	Displays the device group the device belongs to.
Description	Displays the device's description.
Table List Buttons	Description
Add	Presents the list of devices and users check the box to bulk assign them the current owner, click Submit to assign or Close.
Remove	Removes the association between the selected devices and the owner.

10.5.1.2. Projects Tab

The initial view presented when the Project Tab is selected is a list of Projects that belong to the current owner. The table list contains the following fields:

Projects Tab List Column	
Project Name	Displays the name of the project.
Project Number	Displays the number assigned to the project.
Status	Displays the project status.
Department	Displays the department the project belongs to.

10.6. Current Users Menu Item

The Current Users menu item lets administrators see who is actively using the application. The IP Address, Login Time, and Last Active timestamps are displayed for all currently connected users to the system.

You can terminate User sessions by selecting the check box in the Select column and clicking the Terminate button. Users are notified that their session is terminated and are returned to the login screen.

The initial view presented when the Current Users menu item is selected is a list of current users. The table list contains the following fields:

Table List Column	Description
User	Displays user's login name.
First Name	Displays user's first name.
Last Name	Displays user's last name.
Email	Displays user's email address.
Phone	Displays user's phone number.
IP Address	Displays user's IP address.
Login Time	Displays the time the user logged in. Filter bar allows user to enter a start date and end date range which filters for users with a login date is in that range.
Last Active	Displays when the user was last active on the system. Filter bar allows user to enter a start date and end date range which filters for users with a last active date is in that range.
Table List Button	**Description**
Terminate	Ends the session for the selected user and forces them back to the login prompt.

11. Groups Menu Group

The Groups feature allows users to define Device Groups, Rack Groups, Camera Groups and Associated Devices Group to help manage user rights access and dashboard views for devices.

Note: Devices that do not have a device group setting can be managed only by users in the administrators group. Other users can only view and manage devices where they have explicitly been granted rights to the device's Device Group in their User Group rights access settings.

Device Groups let administrators manage rights access to all devices created in the application. Grouping several devices together in a device group lets administrators assign create, modify, delete, and view rights to these groups. These access rights are managed in the User Groups menu item under the Rights Access menu group.

Rack Groups are available to allow users to access Rack Group dashboard views and easily track power, space and cooling information related to racks. These dashboards are accessed when users select a Rack device in the navigation tree. The rack group name is shown in parentheses next to the rack name and a Rack Group button is available to view the Rack Group dashboard. The setting for the Rack Group can be defined at the group by adding a device to the group or at the device by adding the group to the device.

Camera Groups allow users to configure multi camera views in the Camera Studio feature of the application. Cameras which belong to the same Camera Group can be viewed in a single camera dashboard.

Associated Devices Group allow users to link devices logically. Devices which are linked in this way will move and decommission together.

Dynamic VM Group

The VM Guests that belong to this group are dynamically changed due to the rules that users set. Users can define different rules for one Dynamic VM Group. The following fields can be used to define the rules:

- IP - Guest IP address
- Name - Guest name
- Host - Host name
- Criticality - Guest Criticality. Options are “Critical”, “Infrastructure”, “Infrastructure Detected”, “Non-Critical”.
- VMWare Tags - Tags which have been assigned to a guest.

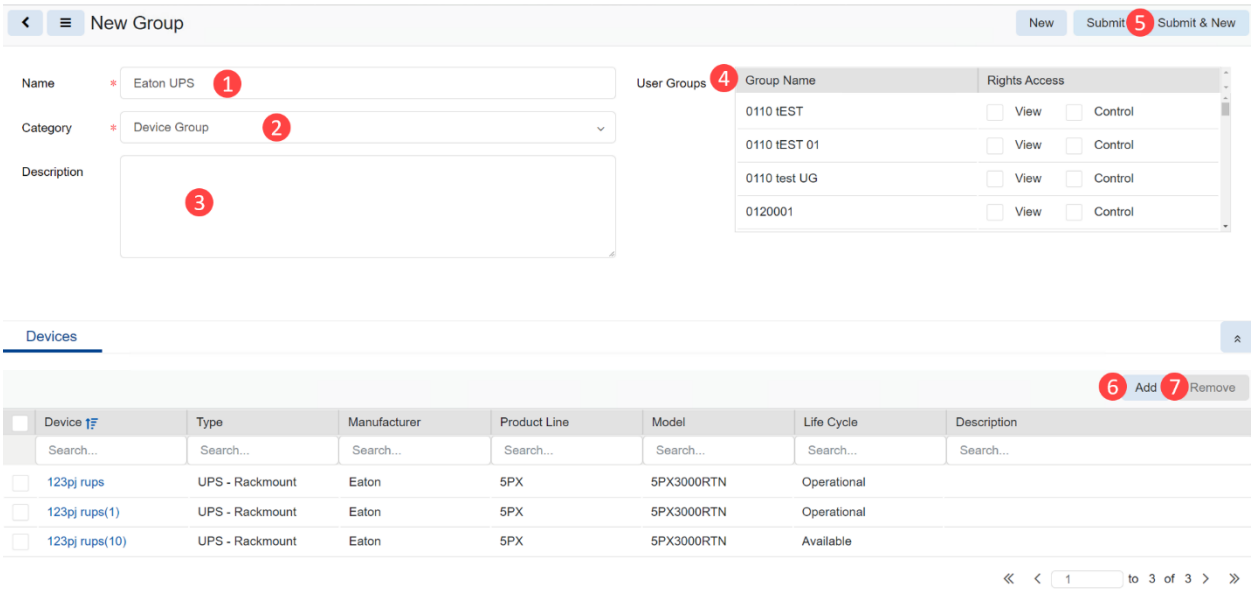
The initial view presented when the Groups menu group is selected is a list of current groups. The table list contains the following fields:

Table List Column	Description
Group Name	The group name in the list is also a link to open the form with additional details about the group.
Category	Displays the group category. Options are Associated Devices Group, Camera Group , Device Group, and Rack Group, and Dynamic VM Group.

Devices	Displays the number of devices belonging to the group. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the groups to which that device belongs.
Description	Displays the text in the group's description.
Table List Button	
New	Presents a form for creating a new group.
Delete	Deletes the selected group from the list.

11.1. Create New Groups

Select the New button on the top right corner to create a New Group configuration form. The following screen is presented to the user with the functions defined below.

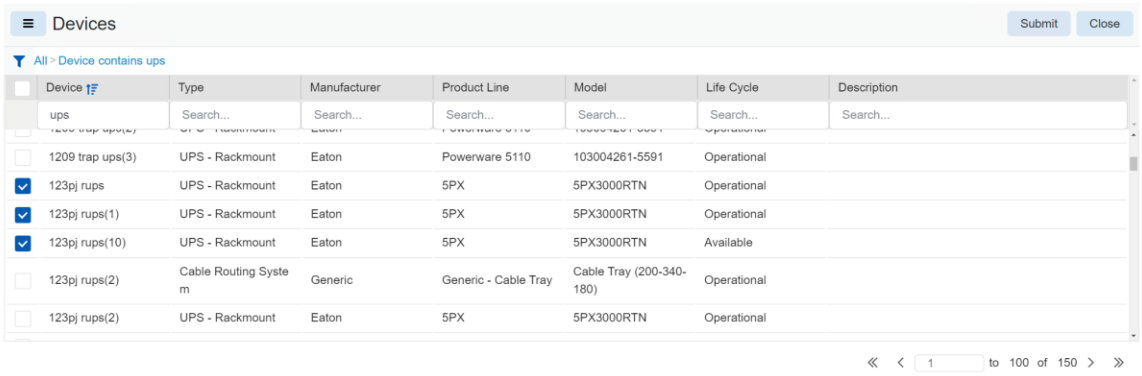


1. Enter the group name.
2. Select a group category from the dropdown list. Options are Associated Devices Group, Camera Group, Device Group, and Rack Group.
3. Enter the description of the group if needed.
4. Select the user groups who will have the access to view or control this group.
5. Click the Submit button.

11.1.1. Devices Tab

The Devices Tab displays a list of Devices that correspond to the current Camera, Device or Rack Group.

6. Click the Add button, a table of recipients pops up. Select the devices/racks/camera devices/associated devices you'd like to add to this group and click the Submit button.



7. To remove the selected devices/racks/camera devices/associated devices, click the checkboxes and click the Remove button.

The table list contains the following fields:

Devices Tab List Column	
Device Name	Name of the device is also a link to open the form with additional details about the device.
Type	Displays the device's type name.
Manufacturer	Displays the device's manufacturer name.
Product Line	Displays the device's product line name.
Model	Displays the device's model name.
Life Cycle	Displays the device's lifecycle status - Available or Operational
Description	Displays the device's description.

12. Devices Menu Group

The Devices Menu Group contains menu items for creating, deleting, and managing devices.

12.1. Devices Menu Item

The Devices Menu Item displays a list of all the devices in the system. The table list contains the following fields:

Table List Column	
Device Name	Name of the device is also a link to open the Device Central panel that contains the device's attributes list, function tiles and monitoring details.
Type	Displays the device's type name.
Manufacturer	Displays the device's manufacturer name.
Product Line	Displays the device's product line name.
Model Name	Displays the device's model name.
Life Cycle	Displays the device's lifecycle status - Available or Operational
Asset Tag	Displays the contents of the Asset Tag attribute.
Serial Number	Displays the contents of the Serial Number attribute.
IP Address	Displays the contents of the IP Address attribute.
Short Path Location	Displays the location where the device has been placed.
Table List Buttons	**Description**
Replace	Replaces the selected device with a completely same new device. The old device's status will become decommission.
Set Warranty Info	A Quick button to set the warranty information of the device. Users can do the same thing in the device's Warranty Function Tile.
Import	Presents the Import Wizard for bulk loading of devices. For further instructions see the Import Central section.
New	Presents the form for creating a new device.
Clone	Duplicates the selected devices.
Delete	Deletes the selected devices from the system.

12.1.1. Managing Device Table Fields

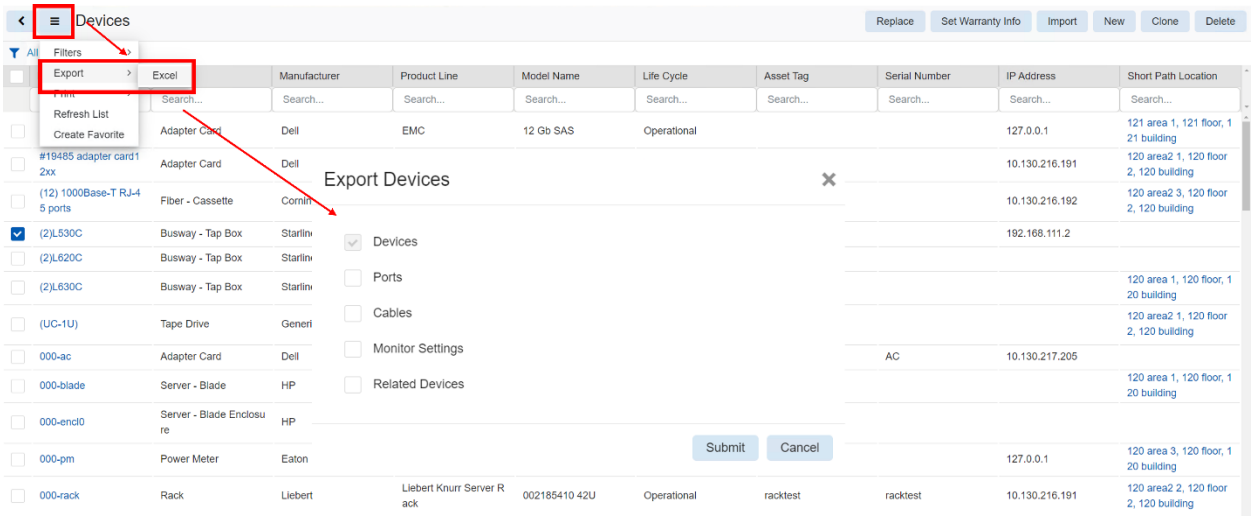
A Settings icon  can be found at the bottom, left of the Device Table. Selecting this icon opens a list of Attributes which can be selected and re-ordered for the Device Table. The list of Attributes on the left are available to add to the Device Table. The list of Attributes on right are Attributes currently defined in the Device Table. The following actions can be taken with this list of Attributes:

- Add Attributes to the Device Table – Select the checkbox next to the Attribute in the list on the left and click Submit.
- Remove Attributes from the Device Table – Click the Delete icon next to the Attribute on the list on the right.
- Change Order of Attributes on Device Table – Click the Up | DOWN arrow icons next to the Attribute in the list on the right to set the order of Attributes in the Device Table.

Note: A horizontal scroll bar will be added if too many fields are selected to fit on the page.

12.1.2. Export Devices

Exporting devices is useful for making bulk changes or as a method of identifying the syntax for creating spreadsheets for bulk importing. Exporting devices is done using the Export option from the Devices table list menu.



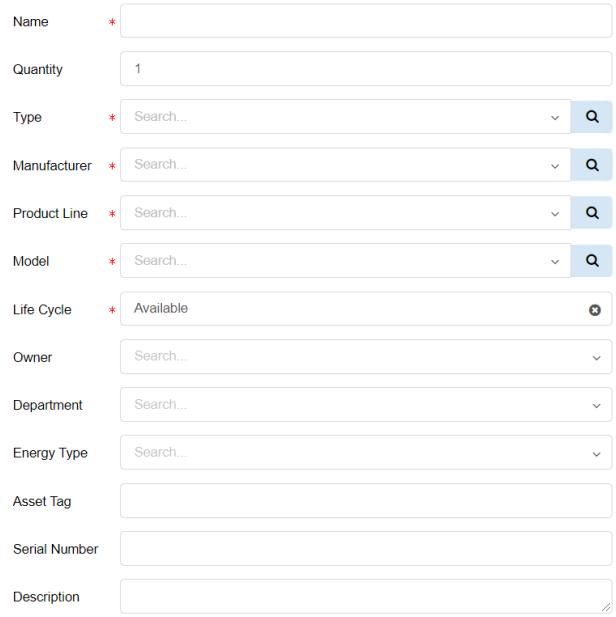
1. Filter the device list so it displays the list of items you wish to export
2. Click on the table filter button, select Export > Excel
3. Choose the export options. The multiple selections are supported.
    a. Devices – Export the device itself. The Devices option is selected by default and users are not able to unselect it.
    b. Ports – Export the device and all ports related to the device.
    c. Cables - Export the device and all cables related to the device.
    d. Monitor Settings - Export the device and all monitoring settings related to the device.
    e. Related Devices - Export the device and all related devices mounted on the device.
4. The Excel file will be in your Downloads folder

12.1.3. Import Devices

Click the “Import” button will direct users to the “Import | Export” menu group, “Import Wizard” menu item page. The Import Type is Devices. For details, please refer to the Import Central section.

12.1.4. Device Form

Selecting the New button presents the New Device form. The New Device form has static fields on the left section and a groups table for associating the device with rack and user groups.



Fields	Description
Name	Device name
Quantity	Number of devices to be created
Type	Enter the device's type name.
Manufacturer	Select the device's manufacturer name.
Product Line	Select the device's product line name.
Model	Select the device's model name.
Life Cycle	Select Available or Procurement
Owner	Select an owner
Department	Select a department
Energy Type	Select Energy Type - see list below for a description of options.
Asset Tag	Enter the device's asset tag.
Serial Number	Enter the device's serial number.
Description	Enter user defined description for device.
Group Table List Columns	**Description**
Group Name	User Group name
Category	Displays if it is a device or rack group
Devices	Displays the number of devices belonging to the group. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the groups to which that device belongs.
Description	Displays the text in the group's description field.
Table List Buttons	**Description**
New	Presents a form for creating a new device.
Submit	Creates the new device with information from form. Submit also saves changes to an existing device's form.
Submit & New	Increases efficiency when creating a number of devices sequentially by creating a new device with existing values and presenting a blank new form.

Addition Rule for Asset Tag & Serial Number

If the device quantity of the new devices that are to be deployed on the floor is larger than 1, users can enter multiple “Asset Tag” and “Serial Number” by commas.

If the device quantity is greater than the “Asset Tag” and/or the “Serial Number” the user entered, a confirmation message will pop up when submitting.

The number of Asset Tag/Serial Number does not match the device number. Yes | No

- If the user select “Yes”, all devices will be created but some devices will be created without Asset Tag/Serial Number. The “Add Devices By Model” configuration page will be closed.
- If the user select “No”, the submit operation will be cancelled and the “Add Devices By Model” configuration page will remain open.

If the device quantity is less than the “Asset Tag” and/or the “Serial Number” the user entered, all devices will be created, and the extra Asset Tag/Serial Number will be ignored.

12.1.4.1. Energy Settings for Reporting

Energy settings are used to define how certain power attributes should be reported in the reporting system. Several options for defining Energy provide a flexible way to control how values are aggregated and reported. **Note:** Energy settings defined at the Model level are inherited by default on all created devices based on that model. However, these settings can be overridden at the device level.

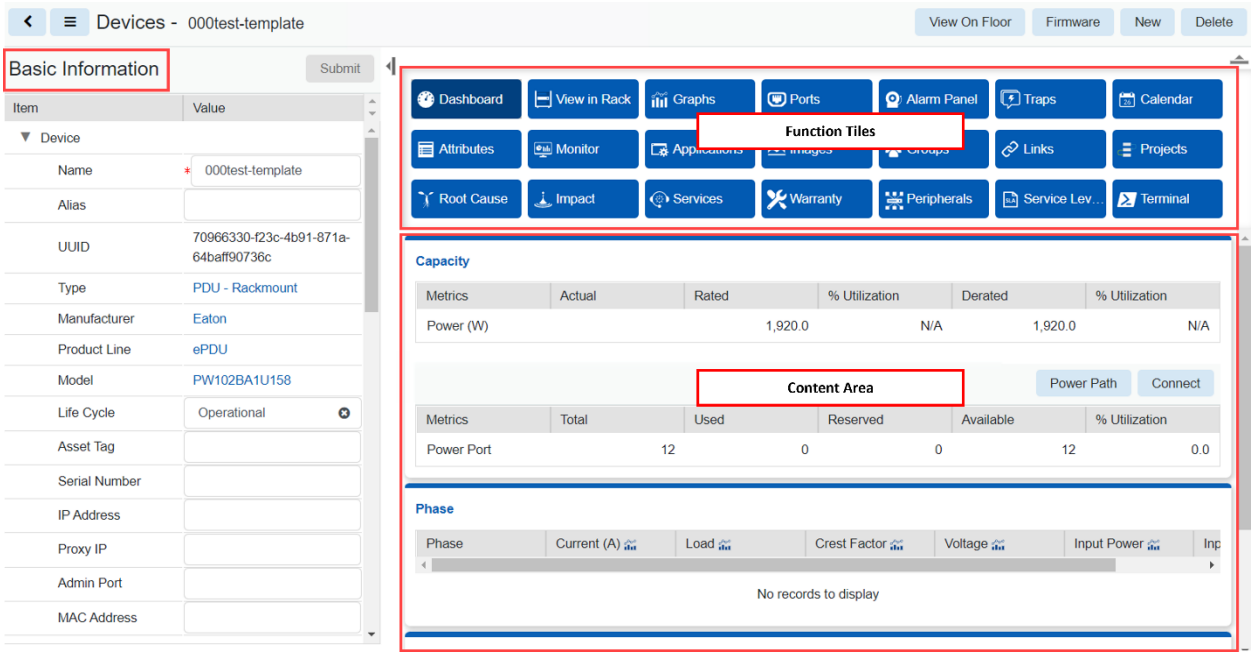
Energy Type – Each device is assigned an Energy category which allows the application to group similar devices for reporting. These categories allow for a series of data center efficiency metrics to be calculated. The options for this setting are as follows:

- **Energy Monitor** – This value is a monitoring probe that collects energy data from devices.
- **Energy Source** – This value defines the amount of power delivered to the facility. For efficiency purposes, this value allows us to understand the total power consumed at the facility and will inform users of how efficiently power is being delivered to end devices.
- **Energy Transport** – All devices used to deliver power form the source to the end devices fall into this category. For example, PDU, UPS, switch gear and other similar devices will deliver power thru the facility to the end devices.
- **IT Cooling Device** – This value is any type of cooling device used in the data center. This device is tracked separate from other facility devices to better understand the impact that cooling power consumption has on the data center and allows for cooling specific efficiency calculations.
- **IT Device** – This value is the target of the power provided to the facility. For example, servers, storage, and network gear would typically be assigned this category.
- **Lighting** – This value is any type of lighting device used in the data center.
- **Non-IT Cooling Device** – In some instances there are cooling devices which serve locations other than the Data Center which are served by the data center power source. These devices are also tracked separately to improve the accuracy of the efficiency calculations used for the data center facility.
- **Non-IT Device** – In some instances, computers, monitors, and other IT devices are located in the data center but are not the end user IT devices which the data center is designed to support. An

example of a Non-IT device would be the system administrator's computer which is in a cube within the data center facility.

12.1.5. Device Central for Existing Devices

When a device name link is selected in the Devices Menu Item list or any other device list, the user is presented with the Device Central device page.



Device Central initially displays the areas detailed below and the content area that changes as function tiles are selected.

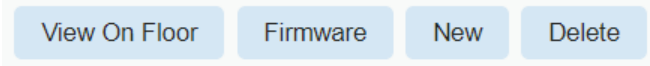
12.1.5.1. Basic Information

The Basic Information attributes list contains some editable fields, links to Type, Manufacturer, Product Line, Model, Floor, Area, and Rack. Use the button to hide/show the Basic Information attributes list.

Devices can be decommissioned throughout the application:

- In the basic information area, the Life Cycle field can be changed to Decommissioned.
- Devices can be decommissioned in bulk with the Life Cycle attribute in the import spreadsheet.
- The rack manager/Floor Deploy page has a Decommission icon to decommission selected devices.
- The rack view pages on the navigation tree have a Decommission button to decommission selected devices.

12.1.5.2. Buttons on Upper Right



- View On Floor – Redirect users to the floor page where device is deployed. This button appears when a device is operational with a location.
- Firmware – Redirect users to the Import Central –> step 2. Upload File of the “Import | Export” Menu Group. This button is only visible for Eaton and Tripp Lite manufactured Rackmount PDU, Rackmount UPS, and Rackmount Transfer Switch.
- New – Create a new device.
- Delete – Delete the current device.

12.1.5.3. Function Tiles

When a Function Tile is selected the data for the specific device is displayed.

12.1.5.3.1. Dashboard Function Tile

Displays the enhanced dashboard for some device types or the Real-time monitoring data for others. Dashboards report device conditions and can provide device controls. For details regarding the enhanced dashboards for specific device types please refer to the Device Dashboards Section of this document. Devices with enhance dashboards include:

- PDUs - Floor and Rackmount
- Racks
- Rack Groups
- UPSs Rackmount
- Servers
- Switches
- Access Control Devices (cabinet locks)

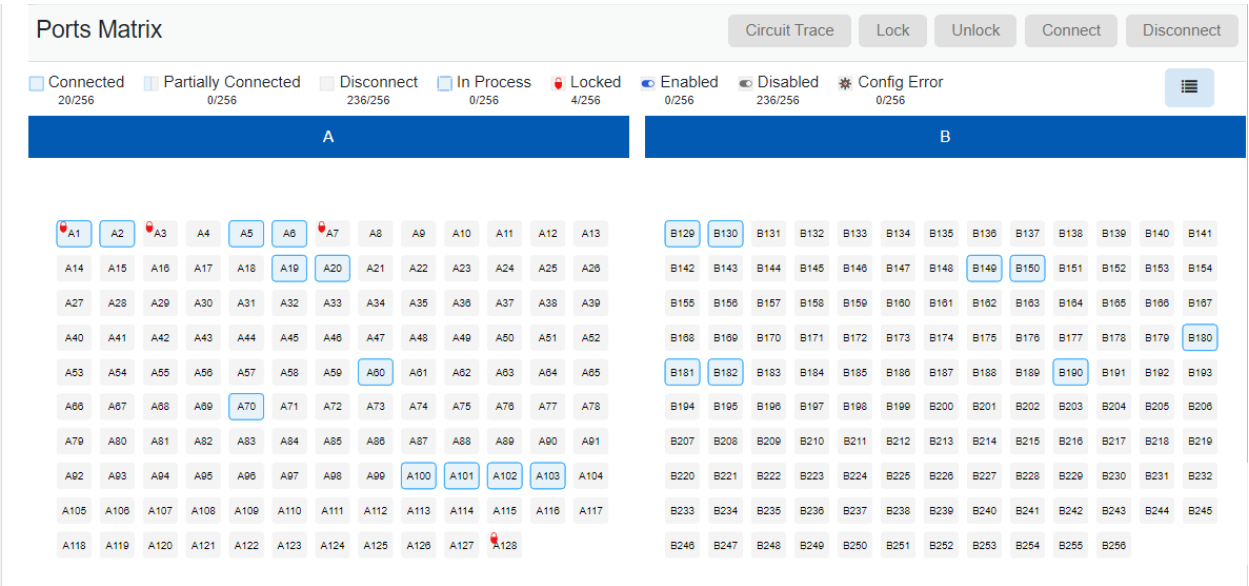
Users can view all ports in the Dashboard Function Tile if the device they choose is in the following Model List and has already been configured with the IP address.

- NRFP-500MM-CP
- NRFPLCU1
- NRFP-9UPP
- NRFP-204MM-MINI
- NRFPLCU

The system will ask users to enter their username and password when they first enter the Page.

IP configuration method:

- Go to the Devices menu group - Devices menu - a particular device - Attribute function tile.
- Add/find an attribute called “Primary Console Address”.
- Enter the IP address.



Users can manage the port status. Select two ports on the same side, and click the button to either lock, unlock, connect, or disconnect selected ports. A pop-up window will jump up to ask users to confirm their action after clicking the Lock or Disconnect button.

Users can view the ports' connection. Select a port and click the Connect List button, a table of all connections on the A/B side should be appeared. The table contains two columns, which are the Source Port and Destination Port.

If users on the BLSS version 7.0 and above and want to use the robot device port control function, please configure the TLS1 as below.

/opt/VDC/jdk/conf/security/java.security

"jdk.certpath.disabledAlgorithms"

```
jdk.certpath.disabledAlgorithms=MD2, \
    RSA keySize < 1024, DSA keySize < 1024, EC keySize < 224
```

"jdk.security.legacyAlgorithms"

```
jdk.security.legacyAlgorithms=SHA1, \
    RSA keySize < 2048, DSA keySize < 2048
```

"jdk.jar.disabledAlgorithms"

```
jdk.jar.disabledAlgorithms=MD2, MD5, RSA keySize < 1024, \
      DSA keySize < 102
```

"jdk.tls.disabledAlgorithms"

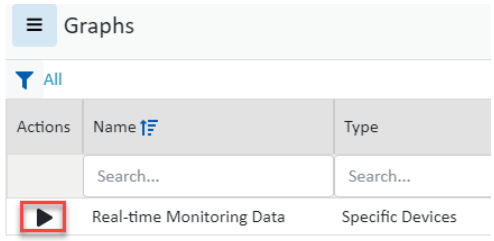
```
jdk.tls.disabledAlgorithms=SSLv3, TLSv1.1, RC4, DES, \
    EC keySize < 224, 3DES_EDE_CBC, anon, NULL
```

12.1.5.3.2. View in Rack Function Tile

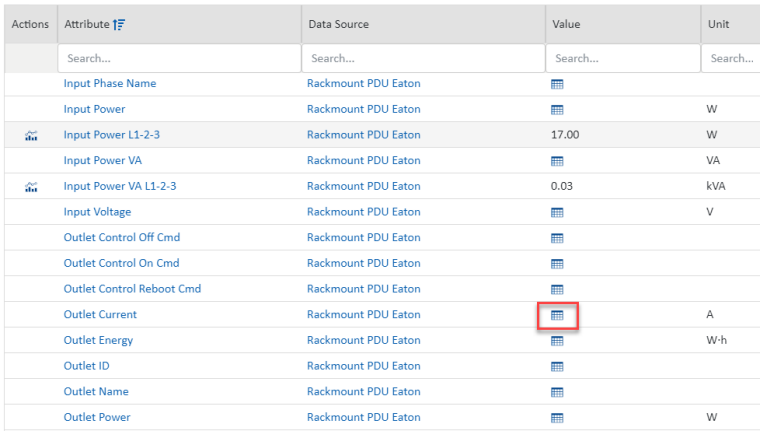
This function tile is only available for rackmount devices. After selecting this function tile, a rack page with rack image and access to rack management functions will be displayed. See the floor Racks Function Tile for details.

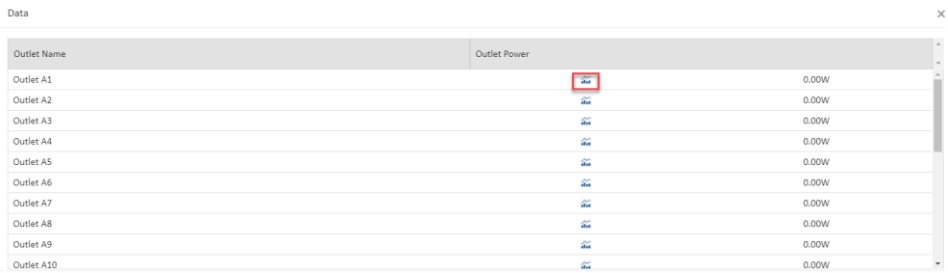
12.1.5.3.3. Graphs Function Tile

Displays the graphs associated with the device. Most devices include a Real-time Monitoring Data graph that can be played to view the real-time monitoring table. See the Graphs section for details on creating graphs. Click the play button to see the graph with the device's monitored data.

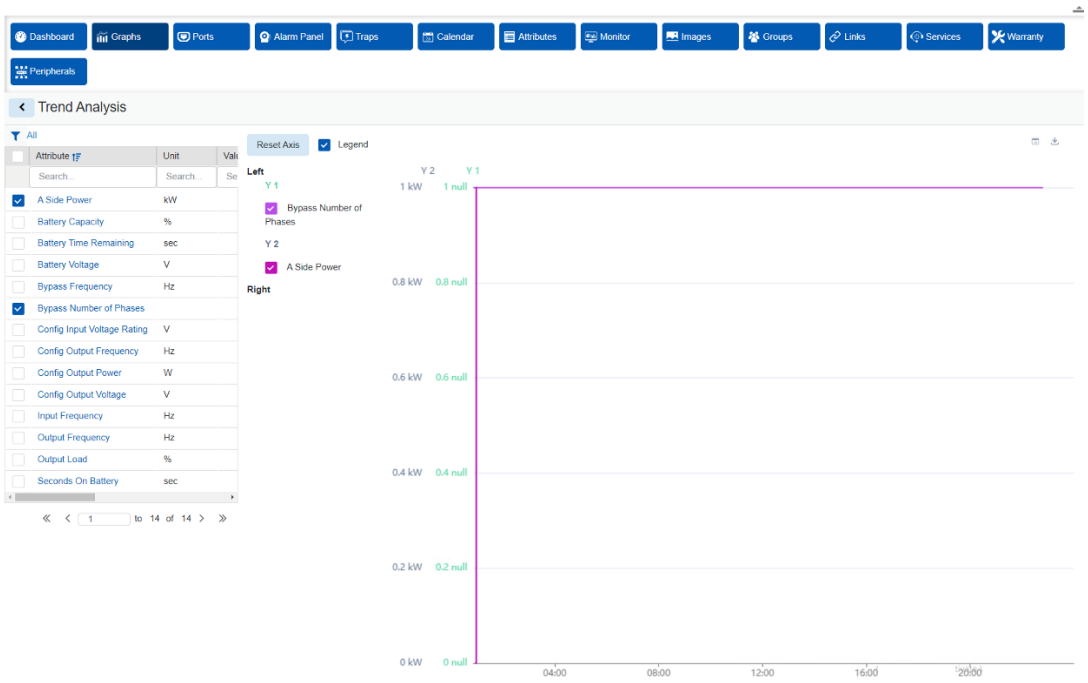


When the value for a data source is tabular, a table icon is shown in the value column. Selecting the icon will display the relevant table with the individual values in the corresponding rows. In cases where the value is reported over time there will be an associated trend chart accessed via the trend chart icon.

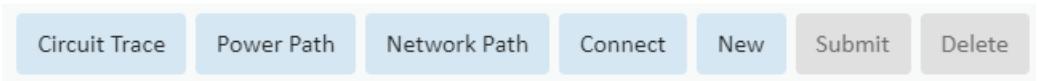




We support users to view a single graph displaying multiple data points with different colors and various y-axis for different engineering units.

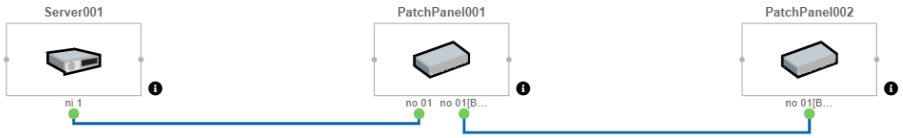


12.1.5.3.4. Ports Function Tile



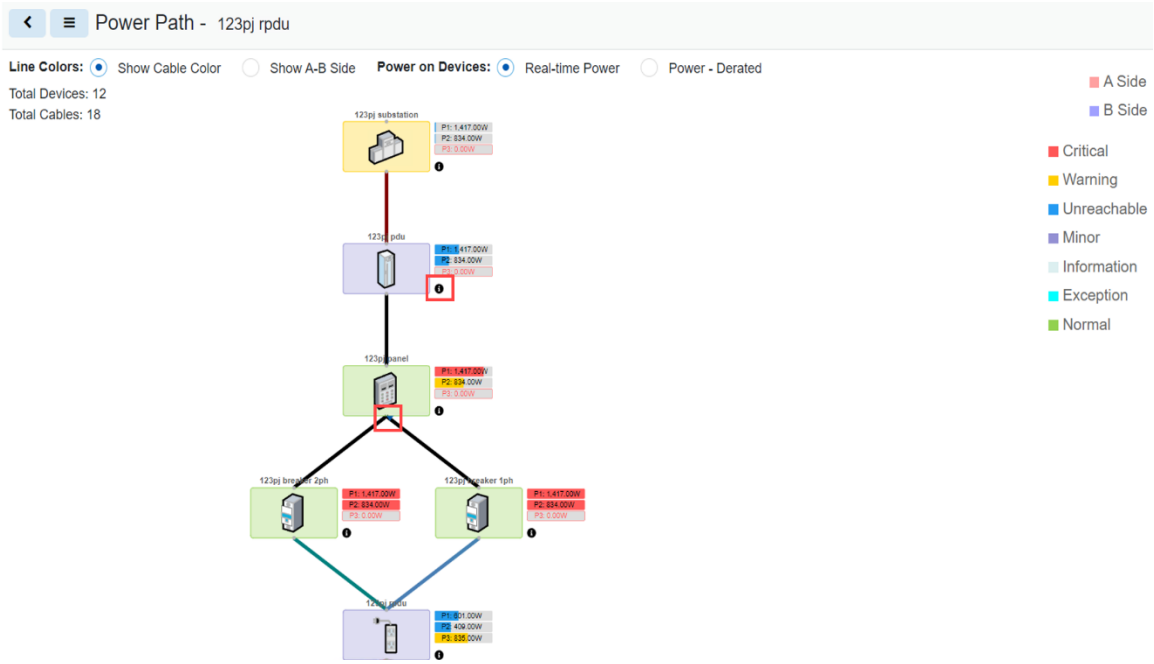
The buttons on the upper right area of the Ports tab provide the following functions:

- **Circuit Trace** displays a detailed flow chart for the selected port



- **Power Path** displays the power flow chart for the device. This path shows the alarm color according to the alarm level on each node, which allows users to quickly notice the devices at risk.

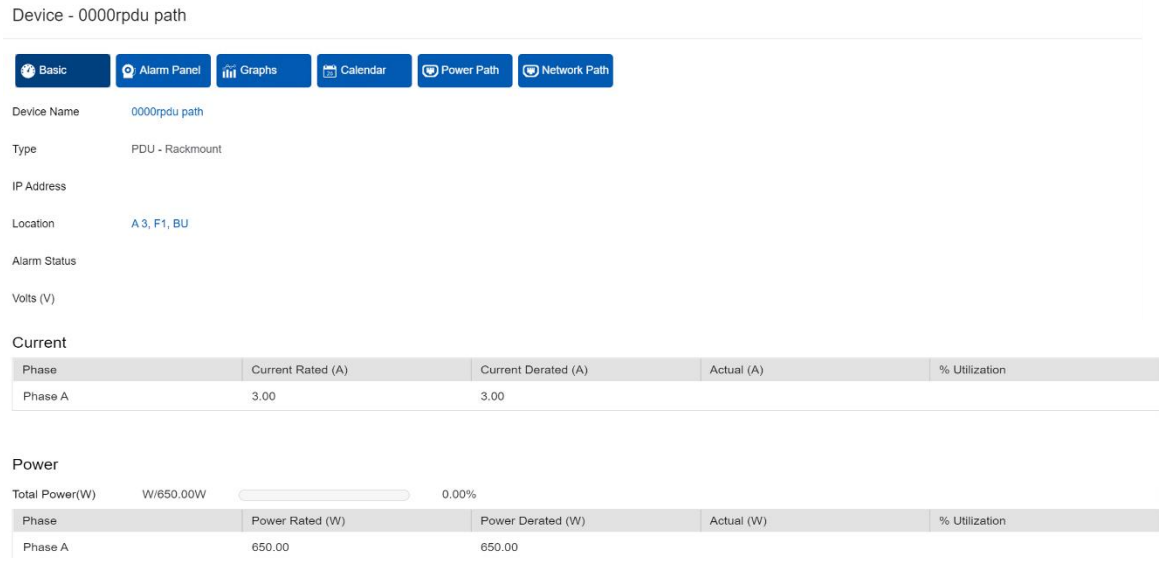
Device Status	Color
Critical	Red
Warning	Yellow
Minor	Purple
Information	Grey
Unreachable	Deep Blue
Exception	Cyan
Normal	Green
Unmonitored	White



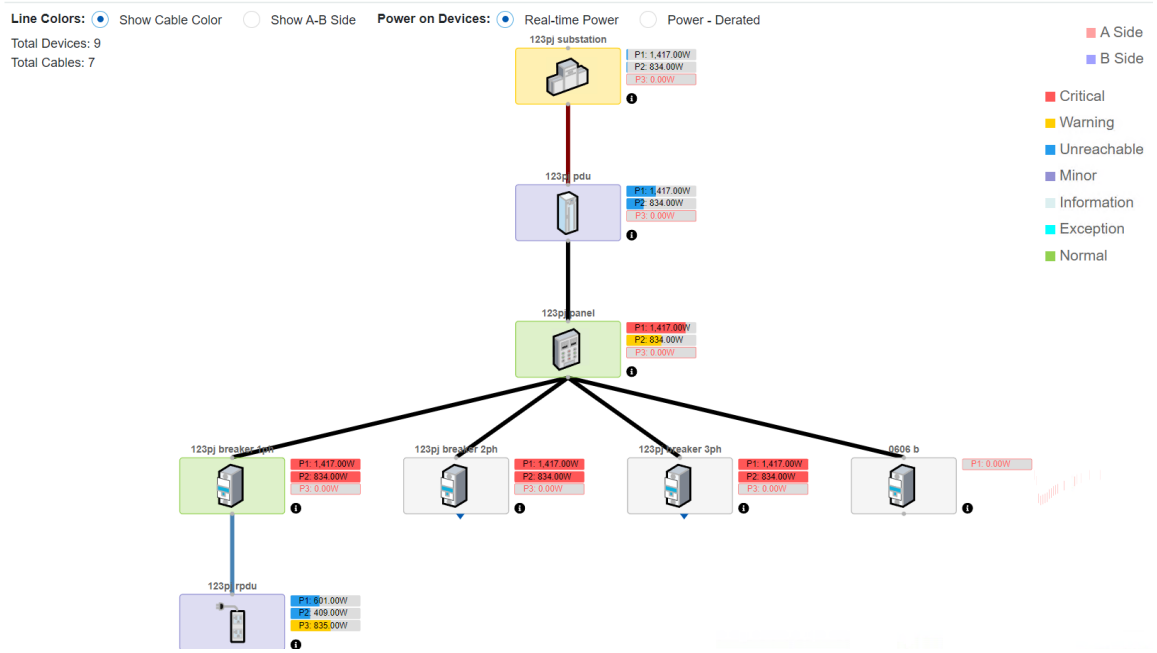
Note: If there is a PDU OR Rackmount PDU device in the Power Path, only the power path from the upstream device to the PDU/Rackmount PDU will be display. If there are more devices connected with the PDU/Rackmount PDU as downstream devices, users need to expand the Power Path manually.
If there is no PDU OR Rackmount PDU devices in the Power Path, all devices on the Power Path will be displayed.

Note: Each node has an "i" information icon. A panel will pop up after users click the little black info icon beside the device. Five function tiles are highly related to the device in the system that is integrated with the panel, which are Basic, Alarm Panel, Graphs, Calendar, Power Path, and Network Path. Users can quickly view the basic device information, alarms, graphs, calendar logs, power path, and network path of the selected device without switching menus.

If there is more than one graph applied on the device, users can select the graphs from a drop-down list. By default, the Graphs function tile shows the first graph according to the naming rule.



Note: A triangle at the base of a node indicates it has additional connections. Clicking on the triangle expands the flow chart to include the nodes additional connections.



- **Network Path** displays the network flow chart for the device

- **Connect** opens the port mapping page with the source filtered for the device
- **New** allows the user to create new ports for the device

- **Submit** becomes available when any changes have been made and will save them when selected
- **Delete** becomes available when the selected port can be deleted. Some ports defined in the model cannot be deleted and when selected they will not activate the delete button

12.1.5.3.5. Alarm Panel Function Tile

Displays the alarm table list filtered for the device. See Alarm Panel section for details.

12.1.5.3.6. Traps Function Tile

Displays the traps associated with the device.

12.1.5.3.7. Calendar Function Tile

Displays the calendar log for filtered for the device. See the Calendar section for details.

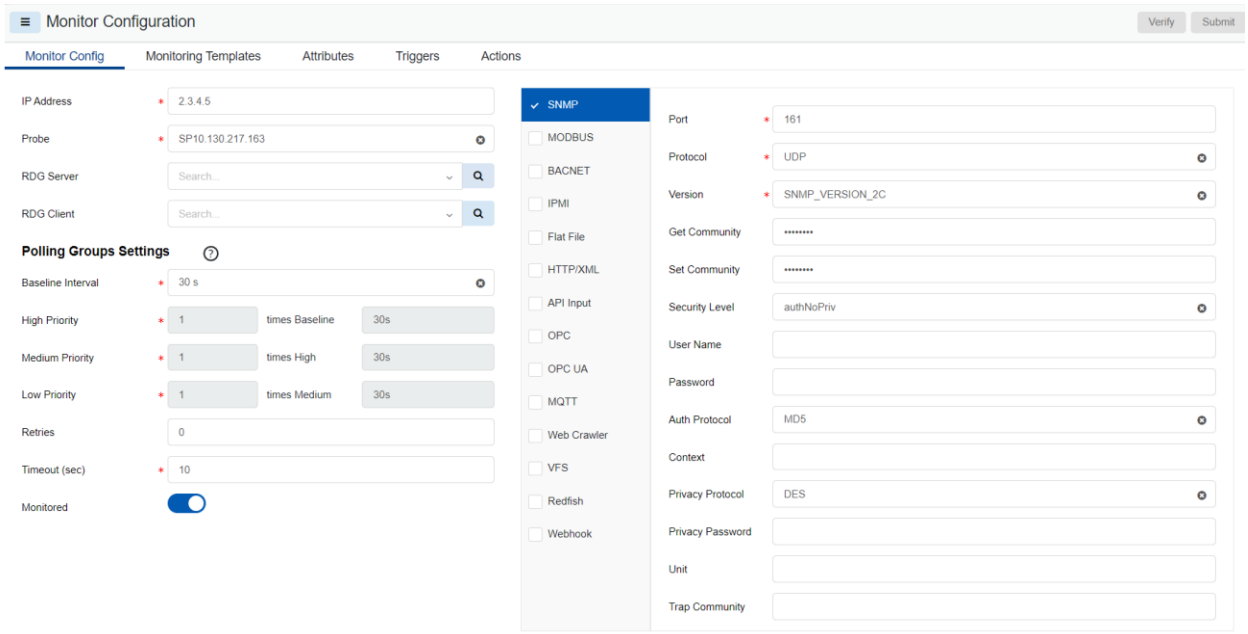
12.1.5.3.8. Attributes Function Tile

Displays the list of attributes designated for the device in the device's model. Users can edit existing attributes and add/remove attributes from the system's attribute list to the device list with the Add button. If a desired attribute is not available then users can create new attributes with the Attribute Manager. See the Attribute Manager section for additional details.

12.1.5.3.9. Monitor Function Tile: Configuring Device for Monitoring

Displays the monitoring settings for the device.

12.1.5.3.9.1. Monitoring Config Tab



Regardless of the protocol to be configured, the following monitoring attributes are defined for the device.

1. **IP Address** - Defines the IP address of the device providing the data for the device.
   Note: If gateways or aggregators are used to provide data, use the IP Address of these devices and not the end device.
2. **Probe** - Determines which probe engine will be the primary source for collecting the raw data from the device.
3. **RDG Server** - Select the RDG Server.
4. **RDG Client** - Select the RDG Client.

Note: Users must select a probe server first, then they can select the RDG server, then the RDG client. If users select a RDG client prior to a RDG server, the RDG server that corresponding to the RDG client will be automatically filled.

Once a RDG client is selected, monitoring protocols on the right panel will be updated. Only SNMP and Modbus protocols will be shown. Users just need to configure the SNMP/Modbus monitoring configurations on the device, and the system will automatically convert the monitoring to MQTT on the backend and generate a JSON file for the device with all monitoring information.

Once the selection of the RDG client is cleared, and the change is submitted, the device's monitoring will be disabled.

5. **Polling Groups Settings** - Users can configure four polling groups for a given device with MODBUS, SNMP and BACnet protocol. Each polling group can be independently configured with a unique polling rate for that group. The BACnet monitoring protocol supports to poll up to 13 attributes up to 1 second.

   The interval of the four poling groups are dependent. We allow users to set the "Baseline Interval" in the range 1 second to 30 days, depends on the license. If users have EMPS license and embed C++ driver for this protocol, the polling interval can be lower to 1 second. Else, the lowest polling interval starts at 30 seconds. Then,
   - High Priority interval = coefficient * Baseline interval
   - Medium Priority interval = coefficient * High Priority interval
   - Low Priority interval = coefficient * Medium Priority interval

   The default Baseline/High Priority/Medium Priority/Low Priority interval are 30 seconds.

   In the Monitoring Template, users can choose the "Polling Group" for an attribute to control its polling interval.

6. **Retries** - If selected, the polling engine retries a polling attempt that did not respond during the timeout period. If the specified number of retry attempts also fails to get a response from the device, the probe stops trying for a response on this polling attempt.
7. **Timeout (sec)** - Defines the period of time in which the polling engine considers the device to be unreachable for a specific polling attempt if no response is received from the target device.
8. **Monitored** - Switch indicates if the device should be actively polled for data if monitor configuration is provided.
9. **Protocol List** – Any available protocols to be used for a device are listed in the column.

10. **Protocol Configuration** - The configuration requirements for the selected protocol are listed and often filled with default values. These should review and updated as needed for the current environment.

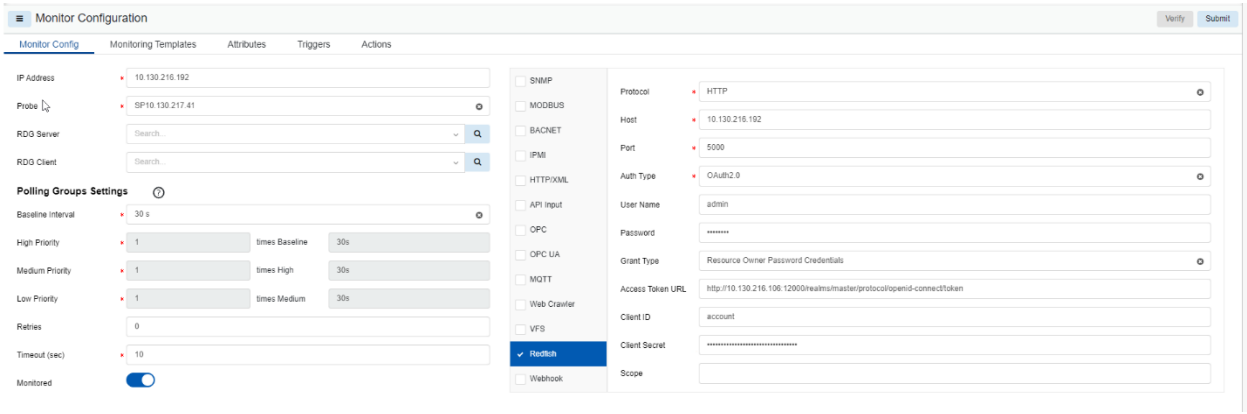
Note:

- For SNMP Traps the Trap Community string is the last attribute in the SNMP Protocol configuration list.

12.1.5.3.9.1.1. Redfish Protocol

Redfish is a hypermedia API for the management of servers, networks, storage devices, facilities equipment, and other converged infrastructure (CI) components in software-defined hybrid IT environments. In data centers, Redfish monitors the health of hardware components such as sensors, power supplies, fans, and chassis, and their state, or metrics like voltage or temperature.

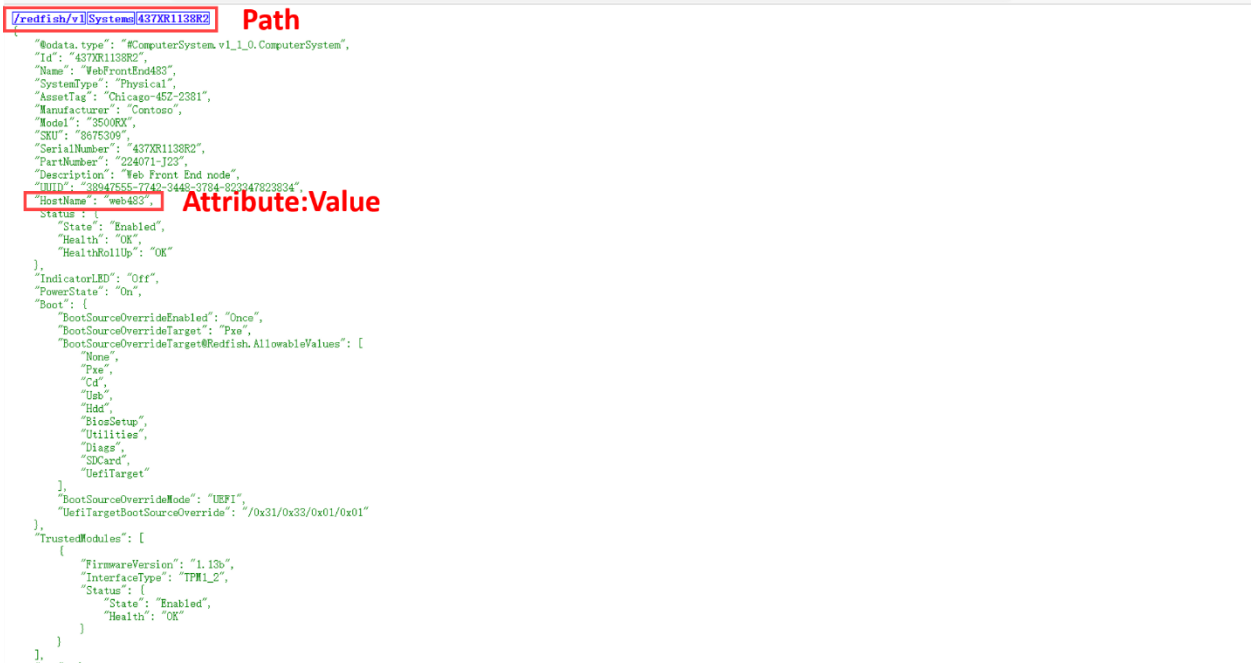
Monitoring Template Configuration

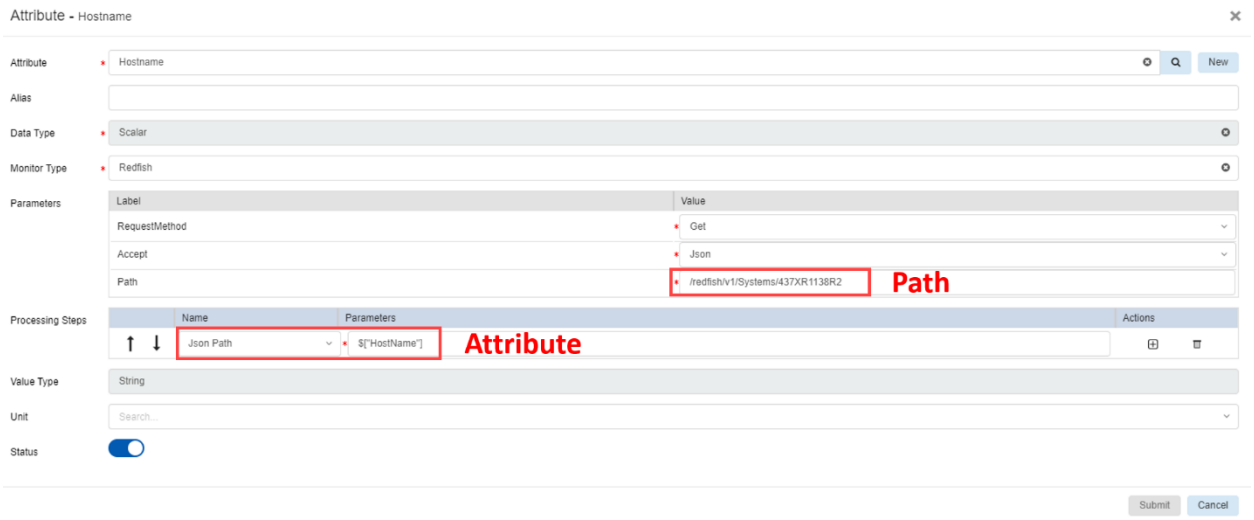


Fields	Description
Protocol	Option: HTTP/HTTPS The function of a Redfish service is to receive an HTTPS request and to return a response about the resource. HTTPS is an application layer protocol that is used to transport requests and responses using TCP/IP at the transport layer. The term Redfish protocol refers to a RESTful mapping to the HTTP message protocol.
Host	The IP address of the host.
Port	The communication port.
Auth Type	Authentication type. Option: No Auth/Basic Auth/ OAuth 2.0 • No Auth: Protocol, host, port, and Auth Type choice “No Auth” • Basic Auth: Protocol, host, port, Auth Type choice “Basic Auth”, Username and Password • OAuth2.0: ○ Resource Owner Password Credentials: ▪ Protocol, host, port, Auth Type choice “OAuth2.0”, ▪ Username, Password, Grant Type choice “Resource Owner Password Credentials”, ▪ Access Token URL, Client ID, Client Secret and Scope. ○ Client Credentials: ▪ Protocol, host, port, Auth Type choice “OAuth2.0”, ▪ Grant Type choice “Client Credentials” ▪ Access Token URL, Client ID, Client Secret and Scope.

User Name	When Selected Basic Auth, Oauth 2 - Resource Owner Password Credentials need to fill value for this field.
Password	When Selected Basic Auth, Oauth 2 - Resource Owner Password Credentials need to fill value for this field.
Grant Type	Option: Client Credentials/Resource Owner Password Credentials The Client Credentials grant type is used by clients to obtain an access token outside of the context of a user. This is typically used by clients to access resources about themselves rather than to access a user's resources.
Access Token URL	Access tokens are credentials used to access protected resources. An access token is a string representing an authorization issued to the client. The string is usually opaque to the client. Tokens represent specific scopes and durations of access, granted by the resource owner, and enforced by the resource server and authorization server.
Client ID	The authorization server issues the registered client a client identifier -- a unique string representing the registration information provided by the client. The client identifier is not a secret; it is exposed to the resource owner and MUST NOT be used alone for client authentication. The client identifier is unique to the authorization server.
Client Secret	The client secret. The client MAY omit the parameter if the client secret is an empty string.
Scope	The authorization server uses the "scope" response parameter to inform the client of the scope of the access token issued. The value of the scope parameter is expressed as a list of space-delimited, case-sensitive strings. The strings are defined by the authorization server.

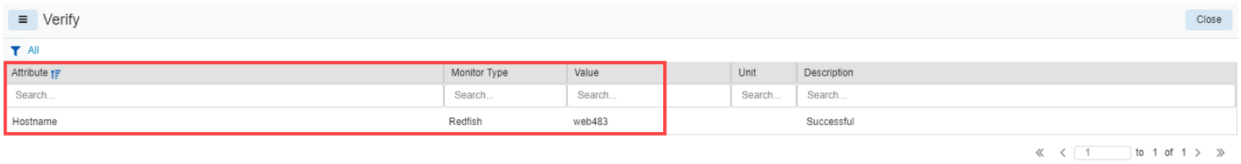
Monitoring Attributes Configuration





Fields	Description
RequestMethod	The request method. Currently only supports GET.
Accept	JSON. JSON is a widely used file format and data interchange format that stores and transmits data objects in human-readable text. By using JSON, Redfish output can be viewed in a browser. Data prescribes the structure of the data coded in JSON format.
Path	This path should be a request route/URL that can be invoked independently. For example: http://10.130.216.192:5000/**redfish/v1/Systems/437XR1138R2** The path is the: **redfish/v1/Systems/437XR1138R2**
Parameters	The attribute format should be: $["level_one attribute"]["level_two attribute"][" level_three attribute"] $. level_one attribute. level_two attribute. level_three attribute For example: $["Oem"]["Hpe"]["AggregateHealthStatus"]["Processors"] $.Oem.Hpe.AggregateHealthStatus.Processors

Verify



12.1.5.3.9.2. Monitoring Templates Tab

Displays the list of monitoring templates assigned to the device and manages which templates are active. Use the Add button to assign additional templates to the device.

12.1.5.3.9.3. Attributes Tab

Displays the list of monitored attributes with the configuration details. Users can add/remove/enable/disable attributes for the device. Please refer to the Monitoring section - Attributes Tab for how to add and configure attributes.

12.1.5.3.9.4. Triggers Tab

Displays the list of associated triggers with high level details. Users can add/remove triggers for the device. Please refer to the Monitoring section - Triggers for how to add and configure attributes.

12.1.5.3.9.5. Actions Tab

Displays the list of associated actions with high level details.

12.1.5.3.10. Applications Function Tile

Displays the list of applications that have been manually associated with the device. Applications are managed by the Setting Menu Group > Applications Menu Item. See the Applications Menu Item section for details.

12.1.5.3.11. Images Function Tile

Displays the images associated with the device's model. Users can upload more images by themselves, or they can contact Eaton support to generate formal device images for them.

12.1.5.3.12. Groups Function Tile

Displays the list of device groups associated with the device and allows the user to add more group associations.

12.1.5.3.13. Links Function Tile

Displays existing links and allows the user to associate a URL or local file to the device.

12.1.5.3.14. Projects Function Tile

Displays any project information associated with the device.

12.1.5.3.15. Root Cause Function Tile

Displays an indented hierarchical view of devices that are upstream from the selected device shown at the bottom of the table. You can use this tool to find out which upstream device(s) are tied to a particular device and which devices are affected.

- Network button will display the network connections upstream.
- Power button will display the power connections upstream.
- The left most button will change between Network Path and Power Path to show the respective full path when selected.

12.1.5.3.16. Impact Function Tile

Displays an indented hierarchical view of devices that are downstream from the selected device shown at the top of the table. You can use this tool to find out which downstream device(s) are tied to a particular device and which devices are affected.

- Network button will display the network connections downstream.
- Power button will display the power connections downstream.

The left most button will change between Network Path and Power Path to show the respective full path when selected.

12.1.5.3.17. Services Function Tile

Displays the device's service Schedules, Calendar, and Service History records on separate tabs for the current device.

12.1.5.3.18. Warranty Function Tile

Displays and allows editing of the warranty information for the current device.

12.1.5.3.19. Peripherals Function Tile

Users can manually add devices to indicate that they are associated with the current device.

12.1.5.3.20. Service Levels (SLA) Function Tile

Displays the SLA rules, records, and downtime history of this device. See Service Levels (SLA) section for more details.

12.1.5.3.21. Terminal Function Tile

Users can enter commands in this page.

12.1.5.3.22. Rack Device Function Tiles and Features

These items are available in device central when the device is a rack.

12.1.5.3.22.1. Rack Group Function Tile

The Rack Group function tile is only available with racks and only active if the rack belongs to a rack group. Selecting the tile displays the Rack Group dashboard. For details see the Rack Group Dashboard section of this document.

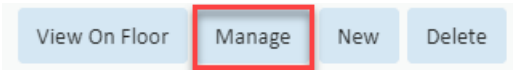
12.1.5.3.22.2. Devices Function Tile

The Devices function tile is only available with racks. The Devices page displays details about the devices mounted in the rack.

12.1.5.3.22.3. Capacity Function Tile

The Capacity function tile is only available with racks. The capacity page displays RU & Weight, RU Fragmentation, Port and Power summary tables and the list of mounted IT devices within the rack.

12.1.5.3.22.4. Manage Rack Button

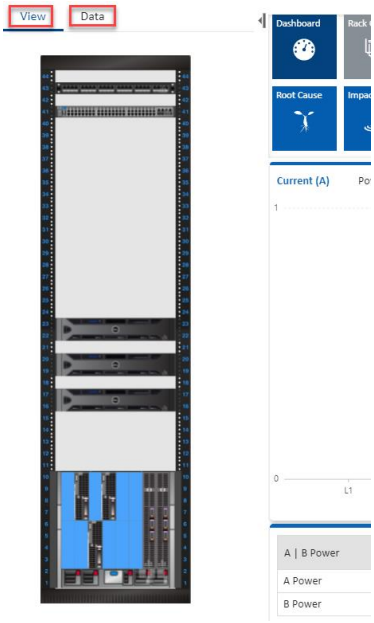


The Manage button opens the rack manager page for the selected rack. For details see the Rack Manager Menu Item section.

12.1.5.3.22.5. Rack View Tab

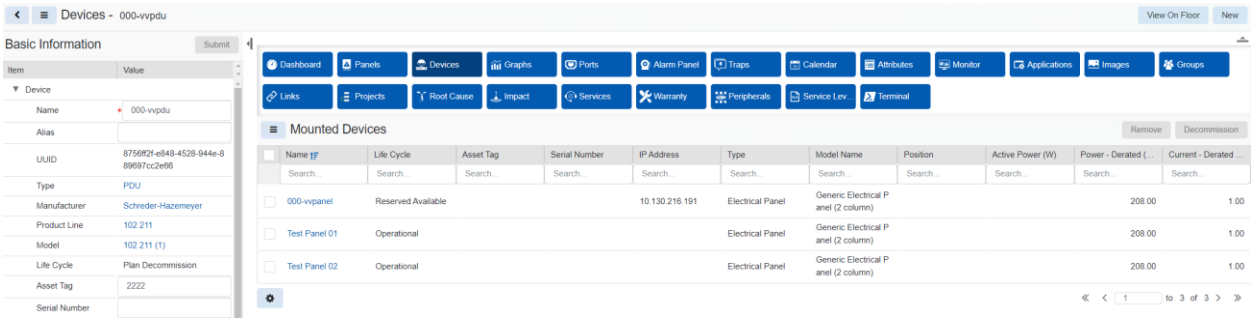
When the device is a rack the area that normally contains basic information has two tabs.

- View tab - displays the image of the rack.
- Data tab - displays the rack's basic information.



12.1.5.3.23. Floor PDU Device Function Tiles and Features

The Devices Function Tile will appear when the device is a floor mounted PDU.



The sub devices mounted on the PDU will be listed under the Mounted Devices tab.

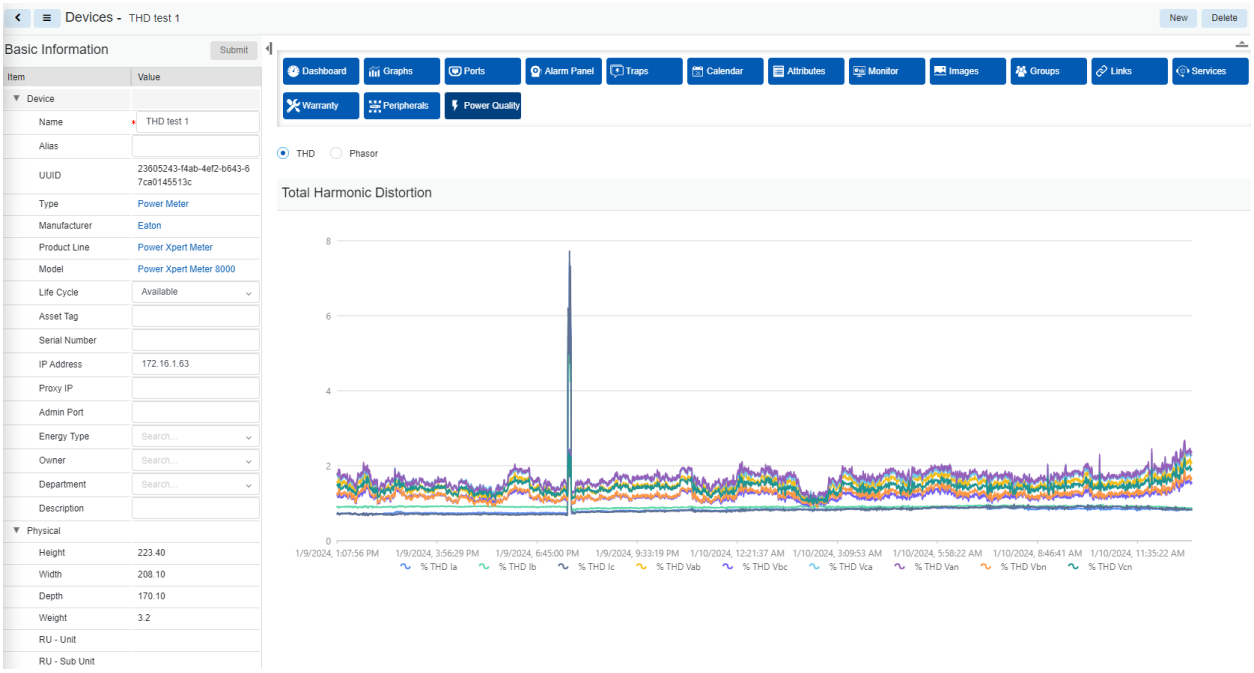
Note: The system will retrieve and display the monitored value of “Active Power”, “Power - Derated” and “Current – Derated” attributes first. If it is not able to retrieve the monitored value, then the static data of the attributes will be displayed. If there is no data for both monitored attributes and static attributes, then the field will be left blank.

12.1.5.3.24. Power Quality Function Tile

The Power Quality function tile is only accessible when using the EPMS-ADVANCE and APM-ADVANCE licenses.

Total Harmonic Distortion (THD)

Out-of-the-box dashboard data of Total Harmonic Distortion (THD) for key performance indices for critical power devices. The values are trended THD channels from power quality meters polled from the Modbus channel.



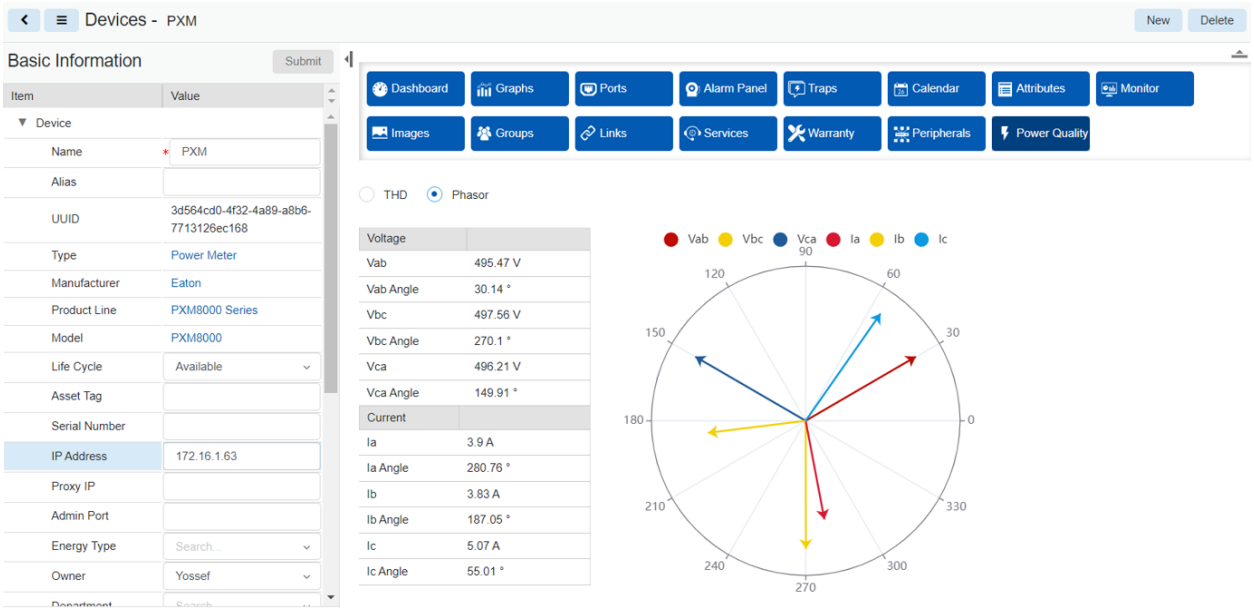
To get this diagram, users need to monitor the following attributes. Users can also create the monitoring template for these attributes by themselves. The monitoring protocol can be any protocol that can give the correct data.

- % THD Ia
- % THD Ib
- % THD Ic
- % THD Vab
- % THD Van
- % THD Vbc
- % THD Vbn
- % THD Vca
- % THD Vcn

Phasor diagram

The main use of a phasor diagram is to visualize the relative phase angles between each voltage/current phase of a 3-phase system.

When viewing a meter device, we can see a phasor diagram on the meter dashboard. The values are live relative phase angles of 3-phase system channels from power quality meters polled from the Modbus channel.



To get this diagram, users need to monitor the following attributes. Users can also create the monitoring template for these attributes by themselves. The monitoring protocol can be any protocol that can give the correct data.

- Output Current 1
- Output Current 2
- Output Current 3
- Phase Angle Ia
- Phase Angle Ib
- Phase Angle Ic
- Phase Angle Vab
- Phase Angle Van
- Phase Angle Vbc
- Phase Angle Vbn
- Phase Angle Vca
- Phase Angle Vcn
- Voltage A-B
- Voltage A-N
- Voltage B-C
- Voltage B-N
- Voltage C-A
- Voltage C-N

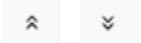
12.2. Types Menu Item

The Types Menu Item displays a list of all the device Types in the system. The table list contains the following fields:

Table List Column	Description
Type	Displays the type name. The type name is also a link to the type's form.
Icon	Displays a representative icon for the type.
Manufacturer #	Displays the number of manufactures with models of the type. The Manufacturer Name filter in the filter bar allows you to enter a Manufacturer Name and it will filter to show only the types which have models for that manufacturer.
Product Line #	Displays the number of product lines with models of the type. The Product Line Name filter in the filter bar allows you to enter a Product Line Name and it will filter to show only the types which have models for that product line.
Model #	Displays the number of models of the type. The Model Name filter in the filter bar allows you to enter a Model Name and it will filter to show only the types which have that model.
Device #	Displays the number of devices in the database belonging to the type. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the types with device names that match the filter.
Description	Displays the text from the type's description field.

12.2.1. Types Form

Selecting an existing type presents the Types form. The Types form has static fields in the top section, the icon associated with the type followed by tabs that present their own lists related to the type.

Fields	Description
Name	Displays the name of the type.
UUID	Displays the unique identification string for the type.
Description	Displays the text from the type's description field.
Table List Buttons	**Description**
Submit	If a form field is editable the Submit button becomes active and is used to update the form.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

12.2.1.1. Attributes Tab

The initial view presented when the Attributes Tab is selected is a list of attributes for the device Type.

List Column	
Attribute	Attribute name is also a link to the attribute's form.
Category	Displays the attribute's category. Options are Capacity, Common, Electrical/Power, Environmental, Global, Location, Network, Port, Rack or Server.
Attribute Type	Displays if the attribute is System or Custom.
Description	Displays the text from the attribute's description field.
User List Buttons	

Add	Adds attributes to the type. Check attributes to be added from list and click Submit to add to list. Close, closes the window and does not save. Click Submit on the type form to save.
Remove	Removes attribute from the list. Click Submit on the type form to save.

12.2.1.2. Manufacturers Tab

The initial view presented when the Manufacturers Tab is selected is a list of manufacturers of devices of the current Type.

List Column	
Manufacturer	Manufacturer name is also a link to the manufacturer's form.
Type	Displays the number of devices of the current type for the manufacturer in the database.
Product Line #	Displays the number of product lines of the current type for the manufacturer in the database.
Model #	Displays the number of models of the current type for the manufacturer in the database.
Device #	Displays the number of devices of the current type for the manufacturer in the database.
Description	Displays the text from the attribute's description field.

12.2.1.3. Product Lines Tab

List Column	
Product Line	Displays the product lines for the type.
Type	Displays the type.
Manufacturer	Displays the manufacturers name.
Model #	Displays the number of models in the product line. The Model Name filter in the filter bar allows you to enter a Model Name and it will filter to show only the product lines which have that model.
Device #	Displays the number of devices in the system. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the product lines with device names that match the filter.
Description	Displays the text from the description field.

12.2.1.4. Models Tab

The initial view presented when the Models Tab is selected is a list of all the models of the current Type.

List Column	
Model	Displays the model name. The model name is also a link to the model's form.
Type	Displays the model's type.
Manufacturer	Displays the model's manufacturer.
Product Line	Displays the model's product line.
Device #	Displays the quantity of devices in the database using that model.
Description	Displays the text from the model's description field.

12.2.1.5. Devices Tab

The initial view presented when the Devices Tab is selected is a list of all the devices of the current Type.

List Column	
Device	Displays the device name. The device name is also a link to the device's form.
Type	Displays the device's type.
Manufacturer	Displays the device's manufacturer.
Product Line	Displays the device's product line.
Model	Displays the device's model.
Life Cycle	Displays the device's lifecycle status. Options include Operational, Available, Procurement and Reserved Procurement.
Groups	Display's the device groups to which the device belongs.
Description	Displays the text from the device's description field.

12.3. Manufacturers Menu Item

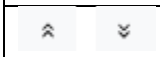
The Manufacturers Menu Item displays a list of all the manufacturers in the system. The table list contains the following fields:

Table List Column	Description
Manufacturer	Displays the name of manufactures. The manufacturer name is also a link to the manufacturer's form.
Type #	Displays the number of device types that manufacturer has in the system. The Type Name filter in the filter bar allows you to enter a type and it will filter to show only the manufactures which have models of that type.
Product Line #	Displays the number of product lines for the manufacturer. The Product Line Name filter in the filter bar allows you to enter a Product Line Name and it will filter to show only the manufacturers which have models for that product line.
Model #	Displays the number of models of the type. The Model Name filter in the filter bar allows you to enter a Model Name and it will filter to show only the types which have that model.
Device #	Displays the number of devices in the database belonging to the type. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the types with device names that match the filter.
Description	Displays the text from the type's description field.
Table List Button	**Description**
New	Presents a form for creating a new manufacturer.
Delete	Deletes the selected manufacturer from the system.

12.3.1. Manufacturers Form

Selecting an existing manufacturer presents the Manufacturers form. The Manufacturers form has static fields in the top section followed by tabs that present their own lists related to the manufacturer.

Fields	Description
Name	Displays the name of the manufacturer.
Address	Displays the address of the manufacturer.
Contact Information	Displays the contact information for the manufacturer.

Phone	Displays the phone number for the manufacturer.
Fax	Displays the fax number for the manufacturer.
Email Address	Displays an email address for the manufacturer.
Web URL	Displays the URL for the manufacturer.
Description	Displays the description for the manufacturer.
Table List Buttons	Description
New	Displays an empty manufacturer form to create a new manufacturer.
Submit	If a form field is editable the Submit button becomes active and is used to update the form.
Delete	Deletes the current form.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

12.3.1.1. Types Tab

List Column	Description
Type	Displays the type name. The type name is also a link to the type's form.
Manufacturer	Displays the number of manufacturers with models of the type. The Manufacturer Name filter in the filter bar allows you to enter a Manufacturer Name and it will filter to show only the types which have models for that manufacturer.
Product Line #	Displays the number of product lines with models of the type. The Product Line Name filter in the filter bar allows you to enter a Product Line Name and it will filter to show only the types which have models for that product line.
Model #	Displays the number of models of the type. The Model Name filter in the filter bar allows you to enter a Model Name and it will filter to show only the types which have that model.
Device #	Displays the number of devices in the database belonging to the type. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the types with device names that match the filter.
Description	Displays the text from the type's description field.

12.3.1.2. Product Lines Tab

List Column	
Product Line	Displays the product lines for the manufacturer.
Type #	Displays the number of product line types that manufacturer has in the system.
Manufacturer	Displays the manufacturers name.
Model #	Displays the number of models in the product line. The Model Name filter in the filter bar allows you to enter a Model Name and it will filter to show only the product lines which have that model.
Device #	Displays the number of devices in the system. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the product lines with device names that match the filter.
Description	Displays the text from the description field.

12.3.1.3. Models Tab

The initial view presented when the Models Tab is selected is a list of all the models of the current Type.

List Column	
Model	Displays the model name. The model name is also a link to the model's form.
Type	Displays the model's type.
Manufacturer	Displays the model's manufacturer.
Product Line	Displays the model's product line.
Device #	Displays the quantity of devices in the database using that model.
Description	Displays the text from the model's description field.

12.3.1.4. Devices Tab

The initial view presented when the Devices Tab is selected is a list of all the devices of the current Type.

List Column	
Device	Displays the device name. The device name is also a link to the device's form.
Type	Displays the device's type.
Manufacturer	Displays the device's manufacturer.
Product Line	Displays the device's product line.
Model	Displays the device's model.
Life Cycle	Displays the device's lifecycle status. Options include Operational, Available, Procurement and Reserved Procurement.
Groups	Display's the device groups to which the device belongs.
Description	Displays the text from the device's description field.

12.4. Product Lines Menu Item

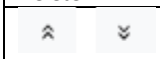
The Product Lines Menu Item displays a list of all the product lines in the system. The table list contains the following fields:

Table List Column	Description
Product Line	Displays the product lines available in the system. The product line name is also a link to the product line's form.
Type #	Displays the number of device types that product line has in the system.
Manufacturer	Displays the name of the manufacturer.
Model #	Displays the number of models in the product line.
Device #	Displays the number of devices in the database belonging to the product line.
Description	Displays the text from the type's description field.
Table List Button	**Description**
New	Presents a form for creating a new manufacturer.
Delete	Deletes the selected manufacturer from the system.

12.4.1. Product Lines Form

Selecting an existing product line presents the Product Lines form. The Product Lines form has static fields in the top section followed by tabs that present their own lists related to the product line.

Fields	Description
Name	Displays the name of the product line.
Manufacturer	Displays the manufacturer of the product line.

Description	Displays the description of the manufacturer.
Table List Buttons	**Description**
New	Displays an empty product line form to create a new product line.
Submit	If a form field is editable the Submit button becomes active and is used to update the form.
Delete	Deletes the current form.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

12.4.1.1. Types Tab

List Column	Description
Type	Displays the type name. The type name is also a link to the type's form.
Manufacturer	Displays the number of manufacturers with models of the type. The Manufacturer Name filter in the filter bar allows you to enter a Manufacturer Name and it will filter to show only the types which have models for that manufacturer.
Product Line	Displays the number of product lines with models of the type. The Product Line Name filter in the filter bar allows you to enter a Product Line Name and it will filter to show only the types which have models for that product line.
Model #	Displays the number of models of the type. The Model Name filter in the filter bar allows you to enter a Model Name and it will filter to show only the types which have that model.
Device #	Displays the number of devices in the database belonging to the type. The Device Name filter in the filter bar allows you to enter a Device Name and it will filter to show only the types with device names that match the filter.
Description	Displays the text from the type's description field.

12.4.1.2. Models Tab

The initial view presented when the Models Tab is selected is a list of all the models of the current Product Line.

List Column	
Model	Displays the model name. The model name is also a link to the model's form.
Type	Displays the model's type.
Manufacturer	Displays the model's manufacturer.
Product Line	Displays the model's product line.
Device #	Displays the quantity of devices in the database using that model.
Description	Displays the text from the model's description field.

12.4.1.3. Devices Tab

The initial view presented when the Devices Tab is selected is a list of all the devices of the current Product Line.

List Column	
Device	Displays the device name. The device name is also a link to the device's form.
Type	Displays the device's type.
Manufacturer	Displays the device's manufacturer.

Product Line	Displays the device's product line.
Model	Displays the device's model.
Life Cycle	Displays the device's lifecycle status. Options include Operational, Available, Procurement and Reserved Procurement.
Groups	Display's the device groups to which the device belongs.
Description	Displays the text from the device's description field.

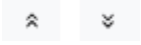
12.5. Models Menu Item

The Models Menu Item displays a list of all the models in the system. The table list contains the following fields:

Table List Column	Description
Model	Displays the models available in the system. The model name is also a link to the model's form.
Category	Displays the model's category.
Type	Displays the model's type.
Manufacturer	Displays the model's manufacturer.
Product Line	Displays the model's product line.
Device #	Displays the number of devices in the database based on the model.
Description	Displays the text from the model's description field.
Table List Button	**Description**
Import	Takes you to the Import Wizard to import model packages.
New	Presents a form for creating a new model.
Clone	Clones the selected model to a new model appended with a number in parenthesis (1).
Delete	Deletes the selected model from the system.

12.5.1. Model Form

Selecting an existing model presents the Models form. The Models form has static fields in the top section followed by tabs that present their own lists related to the model.

Fields	Description
Name	Displays the name of the model.
UUID	Displays the model's unique identifier in the database.
Type	Displays the model's type.
Manufacturer	Displays the model's manufacturer.
Product Line	Displays the model's product line.
Energy Type	Select Energy Type from dropdown list that includes: Energy Monitor, Energy Source, Energy Transport, IT Cooling Devices, IT Device, Lighting, Non-IT Cooling Device.
Description	Displays the description for the model.
Table List Buttons	**Description**
New	Displays an empty model form to create a new model.
Submit	If a form field is edited the Submit button becomes active and is used to update the form.
Delete	Deletes the current form.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

12.5.1.1. Attributes Tab

The initial view presented when the Attributes Tab is selected is a list of attributes for the model.

List Column	
Attribute	Attribute name is also a link to the attribute's form.
Category	Displays the attribute's category. Options are Capacity, Common, Electrical/Power, Environmental, Global, Location, Network, Port, Rack or Server.
Value	Displays the value for the attribute.
Unit	Displays the unit of the value.
User List Buttons	
Add	Adds attributes to the model. Check attributes to be added from list and click Submit to add to list. Close, closes the window and does not save. Click Submit on the type form to save.
Remove	Removes attribute from the list. Click Submit on the type form to save.

12.5.1.2. Images Tab

The initial view presented when the Images Tab is select displays the front, rear, left, right, top, and bottom images for the model.

12.5.1.3. Links Tab

The initial view presented when the Links Tab is selected is a list of links associated with the model.

List Column	
Label	Display's the label for the link.
Link Type	Displays the link type as either a Local File or a URL.
Content	The actual path to the file or the URL.
User List Buttons	
New	Displays an empty form to create a new link.
Delete	Deletes the selected links from the list.

12.5.1.4. Devices Tab

The initial view presented when the Devices Tab is selected is a list of all the devices based on the current model.

List Column	
Device	Displays the device name. The device name is also a link to the device's form.
Type	Displays the device's type.
Manufacturer	Displays the device's manufacturer.
Product Line	Displays the device's product line.
Model	Displays the device's model.
Life Cycle	Displays the device's lifecycle status. Options include Operational, Available, Procurement and Reserved Procurement.
Groups	Display's the device groups to which the device belongs.
Description	Displays the text from the device's description field.

User List Buttons	
New	Displays a form to create a new device based on the current model.
Delete	Deletes the selected device from the list.

12.5.1.5. Ports Tab

The initial view presented when the Ports Tab is selected is a list of all the ports on the current model.

List Column	
Port Name	Displays the port name for each port on the current model.
Port Number	Displays a list of the port numbers on the current model.
Port Type	Displays the port type for each port on the current model.
Description	Displays the text from the port's description field.
Actions	Jumps to the Port details page. Users can add/remove attributes for the port.
User List Buttons	
New	Displays a form to create a new port for the current model.
Delete	Deletes the selected port from the list.

12.5.1.6. Associated Model Tab

The initial view presented when the Associated Model Tab is selected is a list of all models associated with the current model.

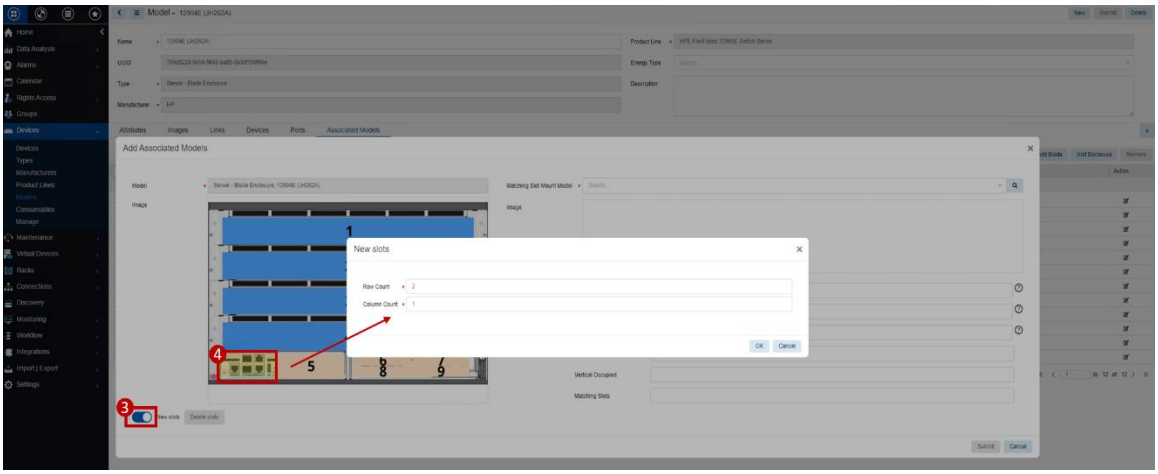
Table List Column	Description
Model	Displays the name of the associated model. The model name is also a link to the model's form.
Type	Displays the model's type.
Manufacturer	Displays the model's manufacturer.
Device #	Displays the number of devices in the database based on the model.
Matching Relation	Displays the matching relationship.
Matching Slots	Displays the matching slots.
Actions	Jumps to the “Add Enclosure Models” page. Work as the same as the “Add Enclosure” button but with some prefilled.
Description	Displays the text from the model's description field.
User List Buttons	
Add Blade	Adds new slots for enclosure type model. For details, please see the below section.
Add Enclosure	Adds new slots for blade type model. For details, please see the below section.
Remove	Remove the selected associated models.

12.5.1.6.1. Draw slots on models

Click the “Add Blade” or “Add Enclosure” button presents a new configuration window.

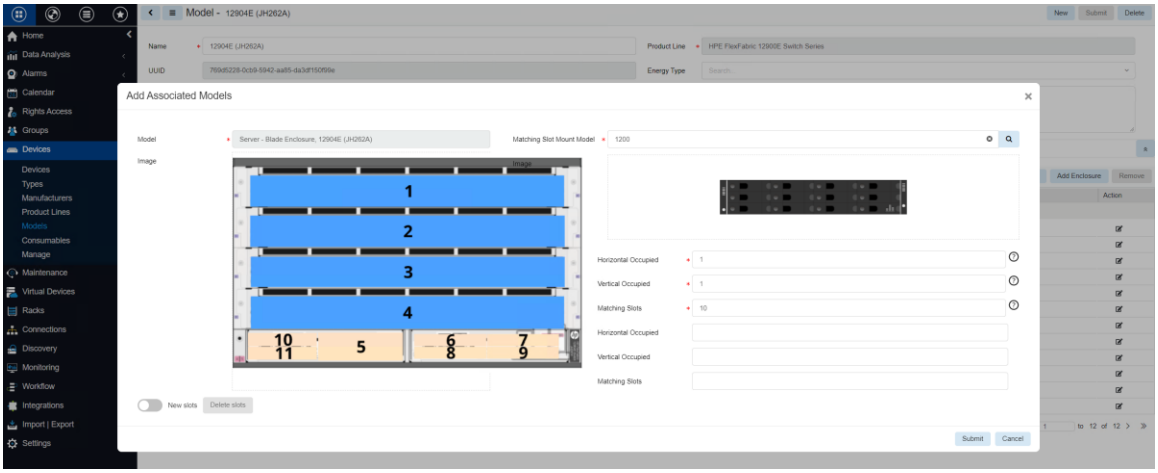
1. Click the toggle button “New slots” to enable adding new slots. By default, the button is off.
2. Draw the range of the slot you want to add on the image of the model, and a window will pop up. Enter the row and column count of the slots you’d like to add. Users can add new slots on both front and rear side.

   Note: The new slot range can’t overlap with the existing slots.

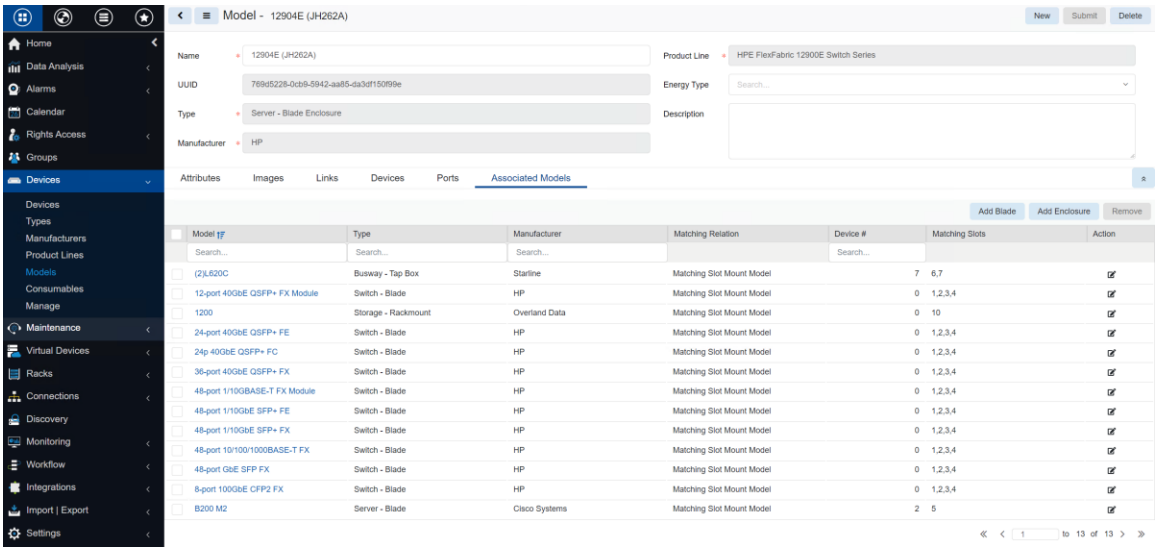


Users can delete the self-created slot by selecting it and clicking the “Delete slots” button when the “New slots” toggle button is off.

3. Select a model you’d like to mount on the slot from the drop-down list.
4. Enter the number of slots this model occupies in the horizontal and vertical direction and its matching slot’s No. If the model will occupy more than one slot, use the comma as separate.



5. Click the Submit button. The new model will be displayed in the model list under the Associated Models panel.
6. Users can select the edit icon in the Action column to edit the self-created slot and the slot-mounted model.



Note:

- If any blade has been deployed on a customized slot, then this slot group cannot be deleted from the web interface.
- When the attribute “Model Status” is locked, the status is still locked even if users draw a new slot group on this model.
- When the attribute “Model Status” is customized, the custom model won’t be updated even if users update this model’s attributes by import.

12.6. Consumable Types Menu Item

Displays a list of consumable type items that will then be displayed in the Inventory function tile for a floor location on the navigation tree.

Table List Column	Description
Name	The name of the consumable type. By default Cables and Optic are available.
Description	User defined description of the consumable type.
User List Buttons	
New	Displays a form to create a new item.
Delete	Deletes the selected item.

12.7. Manage Menu Item

The Manage feature allows users to maintain a library of firmware files to upload to one or many devices and allows for the bulk configuration of device attributes for supported devices. The features in this menu will only work for devices created in the application which are also configured with monitoring settings. The application must be able to communicate with the end devices to manage the firmware and configuration changes.

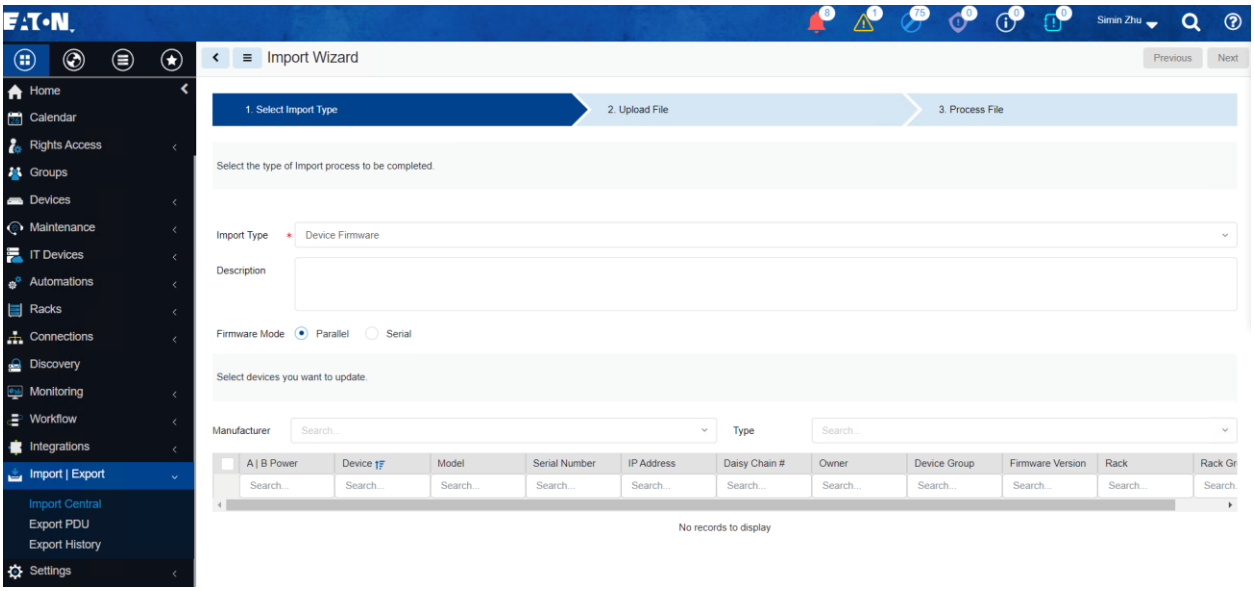
The Manage page contains three separate tabs which allow for the following actions:

- Upload Jobs Tab – Users can upload firmware or bulk configuration change files to supported devices.
- Configuration Tab - Users can perform bulk password resets for supported devices.
- Firmwares Tab – Users manage the library of firmware files available to use with the supported devices.
- Certificates – Users can upload certificates to use for MQTT device monitoring

12.7.1. Upload Jobs Tab

The Upload Jobs page will display a list of all jobs and related job information which have been defined in the past. Clicking the Import Type link for the job will present the summary information and error messages, if applicable, for the job process. User can remove jobs from the job list by clicking the checkbox and selecting the Clear button at the top of the page.

Users can upload new device firmware by clicking the New button at the top of the page. The Import Type is Device Firmware.



For this type of upload job, users will define the Manufacturer from the supported manufacturer dropdown list and choose the Device Type from the list of supported device types. So far, we support Eaton and Tripp Lite manufacturer and PDU – Rackmount, UPS – Rackmount, and Transfer Switch – Rackmount type devices. When these are selected a list of devices in the application which meet the choices will be presented in the device list table. **Note**: If the device is not configured with monitoring settings, the checkbox for that device will be disabled. Devices must be monitored in the application in order for this feature to support the device.

The system supports uploading firmware in a serial way. Users can select the firmware uploading mode in either parallel or serial. If users select the Parallel mode, then the firmware will be pushed to multiple devices simultaneously. If users select the Serial mode, then the firmware will be uploaded to multiple devices, one device by one device.

Using the Search filters at the top of the columns, users can easily find the devices to select for the firmware upload job. A Select All checkbox can be found in the column headings to simplify bulk device selection. When devices are selected, choose the Next button at the top of the page.

Based on the Manufacturer and Device Type selected in the previous step, a list of supporting firmware files which have been loaded to Library will be presented to the user. Select a file from the list and hit the Next button at the top of the page. In order for the application to successfully upload the firmware file to the device, the user must enter an Admin user and password to enable the file transfer.

Note: The user and password must be the same for all selected devices or the upload job will fail.

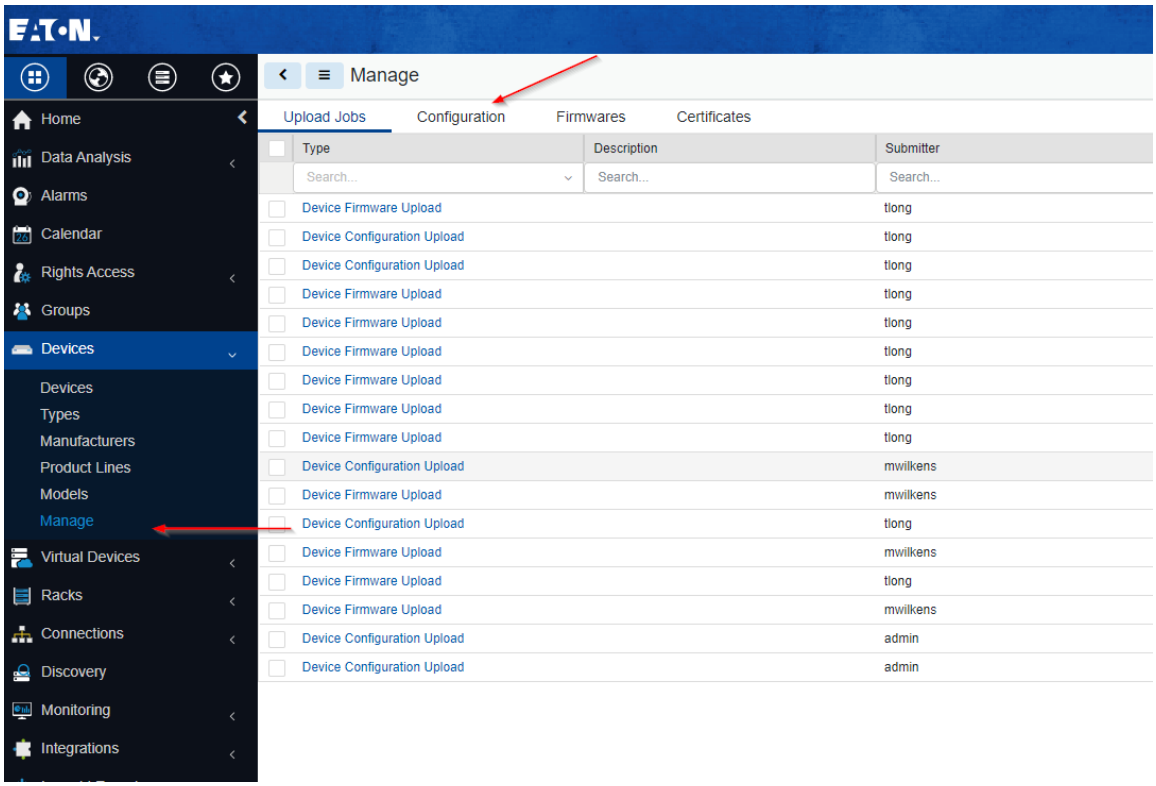
Once the password is defined, the user is presented the job summary page. This page is fully documented in the Import Central section of this user documentation. Users will be able to quickly view success/failure results of the upload job and access details of failures if they are reported.

12.7.2. Configuration Tab

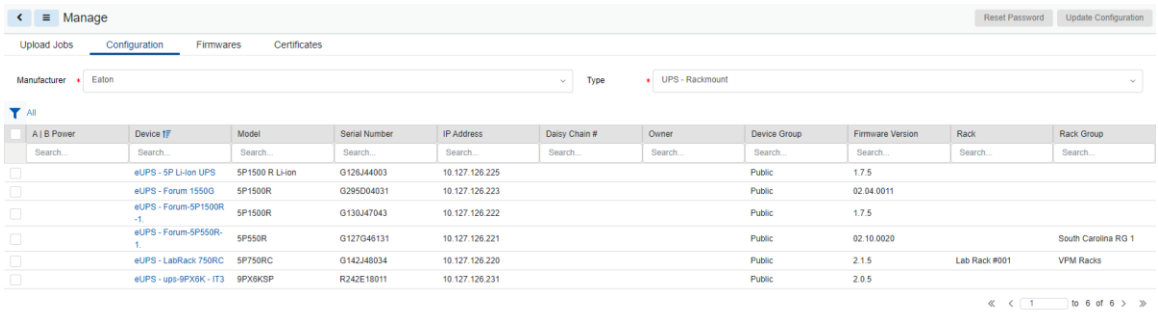
This function works with Eaton PDU – Rackmount, UPS – Rackmount, and Transfer Switch – Rackmount type devices with Eaton M2 Gigabit network cards and Tripp Lite PDU – Rackmount, UPS – Rackmount, and Transfer Switch – Rackmount type devices with 20.x network card.

Below is an example for how to configure the UPS - Rackmount.

1. From the Devices menu group, Select the Manage menu item and then Select the Configuration tab

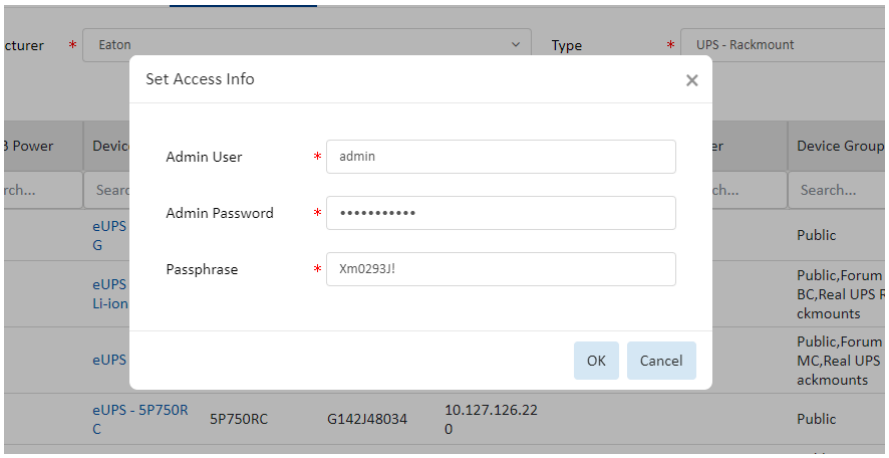


2. From the Manufacturer pull-down menu select Eaton and from the Type pull-down menu select UPS – Rackmount. The results table will display the UPS rackmount devices with Eaton M2 Gigabit network cards.

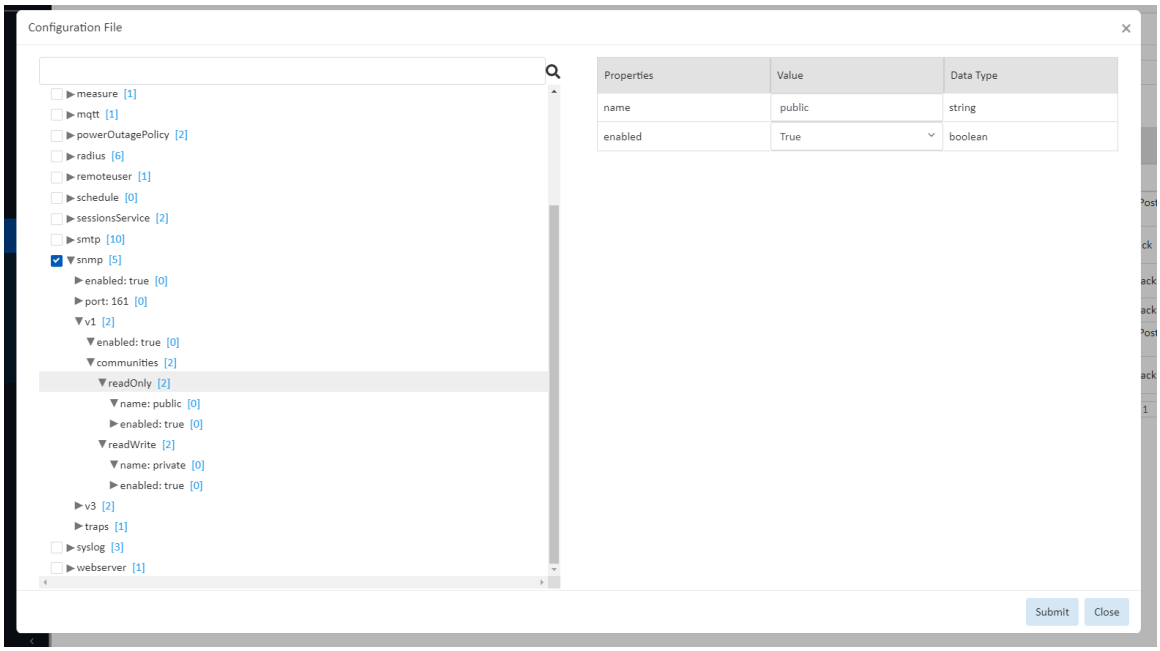


3. Select the UPS devices in the list you want to bulk configure. The configuration of the UPS that you FIRST select in the list will load in the next screen and be the main UPS configuration that you will push out to the following selection of network cards. Once the devices are selected hit the **Update Configuration** button in the top right-hand corner of the screen.

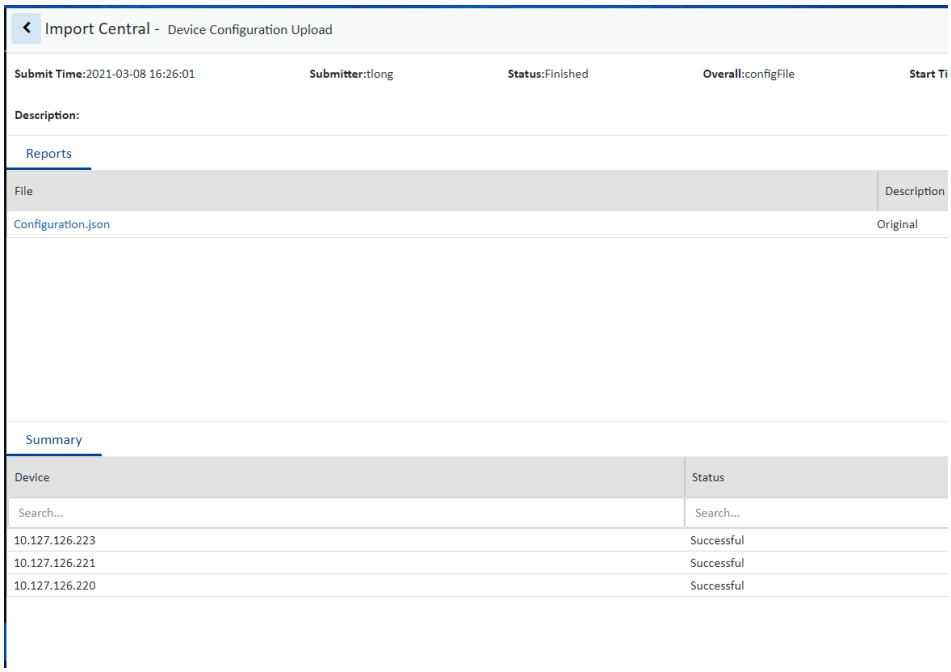
4. You will need to authenticate with the network cards, and they all must have the same username and password. For the Passphrase field, this can be any string of letters and numbers you desire, but it must be no shorter than 8 characters. The passphrase is used as a security field to encrypt the data and does not need to be the same each time.



5. A pop-up box will open with all the objects of the UPS network card you first chose from the previous list. Click the check boxes of the network card objects you wish to push out to all of the other UPS device network cards. You can click on the triangles to open the objects and review or change. You can change any of the objects you wish to configure in the box on the right-hand side. Select Submit to push the configuration to your UPS network cards.



6. After the card pushes the configuration, you will see a screen showing if the pushes were successful or failed and to which devices.



12.7.2.1. Important Notes on Bulk Configuration Features

- This version only supports the M2 communication card and the M2 Industrial Gateway communication card from Eaton, and Tripp Lite 20.x network card. The Eaton MS communication card is not supported in this release.
- View the Import | Export page to see specific details on errors which have occurred.

- The Upload Configuration process will restart the communications card on the UPS Rackmount device. There will be a 2-3 minute restart time until the card is reachable via the web again.

12.7.2.2. Reset Password

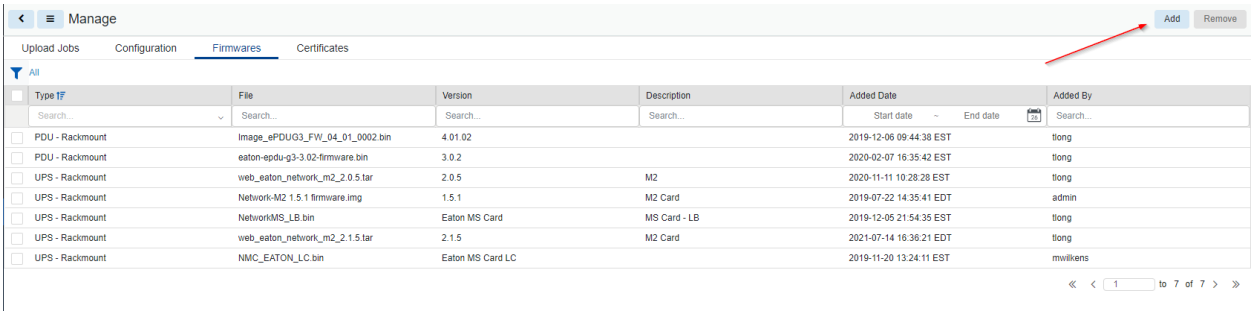
For the Reset Password function, users will define the Manufacturer from the supported manufacturer dropdown list and choose the Device Type from the list of supported device types. When these are selected a list of devices in the application which meet the choices will be presented in the device list table. **Note:** If the device is not configured with monitoring settings, the checkbox for that device will be disabled. Devices must be monitored in the application in order for this feature to support the device.

Using the Search filters at the top of the columns, users can easily find the devices to select for the firmware upload job. A Select All checkbox can be found in the column headings to simplify bulk device selection. When devices are selected, choose the Reset Password button at the top of the page.

Enter the admin username, current admin user password and then provide the new password and password confirmation fields. Click OK to process the password changes for all selected devices. The Import Wizard page will report the status as the Password Reset list is processed. Each device will report a success or failure message in the Summary column of this page.

12.7.3. Firmwares

Firmwares is a file repository for firmware files to be uploaded to devices when defining a firmware upload job. Users can add and remove files from firmwares using the **Add** and **Remove** buttons at the top of the page. When adding files to firmwares, users will define which device type is supported by the file and the version of the file upload. These attributes will help with searching the library for the correct files when an upload job is being defined.



12.7.4. Certificates

The certificate files will be managed in the Manage module. This is where the user can add the certificate file for the devices that was to use MQTT to monitor. After adding the certificate for the device, click on the device count and it will show the applied device.

13. Maintenance Menu Group

The Maintenance Menu Group contains menu items for managing the Service and Warranty functions.

13.1. Calendar Menu Item

Displays all the services events including historical and future service events. By default, this page shows the events from 00:00:00 for the day. Users can add and remove records.

Fields	Description
Device	Displays the device name.
Device Status	Displays the device status. Options are RMA/Down, RMA/Using Spare, Down, Impaired, and Operational.
Schedule	Displays the schedule name.
Service Type	Displays the service type. Options are Repair, Replace, Install, and Preventive.
Status	Displays the service status. Options are Scheduled and Overdue.
Completed	Displays the progress of the service. Options are Finished, Unfinished, and Not Start.
Vendor	Displays the vendor name.
Vendor Tech	Displays the vendor tech. This is a user-defined field.
Day	Displays the weekday of the scheduled service.
Date Time	Displays the date and time of the scheduled service.
Actual Start	Displays the actual date and time of the service.
Action	A pencil icon to edit the service schedule. **Note**: The icon will only appear after users add a record.
Button	
Add Record	Add a service record of this scheduled service.
Remove Record	Delete a service record of this scheduled service.

13.2. Service Schedules Menu Item

User can view, modify, delete, and create new services schedules for devices and bulk export/import service schedules. User can view list of defined service schedules and view service schedules by device. Click on a schedule name to edit. Create new service schedule with the New button. Select schedules from the list and delete them.

13.2.1. Devices Tab

Displays a list of the devices with scheduled service events.

Fields	Description
Device	Displays the device name.
Schedule	Displays the schedule name.
Service Type	Displays the service type. Options are Repair, Replace, Install, and Preventive.
Device Status	Displays the device status. Options are RMA/Down, RMA/Using Spare, Down, Impaired, and Operational.
Vendor	Displays the vendor name.
Vendor Tech	Displays the vendor tech. This is a user-defined field.
Periodic Rule	Displays the service schedule period. Options are Specific Date and Periodicity.
Start Date	Displays the start date of the scheduled service.

End Date	Displays the end date of the scheduled service.
Start Time	Displays the start time of the scheduled service.
Buttons	
New	Create a schedule.
Delete	Delete the existing schedule.

13.2.2. Schedules Tab

Displays a list of the scheduled service events.

Fields	Description
Schedule	Displays the schedule name.
Devices #	Displays the number of devices.
Service Type	Displays the service type. Options are Repair, Replace, Install, and Preventive.
Device Status	Displays the device status. Options are RMA/Down, RMA/Using Spare, Down, Impaired, and Operational.
Vendor	Displays the vendor name.
Vendor Tech	Displays the vendor tech. This is a user-defined field.
Periodic Rule	Displays the service schedule period. Options are Specific Date and Periodicity.
Start Date	Displays the start date of the scheduled service.
End Date	Displays the end date of the scheduled service.
Start Time	Displays the start time of the scheduled service.
Buttons	
New	Create a schedule.
Delete	Delete the existing schedule.

13.3. Service History Menu Item

Displays a list of all the service records in the system for the date range specified.

Fields	Description
Device	Displays the device name.
Device Status	Displays the device status. Options are RMA/Down, RMA/Using Spare, Down, Impaired, and Operational.
Schedule	Displays the schedule name.
Service Type	Displays the service type. Options are Repair, Replace, Install, and Preventive.
Completed	Displays the progress of the service. Options are Finished, Unfinished, and Not Start.
Vendor	Displays the vendor name.
Vendor Tech	Displays the vendor tech. This is a user-defined field.
Day	Displays the weekday of the scheduled service.
Date Time	Displays the date and time of the scheduled service
Description	Displays the description of the service.
Action	A pencil icon to edit the service history. **Note**: The icon will only appear after users add a record in the Calendar.
Buttons	
Remove Record	Removes the selected service history.

13.4. Warranty Menu Item

Displays a list of all devices with warranty information.

Fields	Description
Device	Displays the device name.
Warranty Status	Displays the warranty status.
Warranty Vendor	Displays the warranty vendor.
Component ID	Displays the component ID.
Claim Phone	Displays the claim phone.
Parts Start Date	Displays the parts start date.
Parts End Date	Displays the parts end date.
Labor Start Date	Displays the labor start date.
Labor End Date	Displays the labor end date.

14. IT Devices Menu Group

The IT Devices Menu Group contains menu items with dashboards for viewing virtual machines linked via VCenter.

To populate the dashboard, users must first use the Discovery tool to link to their instance of vCenter (see the Discovery section for more details).

Once vCenter is discovered and linked:

- The VMware Hosts and Guests are visible from within the application
- The Virtual Devices Menu Group dashboards display virtual device details
- Virtual devices can be controlled by actions triggered by alarm conditions and traps (see Actions section for more details)

Note: Performing actions on your company's virtual machines can be dangerous. Please contact support to discuss your use of the virtual device tools before proceeding with the configuration.

The IT Devices Menu Group will have the other layout, including the sub-menus, when the VM host number is over 20 million.

14.1. VMware Layout

We support auto-restart of user virtual machines at cluster restart time. For users who have to restart their infrastructure, the restart UVM feature is there to save time and minimize delay to restore their business.

When a cluster shutdown has been carried out with our SW, it is now possible, when the cluster is restarting, to get an automatic restoration of all users' virtual machines that were in service at the time of the shutdown.

The main benefit is to save time for the end user and improve the quality of the restart process.

This automatic restart is not systematic and will only take place when our software has stopped the cluster on its own and only if the automatic restart option is activated. It is when creating or configuring the cluster shutdown action that the end user can choose whether or not to activate this option.

This feature is provided for all supported versions of VMware clusters. This feature is not provided for clusters from other vendors except VMware.

14.1.1. VMware VCenter Menu Item

The VMware VCenter Menu Item dashboard displays information tiles reporting VCenter statistics at a glance including the number of Hosts, Guests and Clusters, CPU, Memory and Storage use. Tabs for Clusters, Hosts and Guest display details for each of those items and selecting the item name provides additional details.

14.1.2. VMware Hosts Menu Item

The VMware Hosts Menu Item displays the list of VM hosts with details including IP, Cluster, Guests, Connect Status, Power Status, CPU, Memory, Storage, Uptime, Version and Device. Selecting the host name opens a dashboard with the details of the guests on that host.

14.1.3. VMware Guests Menu Item

The VMware Guests Menu Item displays the list of VM Guests with details including IP, Host, Cluster, Connect Status, Power Status, CPU, Memory, Storage, Uptime and VMware Tool. Selecting the guest name opens a dashboard with basic information and capacity graphs.

14.1.4. Virtual Groups Menu Item

The Configuration Group Menu Item displays the list of configuration groups with their priority level, the number of guests and a user defined description. Selecting the configuration group name displays the group page and allows editing.

When creating a new configuration group user assign a priority to identify the importance of each group in relationship to the others when actions are performed. Value of 0 has the highest priority and value 1000 is the lowest.

14.1.5. Action History Menu Item

The Action History Menu Item displays a list of the triggered actions and if they succeeded or failed. Each row can be expanded to display the details and commands of each action.

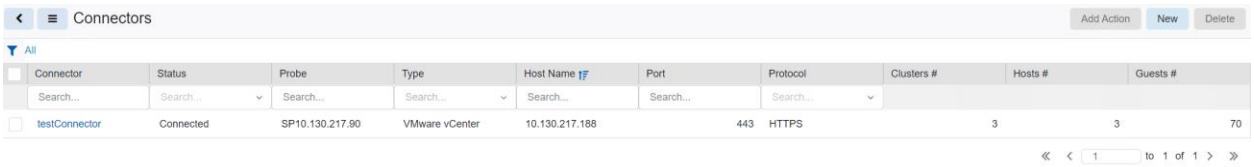
14.2. VM Layout

14.2.1. Connectors Menu Item

The Connectors Menu Item displays the connections of virtual machine. we support users to import/export multiple connectors.

- The existing Nutanix connector is now compatible with Nutanix AHV/ESXi version 6.5.
- The existing VMware vCenter/ESXi connector is now compatible with vCenter/ESXi versions 8.0, 8.0u1 and 8.0u2.

Note, we no longer support the VMware version below 7.0 when using the “IT Automation - Component” feature.

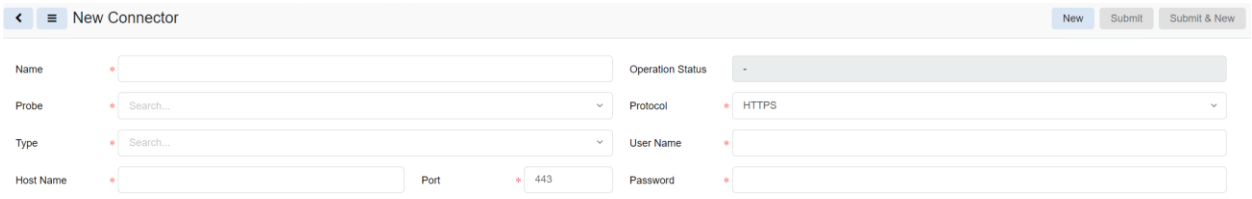


The table list contains the following fields:

Fields	Description
Connector	Displays the connector's IP
Status	Displays the connection status.
Probe	Displays the probe server name.
Type	Displays the connector type
Host Name	Displays the host server name.
Port	Displays the port number.
Protocol	Displays the monitoring protocol.
Clusters #	Displays the numbers of associated clusters.
Hosts #	Displays the numbers of associated hosts.
Guests #	Displays the numbers of associated guests.
Table List Buttons	**Description**
Add Action	Creates actions, their trigger conditions, and the corresponding operations for a VM connection.
New	Presents a configuration form for connecting a new virtual machine.
Delete	Deletes the selected VM connection.

14.2.1.1. Create new Connector

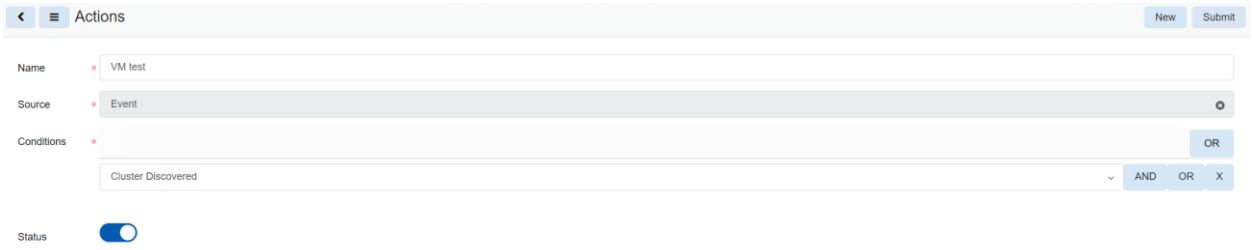
Click the **New** button on the top right corner to present a new Connector form. A red asterisk appears next to the required fields, and you'll notice that some fields are already pre-populated. Complete the appropriate fields and then click Submit button.



- The available protocols are HTTP and HTTPS

14.2.1.2. Add Actions

Select a VM connector and click the Add Action button. This button will direct users to the Monitoring Menu Group – Actions Menu Item, which enable users to define conditions to trigger the action.



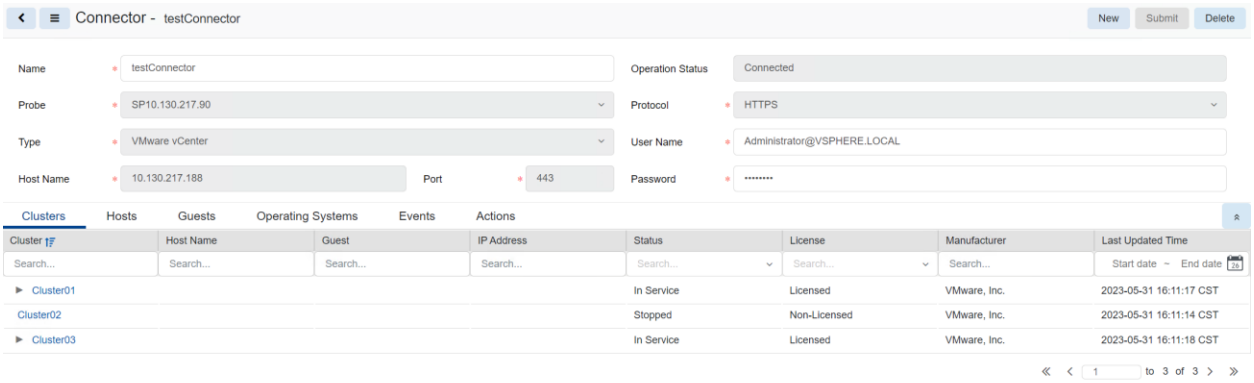
1. Enter the user-defined action name.
2. The source of the action is not editable.

3. Select one condition that will trigger the action. The event-based action doesn't support multiple conditions so far. A total of 27 events are available related to Clusters, Connector, Guests, and Host status.
4. Click the toggle button to change the action status. By default, is a turn-on.
5. Click the Submit button to submit the new Action configuration form.

The next following steps includes add operations, apply the action to devices or virtual devices, please refer to the Create New Actions section

14.2.1.3. Connector detailed page

After successfully connecting to a virtual machine and clicking the hyperlink of the Host Name, there are five tabs under the Connector page.



14.2.1.3.1. Clusters tab

The Clusters tab displays all clusters related to this connector. The table list contains the following fields:

Fields	Description
Cluster	Displays the cluster name.
Host Name	Displays the host name.
Guest	Displays the guest name.
IP Address	Displays the IP address .
Status	Displays the status of the cluster/host/guest. Options are Dormant, In Service, Servicing, and Stopped.
License	Displays if the cluster is licensed or not.
Manufacturer	Displays the manufacturer name.
Last Updated Time	Displays the last update time.

14.2.1.3.2. Hosts tab

The Hosts tab displays all hosts related to this connector. The table list contains the following fields:

Fields	Description
Host Name	Displays the host name.
Guest	Displays the guest name.
Cluster	Displays the cluster name.
IP Address	Displays the IP address .

Status	Displays the status of the host/guest. Options are Dormant, In Service, Servicing, and Stopped.
License	Displays if the host is licensed or not.
Manufacturer	Displays the manufacturer name.
Last Updated Time	Displays the last update time.

14.2.1.3.3. Guests tab

The Guests tab displays all guests related to this connector. The table list contains the following fields:

Fields	Description
Guest	Displays the guest name.
IP Address	Displays the IP address .
Status	Displays the status of the guest. Options are Dormant, In Service, and Stopped.
License	Displays if the guest is licensed or not.
Manufacturer	Displays the manufacturer name.
Last Updated Time	Displays the last update time.

14.2.1.3.4. Operating Systems

Fields	Description
Host Name	Displays the host IP.
Status	Displays the status of the host connection.
Type	Displays the connector's type.
Machine ID	Displays the host server's machine ID.
License	Displays if licensed or not
Details	Displays the detailed information.
Last Updated Time	Displays the last updated time.

14.2.1.3.5. Events tab

The Events tab displays all events related to this connector. The table list contains the following fields:

Fields	Description
Date	Displays the action's start and end date.
Event	Displays the events that trigger the action.
Description	Displays the description of the action.

14.2.1.3.6. Actions tab

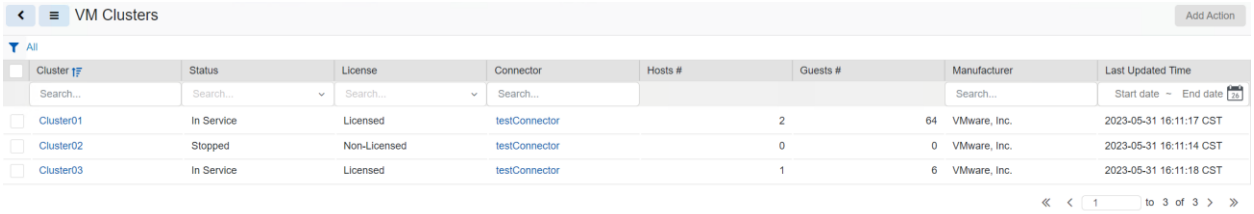
The Actions tab displays all actions related to this connector. The table list contains the following fields:

Fields	Description
Action Name	Displays the action name.
Conditions	Displays the conditions that will trigger the action.
Operations	Displays the operations that will be executed after the action is triggered.

The data of the VM clusters/hosts/guests displayed in the tab will be displayed in the following menu items as well.

14.2.2. VM Clusters Menu Item

The VM Clusters Menu Item displays all clusters of the VM connections in the system.

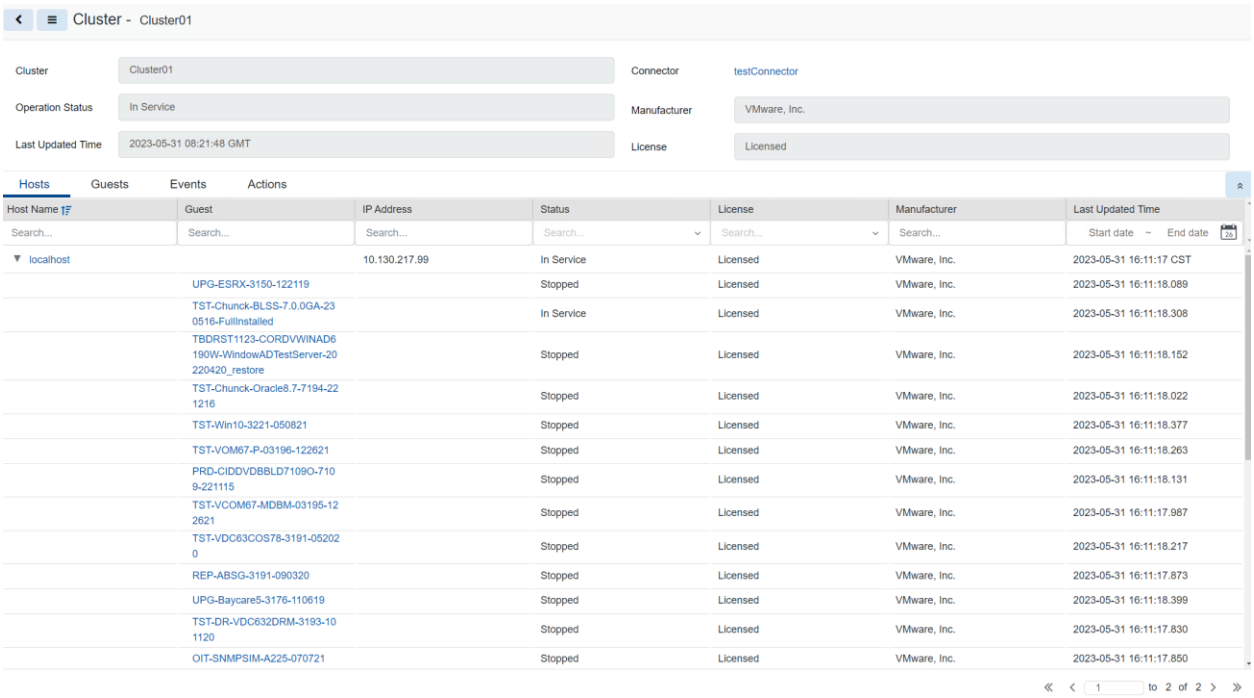


The table list contains the following fields:

Fields	Description
Cluster	Displays the cluster name.
Status	Displays the status of the cluster. Options are In Service, Servicing, and Stopped.
License	Displays if the cluster is licensed or not.
Connector	Displays the corresponding connector name.
Hosts #	Displays the numbers of associated hosts.
Guests #	Displays the numbers of associated guests.
Manufacturer	Displays the manufacturer name.
Last Updated Time	Displays the last update time.
Table List Buttons	**Description**
Add Action	Creates actions, their trigger conditions, and the corresponding operations for a VM cluster.

Users are not allowed to create new clusters by themselves. Click the hyperlink of the Connector will direct users to the Connectors detailed page.

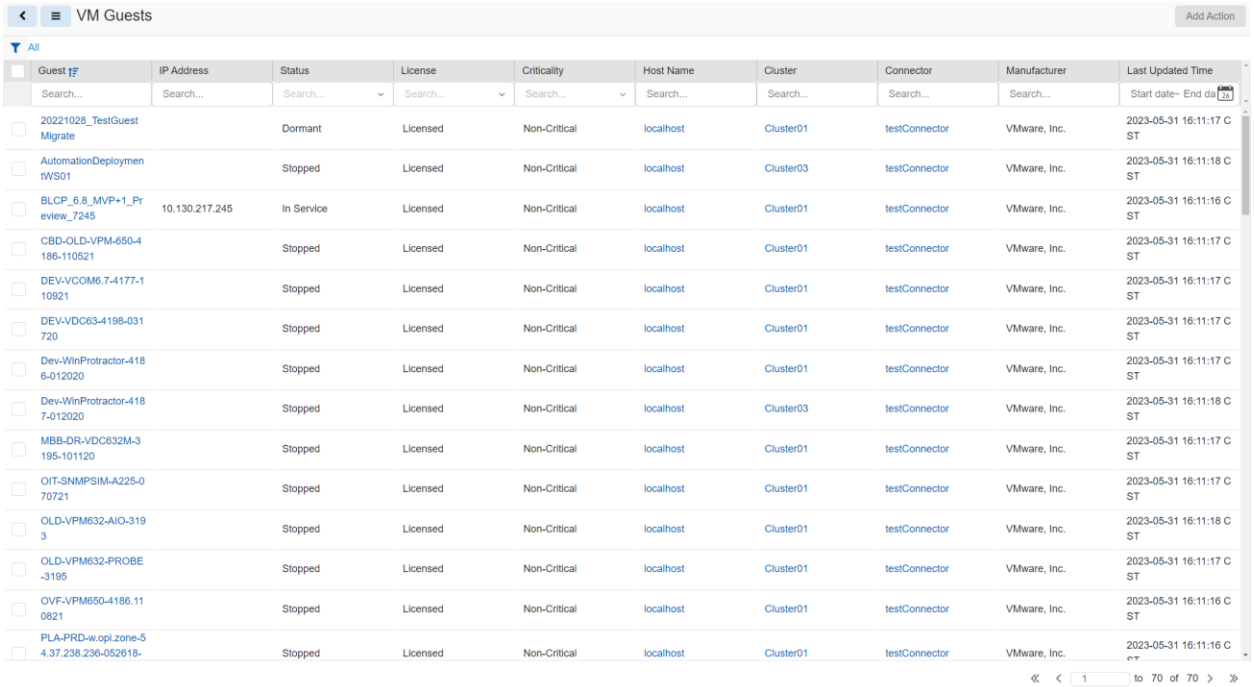
Click the hyperlink of the Cluster name will direct users to the Cluster detailed page.



Please refer to the Hosts tab, Guests tab, Events tab, and Actions tab for the introduction of the tabs.

14.2.3. VM Guests Menu Item

The VM Guests Menu Item displays all guests of the VM connections in the system.



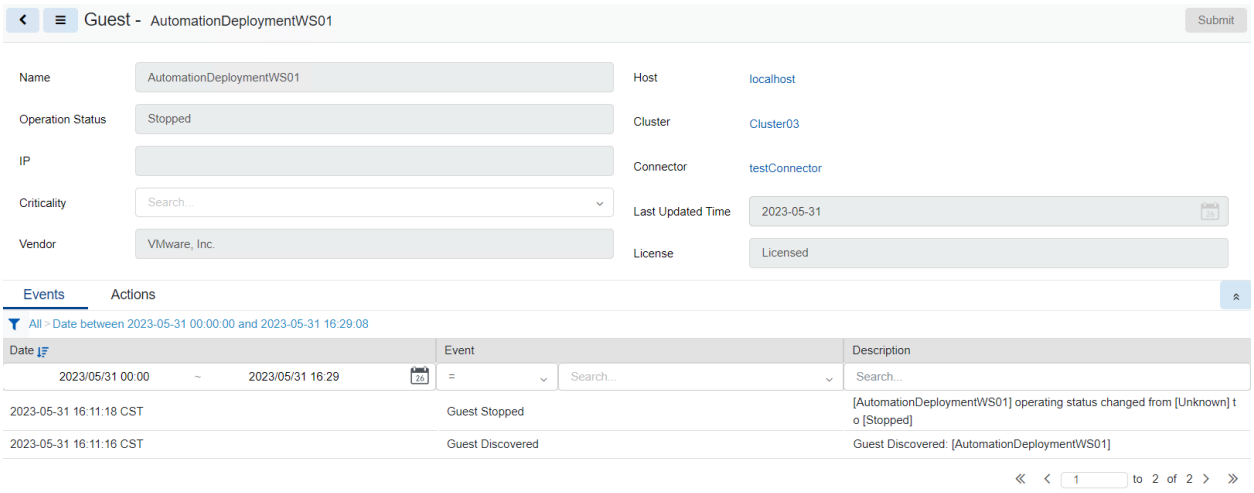
The table list contains the following fields:

Fields	Description

Guest	Displays the guest name.
IP Address	Displays the IP address.
Status	Displays the status of the guest. Options are Dormant, In Service, and Stopped.
License	Displays if the guest is licensed or not.
Criticality	Displays the importance of the guest.
Host Name	Displays the host name.
Cluster	Displays the cluster name.
Connector	Displays the corresponding connector name.
Manufacturer	Displays the manufacturer name.
Last Updated Time	Displays the last update time.
Table List Buttons	**Description**
Add Action	Creates actions, their trigger conditions, and the corresponding operations for a VM host.

Users are not allowed to create new guests by themselves. Click the hyperlink of the Host Name, Cluster and Connector will direct users to the Hosts Menu Item, VM Clusters Menu Item and Connectors detailed page..

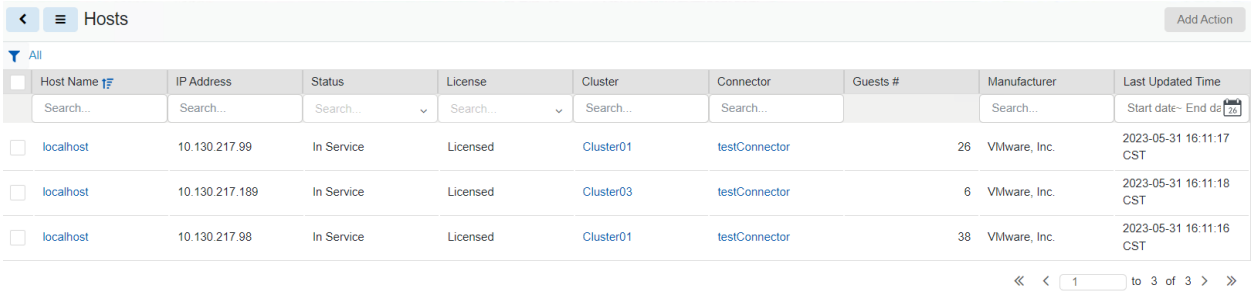
Click the hyperlink of the Guest name will direct users to the Guest detailed page.



Please refer to the Events tab and Actions tab for the introduction of the tabs.

14.2.4. Hosts Menu Item

The Hosts Menu Item displays all hosts of the VM connections in the system.

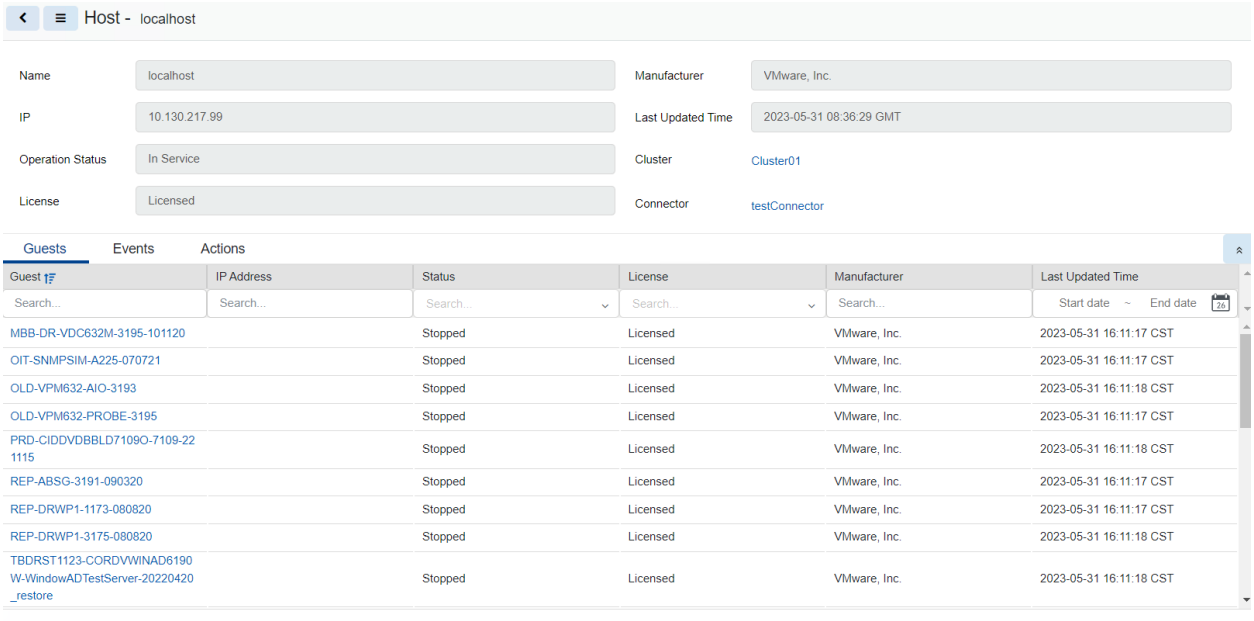


The table list contains the following fields:

Fields	Description
Host Name	Displays the host name.
IP Address	Displays the IP address.
Status	Displays the status of the host. Options are In Service, Servicing, and Stopped.
License	Displays if the host is licensed or not.
Cluster	Displays the cluster name.
Connector	Displays the corresponding connector name.
Guests #	Displays the numbers of associated guests.
Manufacturer	Displays the manufacturer name.
Last Updated Time	Displays the last update time.
Table List Buttons	**Description**
Add Action	Creates actions, their trigger conditions, and the corresponding operations for a VM host.

Users are not allowed to create new hosts by themselves. Click the hyperlink of the Cluster and Connector will direct users to the VM Clusters Menu Item and Connectors detailed page.

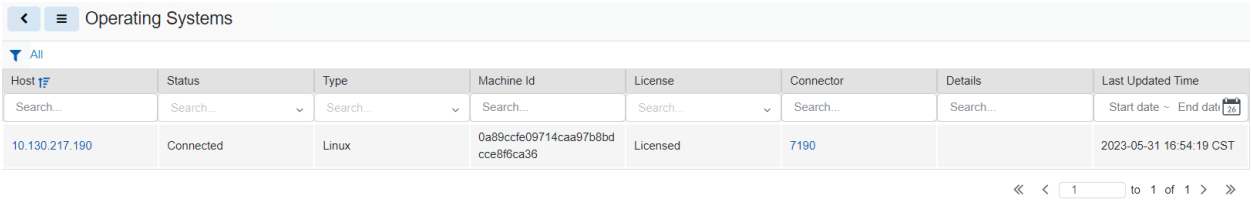
Click the hyperlink of the Host name will direct users to the Host detailed page.



Please refer to the Guests tab, Events tab, and Actions tab for the introduction of the tabs.

14.2.5. Operating Systems

The Operating System Menu Item displays all Linux and Windows type connector's information in the system.

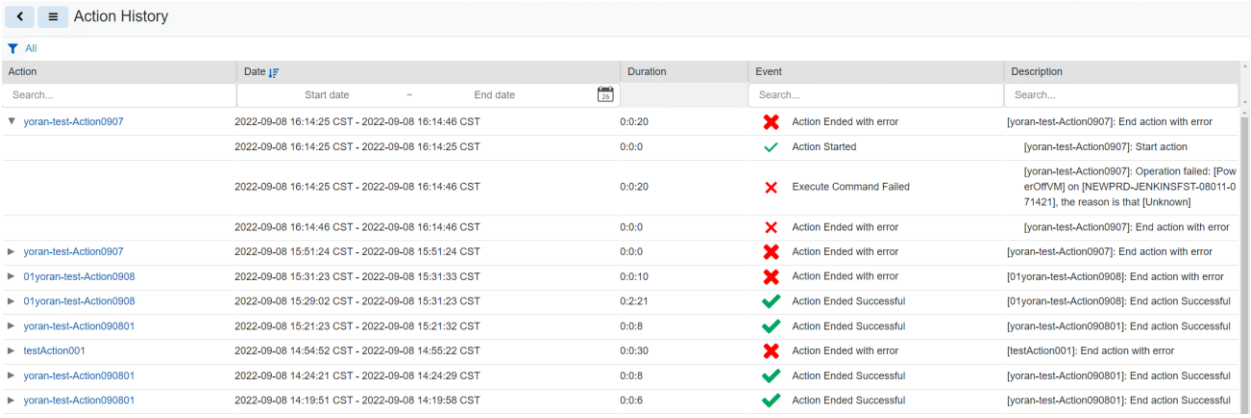


The table list contains the following fields:

Fields	Description
Host	Displays the host IP.
Status	Displays the status of the host connection.
Type	Displays the connector's type.
Machine ID	Displays the host server's machine ID.
License	Displays if licensed or not
Connector	Displays the connector name.
Details	Displays the detailed information.
Last Updated Time	Displays the last updated time.

14.2.6. Action History Menu Item

The Action History Menu Item displays all actions configured on the VM Connector/Cluster/Host/Guest in the system.



The table list contains the following fields:

Fields	Description
Action	Displays the action name.
Date	Displays the action's start and end date.
Duration	Displays the action's duration.

Event	Displays the events that trigger the action.
Description	Displays the description of the action.

Click the hyperlink of the action name will direct users to the Action panel.

15. Automations

This feature provides monitoring and actions on Virtual systems through dedicated connectors. Currently, we support VMware Connector (Standalone ESXi connector & vCenter connector), Microsoft Connector (Microsoft Server connector & SCVMM connector), and Linux/Windows server.

The entry to this integration is in the "IT Devices" menu group – “Connector” menu item.

This SDK offers the ability to:

- get information on the monitored virtual system
- act on the virtual system

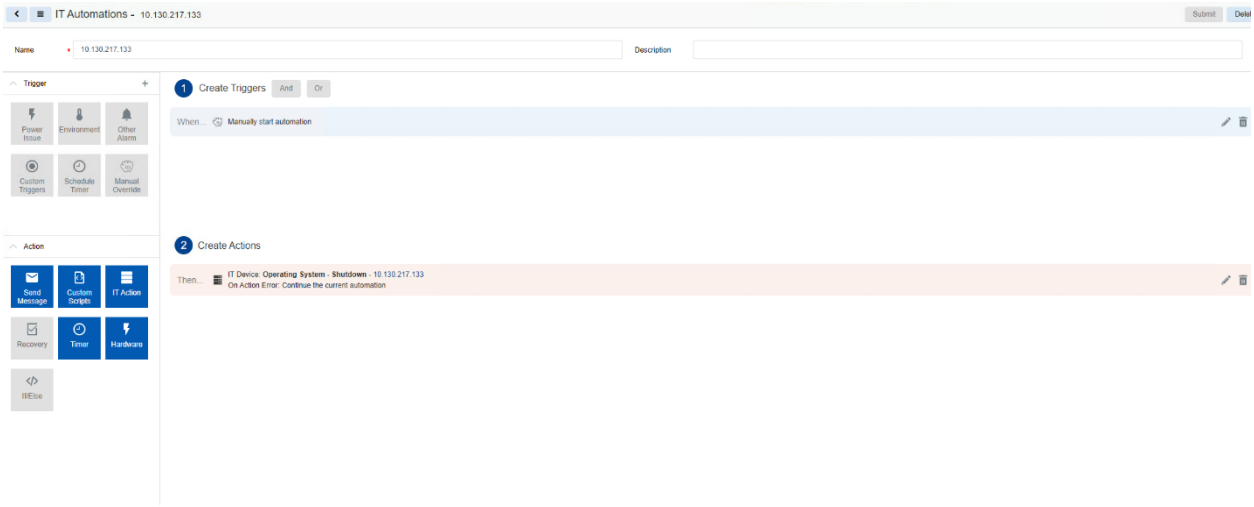
A list of available actions between connectors is listed below.

Host Power Actions	Standalone ESXi	vCenter	SCVMM	Hyper V	Windows Server
Shutdown Host	✓	✓	✓	✓	✓
Shutdown VMs Then Host	✓	✓	✓	✓	n/a
Enter Maintenance Mode	✓	✓	✓	n/a	n/a
Enter Maintenance Mode Then Shutdown	✓	✓	✓	n/a	n/a
Exit Maintenance Mode	✓	✓	✓	n/a	n/a
Power Down To Standby Mode	✓	✓	n/a	n/a	n/a
Power Up From Standby Mode	✓	✓	n/a	n/a	n/a
vApp Power Actions	**Standalone ESXi**	**vCenter**	**SCVMM**	**Hyper V**	**Windows Server**
Power On	✗	✓	n/a	n/a	n/a
Shutdown	✗	✓	n/a	n/a	n/a
Suspend	✗	✓	n/a	n/a	n/a
VM Actions	**Standalone ESXi**	**vCenter**	**SCVMM**	**Hyper V**	**Windows Server**
Power On	✓	✓	✓	✓	n/a
Power Off	✓	✓	✓	✓	n/a
Shutdown Guest	✓	✓	✓	✓	n/a
Suspend	✓	✓	✓	✓	n/a
Migrate	✗	✓	✓	✓	n/a
Fault Domain Actions	**Standalone ESXi**	**vCenter**	**SCVMM**	**Hyper V**	**Windows Server**
Enter Maintenance Mode	✗	✓	n/a	n/a	n/a
Enter Maintenance Mode Then Shutdown	✗	✓	n/a	n/a	n/a
Exit Maintenance Mode	✗	✓	n/a	n/a	n/a
Cluster Power Actions	**Standalone ESXi**	**vCenter**	**SCVMM**	**Hyper V**	**Windows Server**
Cluster shutdown	✗	✓	✓	✗	n/a
VSAN Cluster shutdown and restart	✗	✓	n/a	n/a	n/a

Very importantly, the IT Automation function is able to:

1. Graceful shutdown standalone Linux servers (physical or virtual)
2. Graceful shutdown standalone Windows servers (physical or virtual)

by choosing the IT Action - Operating System Shutdown.



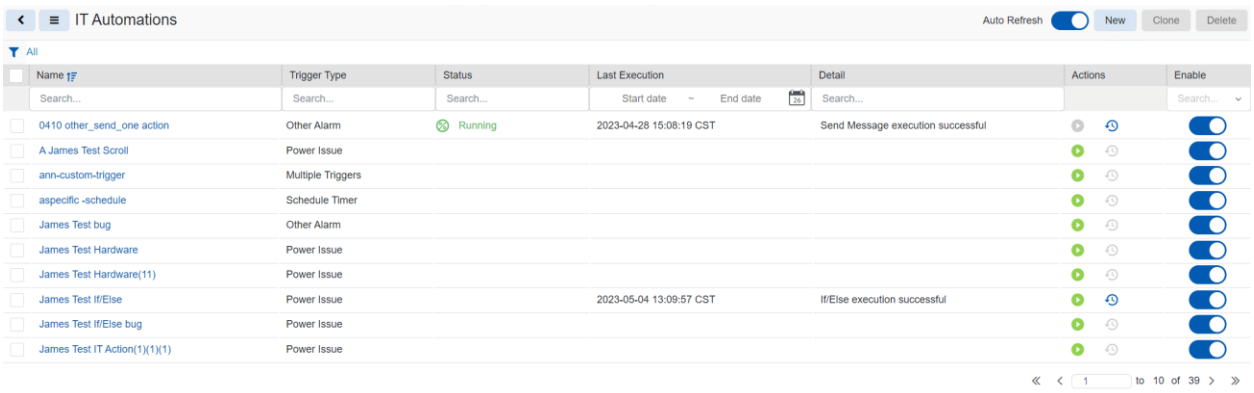
Vendor	Software Component	Category	Version	Function	Tested Env
Standalone Server	Windows Server	Host	2022, 2019, 2016	Shutdown	Windows 10 pro
	Linux Server	Host	Any Linux Server	Shutdown	Oracle Linux Server release 8.x RedHat Enterprise Linux 8.x Ubunto Linux Server 22.x Debian Linux 11.x SUSE Enterprise Linux Server 15.x

Prohibited scenario:

A non-privileged user sudo access with the need to enter a password cannot use this automation action.

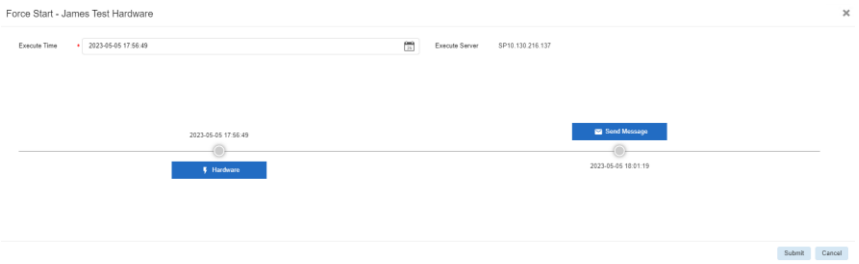
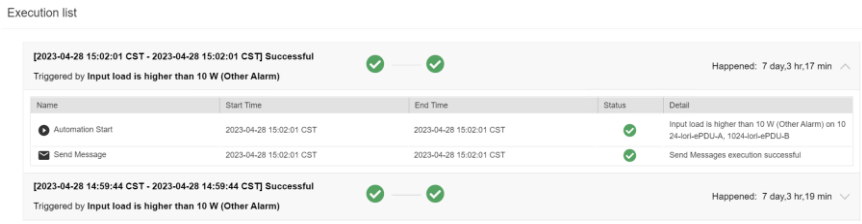
15.1. IT Automation Menu Item

All created automation are listed on the “IT Automations” page as a table.



The table list contains the following fields:

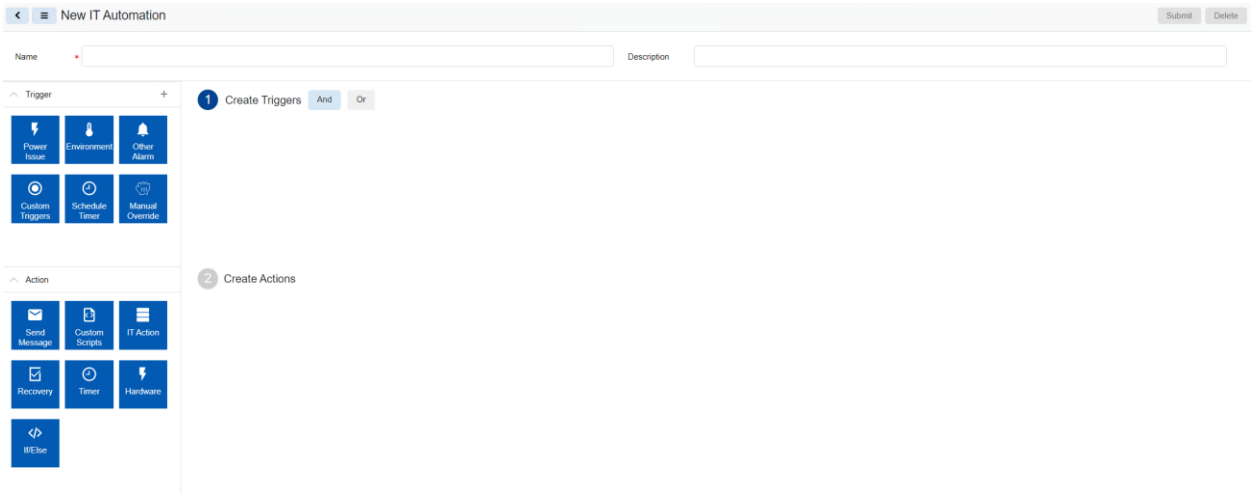
Table List Column	Description
Name	Displays the automation name.

Trigger Type	Displays the trigger category name in the automation. If there are multiple triggers in the automation, the display name will be “Multiple Trigger”.
Status	Displays the automation status. • Running: indicates the automation is running. Click the icon to check the running status. • Configuration Error: indicates there are configuration errors in the automation settings. Click the icon to check the error details. In this status, the automation cannot be force started. • Blank field: indicates normal status without running.
Last Execution	Displays the last execution datetime.
Detail	Displays the automation execution details. This field is blank by default. The details will be displayed in the field once the automation is run.
Actions	There are two actions in the column. • Force start : Users can click the icon to force the automation to start. This icon will only be accessible when the automation is not running. When the automation is running or in the Configuration Error status, the icon will be grey and unclickable. After clicking the “Force Start” button, a timeline window will pop up. Users can select an execution time for starting the automation. Timeline Component: ○ Circle : When the icon is grey, it indicates this step is not executed; When the icon is green, it indicates this step is executed successfully; When the icon is red, it indicates the execution of this step is failed; When the icon is blue, it indicates the execution is running. ○ Calculated Started Time 2023-05-05 17:56:49 : The start time for this step is calculated by the set execution time and delay time. ○ Information Hardware： Displays the action type and details (if have).  • History : List the automation execution history. 
Enable	A toggle button to turn on/off the automation. • If the toggle button is off, the automation won’ be started even if the condition is triggered. • The automation can be force started even if the toggle button is off.
Table List Buttons	**Description**
Auto Refresh	A toggle button to turn on/off the auto-refresh the “IT Automation” page. The auto-refresh interval is 30 seconds.
New	Create a new automation.

Clone	Clone automation. This button will only be accessible when one automation is selected.
Delete	Delete automation. This button will only be accessible when one or more automation is selected. If an automation is related with another automation, this automation cannot be deleted.

15.1.1. Create new automations

Users can create automation, define triggers and actions based on their own requirements. We provide an easy-to-use and well-guidance creation process for users to use. Click the “New” button to create a new automation.

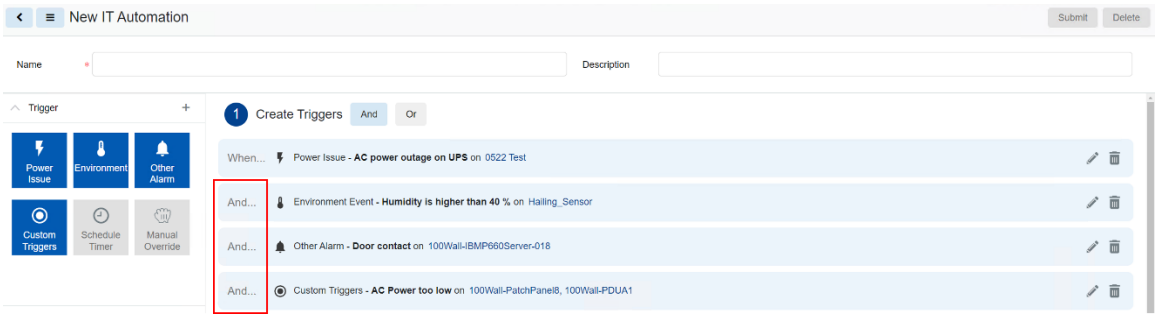


1. Name the automation and give a description (optional).
2. Select a trigger that you’d like to define. A window with configuration details will pop up. Each trigger has its specific configuration window. Fill/select all the necessary fields. There are six pre-defined triggers in the system.

    - Power Issue - Power Issue trigger related to UPS devices
    - Environment - Environment-related trigger with flexible threshold
    - Other Alarm - Other alarm triggers except for the power issue and environmental trigger
    - Custom Triggers - Users’ customized triggers
    - Schedule Timer - Users can set specific datetime or recurrence for the trigger to make actions happen when needed.
    - Manual Override - A trigger that makes automation only be triggered when force starts.

    Please refer to the Select Triggers section for the detailed configuration process of each trigger.

    Users can define one or more triggers combined with AND/ OR to determine the exact condition that triggers automation. Note: The triggers can only be combined by all "AND" conditions, or all "OR" conditions.



3. Select actions. Currently, there are seven actions in the system, which are:
    - Send Message - Send notifications to specific people once the defined triggers are triggered.
    - Custom Script - Run a custom script once the defined triggers are triggered. Users can only select the scripts that exists in the “Script Management” menu item.
    - IT Action - Execute VM commands once the defined triggers are triggered.
    - Recovery - Configure conditional actions based on initial trigger validity.
    - Timer - A wait action. Options are “Wait for a duration”, “Wait for a battery threshold (in %)”, “Wait for a battery runtime threshold (in minutes)”.
    - Hardware - Set an action on hardware (Rackmount-PDU & Server) to turn on/off outlets of Rackmount-PDU or turn on/off servers.
    - If/Else - Set advanced conditions by IF/ELSE logic.

    Users can define one or more actions that will be automated perform once the triggers are triggered. Please refer to the Select Actions section for the detailed configuration process of each action.

4. Users can view the summary of the automation on the “New IT Automation” canvas after they defined all the triggers and actions. Users can review, edit, and delete any one of the triggers or actions while viewing the summary.

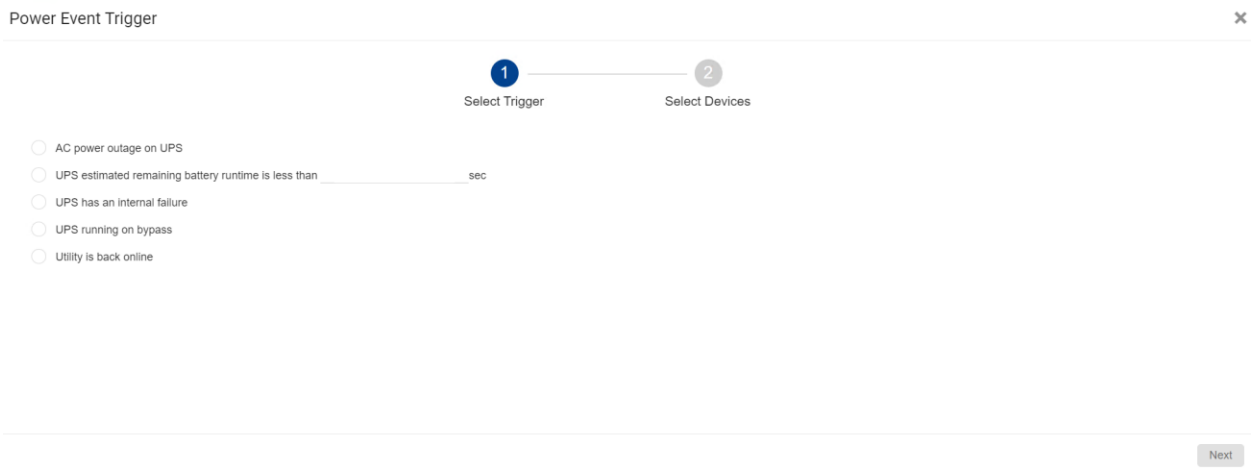
5. Submit the automation after everything is confirmed.

Your defined actions will automatically operate once your defined triggers are triggered.

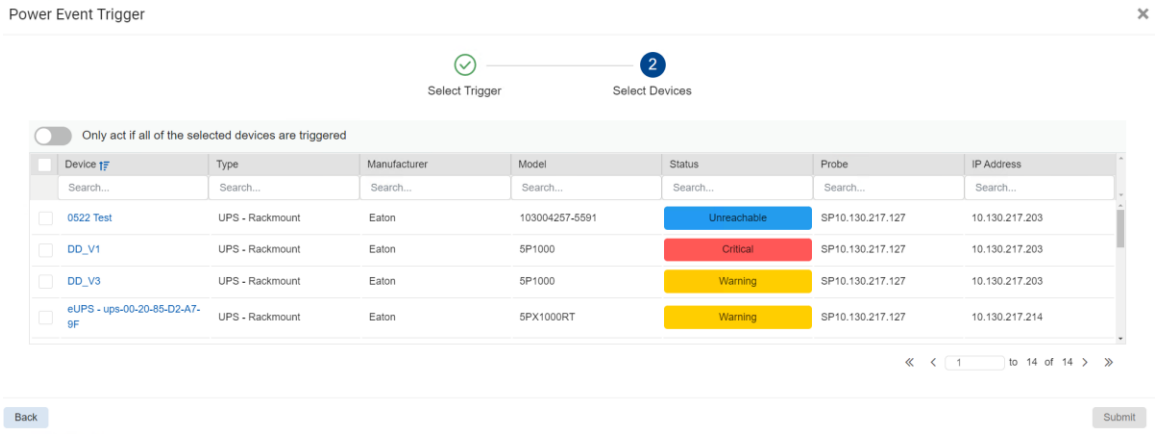
15.1.1.1. Select Triggers

15.1.1.1.1. Power Issue

When clicking the Power Issue tile, a Power Event Trigger window will pop up for users to do relevant operations of the trigger creation.



1. There are five pre-defined triggers listed for selection. Only one trigger can be selected at one time. For the second selection, “UPS estimated remaining battery runtime is less than __ sec”, users can click the underline to enter their own threshold value.
2. Once a trigger is selected, the Next button will be enabled.
3. Select devices. Users can select multiple devices at the same time.



Only the devices that meet the following criteria will be displayed on the list:

a. Manufacturer is Eaton or Tripp Lite
b. Device type is UPS, UPS – Rackmount, PDU, PDU - Rackmount
c. Matches specific Monitoring Template

Trigger Event Name	Monitoring Template
• AC power outage on UPS • UPS has an internal failure • UPS running on bypass • Utility is back online	UPS Eaton MS
	UPS Eaton M2
	UPS RFC1628
	Rackmount PDU Tripp Lite
	Rackmount UPS Tripp Lite
	Rackmount UPS Tripp Lite 100
UPS estimated remaining battery runtime is less than __ sec	UPS Eaton MS
	UPS Eaton M2
	UPS RFC1628
	Rackmount UPS Tripp Lite
	Rackmount UPS Tripp Lite 100

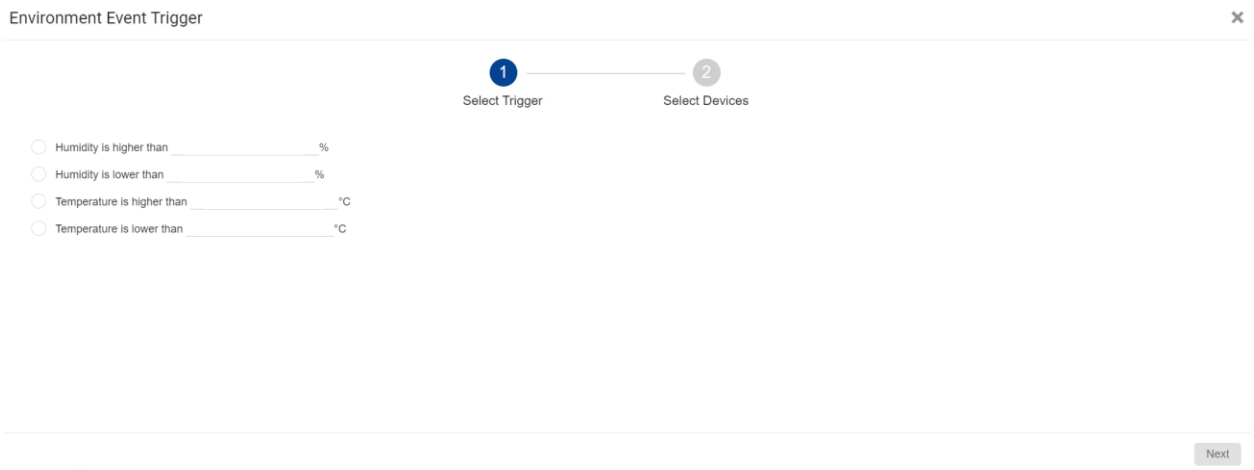
	SC200
	SC300

d. Device is monitored.

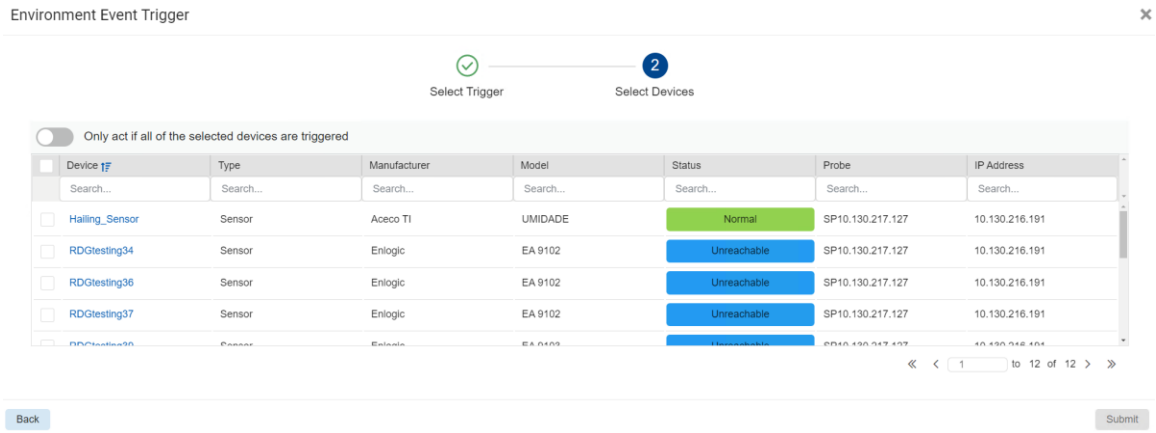
4. There is a toggle button above the device table. By default, this toggle button is turned off. This means if users select more than one device, as long as one of the devices triggers the trigger condition, this automation will run. If this toggle button is turned on, then if users select more than one device, the automation will only run once all devices they select trigger the trigger condition.
5. Click the “Submit” button to submit the trigger.

15.1.1.1.2. Environment

When clicking the Environment tile, an Environment Event Trigger window will pop up for users to do relevant operations of the trigger creation.



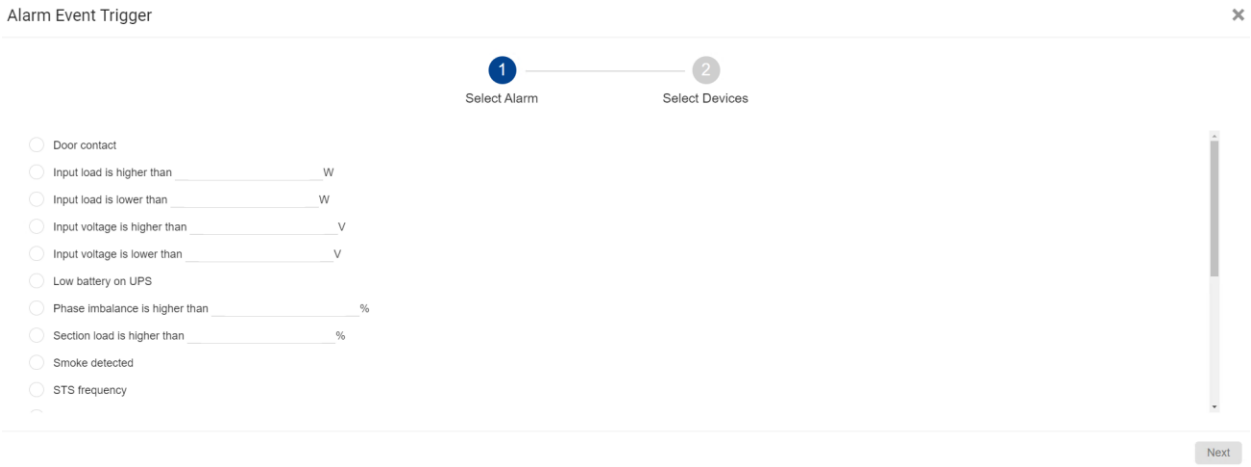
1. There are four pre-defined triggers listed for selection. Only one trigger can be selected at one time. Users can write the threshold value for the trigger they select by clicking the underline. The value entered supports 2 decimal places and must be greater than 0.
2. Once a trigger is selected, the Next button will be enabled.
3. Select devices. All sensor type devices are listed in the table. Users can select multiple devices at the same time. **Note**: Users must ensure the devices they select have monitored Humidity or Temperature attributes, depending on the trigger they choose.



4. There is a toggle button above the device table. By default, this toggle button is turned off. This means if users select more than one device, as long as one of the devices triggers the trigger condition, this automation will run. If this toggle button is turned on, then if users select more than one device, the automation will only run once all devices they select trigger the trigger condition.
5. Click the “Submit” button to submit the trigger.

15.1.1.1.3. Other Alarm

When clicking the Other Alarm tile, an Alarm Event Trigger window will pop up for users to do relevant operations of the trigger creation.



1. There are twenty pre-defined triggers listed for selection. Only one trigger can be selected at one time. Part of the triggers need users to enter the threshold value by clicking the underline.

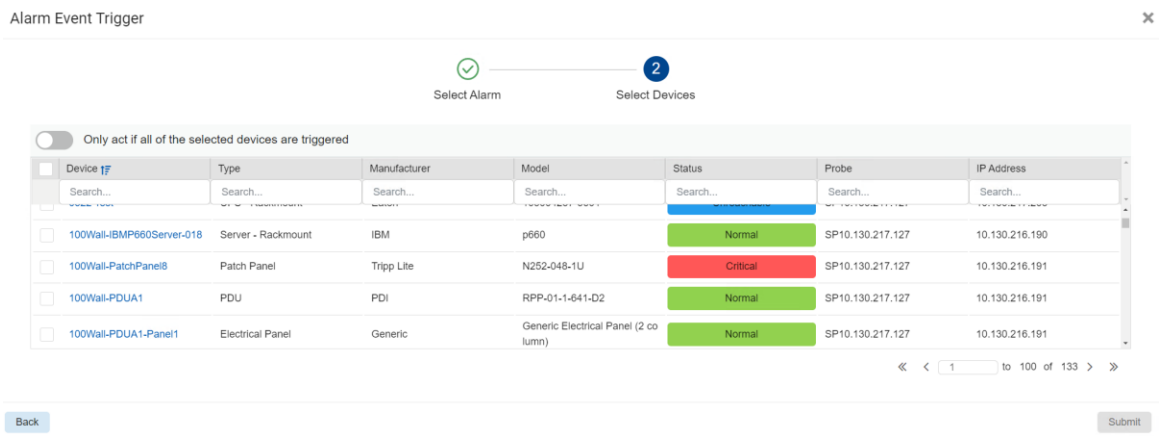
   There are four special trigger selections – Smoke detected, Water leakage, Vibration detected, and Door contact, need to do data mapping before the triggers can work properly here. For how to do the data mapping, please refer to the Data Mapping section.

   Their corresponding data mapping attribute in the system is

Trigger Name	Attribute

Smoke detected	Smoke State
Water leakage	Water State
Vibration detected	Vibration State
Door contact	Door State

2. Once a trigger is selected, the Next button will be enabled.
3. Select devices. Users can select multiple devices at the same time. **Note**: Users must ensure the devices they select have appropriated monitored attributes, depending on the trigger they choose.

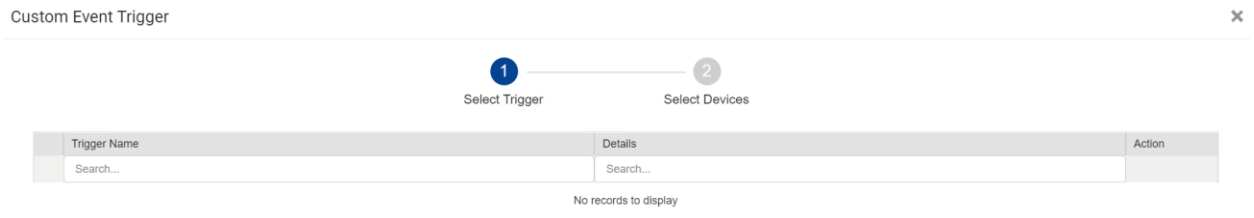


4. There is a toggle button above the device table. By default, this toggle button is turned off. This means if users select more than one device, as long as one of the devices triggers the trigger condition, this automation will run. If this toggle button is turned on, then if users select more than one device, the automation will only run once all devices they select trigger the trigger condition.
5. Click the “Submit” button to submit the trigger.

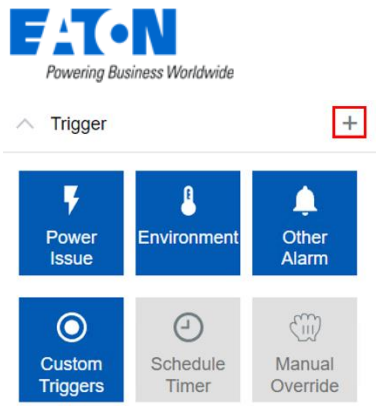
15.1.1.1.4. Custom Triggers

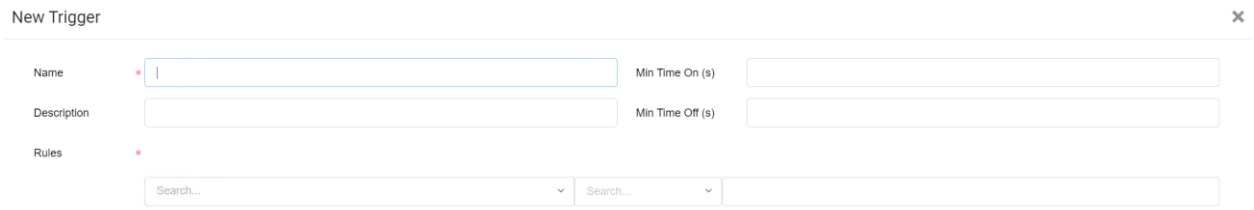
When clicking the Custom Triggers tile, a Custom Event Trigger window will pop up for users to do relevant operations of the trigger creation.

If users are the first time to use this function, the window is empty.



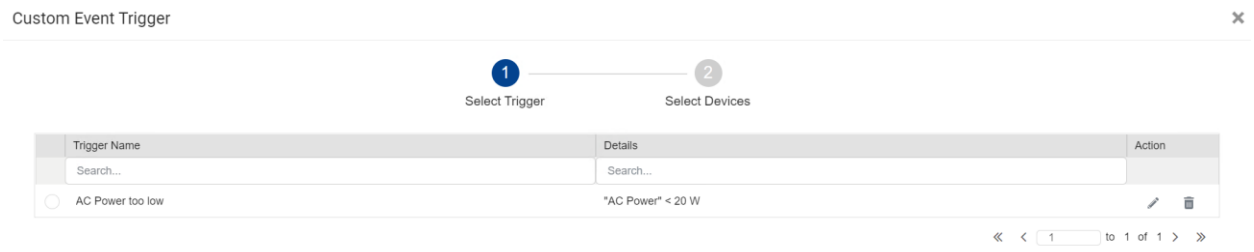
They need to click the + button on the Trigger panel to define the custom trigger first.



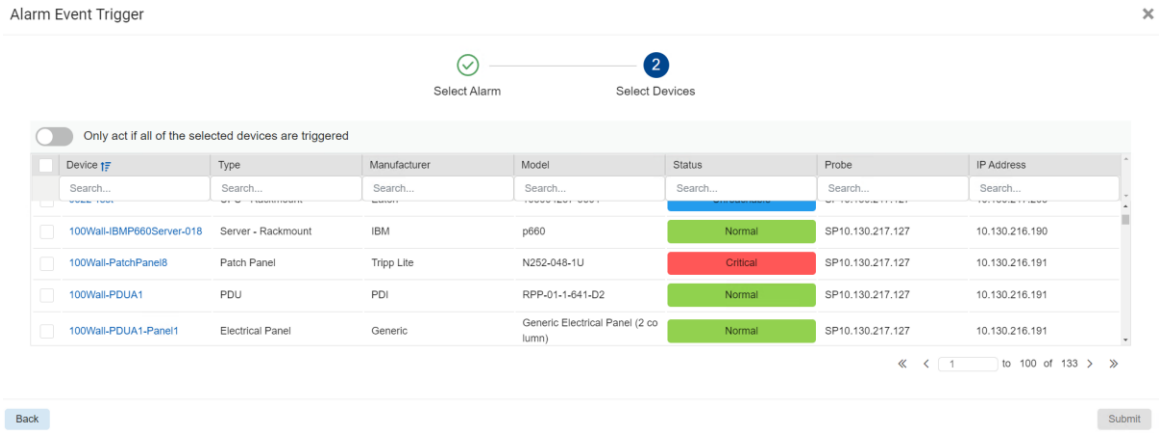


The trigger configuration rule is the same as the system trigger configuration rule. Please refer to the Create New Triggers section. Only one trigger rule can be set for one custom trigger.

Now, back to the Custom Event Trigger window. The trigger the user just defined is displayed here. Users can quickly edit or delete the trigger by clicking the button in the Action column .



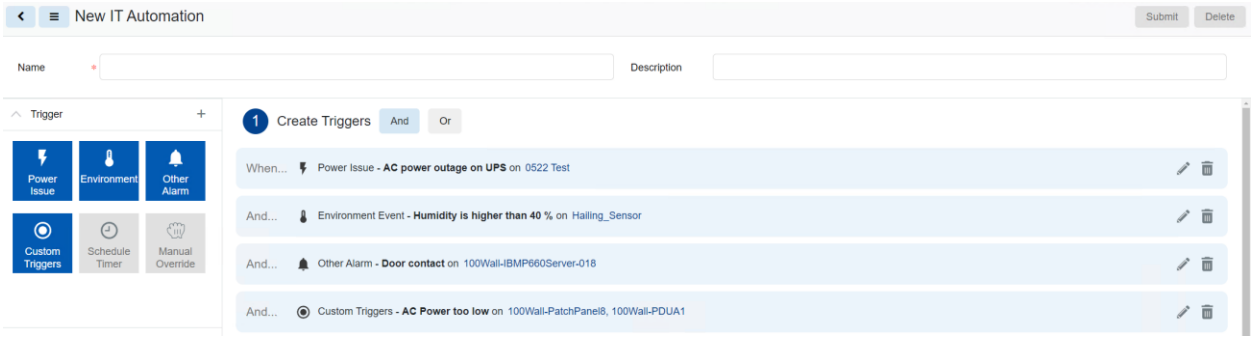
1. All customized triggers will be listed on this page. Select the trigger you'd like to use.
2. Once a trigger is selected, the Next button will be enabled.
3. Select devices. Users can select multiple devices at the same time. **Note**: Users must ensure the devices they select have appropriated monitored attributes, depending on the trigger they choose.



4. There is a toggle button above the device table. By default, this toggle button is turned off. This means if users select more than one device, as long as one of the devices triggers the trigger condition, this automation will run. If this toggle button is turned on, then if users select more than one device, the automation will only run once all devices they select trigger the trigger condition.
5. Click the “Submit” button to submit the trigger.

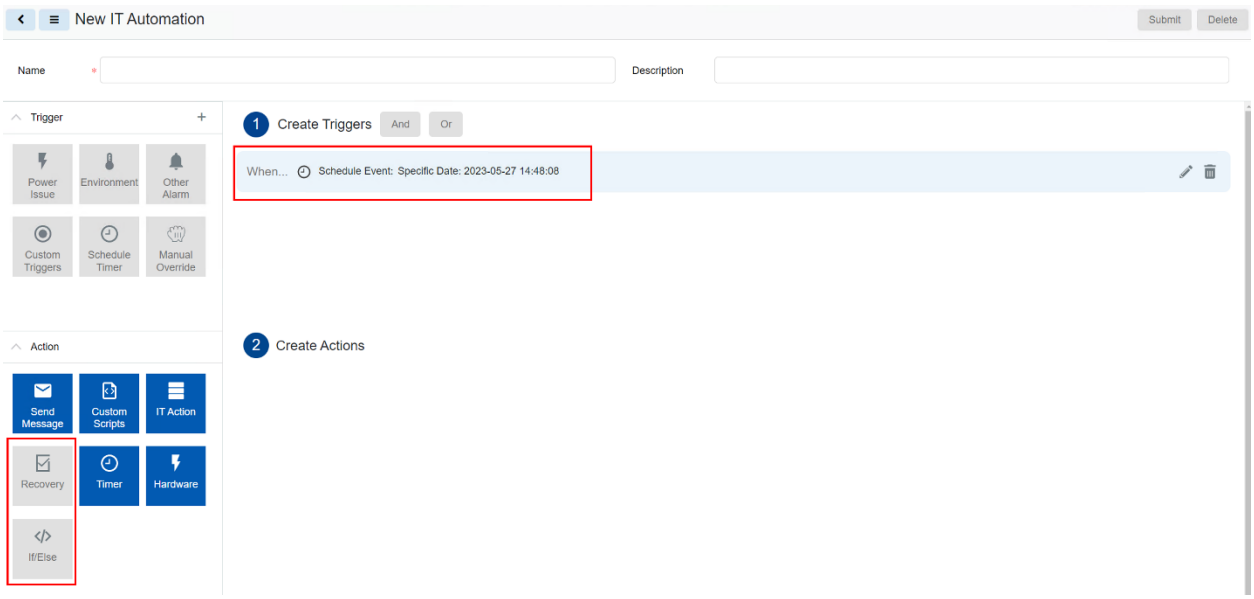
15.1.1.1.5. Schedule Timer

The Schedule Timer trigger allows users to set a specific date or recurrence for the trigger. This trigger can only be used itself and cannot be used with other trigger types together. If users already set other triggers in this automation, the “Schedule Timer” button won’t be accessible.

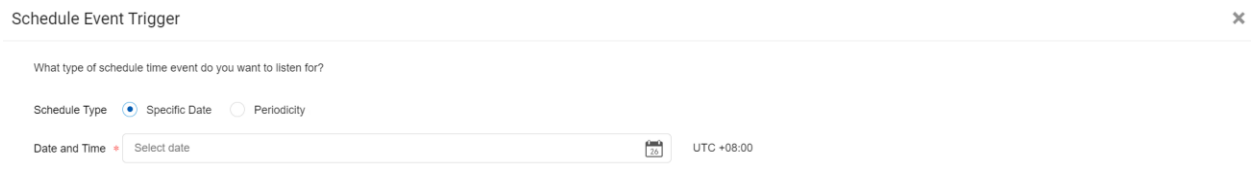


Only one Schedule Timer trigger can be set in one automation.

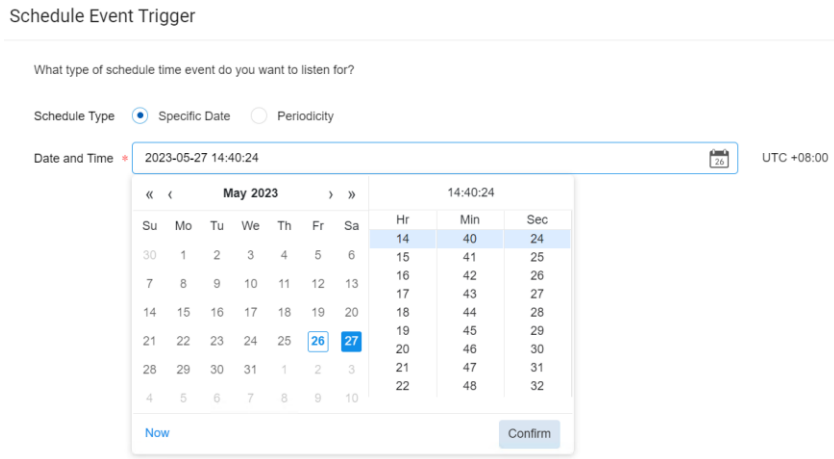
The Recovery and If/Else action is not available for the Schedule Timer trigger.



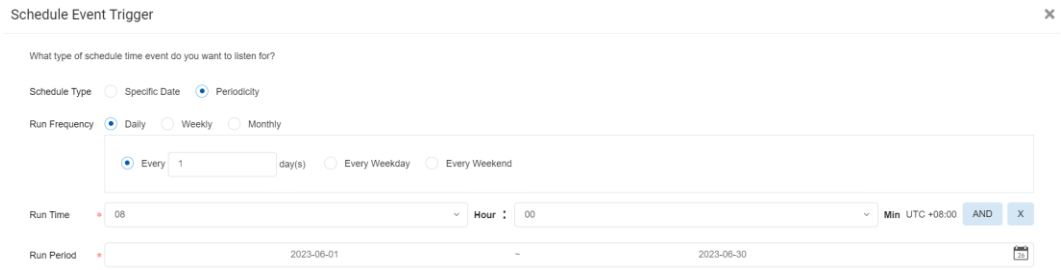
When clicking the Schedule Timer Triggers tile, a Schedule Event Trigger window will pop up for users to do relevant operations of the trigger creation.



1. Choose the Schedule type.
    a. Specific Date – The automation will run on a fix time that the users set. Click the “Date and Time” field to set the date and time.



    b. Periodicity - The automation will run periodically based on the period the users set. Users can set any time want. The following example indicates the automation will run every day at 8 AM during June.



Users can set a past time, but the automation won't work.

When the automation misses the scheduled execution time due to a system-related issue, the automation will be executed when the system is back to normal.

2. Click the "Submit" button to submit the trigger.

15.1.1.1.6. Manual Override

The Manual Override trigger allows defining an automation that will only be triggered when force starts. It can be a "panic button" policy to run in case of unexpected issues.

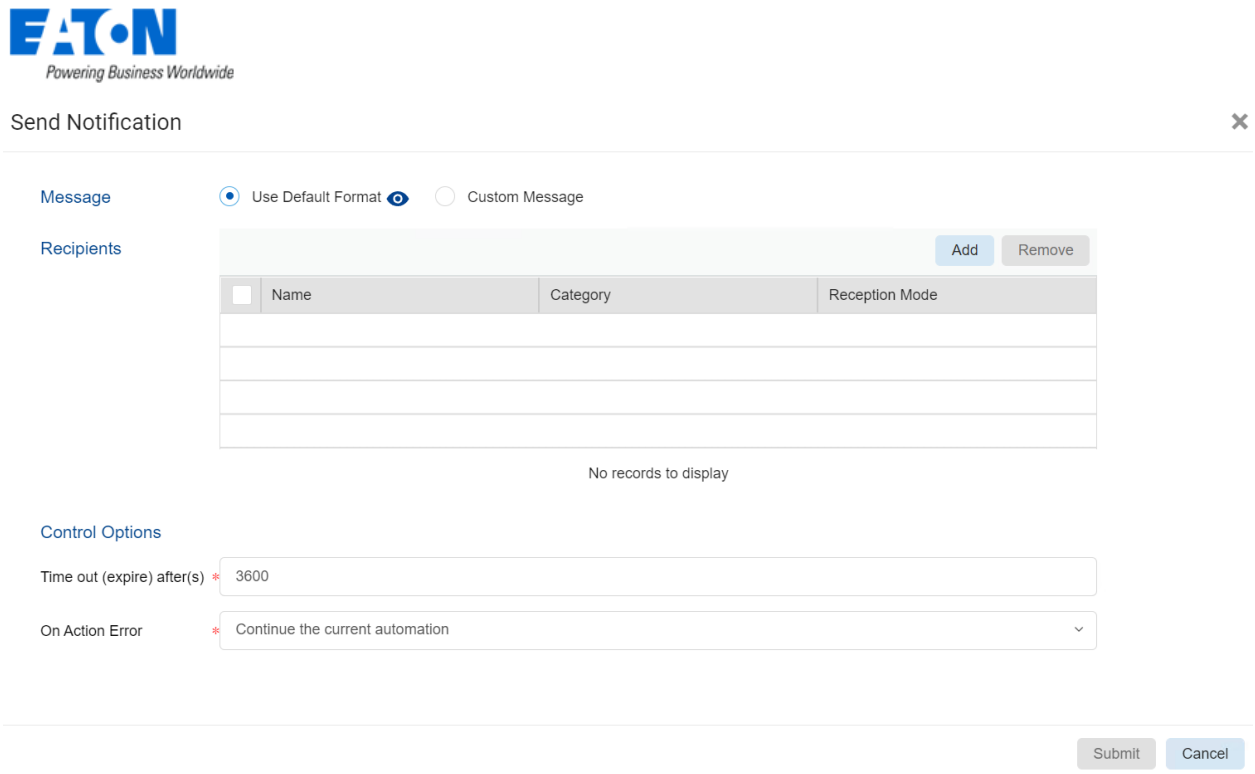
This trigger can only be used itself and cannot be used with other trigger types together. If users already set other triggers in this automation, the "Manual Override" button won't be accessible.

15.1.1.2. Select Actions

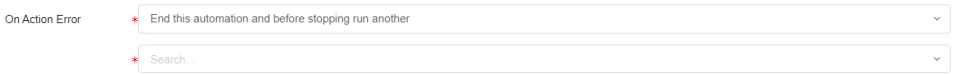
15.1.1.2.1. Send Message

The Send Message action allows the system to automatically send notifications to appointed recipients when the defined trigger(s) is triggered.

When clicking the Send Message tile, a Send Notification window will pop up for users to do relevant operations of the action creation. The interface and operation steps are very similar to the monitoring – Actions – Send Message action. Users can also refer to the Send Message section in the Monitoring chapter.



1. Users can choose the default or the custom message style. For the default message, users can click the button to preview the final style effect. For the custom message, users can use the built-in tools to enter the customized content in the Subject and Message fields to tailor the message.
2. Choose user(s) or user group(s) who want to receive the notification.
3. Set Control Options
    a. Time out (expire) after(s) – enter the timeout value. By default, the value is 3600 seconds.
    b. On Action Error – indicates once this action fails, the subsequent operations.
        i. Continue the current automation: If this action fails, continue the current automation. Execute other actions if they exist.
        ii. End the current automation: If this action fails, end the current automation.
        iii. End this automation and before stopping run another: If this action fails, end the current automation, and run another automation. Users can select another automation from the dropdown list.



4. Click the “Submit” button to submit the action.

15.1.1.2.2. Custom Scripts

The Custom Scripts action allows the system to automatically execute a specific user-defined script when the defined trigger(s) is triggered.

When clicking the Custom Scripts tile, a Custom Script window will pop up for users to do relevant operations of the action creation. The interface and operation steps are very similar to the monitoring –

Actions – Custom Scripts action. Users can also refer to the Custom Scripts section in the Monitoring chapter.

1. Select a script from the dropdown list. Note: Users have to upload the script first through the Script Management function. Only the scripts that already been uploaded will be displayed in the dropdown list. Users can click the “Script Content” button to view the sprite content.
2. Users can set the parameters for the script. We provide a list of parameters that users can use in their scripts. Please refer to the Custom Scripts section in the Monitoring chapter.
3. Set Control Options
    a. Time out (expire) after(s) – enter the timeout value. By default, the value is 3600 seconds.
    b. On Action Error – indicates once this action fails, the subsequent operations.
        i. Continue the current automation: If this action fails, continue the current automation. Execute other actions if they exist.
        ii. End the current automation: If this action fails, end the current automation.
        iii. End this automation and before stopping run another: If this action fails, end the current automation, and run another automation. Users can select another automation from the dropdown list.

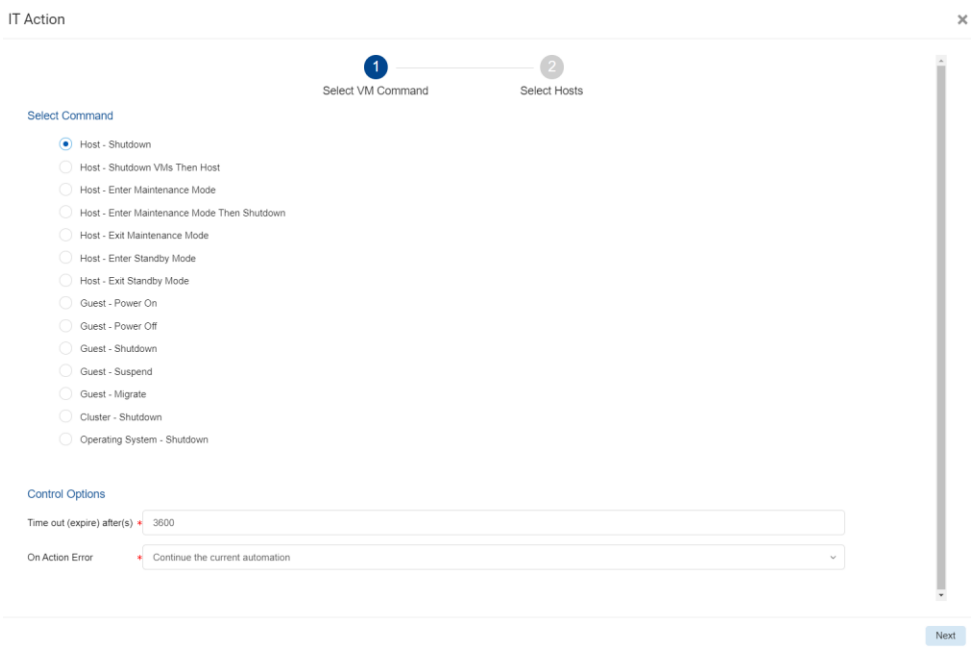
4. Click the “Submit” button to submit the action.

If a script is deleted, the automation would be in “Configuration Error” Status.

15.1.1.2.3. IT Action

The IT Action action allows the system to automatically execute VM commands when the defined trigger(s) is triggered. Thus, users can easily manage their virtual devices.

When clicking the IT Action tile, an IT Action window will pop up for users to do relevant operations of the action creation.



1. Select the VM command.
2. Set Control Options
    a. Time out (expire) after(s) – enter the timeout value. By default, the value is 3600 seconds.
    b. On Action Error – indicates once this action fails, the subsequent operations.
        i. Continue the current automation: If this action fails, continue the current automation. Execute other actions if they exist.
        ii. End the current automation: If this action fails, end the current automation.
        iii. End this automation and before stopping run another: If this action fails, end the current automation, and run another automation. Users can select another automation from the dropdown list.

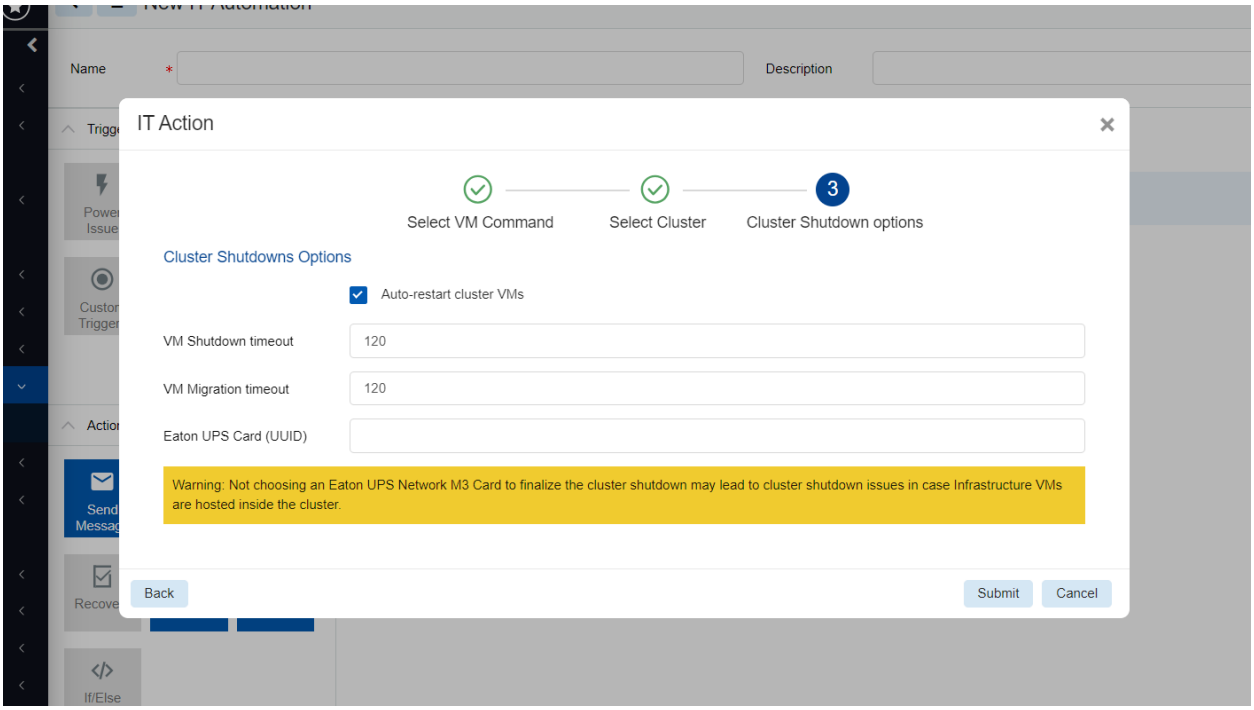
3. Select the host device. When the cluster command is selected in step 1, users can only select one cluster device.
4. For Migrate action, there is one more step than other actions. Users have to select the destination host first, then select guest.
5. Click the “Submit” button to submit the action.

15.1.1.2.3.1. Cluster Shutdown

When choosing the “Cluster - Shutdown”, and the BLSS is installed **inside** a VMware vSAN Cluster, it must be shut down before triggering the final cluster shutdown actions.

Before the shutdown, BLSS provides specific instructions to the Eaton Network M3 Card, which then executes these final shutdown instructions.

At the last step of the Cluster Shutdown IT Action, you need to enter the UUID parameter of the Eaton Network M3 Card in the Cluster Shutdown Options.



Note,

⚠ Eaton Network M3 Card minimal version: v2.0.0

⚠ The operation will not work with any other card.

⚠ When BLSS is installed outside a VMware vSAN Cluster the Eaton Network M3 Card configuration is not needed.

15.1.1.2.3.2. Guest – Power On/Power Off/Shutdown/Suspend/Migrate/Resume

For defining the IT action with any of the following commands selected (commands whose name starts with Guest -), users can choose to use either the static list or the VM groups.

- Guest - Power On
- Guest - Power Off
- Guest - Shutdown
- Guest - Suspend
- Guest - Migrate
- Guest - Resume

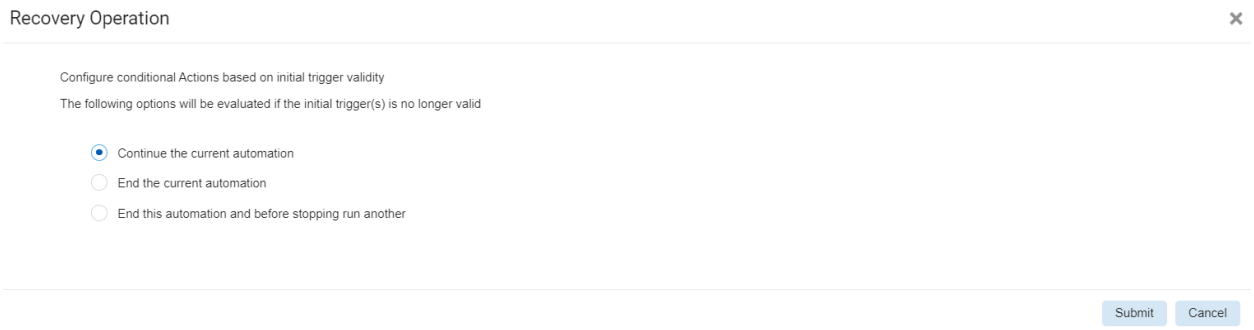
If VM Groups are selected while performing IT Automation, the selected IT action command will be sent to guests queried using the rules defined in the selected VM group.

15.1.1.2.4. Recovery

The Recovery action allows the system to automatically Configure conditional actions based on initial trigger validity when the defined trigger(s) is triggered. In general, the Recovery action does not exist alone. It will cooperate with other actions to complete an automation.

The Recovery action is not available for Schedule Timer and Manual Override trigger.

When clicking the Recovery tile, a Recovery Operation window will pop up for users to do relevant operations of the action creation.

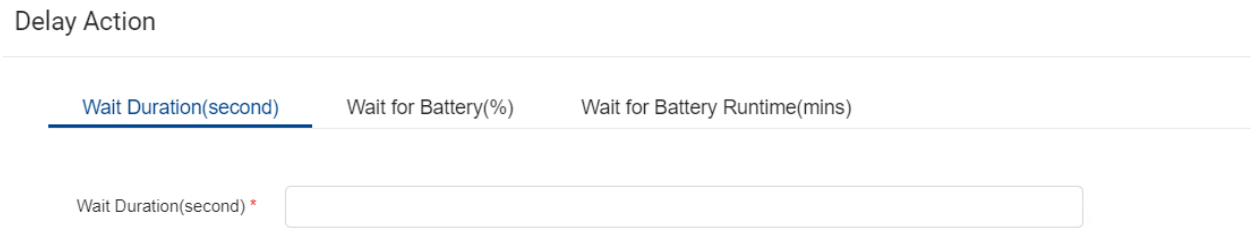


1. Continue the current automation: If trigger(s) exist and are valid, continue the current automation. Execute other actions if they exist.
2. End the current automation: If trigger(s) exist and are valid, continue the current automation. Execute other actions if they exist. Otherwise, end the current automation.
3. End this automation and before stopping run another: If trigger(s) exist and are valid, continue the current automation. Execute other actions if they exist. Otherwise, end the current automation, and run another automation. Users can select another automation from the dropdown list.

15.1.1.2.5. Timer

The Timer action allows users to set a delay action when the defined trigger(s) is triggered. Thus, users can make an action happen at an accurate time.

When clicking the Timer tile, a Delay Action window will pop up for users to do relevant operations of the action creation.



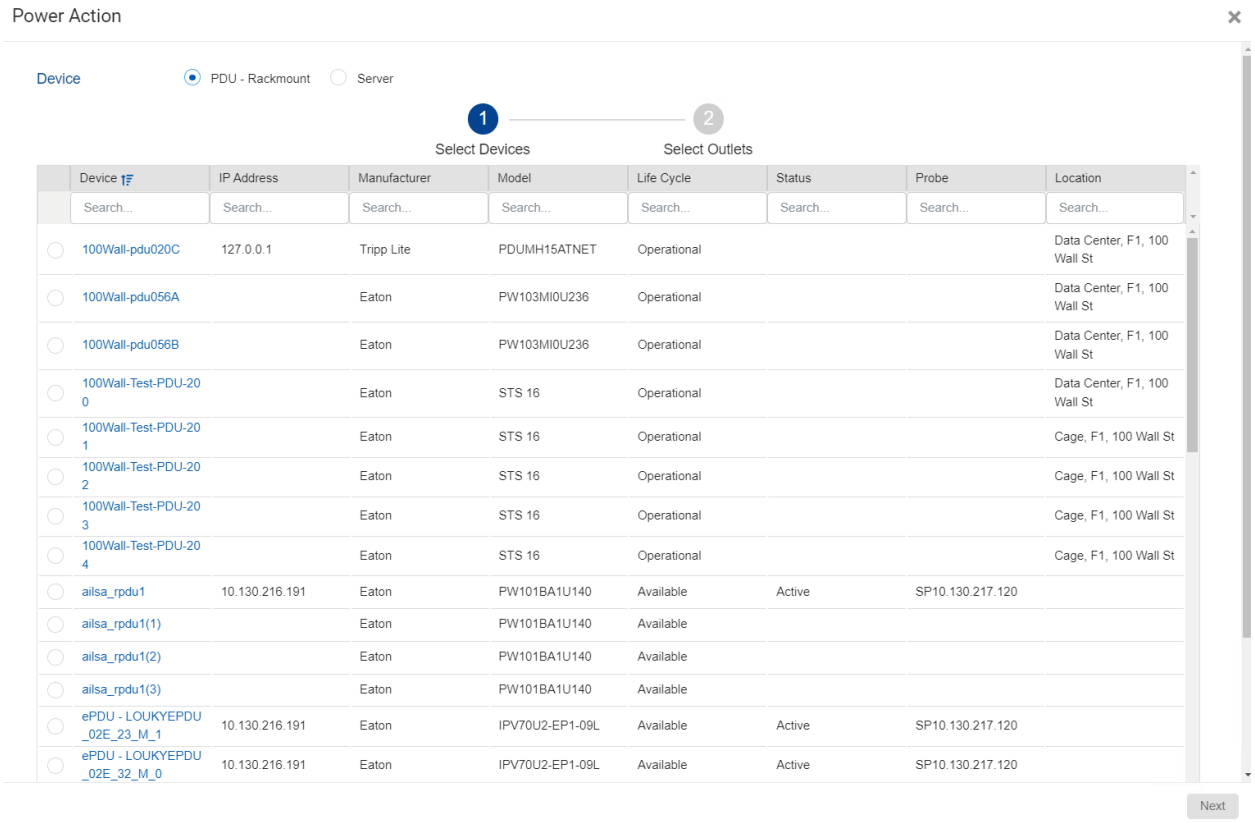
1. Wait Duration – Wait a certain duration to execute the automation.

2. Wait for Battery – Wait until the UPS – Rackmount device's battery equals or below a threshold, then execute the automation.
3. Wait for Battery Runtime - Wait until the UPS – Rackmount device's battery runtime equals or below a threshold, then execute the automation.

15.1.1.2.6. Hardware

The Hardware action allows the system to automatically turn on/off Eaton or Tripp Lite PDU – Rackmount or Server's outlets when the defined trigger(s) is triggered.

When clicking the Hardware tile, a Power Action window will pop up for users to do relevant operations of the action creation.



1. Choose the Device Type and the specific device you want to control. Only one device can be selected at one time.
2. Select the specific outlets of the device. Users can select multiple outlets at one time.
3. Set Control Options
    a. Time out (expire) after(s) – enter the timeout value. By default, the value is 3600 seconds.
    b. On Action Error – indicates once this action fails, the subsequent operations.
        i. Continue the current automation: If this action fails, continue the current automation. Execute other actions if they exist.
        ii. End the current automation: If this action fails, end the current automation.

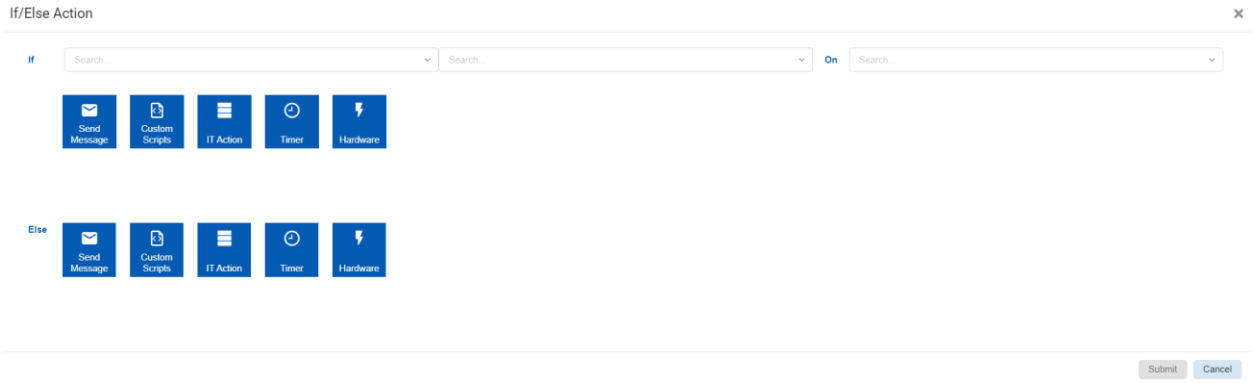
iii. End this automation and before stopping run another: If this action fails, end the current automation, and run another automation. Users can select another automation from the dropdown list.

4. Click the “Submit” button to submit the action.

15.1.1.2.7. If/Else

The If/Else action allows users to set advanced conditions by IF/ELSE logic to execute actions when the defined trigger(s) is triggered.

When clicking the If/Else tile, an If/Else Action window will pop up for users to do relevant operations of the action creation.



1. Select a trigger from the dropdown list first.
2. Then, choose an operation from a dropdown list and enter the threshold for the attribute you select.
3. Select which device you’d like to apply the trigger.
4. Select the action that will execute if the trigger condition is met.
5. Select the other action that will execute if the trigger condition is not met.
6. Click the “Submit” button to submit the action.

16. Racks Menu Group

The Racks Menu Group contains menu items for rack building and audit management which are important features for helping to manage devices mounted into racks.

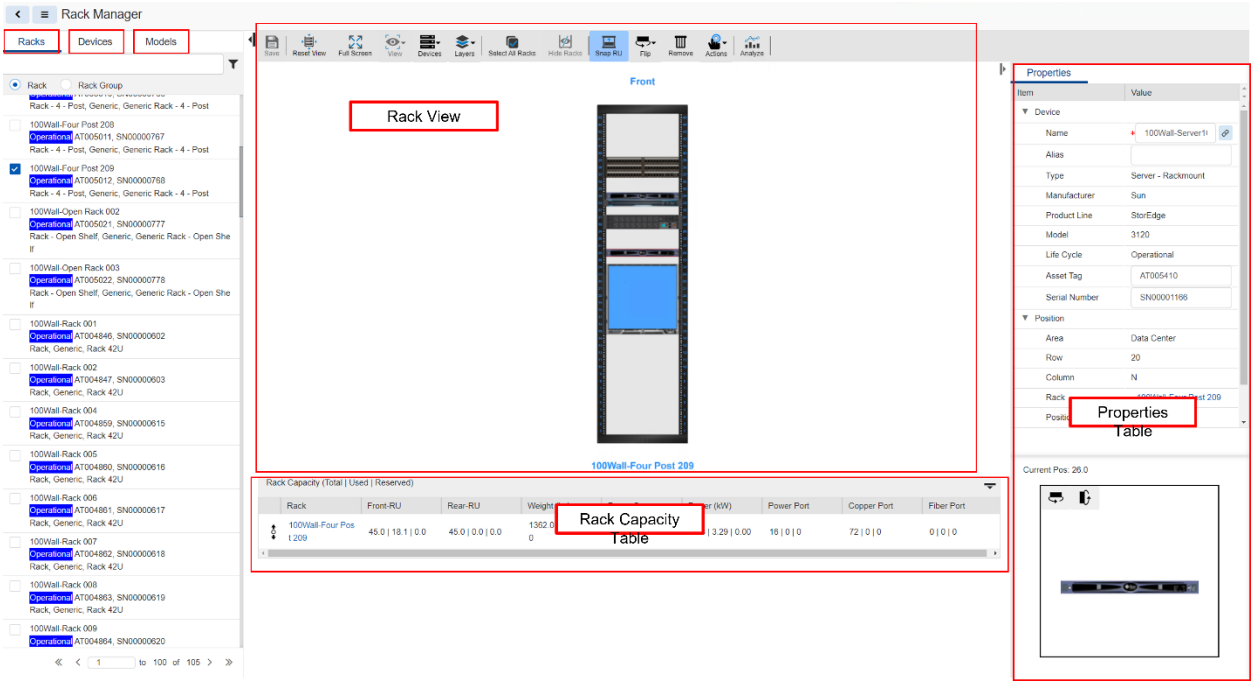
16.1. Rack Manager Menu Item

The Rack Manager Menu Item allows users to manage devices within the rack and to view rack detail and capacity information. The rack building function is a key asset management feature of the application and the graphical, drag and drop features provide intuitive methods to manage rack-mounted devices.

Note: Data in the tables can be selected and copied to be used in other fields or applications with standard Windows copy and paste shortcuts.

On the Rack Manager page there are the following key areas of the page for the user to manage and view devices and data:

- Racks List Tab
- Devices List Tab
- Model List Tab
- Rack View
- Rack Capacity Table
- Properties Table

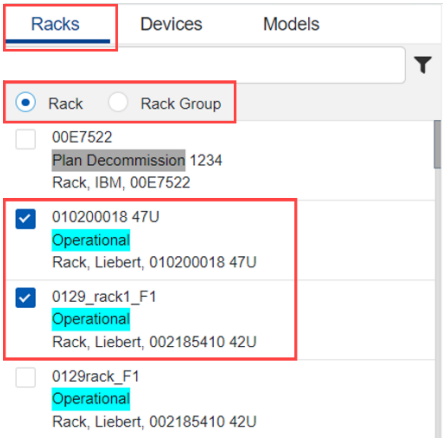


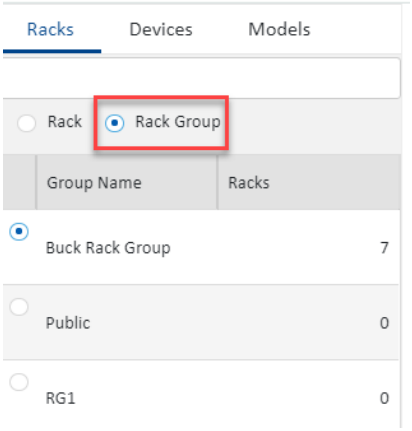
16.1.1. Racks List Tab

This part of the page will list Rack devices managed in the application based on search and filter criteria. Entering text to the search bar above the list will filter the Racks list using “contains” search logic for the Device Name of the Rack. The * character is a wildcard character in the search list. Additional filter options are available by clicking the filter icon next to the Search bar above the Rack List.

Users can select one or more racks in the list using the checkbox next to the rack name. This will add the selected racks to the Racks View area on the page. To remove a rack from the Rack View simply uncheck the checkbox next to the Rack Name. Racks will appear in the Rack View area in the order they are selected in the Racks list. The first rack selected will be on the far left of the Rack View area and the last rack selected will be on the far right of the Rack View area.

If multiple Racks need to be selected in the same Rack Group, then users can toggle the Racks list to a list of Rack Groups by selecting the Rack Group radio button at the top of the list. Racks in the selected Rack Group will be displayed in the Rack Manager.



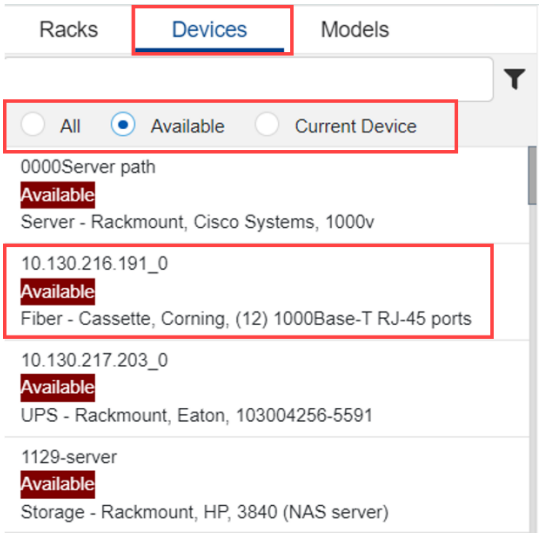


16.1.2. Devices List Tab

This part of the page will list all non-Rack devices managed in the application based on search and filter criteria. This list represents devices which have already been created and are in the Devices list. Entering text to the search bar above the list will filter the Devices list using “contains” search logic for the Device Name of the Rack. The * character is a wildcard character in the search list. Additional filter options are available by clicking the filter icon next to the Search bar above the Device List. Radio buttons are available to easily filter the list for All Devices, Available devices only or a list of devices in the currently selected racks.

The background color of the lifecycle is exactly matched with the Life Cycle attribute’s color. The icons at the right indicate several device statuses:

- Alarm severity icon: indicates the device is in abnormal status.
- : indicates the device cannot be move.
- : indicates the device is in a project.



Information

If there is a Server - Blade Enclosure device deployed in the rack, only the blades or models that can be deployed into this Blade Enclosure server will be listed in the Devices list or the Models list.

16.1.3. Models List Tab

The Models List is used to create devices based on a model. In this use case, the device has not already been created in the application so a user can create the device and mount the device into the rack with a single action. The Model List contains a full list of all non-Rack models.

Entering text to the search bar above the list will filter the Models list using “contains” search logic for the Device Name of the Rack The * character is a wildcard character in the search list. Additional filter options are available by clicking the filter icon next to the Search bar above the Model List.

16.1.4. Rack View

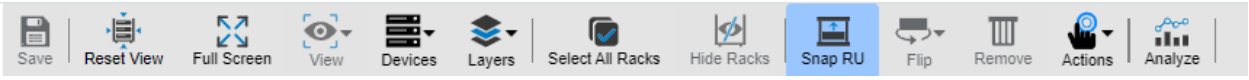
When one or more racks are selected from the Rack list, the rack images and views of the mounted devices will be presented to the user. The order of racks on the screen will match the order in which the racks are selected in the Rack List. Users can reorder the racks in the Rack View by using the up|down arrow icons in the Capacity table to drag and drop the racks within the list. The following features are provided on the rack view portion of the page:

- Pan Rack Images – Right click the mouse and drag the racks.
- Zoom Rack Images – Use the mouse scroll wheel to zoom into the racks to view details of devices.
- Rotate Rack Images – Users can rotate 3D views of the racks by using the left mouse button and moving the mouse.

- Selecting Racks – Racks can be selected to allow users to perform an action on the rack such as changing views. Users can select a rack by using a single click of the left mouse button. This will highlight the rack with a red outline. Multiple Racks can be selected by holding the Ctrl key and clicking subsequent racks with the left mouse button. Each selected rack will be outlined with the red lines.
    - When clicking the rack be sure not to click a device within the rack. Selecting a rackmount device will not select the entire rack.

16.1.4.1. Toolbar

There are several functions which can be performed in the Rack View with the icons presented on the toolbar. The following actions are supported with the toolbar:



16.1.4.1.1. Save Icon

Saves all changes made to the racks.

16.1.4.1.2. Reset View

Resets the 3D orientation view of all the racks to a 2D view.

16.1.4.1.3. Full Screen

Toggles the view of the Rack Manager from Full Screen to the default view.

16.1.4.1.4. View

The View icon allows users to change views of the selected racks. For example, to view the Rear of racks users can select one or more racks and choose the View-Rear option from the list.

16.1.4.1.5. Devices

Front Devices

Allows users to show or hide devices which are mounted to the front of the rack.

Rear Devices

Allows users to show or hide devices which are mounted to the rear of the rack.

16.1.4.1.6. Layers

By default, device images are presented in the Rack View. The Layers icon allows users to switch from the Device Image to the Device Name by selecting from the dropdown list.

16.1.4.1.7. Select All Racks

Selects all the racks displayed in the Rack View.

16.1.4.1.8. Hide Racks

Selected Racks will be removed from the Rack View and deselected in the Rack List. If a Rack Group is being viewed this icon will change name and can be used to hide the racks which belong to the selected Rack Group.

16.1.4.1.9. Snap RU

Snap RU allows users to manage the granularity of the U Position when assigning devices to Racks. By default, Snap RU is on and forces devices into the full U position (i.e., 5.0, 6.0, 7.0, etc.). If the Snap RU is off, users can assign devices into the partial U positions (i.e., 5.0, 5.1, 5.2, 6.0, 6.1, etc.).

16.1.4.1.10. Flip

Flip Horizontal

If a Rack is selected then the selected Racks will rotate between Front, Left , Rear and Right views. If a rackmount device is selected, the device will toggle between front and rear views of the device.

Flip Vertical

If a Rack is selected then the selected Racks will rotate between Front, Left , Rear and Right views. If a rackmount device is selected, the device will rotate vertically while maintaining the same front or rear view within the rack.

16.1.4.1.11. Remove

Users can select devices mounted to the rack and then click the Remove button. This action removes the devices from the Racks but does not Delete them from the application.

16.1.4.1.12. Actions

The Action icon allows users to reserve devices, decommission devices, plan to decommission devices, cancel decommission devices, cancel reservation, and set devices to operational. The details will be introduced in later section.

16.1.4.1.12.1. Reserve Devices

The “Reserve” button is accessible when users select a device whose lifecycle is “Available” or “Procurement”. After that, the lifecycle status will become “Reserved Available” or “Reserved Procurement”.

Note: The lifecycle of devices deployed on an “Available” rack is also “Available”. In this case, these devices cannot be reserved even though their lifecycle is “Available”.

16.1.4.1.12.2. Decommission Devices

The “Decommission” button is accessible when users select a device whose lifecycle is “Operational” or “Plan Decommission”. After that, the lifecycle status will become “Decommissioned”.

Note: The lifecycle of devices deployed on an “Available” rack is also “Available”. In this case, these devices can be decommissioned even though their lifecycle is “Available”.

16.1.4.1.12.3. Plan to Decommission Devices

The “Plan Decommission” button is accessible when users select a device whose lifecycle is “Operational”. After that, the lifecycle status will become “Plan Decommission”.

Users can keep decommissioning the device or cancel this decommission action.

Note: The lifecycle of devices deployed on an “Available” rack is also “Available”. In this case, these devices can be planned to decommission even though their lifecycle is “Available”.

16.1.4.1.12.4. Cancel Decommission Devices

The “Cancel Decommission” button is accessible when users select a device whose lifecycle is “Plan Decommission”. After that, the lifecycle status will become “Operational”.

16.1.4.1.12.5. Cancel Reservation

The “Cancel Reservation” button is accessible when users select a device whose lifecycle is “Reserved Available” or “Reserved Procurement”. After that, the lifecycle status will become “Available” or “Procurement”.

16.1.4.1.12.6. Set Devices to Operational

The “Set Operational” button is accessible when users select a device whose lifecycle is “Reserved Available” or “Reserved Procurement”. After that, the lifecycle status will become “Operational”.

Note: The lifecycle status will become “Available” for the devices deployed on an “Available” rack after clicking the “Set Operational” button.

16.1.4.1.13. Analyze

The Analyze icon allows users to enter the WHAT-IF Analysis function. Please see the following instructions for details.

Analyze button

The Analyze button supports users to drag and drop devices to the rack to simulate device deployment.

1. Select a rack and click the Analyze icon.
2. Drag a device from the Devices/Models list and drop it into the rack.
3. The device details is displayed at the bottom of the page.
4. Fill all empty fields.
    a. Department - select the department this device belongs to.
    b. Weight – enter the device weight
    c. Power – enter the power consumption of the device
    d. Power Supply A/B, Power Port – set the power supply source for the device

       The selection order is Power Supply A/B -> Power Port. There are certain criteria need to be met:

       Power Supply A

- The dropdown list will only show the PDU - Rackmount devices on the current floor which "Power-Side" field is "A Side Power", and the lifecycle is not reserved.

Power Port

- The dropdown list will display all available power ports of the selected PDU – Rackmount in which the "Service Type" is out, and the lifecycle is not reserved.

Power Supply B

- The dropdown list will only show the PDU - Rackmount devices on the current floor which "Power-Side" field is "B Side Power", and the lifecycle is not reserved.

5. Repeat step 1-3 if you'd like to simulate more than one device.
6. After the deployment of all the devices you'd like to simulate, click the Analyze button at the top right corner. A compositive capacity panel will be shown on the right side of the page. The compositive capacity panel shows the trend of capacity change after adding devices.

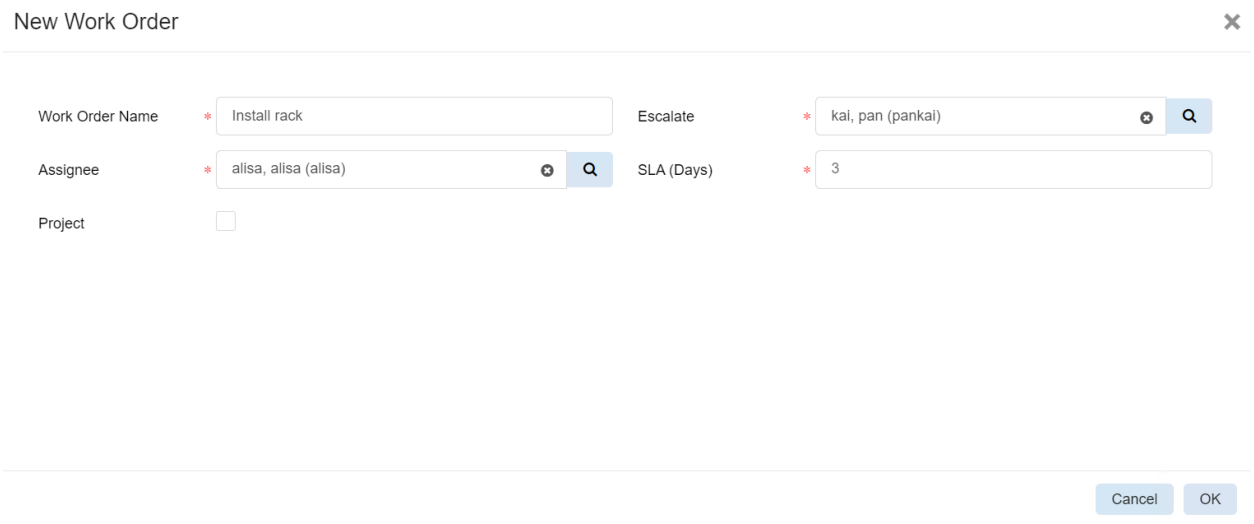
Reserve button

Th Reserve button allows users to reserve the device and all associated resources of the device they plan to deploy. The associated resources include power, weight, position space. After users reserve a device, this action shall be logged in the Calendar.

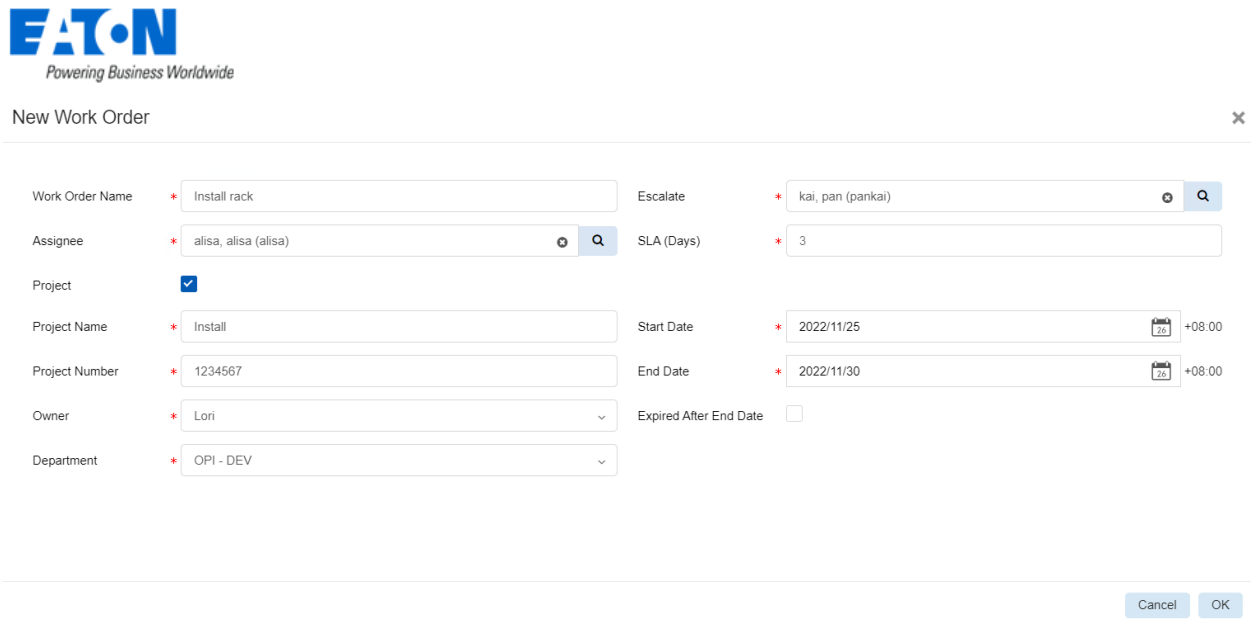
Work Order button

The Work Order button allows users to create a new "Install Equipment" Work Order for the selected devices conveniently.

Click this button, a "New Work Order" page will pop up. Complete the fields with the red asterisks that are the same as the normal Work Order creation process. The Work Order does not necessarily need to link with a Project.



Users can create a new Project at the same time by selecting the Project checkbox. Then complete the fields with the red asterisks that are the same as the normal Project creation process.



Export button

The Export button allows to export the capacity analysis result in PDF and Excel format.

16.1.5. Rack Capacity Table

The Rack Capacity Table provides details of the space, power, and cable metrics for the selected racks. The order of the racks in the table list is determined by the order the racks are checked in the Rack List. Metrics listed in the table represent the configurations of the racks including unsaved install and decommission actions performed in Rack Manager. Metrics in this table will update with each device install or decommission action performed by the users.

16.1.6. Properties Table

The Properties table is located on the right side of the page. When a rack or device is selected in the Rack View, the properties able will update with relevant asset information for the selected device. Users can show or hide the Properties table using the expand/collapse icon located in the top, left of the table.

Among these attribute fields, Name, Alias, Asset Tag, Serial Number, and Power -Side* can be edited. Users can click the icon in the Name field to jump to the Devices Menu Group – Devices Menu Item - Device details page when selecting a device or a rack.

*Note: The Power-Side field need to be field if users want to specify a more explicit power supply source. Only devices in the following types have this “Power - Side” field:

- PDU
- PDU - Rackmount
- RPP
- UPS
- UPS - Rackmount
- ATS
- ATS - Rackmount

- Rectifier
- Rectifier - Rackmount

After users save their selection, the info will be displayed on the Basic Information panel of the Device page.

At the bottom of the Properties table an image of the selected device in the Devices List will be displayed to the users. If the device needs to be rotated vertically prior to mounting into the rack, users can rotate the devices using this image window and then mount the device to the rack. This rotate feature will also work for selected devices which are already mounted into the rack.

16.1.7. Adding Devices to Rack

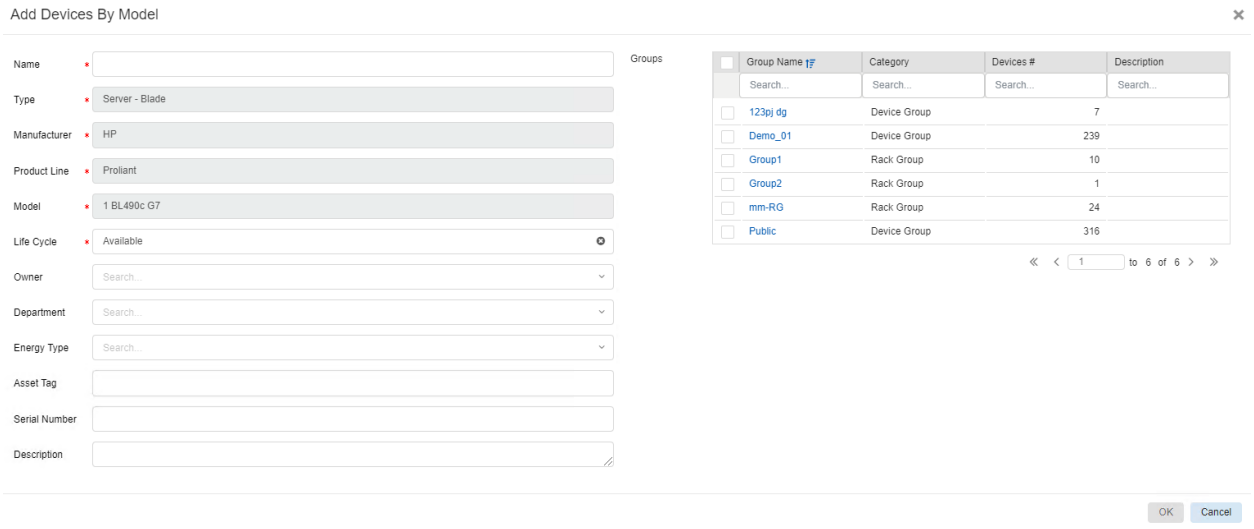
There are three methods which can be performed by users to install devices to a Rack. In all cases, the Rack View must be set based on the desired side of the rack to which you want to mount the device. For example, to place devices on the rear of the rack, the rack must be set to Rear View prior to assigning the device. As devices are being mounted to the target rack, the Current Rack, Current View, and Current U Pos data on the toolbar will display the details of where the device will be assigned if the device is placed in that location. The device is mounted to the rack when the mouse cursor is released as part of the drag and drop action.

16.1.7.1. Devices List Installs

Find devices to place into the rack using the Device List feature. Drag and drop the device from the list onto the rack in an available position. A red indicator will appear if the device is overlapping existing devices and is not able to be assigned the position. An orange indicator will appear if the device can successfully be assigned the position.

16.1.7.2. Models List Installs

Find the model of the device to be created and mounted into the rack using the Models list. Drag and drop the model to the available position on the rack. An “Add Devices By Model” form will be presented to allow the user to define key device attributes for the newly created device.

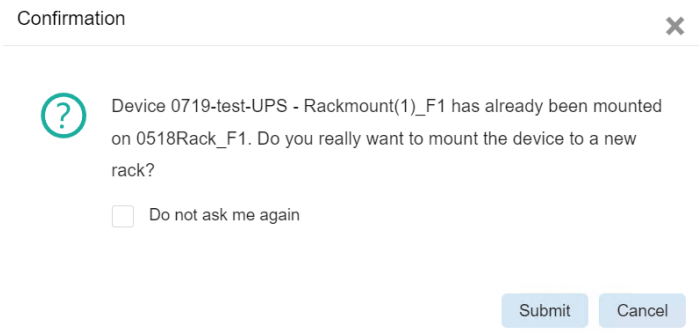


16.1.7.3. Graphical Device Moves

When users have more than one rack selected and in the Rack View, they can drag and drop devices from one rack to the other rack graphically. Click and drag a device from one rack onto the other rack to assign the device a new location. This method can also be used to reposition a device within the same rack if needed.

16.1.8. Moving Devices to another rack

Users can drag and drop devices that already deployed from the Devices List to another rack if needed. By doing this, a confirmation message will pop up.



If users select the checkbox “Do not ask again”, the pop-up message won’t pop up again until users leave the current rack.

16.1.9. Removing Devices from Rack

Devices can be removed from a rack position by single clicking the device in the rack and then clicking the Remove icon in the toolbar. Please make sure to hit the save button prior to navigating to a new node of the navigation tree to save the changes.

Note: This action does not remove the device from the device list. The device will change its device status from Operational to Available.

To fully Decommission a device, select a device in the rack and click the Decommission icon at the top of the Rack View.

16.1.10. Print Rack Configurations

A PDF report can be generated for all of the selected racks by choosing the main menu option for Export – PDF. The selected racks will be documented with each rack view and a full list of all devices with relevant information in a single PDF document.

16.2. Audit Manager

The Audit Manager Menu Item displays a list of all the audits in the system. Audits are performed to validate and update the assets which are mounted into racks in the locations being managed with the

application. Audits can be defined for floors, areas, rows of racks, individual racks, etc. The table list contains the following fields:

Devices Tab List Column	
Status	Displays the status of the audit.
Audit Name	Displays the user defined named of the audit.
# Racks	Displays the number of racks included in the audit.
% Complete	Displays the progress of the audit.
Created By	Displays the name of the user that created the audit.
Created	Displays the date the audit was created.
Start Date	Displays the date the audit was started.
Completion Date	Displays the date the audit was completed.
Actions	Displays icons    to produce an audit report PDF, export audit details to excel and delete the audit.
Table List Buttons	**Description**
New	Presents the form for creating a new audit.
Delete	Delete a selected audit work.
Cancel	Cancel the selected audit work.

We have a separate document - Mobile Audit Manager User Guide for detailed information.

16.2.1. Audit Form

Selecting the New button presents the Audit form. The Audit form has a static field in the top section followed by tabs that present their own lists related to the model.

Fields	Description
Name	Audit name is also a link to the audit form with details.
Required Cable Type	Select the cable types that need to be audited.
Status	Displays the audit status. Users cannot edit this field. The status is synchronized from MAM application.
% Complete	Displays the complete percentage of the audit. Users cannot edit this field. The percentage is synchronized from MAM application.
Start Date	Displays the start date of the audit. Users cannot edit this field. The percentage is synchronized from MAM application.
Completion Date	Displays the end date of the audit. Users cannot edit this field. The percentage is synchronized from MAM application.
Table List Buttons	**Description**
New	Presents a form for creating a new audit.
Submit	Creates the new audit with information from form. Submit also saves changes to an existing audit's form.
Submit & New	Increases efficiency when creating a number of audits sequentially by creating a new audit with existing values and presenting a blank new form.

16.2.1.1. Racks Tab

The initial view presented when the Racks Tab is selected is a list of racks to be included in the audit.

List Column

Name	Displays the name of the rack.
Auditable	Displays whether the rack is auditable.
Audit Status	Displays the audit status of the rack. Options are Not Verified, Verified, Verified – New, Absent, Verified – Error, Unverified – Error.
Audit Date	Displays the audit date.
Model	Displays the rack's model name.
Product Line	Displays the rack's product line.
Manufacturer	Displays the rack's manufacturer.
Serial Number	Displays the rack's serial number.
Asset Tag	Displays the rack's asset tag.
Groups	Displays the names of the groups to which the rack belongs.
Location	Displays the racks location.
User List Buttons	
Add	Add displays a table list of available racks to add to the audit. Click the check boxes to select racks to be added to the audit. Click Submit to save the selected racks to the list of racks for the audit. Close, closes the window and does not save.
Remove	Removes the selected rack from the rack list.

16.2.2. Executing an Audit

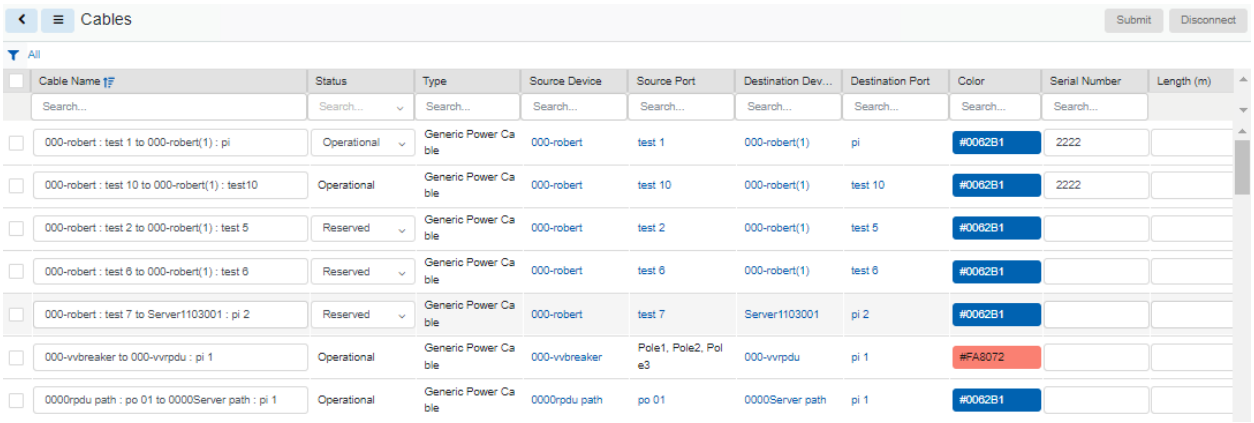
Please refer to the Mobile Audit Manager documentation for instructions on how to execute an audit.

17. Connections Menu Group

The Connections Menu Group contains all cable and port-related menu items. Users can do port mapping between devices.

17.1. Cables Menu Item

The Cables Menu Item displays a list of existing cable connections available for editing and disconnecting.



The table list contains the following fields:

List Column	
Cable Name	Displays the name of the cable. The field can be edited directly in the list.
Status	Displays if the status is Operational or Reserved.
Type	Displays cable type.
Source Device	Displays the name of the source device.
Source Port	Displays the port name on the source device.
Destination Device	Displays the name of the destination device.
Destination Port	Displays the port name on the destination device.
Color	Displays the cable color. Color can be changed directly in the list.
Serial Number	Displays cable's serial number. The field can be edited directly in the list.
Length	Displays the length specified for the cable. The field can be edited directly in the list.
Description	Enter user defined description.
Action	Pencil icon opens the cable's form for editing.
Page Buttons	
Submit	Saves any changes made to the editable fields.
Disconnect	Disconnects the selected cable.

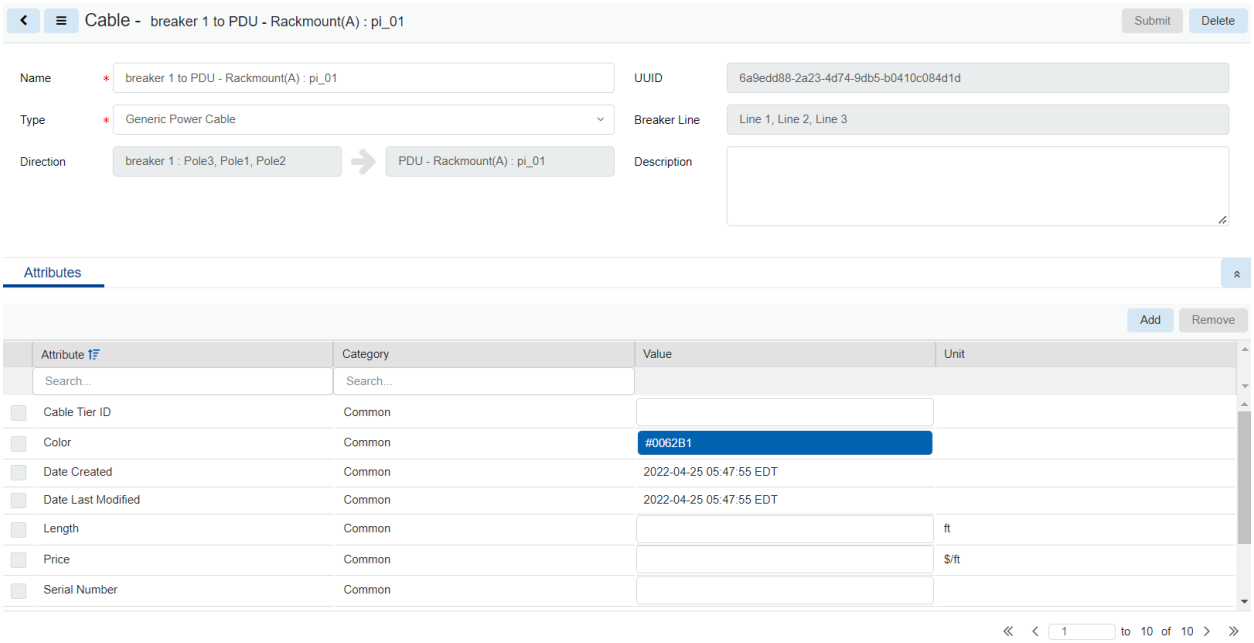
Users can change the cable status directly from the Cables page thought the dropdown list of the Status field. The cable connection status can only be changed from Reserved to Operational, not from Operational to Reserved. The related port's status will also change from Reserved to Operational. The dropdown list will disappear after the execution is done. Users can create reserved cables and change the cable status through the Import tool as well.

Note: We only support Power, Copper, and Fiber type cables now. The cable status can't be changed if the reserved cable is created by a Project.

17.1.1. Edit Cables

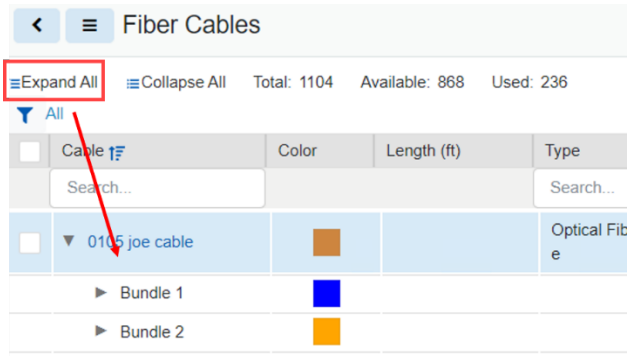
Click the pencil icon in the Action column to edit the connected cables. Users can edit the connection name, cable type, and change the attributes.

Note: The Direction, UUID and a few attributes are not editable.



17.2. Fiber Cables

The Fiber Cables Menu Item displays a list of fiber cables created in the system. Click the Expand All button on the top left corner to show all the fiber bundles under cables. User can view the total lines, available lines and used lines of all cables in the system.



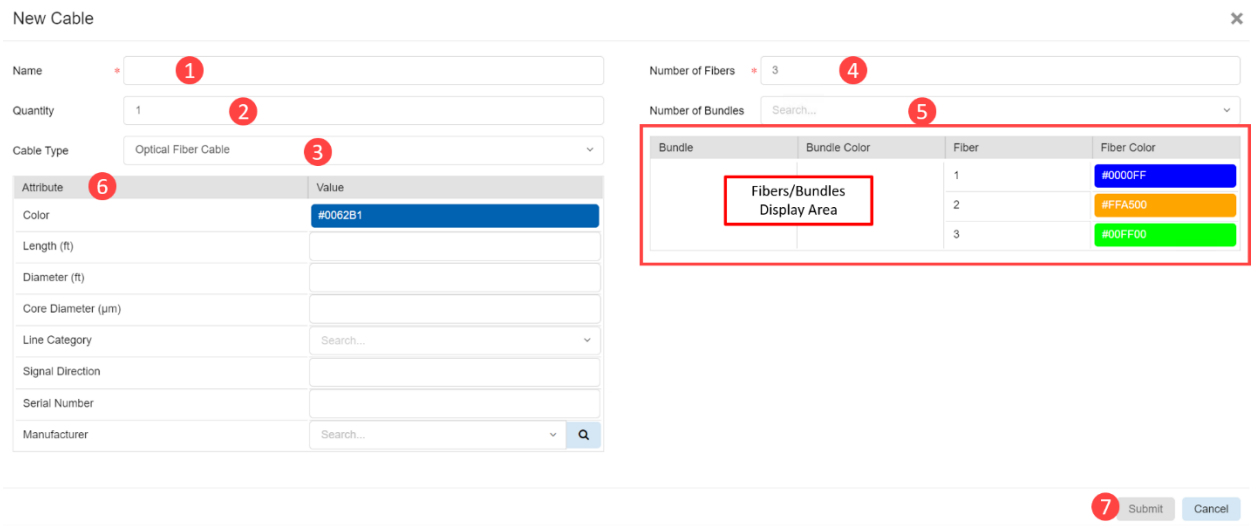
The table list contains the following fields:

List Column

Cable	Displays the name of the cable.
Color	Displays the cable color.
Length	Displays the length specified for the cable.
Type	Displays the fiber cable type.
Lines	Displays the number of lines of the fiber cables.
Available	Displays the number of available lines of the fiber cables.
Used	Displays the number of used lines of the fiber cables.
Usage	Displays the usage percentage.
Signal Direction	Displays the signal direction.
Junction Box	Displays the Junction Box name of the fiber cables.
Direction	Displays the signal direction.
Grid	Displays the grid info.
Connected Cable	Displays the cable name that connected with this fiber cable.
Connected Fiber	Displays the fiber cable name that connected with this fiber cable.
Page Buttons	
New	Creates a new fiber cable.
Delete	Deletes an existing fiber cable.

17.2.1. Create New Fiber Cables

Click the New button to create a new fiber cable configuration form. The following screen is presented to the user with the functions defined below.

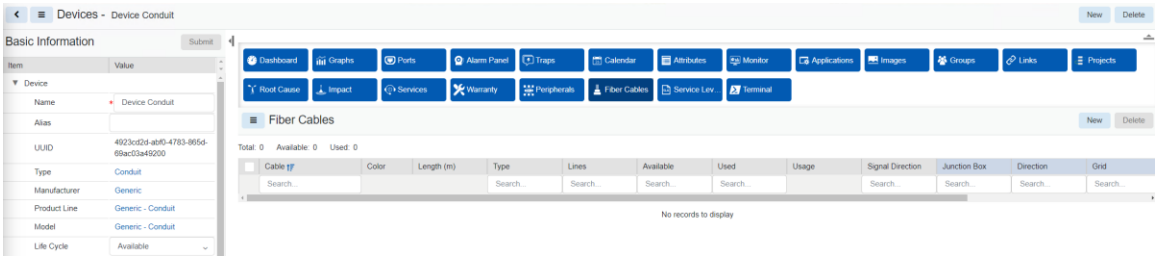


1. Enter the fiber cable name.
2. Select the quantity of the cables.
3. Select the cable type.
4. Enter the number of fibers in this cable.
5. Select the number of bundles. The options are varied according to the number of fibers you entered.
6. Fill the attributes if needed.
7. Click the Submit button.

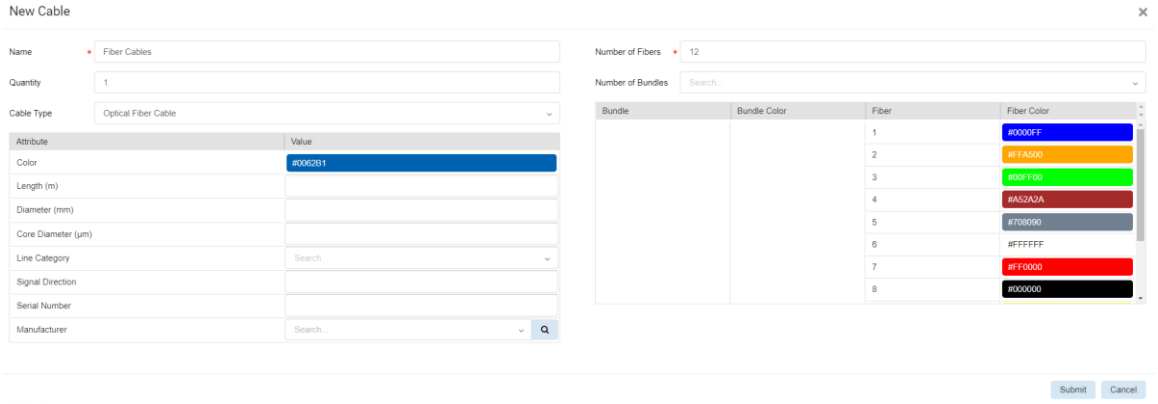
17.2.2. Example: Manage fiber cables in BLSS

In practical installations, fiber cables are inherently fragile and thin. Their vulnerability to moisture, temperature fluctuations, and mechanical stress necessitates additional layers of defense. Enter conduits and junction boxes—essential components that enhance security and longevity, and we provide users with the same installation scenario to make the connections in BLSS.

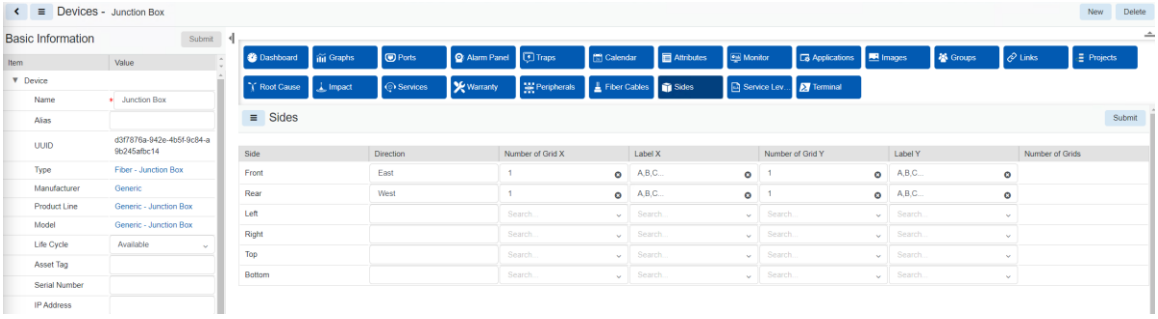
1. Create a device that type “Conduit” in Devices menu item.



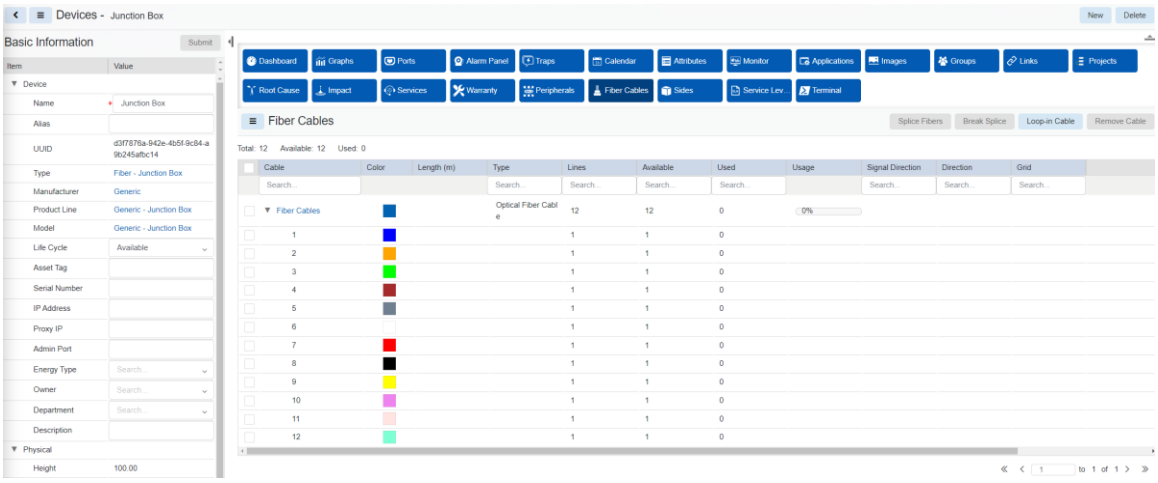
2. Create fiber cables on the conduit in the “Fiber Cables” function tile. Click the “New” button and then, enter the name of the fiber cables. The number of fibers is mandatory, and the number of bundles is optional. Click the “Submit” button to finish the creation.



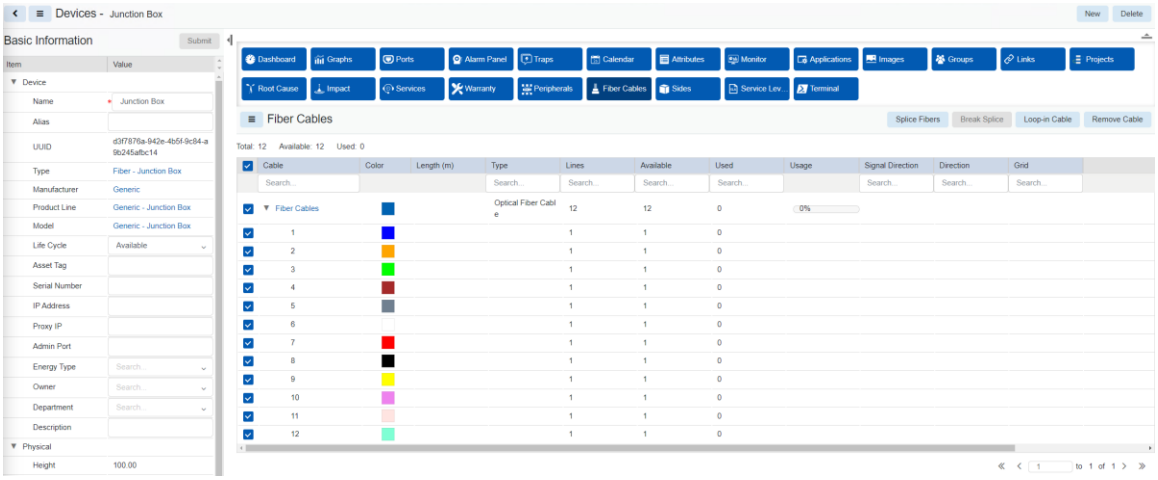
3. Create a device that type “Fiber - Junction Box” in Devices menu item.
4. Define sides on the Junction Box on the function tile “Sides”.



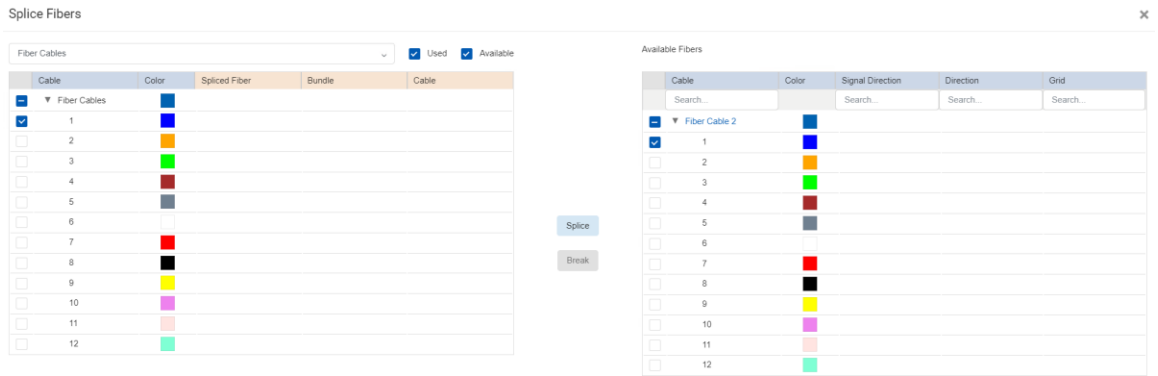
5. Loop in fiber cables in the Junction Box in the function tile “Fiber Cables”. Click the “Loop-in Cable” button. Choose the Cables you want to loop in and then, click the “Submit” button.



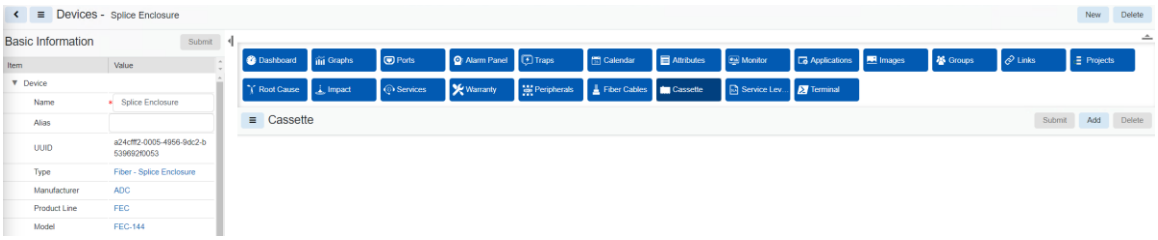
6. Splice fibers in the Junction Box function tile “Fiber Cables”. Select the checkbox of the fiber cable you just looped in, then the “Splice Fibers” button will be accessible.



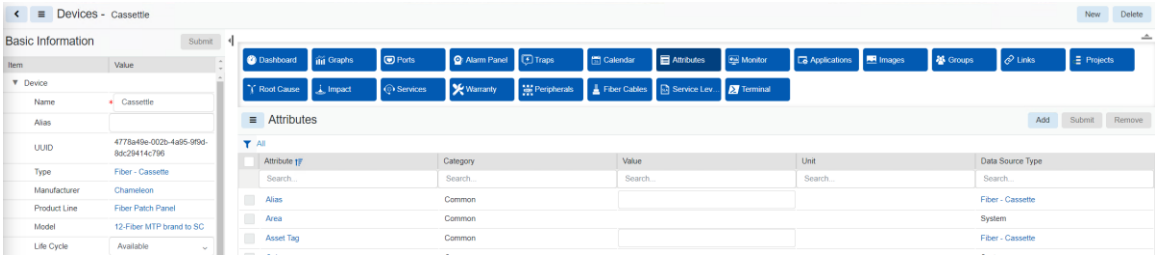
Click the “Splice Fibers” button. You need at least two fiber cables in the system to splice the fibers. Choose the cables you want to splice and then, click the “Splice” button.



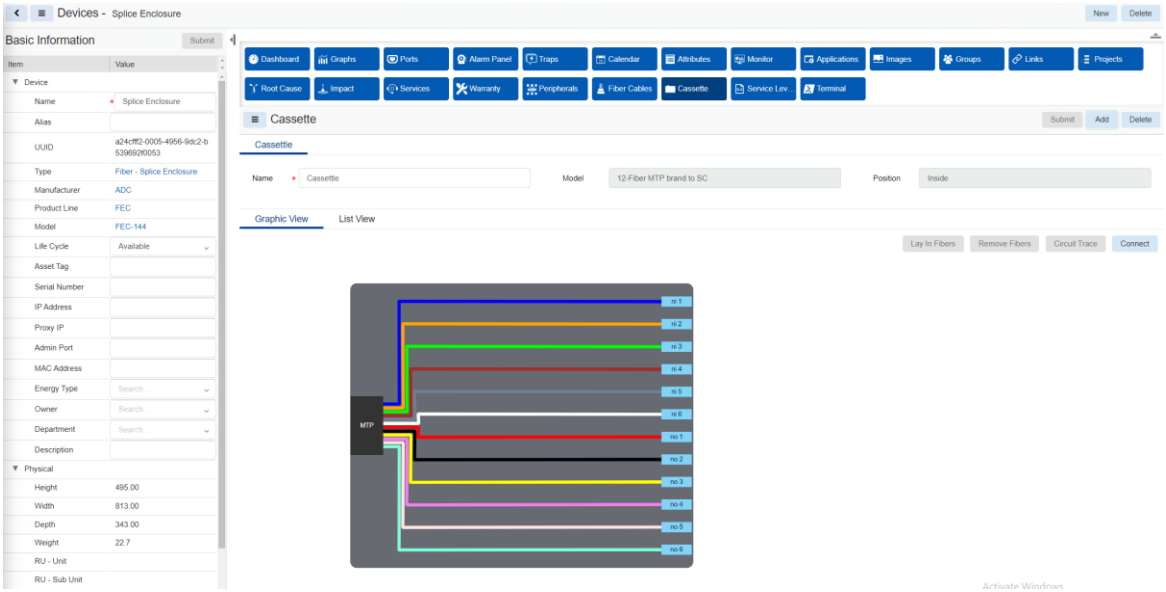
7. Create a device that type “Fiber – Splice Enclosure” in Devices menu item.



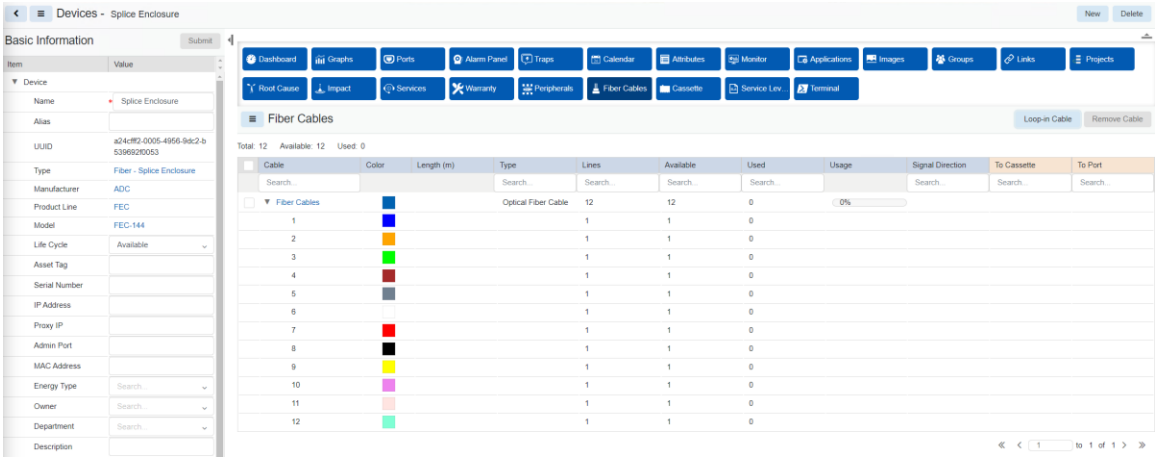
8. Create a device that type “Fiber – Cassette” in Devices menu item. Make sure the cassette’s model has both the in/out ports.



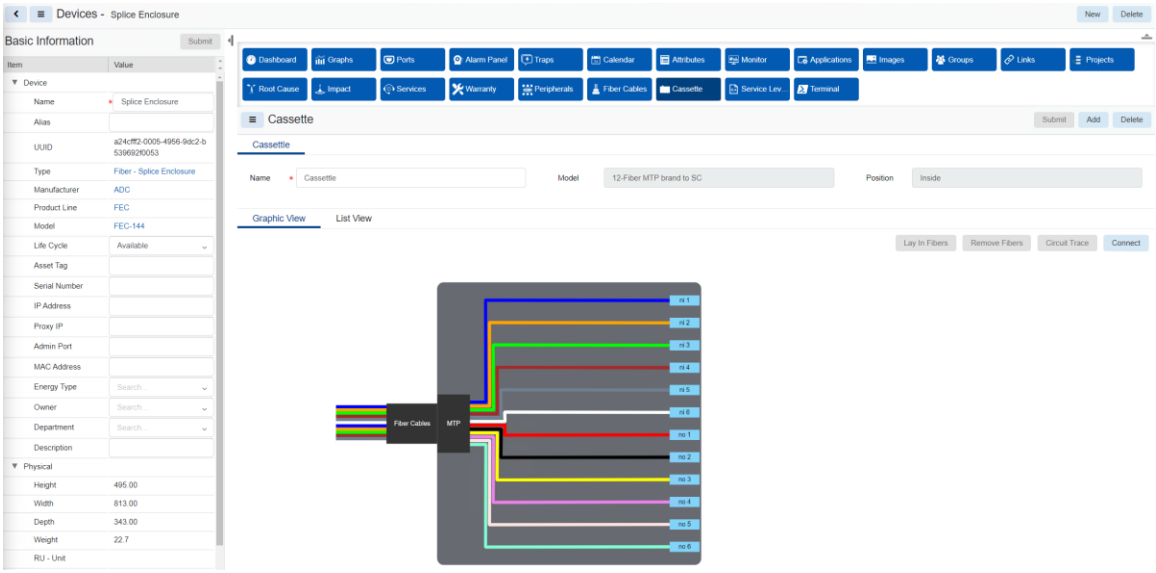
9. In the device Fiber – Splice Enclosure’s “Cassette” function tile, click the “Add” button. Choose the cassette you want to add to the Splice Enclosure device. Then click “Submit & Close” button.



10. Loop in fiber cables in the function file “Fiber Cables”. Go to the “Fiber Cables” function tile. Click the “Loop-in Cable” button. Choose the fiber cables you want to loop in and then, click the “Submit” button.



11. Lay in fibers in the function file “Cassette” -> Graphic View. Choose an “IN” port (For example, MTP port in the screenshot), then the “Lay In Fibers” button will be accessible. Click the “Lay In Fibers” button, choose the fiber cables you want to lay in (For example, the MTP port requires 12 fiber cables, so you need to choose 12 fiber cables), and then click the “Submit” button.



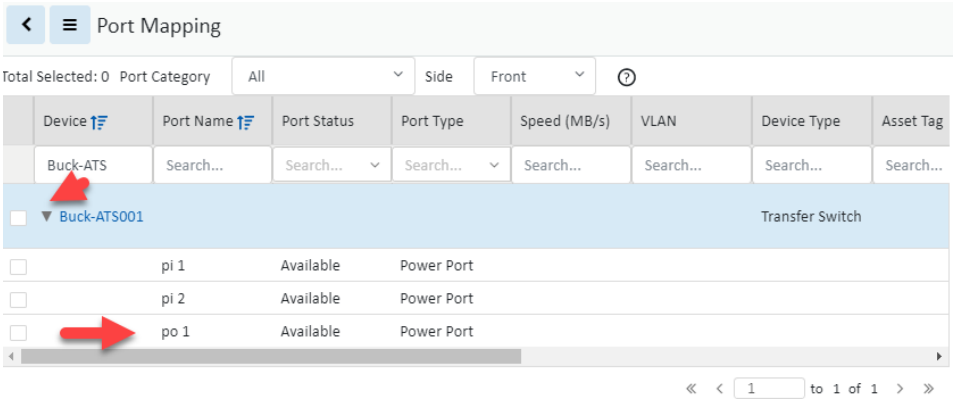
12. Connect the cassette to switches in the “Port Mapping” menu item.
13. Repeat step 2-6 if you have more than 1 Junction Box.

17.3. Port Mapping Menu Item

The Port Mapping Menu Item allows users to create mappings between power ports and network ports using the port mapping feature. If a device does not have an appropriate port listed, ports can be added in device central by through the Ports function tile for the device.

The port mapping feature page is divided into two sections. The left section for specifying the first device port and the right section for the second device port. Both tables are empty to start. Using the search fields in the second row of the right table, sort for the first device.

Toggle the triangle next to the device name to show and hide the available ports.



Left Table Fields and Options	
Total Selected	Displays the number of ports selected in the table.
Port Category	Filters what ports are listed for the device. Options are All, Copper Port, Fiber Port, Power Port or Storage Port.
Side	Specifies that the ports listed are on the Frontside or the Backside of the device.
List Column	
Device	Displays device name.
Device Port Name	Displays port name.
Device Port Status	Displays port status.
Device Port Type	Displays port type.
Device Port Speed (MB/s)	Displays port speed.
Device Port VLAN	Displays the port's VLAN information.
Type	Displays device type.
Asset Tag	Displays device's asset tag information.
Serial Number	Displays device's serial number.
IPV4 Address	Displays device's IP address.
Owner	Displays device
Group Names	Displays the group to which the device belongs.
Rack Name	Displays the rack where the device is placed.
Short Path Location	Displays the device's location.
Settings Icon	Used to select and arrange columns in the table.
Page Buttons	
Connect	Connects the ports selected and opens the New Cable form where cable details can be specified. Submit makes the connection.
Reserve	Opens the New Cable form where cable details can be specified. Submit will reserve the ports for future connection.
Cables	Opens the cable list showing all connections in the system.
	These icons collapse and expand the area of the page to provide more space for the tables.
Right Table Fields and Options	
Location Filter Drop-Down Menu	Filters the table device list to show ports in All locations, Same Area, Same Floor or Same Rack. The default is Same Rack and can be changed in the user's personal setting.
Side	Specifies that the ports listed are on the Frontside or the Backside of the device.
List Column	
Device	Displays device name.
Device Port Name	Displays port name.
Device Port Status	Displays port status.

Device Port Type	Displays port type.
Device Port Speed (MB/s)	Displays port speed.
Device Port VLAN	Displays the port's VLAN information.
Type	Displays device type.
Asset Tag	Displays device's asset tag information.
Serial Number	Displays device's serial number.
IPV4 Address	Displays device's IP address.
Owner	Displays device
Group Names	Displays the group to which the device belongs.
Rack Name	Displays the rack where the device is placed.
Short Path Location	Displays the device's location.
Settings Icon	Used to select and arrange columns in the table.

17.3.1. Cable Form

The cable form contains all the details for a connection.

Fields	Description
Name	The default cable name contains the connected devices and port names. User can edit the cable name.
Type	Displays the cable type.
UUID	Displays the database unique identifier for the cable.
Description	Enter user defined description for device.
Direction Arrow	Arrow between fields designates which is the source device and which is the consumer.
Attributes List Buttons	**Description**
Add	Adds additional attributes to the attribute list.
Remove	Removes the selected attribute from the list.
Attributes List Column	**Description**
Attribute	Displays the attribute name.
Category	Displays the attribute category.
Value	Displays the value for the attribute.
Unit	Displays the unit for the value of the attribute.
Attributes	**Description**
Cable Tier ID	Identifies the cable tray where the cable will flow.
Color	Specifies the color of the cable.
Lengths	Specifies the length of the cable.
Price	Specifies the cable cost per inch.
Serial Number	Specifies the serial number of the cable
Wire Current Capacity	Specifics the cable capacity in amps (A).
Wire Diameter	Specifies the cable diameter in mm^2.
Wire Gauge	Specifies the cable gauge in AWG.

Note: The following attributes can be added to the list: Duplex Patch Cord, Duplex Position, MTP Patch Cord, Number of Cores, Project Number and Sensor Unit. Custom attributes can be created in the attributes manager and designated for use with cables, and they will appear in the add attributes list.

17.4. Port Type

The Port Type Menu Item displays a list of all the port types in the system. The table list contains the following fields:

Table List Column	Description
Port Type	Displays the port type name. The type name is also a link to the port type's form.
Icon	Displays a representative icon for the port type.
Parent Type	Displays the port's parent port type.
Category	Displays the port category. The category can be either System or Custom.
Service Type	Displays the port's service type.
Description	Displays the text from the type's description field.

17.4.1. Port Types Form

Selecting an existing port type presents the Port Types form. The Port Types form has static fields in the top section, the icon associated with the type followed by tabs that present their own lists related to the type.

Fields	Description
Name	Displays the name of the type. Name field can be edited.
UUID	Displays the unique identification string for the type.
Parent Type	Displays the port's parent port type.
Description	Displays the text from the type's description field. Description field can be edited.
Number Phases	Displays the number of power phases. Only Power Port has this field.
Service Type	Displays the port's service type. Only Power Port has this field.

17.4.1.1. Attributes Tab

The initial view presented when the Attributes Tab is selected.

List Column	Description
Attribute	Attribute name is also a link to the attribute's form.
Category	Displays the attribute's category.
Attribute Type	Displays if the attribute is System or Custom.
Description	Displays the text from the attribute's description field.

17.4.1.2. Compatible Port Types Tab

The initial view presented when the Compatible Port Tab is selected.

List Column	Description
Port Type	Displays the port type compatible to this port. The port type name is also a link to the port type's form.
Service Type	Displays the port's service type.

17.4.1.3. Compatible Cable Types Tab

The initial view presented when the Compatible Cable Tab is selected.

List Column	Description
Cable Type	Displays the cable type compatible to this port.

17.5. Cable Types

The Cable Type Menu Item displays a list of all the port types in the system. The table list contains the following fields:

Table List Column	Description
Cable Type	Displays the cable type name. The type name is also a link to the port type's form.
Parent Type	Displays the cable's parent port type.
Category	Displays the cable category. The category can be either System or Custom.
Description	Displays the text from the type's description field.

17.5.1. Cable Types Form

Selecting an existing cable type presents the Cable Types form. The Cable Types form has static fields in the top section, the icon associated with the type followed by tabs that present their own lists related to the type.

Fields	Description
Name	Displays the name of the cable type. Name field can be edited.
UUID	Displays the unique identification string for the type.
Parent Type	Displays the cable's parent port type.
Description	Displays the text from the type's description field. Description field can be edited.

17.5.1.1. Attributes Tab

The initial view presented when the Attributes Tab is selected.

List Column	Description
Attribute	Attribute name is also a link to the attribute's form.
Category	Displays the attribute's category.
Attribute Type	Displays if the attribute is System or Custom.
Description	Displays the text from the attribute's description field.

17.5.1.2. Compatible Port Types Tab

The initial view presented when the Compatible Port Tab is selected.

List Column	Description
Port Type	Displays the port type compatible to this cable.

17.6. Port Settings

The Port Settings Menu Item displays a list of all Port Setting network options in the system. Users can define Network options for use when assigning a Network attribute for ports. The table list contains the following fields:

Table List Column	
Network Name	Name of the network is also a link to open the form that contains the network details.
Network Type	Displays if the network type is Network or Storage.
Maximum Speed	Displays the maximum network speed set for the network.
Unit	Displays the unit for maximum speed, typically MB/s.
Table List Buttons	**Description**
New	Presents the form for creating a new port setting.
Delete	Deletes the selected port setting from the system.

17.6.1. Port Settings Form

Selecting the New button presents the Port Settings form. The form has static fields and check boxes.

Fields	Description
Network Name	Name for the network.
Maximum Speed	Maximum speed for the network.
Check Boxes	**Description**
Storage Network	Identifies the type of network. Check sets the type to Storage and unchecked the type is Network.
Set As Default	If checked this will be the default network setting for ports.
Table List Buttons	**Description**
New	Presents a form for creating a new network.
Submit	Creates the new network with information from form. Submit also saves changes to an existing network form.
Submit & New	Increases efficiency when creating a number of networks sequentially by creating a new network with existing values and presenting a blank new form.

Selecting an existing port network presents the same form with a Ports Tab.

17.6.1.1. Ports Tab

The initial view presented when the Port Tab is selected.

List Column	Description
Device Name	Displays the device name that use this port network setting.
Location	Displays the device's location.
Port Name	Displays the port name.
Port Status	Displays the port status.
Port Type	Displays the port type.
Network	Displays the port network setting.

Speed (MB/s)	Displays the network speed.
VLAN	Displays the VLAN information.

17.7. Port Allocations Menu Item

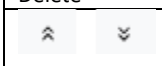
By default, all network and power ports are counted towards the racks in which the devices are mounted. If users would like to allocate ports, for purposes of capacity and utilization reporting, to other racks, then this tool enables user to allocate the ports to the other racks.

The Port Allocations Menu Item displays a list of all Port Allocation objects in the system. The Port Allocation object contains the details regarding which ports are being reallocated to which racks. The table list contains the following fields:

Table List Column	
Port Allocations Name	Name of the Port Allocations object and is also a link to the form that contains the port allocations' details.
Port Category	Displays the type of ports allocated in the port allocation object.
Ports #	Displays the number of ports being allocated in the port allocation object.
Allocation Racks #	Displays the number of racks where the ports are being allocated in the port allocation object.
Table List Buttons	**Description**
New	Presents the form for creating a new port allocation object.
Delete	Deletes the selected port allocation object from the system.

17.7.1. Port Allocations Object Form

Select the New button or an existing port allocations item presents the Port Allocations Object form. The form has static fields in the top section followed by tabs that present their own lists related to the port allocations object.

Fields	Description
Port Allocations	Displays the name of the port allocations object.
Port Category	Displays the type of ports allocated in the port allocation object. When creating a new port allocation object, the port type can be set to Network, Power or Storage.
Table List Buttons	**Description**
New	Displays an empty port allocations object form to create a new manufacturer.
Submit	If a form field is editable the Submit button becomes active and is used to update the form.
Delete	Deletes the current form.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

17.7.1.1. Ports Tab

The initial view presented when the Ports Tab is selected is a list of ports included in the port allocations object.

List Column

Device Name	Name of the device where the port resides. The name is also a link to the device's device central page.
Location	Displays the location information for the device.
Port Name	Displays the port name to be included in the port allocations object.
Port Status	Displays if the port is available or not.
Port Type	Displays the port's type.
Network	Displays the network assigned to the port.
Speed (MB/s)	Displays the network's speed.
VLAN	Displays VLAN information.
User List Buttons	
Add	Displays a list of all available ports. Select the desired ports and click the Submit button to add to the list. Click the Close button to close the window.
Remove	Removes the selected ports from the list.

17.7.1.2. Allocated Racks Tab

The initial view presented when the Allocated Racks Tab is selected is a list of racks included in the port allocations object.

List Column	
Name	Name of the rack where the port will be allocated. The name is also a link to the rack's device central page.
Model	Displays the rack's model name.
Product Line	Displays the rack's product line.
Manufacturer	Displays the rack's manufacturer.
Serial Number	Displays the rack's serial number.
Asset Tag	Displays the rack's asset tag.
Groups	Displays the rack's groups.
Location	Displays the rack's location.
User List Buttons	
Add	Displays a list of all available racks. Select the desired racks and click the Submit button to add to the list. Click the Close button to close the window.
Remove	Removes the selected racks from the list.

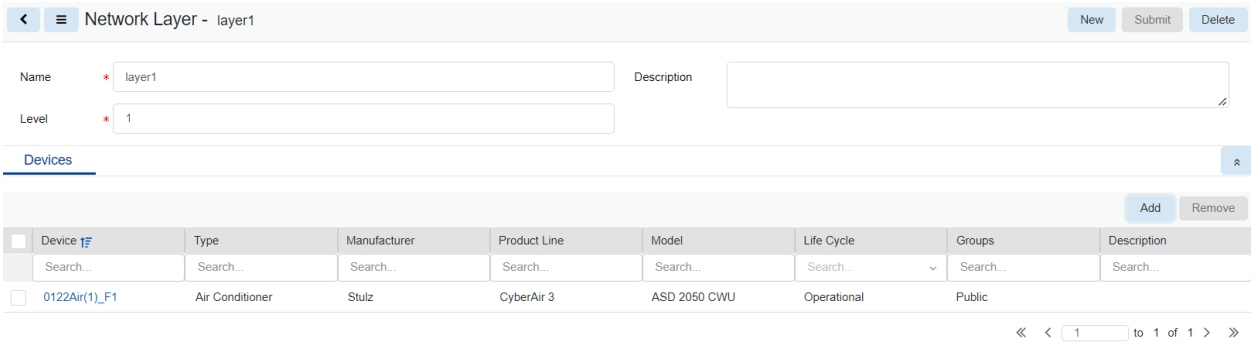
17.8. Network Layers

The Network Layers Menu Item allows users to define the network layers and add devices to the network layer to which it belongs. Users can view the network topology of devices in the Navigation Tree.

List Column	Description
Name	Displays the name of the network layer.
Level	Displays the level of the network layer.
Description	Displays the description.
User List Buttons	
New	Creates a new network layer.
Delete	Deletes an existing network layer.

17.8.1. Devices Tab

Users can add devices to the network layer to which it belongs.



1. Click the Add button.
2. A Devices windows will pop up. Select the devices you would like to add to this network layer. Click the Submit button.

18. Discovery Menu Group

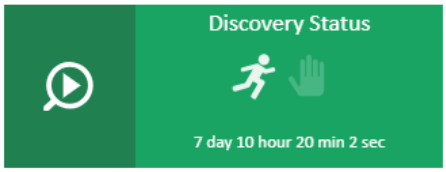
The Discovery Menu Item displays the information tiles associated with discovery and several tabs of associated lists including the Jobs Manager Tab list of all the discovery jobs in the system. Discovery allows users to define and manage the auto discovery feature of the application. This feature will poll defined IP ranges and allow users to decide if devices found are added to the device list with full monitored capabilities or as manage-only devices which can be placed in racks and used in port mapping.

18.1. Discovery Information Tiles

The Discovery Information Tiles show the status of various discovery tasks.

18.1.1. Discovery Status Tile

Indicates the running state of the discovery service. Users can Stop and Start the process using the icons. The text will indicate how long the discovery process has been running.



18.1.2. Discovery Agents Tile

Displays the number of agents (probes) deployed and hovering over the number provides the name and status for each agent. A green LED shows the agents are running and a red LED indicates a problem.

18.1.3. Discovery Process Tile

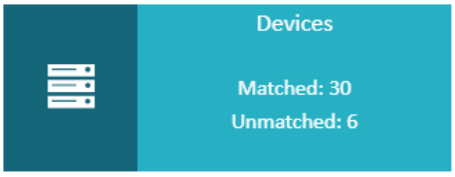
Shows a raw count of the IP addresses defined and remaining to be polled by the discovery service and indicates the progress of the current discovery process against the defined IP ranges.

18.1.4. Jobs Manager Tile

Indicates the number of defined discovery jobs and how many of the those are active. The list of discovery jobs is displayed in the Jobs Manager tab.

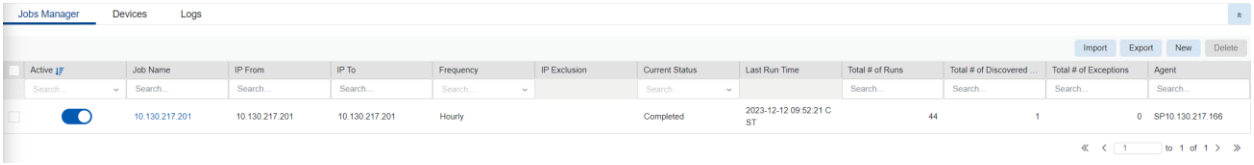
18.1.5. Devices Tile

Indicates the number of matched and unmatched devices discovered by the discovery process.



18.2. Jobs Manager Tab

The initial view presented when the Jobs Manager Tab is selected is a list of existing discovery jobs. There is a search bar under each column that allows users to quickly find the Job they want.

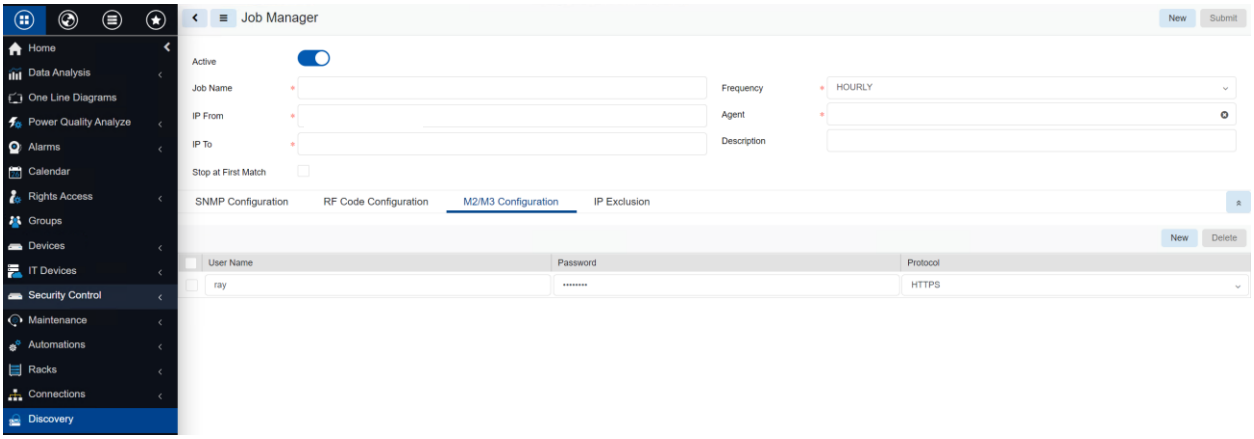


List Column	
Active	Determines if the discovery job is included in the discovery process or omitted from the list of jobs processed in the discovery process.
Job Name	Name of the discovery job. This name is referred to when devices are discovered by the discovery process.
IP From	The starting IP address in the range of addresses to be polled for devices.
IP To	The last IP address in the range of addresses to be polled for devices.
Frequency	Displays the frequency the defined job is included in the discovery service. Options are Once, Minute, Hourly Daily. **Note:** The discovery service is processing many different jobs, so the setting may not be exact as the discovery job picks up jobs on a scheduled routine as other jobs are finished.
IP Exclusion	Displays the IP address to be excluded from the range of addresses being polled by the discovery job.
Current Status	Displays the status of the discovery job.
Last Run Time	Displays the last time the discovery job was executed.
Total # of Runs	Displays the total number of times the discovery job was executed.
Total # of Discovered Devices	Displays the total number of devices discovered by the discovery job.
Total # of Exceptions	Displays the total number of exceptions discovered by the discovery job.
Agent	Displays the name of the agent (probe) used by the discovery job.

List Buttons	
Import	Imports discovery jobs from spreadsheet.
Export	Exports discovery jobs to spreadsheet.
New	Opens a New Discovery Job Form to create a new job.
Delete	Deletes the selected discovery jobs.

18.2.1. Discovery Job Form

Selecting an existing discovery job or selecting the new button presents the Discovery Job form, which allows users to create a new Discovery job. The form has static fields on the top section and tabs for SNMP Configuration, RF Code Configuration, VMware Configuration and IP Exclusion along the middle.



Fields	Description
Active	This switch toggles to activate and deactivate the job.
Job Name	Name of the discovery job. This name is referred to when devices are discovered by the discovery process.
IP From	The starting IP address in the range of addresses to be polled for devices.
IP To	The last IP address in the range of addresses to be polled for devices.
Stop at First Match	Check box to halt the discovery job as soon as it discovers the first device.
Frequency	Displays the frequency the defined job is included in the discovery service. Options are Once, Minute, Hourly Daily. **Note:** The discovery service is processing many different jobs, so the setting may not be exact as the discovery job picks up jobs on a scheduled routine as other jobs are finished.
Agent	Select the probe to be used from the pull-down menu.
Description	Enter user defined description for discovery job.
Table List Buttons	**Description**
New	Presents a form for creating a new discovery job.
Submit	Creates the new discovery job with information from the form. Submit also saves changes to an existing discovery job form.
Submit & New	On the New Discovery Job form this option Increases efficiency when creating a number of discovery jobs sequentially by creating a new job with existing values and presenting a blank new form.

18.2.1.1. New Discovery Job Form: SNMP Configuration Tab

The initial view presented when the SNMP Configuration Tab is selected is a list of SNMP configuration parameters to be used by the discovery job to communicate with devices to be discovered.

Table List Column	Description
SNMP Versions V1, V2, V3	User can select one or all of the version options. If multiple versions are selected, then the discovery service will attempt to contact devices using all options to establish a connection and collect data.
Port	Port to be used for SNMP communications. The default is 161.
Read	Specify the community read string. This string is required.
Write	Specify the community write string. This string is not required since we do not write to the device.
Username	Username for V3 protocol.
Password	Password for V3 protocol.
Auth Protocol	Specify the authorization protocol. Options include: MD5, SHA, SHA224, SHA256, SHA384, and SHA512
Privacy Password	Specify the privacy password.
Privacy Protocol	Specify the privacy protocol. Options include 3DES, AES, AES192, AES256, and DES.
Security Level	Specify the security level. Options include: noAuthNoPriv, authNoPriv, authPriv.
Context	SNMP V3 configuration setting.
Table List Button	**Description**
New	Adds a row to the table where you can enter another set of configuration parameter.
Delete	Deletes the selected configuration from the list.

18.2.1.2. New Discovery Job Form: RF Code Configuration Tab

The initial view presented when the RF Code Configuration Tab is selected is a list of RF Code configuration parameters to be used by the discovery job to communicate with devices to be discovered.

Table List Column	Description
User Name	Username for RF Code communications to the Zone Manager software.
Password	Password for RF Code communications to the Zone Manager software.
Port	Port to be used for RF Code communications.
Table List Button	**Description**
New	Adds a row to the table where you can enter another set of configuration parameter.
Delete	Deletes the selected configuration from the list.

18.2.1.3. New Discovery Job Form: M2/M3 Configuration

We support Eaton Network-M2/M3 cards to be auto discovered by our system and then monitored over MQTT.

The initial view presented when the M2/M3 Configuration Tab is selected is a list of M2/M3 configuration parameters to be used by the discovery job to communicate with devices to be discovered.

Table List Column	Description

User Name	The username to authenticate Eaton UPS API.
Password	User password.
Port	The name of the protocol used for discovery work.
Table List Button	**Description**
New	Adds a row to the table where you can enter another set of configuration parameter.
Delete	Deletes the selected configuration from the list.

After the device is discovered, users need to click the “Manage Devices” button to add the discovered device to the BLSS system. Then the M2/M3 discovery information will be shown in Devices menu item - Monitor function tile - Monitor Config tab - MQTT protocol fields.

The following parameters is filled with the correct value automatically.

- Broker Server - The IP of the device
- Port - MQTT port, default is 8883.
- Version - MQTT version, default is MQTT 3.1.1 for Eaton UPS M2/M3 card.
- Local Certificate - The name of the certificate file that is located in the probe server. This field will be filled automatically after the discovery.

The UPS Eaton M2 MQTT/UPS Eaton M2 MQTT(3 Phase), UPS Eaton M3 MQTT/UPS Eaton M3 MQTT(3 Phase) monitoring templates will be enabled according to the protocol via discovery. Once the monitoring of the UPS device is enabled, these monitoring templates will be enabled out-of-box on the device level.

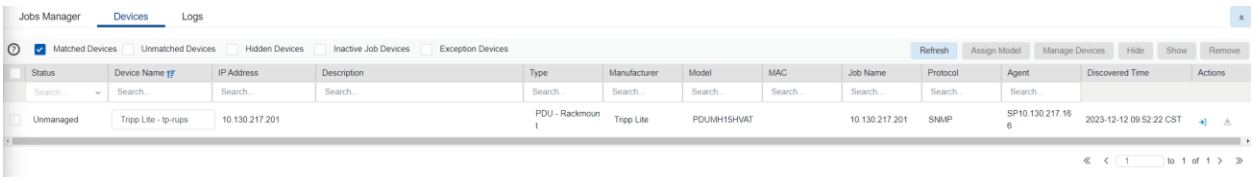
18.2.1.4. New Discovery Job Form: IP Exclusion Tab

The initial view presented when the IP Exclusion Tab is selected is a list of IP ranges to be excluded from the discovery job defined IP range. The IP ranges will be excluded from the discovery search.

Table List Column	Description
Lower Bound	The starting IP address in the range of IP addresses to be excluded from polling.
Upper Bound	The ending IP address in the range of IP addresses to be excluded from polling.
Table List Button	**Description**
New	Adds a row to the table where you can enter the lower and upper bound IP addresses to be excluded.
Delete	Deletes the selected exclusion range from the list.

18.3. Devices Tab

The initial view presented when the Devices Tab is selected is a list of discovered devices. On the left above the table are check boxes which will sort the device list. The List Buttons on the right perform actions on the selected devices.



Sort Option Check Boxes	
Matched Devices	Checking this box displays the discovered devices that were matched to a model in the application database. The icon in the row indicates that the device is matched to a model.
Unmatched Devices	Checking this box displays the discovered devices that were *not* matched to a model in the application database. There is no icon in the row. Users may Assign the Unmatched device to a model, or they may Hide the device from the discovery results.
Hidden Devices	Checking this box displays the discovered devices that were marked as hidden with the Hide button. The in the row indicates that the device is hidden. Users must Show the device before they can add the device to the Device list.
Inactive Job Devices	Checking this box displays the discovered devices that were found by a currently inactive discovery job.
Exception Devices	Checking this box displays the discovered devices that were found to have the same name as an existing device but with a different model to that existing device.
Note: If all the boxes are selected the list shows all devices. The icons, or lack thereof indicate the device's status.	
List Column	
Status	Displays the discovered device's status. Options are: Managed, Monitored, Unmanaged and Exception. See definitions below.
Device Name	Displays the discovered device's name.
IP Address	Displays the device's IP address.
Description	Displays the description retrieved from the device.
Type	Displays the device's type if it can be retrieved from the device.
Manufacturer	Displays the device's manufacturer.
Model	Displays the model the device was matched to during discovery.
MAC	Displays the MAC address for the device.
Job Name	Displays the name of the discovery job that found the device.
Protocol	Displays the protocol used to communicate with the device.
Agent	Displays the name of the agent (probe) used by the discovery job that found the device.
Discovered Time	Displays the time the device was discovered.
Actions	The first icon initiates an SNMP walk of the device. When the second icon is blue it indicates that the SNMP walk is completed and clicking the icon will download the walk file to your computer. This file can be submitted to the support team along with a model request to create a model for the unmatched device.
List Buttons	
Refresh	Manually refresh this page.
Assign Model	Clicking the button will present a window which lists all models from the master model library. Users can search and filter the list to find the match for the discovered devices and then users hit the Submit button to make updates to the selected devices. **Note:** Once a model has been defined for an Unmatched device it will be identified as a matched device.
Manage Devices	Opens a form where the selected devices can be created in the application devices list. **Monitored switch:** • **On:** The device can be configured for data collection included by the probe monitoring engine and will be added to the application device list. • **Off:** The device will be added to the application device list without monitoring. **Device Group Assignment:** Select the device groups for the device
Hide	Hides the selected devices from the list.
Show	Shows a previously hidden device.

Remove	Removes the selected deices.

18.3.1. Device Status Defined

The following are the possible values for status in the discovery device tab list.

- Managed - discovered devices which have the same UUID or same serial number and model name of existing devices, the devices are not monitored.
- Monitored - discovered devices which have same UUID or same serial number and model name of existing devices, and the devices are monitored.
- Unmanaged - discovered devices which do not exist (they do not match existing devices UUID or devices with the same serial number or model name).
- Exception - there are three conditions that will designate the device is an exception
    - The existing device model is different from the discovered device, but they have the same serial number or device name.
    - There are multiple devices that match the discovered device's name or serial number.
    - Existing device is monitored with conflicting monitoring templates or data attributes.

18.4. Logs Tab

The initial view presented when the Logs Tab is selected is a list of the discovery events.

Table List Column	Description
Date	The date of the event.
Event	Text indicating the nature of the event.
Description	Details about the event.
List Buttons	
Export	Export the selected logs.

19. Monitoring Menu Group

The Monitoring Menu Group provides important tools for users to configure data collection from target devices, configure alarm thresholds and define actions to take when defined events occur. Topics defined in these Menu Items are core to the purpose of the application and are critical to the operation of the application.

Given the complexity of supporting a diverse set of target devices, communication protocols, customer network configurations, etc., the following list represents key aspects of the monitoring capabilities of the application and requirements for it to function properly.

- The Probe server is the part of the application which communicates with target devices and collects data from the device.
- In some cases, the Probe server resides on the same server as the main application database and in other cases the Probe server may be on a dedicated physical or virtual server.
- The application supports several protocols to communicate with devices. The basic configuration options for these protocols is defined below. Users can view other materials to have a deeper understanding of how protocols function if needed.
- The Probe server must have network access on required ports to communicate with target devices. If the network is not correctly configured, the application cannot collect data from devices.
- The Probe server processes the data collection jobs defined in the application.

19.1. General Overview

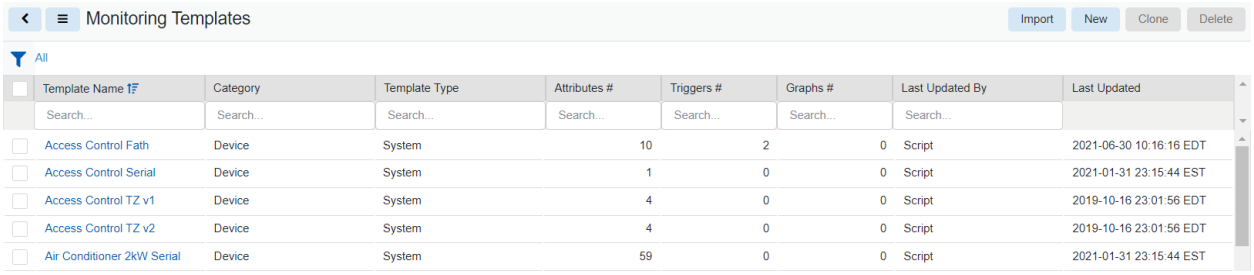
The processes associated with monitoring represent the more complex and important features of the application. The following overview defines the workflow for properly configuring and activating monitoring for devices in the application.

- Raw data is collected from target devices using one of several supported communications protocols. Detailed data point configurations of these raw data points are defined in Monitoring Templates using the Attributes feature.
- Raw data collected from the target devices is mapped to application Attributes. A long list of available Attributes is included in the application, but users may create custom Attributes if needed. By using this mapping mechanism, users can normalize data collected from many different types of devices in different locations.
- Key reporting aspects of the application are based on the application Attributes. Reports, Graphs, Trend Charts and more all use data from the Attributes to present data and calculate key capacity and utilization metrics.
- Triggers are defined to indicate Alarm conditions. A Trigger may consist of one or more conditions related to data for a device, location, or template. Active Triggers can be reviewed on the Alarm page in the application.

- Actions allow users to initiate an action based on a Trigger. Configurations within the Actions feature provide controls on what to do when a Trigger occurs, how frequently to perform actions, what to do when the Trigger returns to a Normal condition and more. An example action is sending an email to a specific user when certain trigger conditions are in effect.

19.2. Monitoring Templates Menu Item

The Monitor Templates Menu Item displays a list of all the monitoring templates in the system.



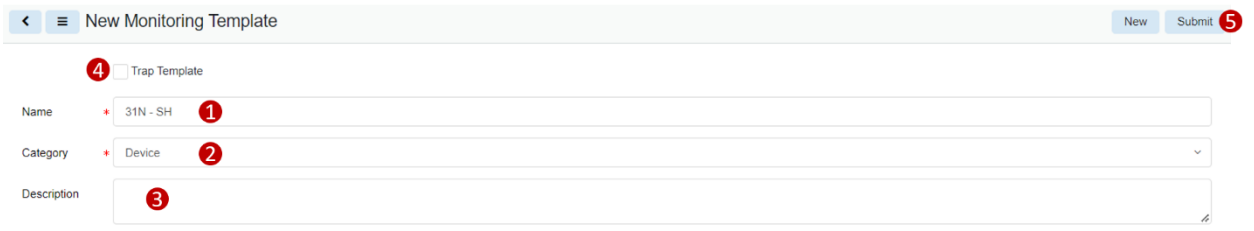
The table list contains the following fields:

Table List Column	
Template Name	Name of the template is also a link to open the Monitoring Templates form that contains the details for that template.
Category	Displays the template's category.
Template Type	Displays the template's type.
Attributes	Displays the number of monitored attributes in the template.
Triggers	Displays the number of triggers defined in the template.
Graphs	Displays the number of graphs defined in the template.
Last Updated By	Display the name of the user who last updated the template.
Last Updated	Displays the date the template was last updated.
Table List Buttons	**Description**
Import	Users can create a monitoring template by importing from a spreadsheet.
New	Presents the form for creating a new monitoring template.
Clone	Duplicates the selected monitoring template.
Delete	Deletes the selected monitoring template from the system.

19.2.1. Create new Monitoring Templates

19.2.1.1. Configuration Form

Click the **New** button on the top right corner to present the Monitoring Templates configuration form.



1. Enter the monitoring template name.
2. Select the category of the monitoring template. Either the template will be applied on devices or locations.
3. Enter the user-defined description for the monitoring template.
4. Click the checkbox if this is a trap template. Please refer to section 24. Creating and Configuring Traps for a detailed trap monitoring template configuration.
5. Click the **Submit** button.

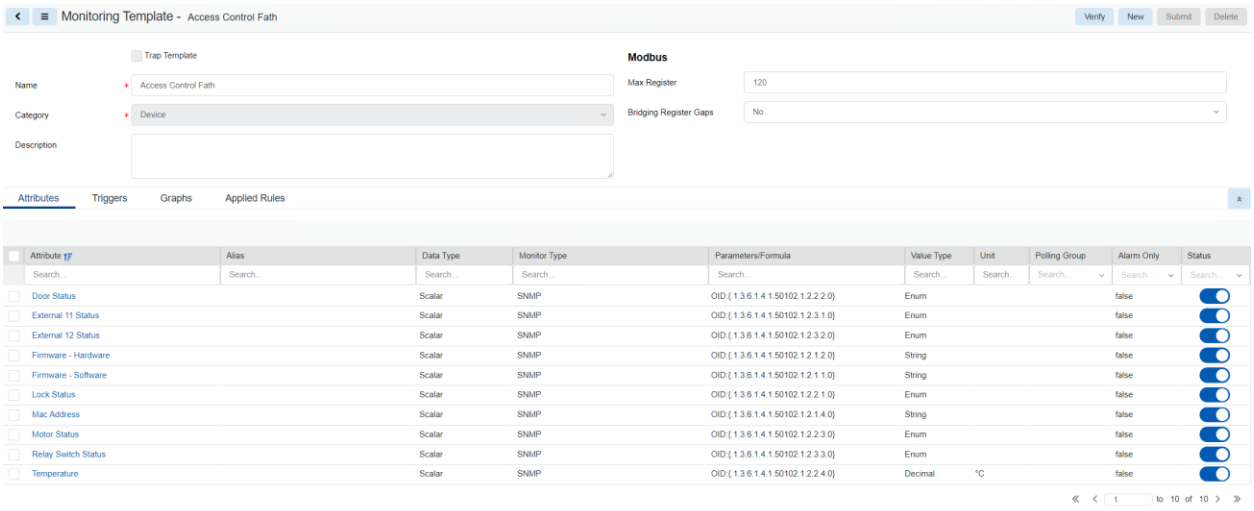
19.2.1.2. Monitoring Template Panel

A particular device or location monitoring template panel appears after submitting the new configuration form. Users can enter the same panel to manage their existing monitoring template by clicking the template name.

A Modbus configuration block is added in the Monitoring Template page. Users can customize this block by themselves.

- Modbus Max Registers - The maximum number of registers to fetch at one time
- Modbus Bridging Register Gap – “No” indicates stop taking values if the register is not continuous. “Yes” indicates if the register is not continuous, continue to take values until max register.

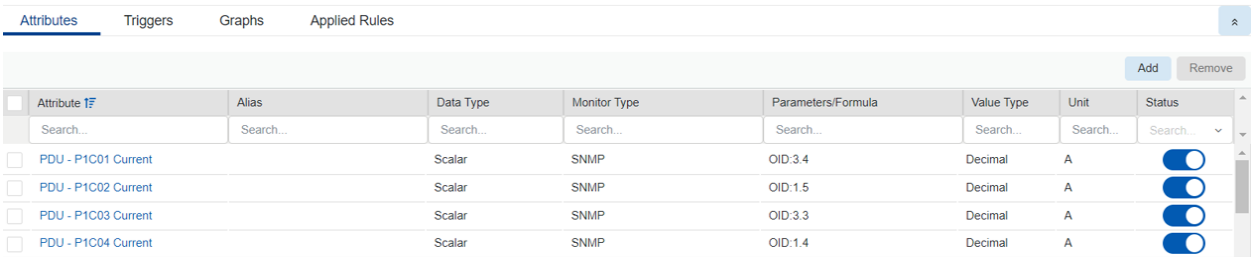
There are four tabs under this panel, including Attribute, Triggers, Graphs, and Applied Rules.



19.2.1.2.1. Attributes Tab

The Attribute Tab displays a list of monitored attributes for the monitoring template. Adding attributes to a monitoring template is essential because a monitoring template without any monitored attributes is a blank template that can’t work.

A monitored attribute is a device attributed that is linked to a corresponding data point on a device.



The table list contains the following fields:

List Column	
Attribute	Attribute name is also a link to the attribute's monitoring configuration form.
Alias	Displays the alias for the attribute.
Data Type	Displays the data type for the attribute.
Monitor Type	Displays the monitoring protocol for the attribute.
Parameters/Formula	Displays the data point identifying parameters and the formula to be applied on the returned values.
Value Type	Displays the value type for the returned values.
Unit	Displays the unit of measure for the returned values.
Polling Group	Displays the polling interval of the attribute. Options are Baseline, High, Medium, Low. The interval time of the four poling groups can be set in the Devices Menu Item - Device details page – Monitor tab.
Alarm Only	True indicates the attribute will write to the database when an alarm is triggered. If no alarm is triggered, it will be written to the database every 5 minutes. So that they can balance the need to storage when monitoring large quantities of devices at a high frequency.
Status	Displays if the attribute monitoring is on or off.
User List Buttons	
Add	Add opens form to add a monitored attribute to the list.
Remove	Removes attribute from the list. Click Submit to save the changes to the monitoring template form.

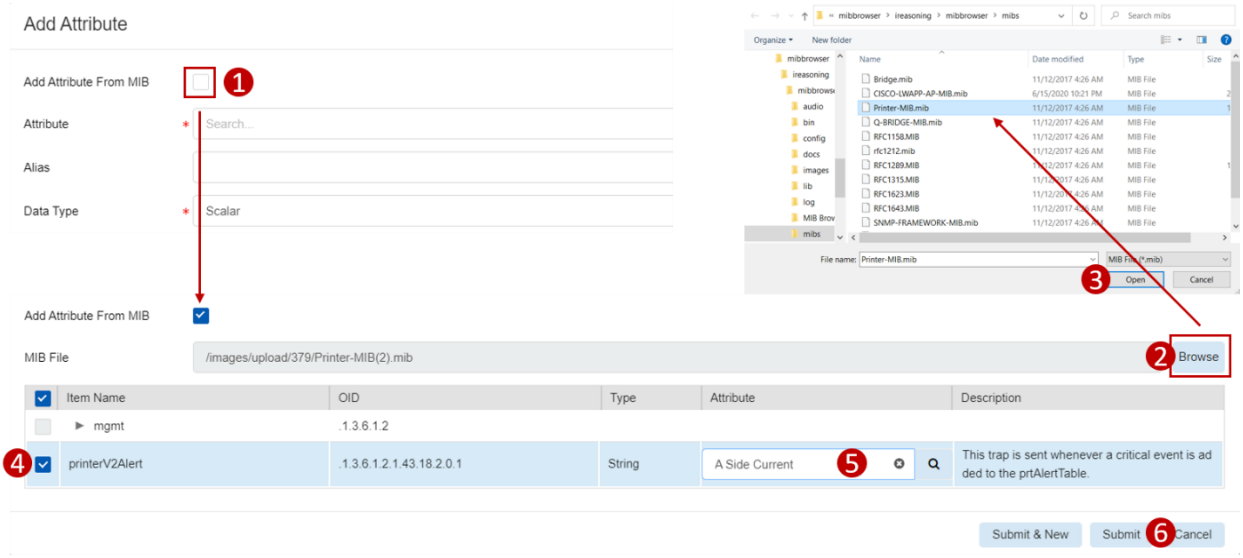
19.2.1.2.1.1. Add Attributes to the Monitoring Template

Click the **Add** button to add attributes to the monitoring template. There are two ways to add attributes to a monitoring template. One is imported from the MIB file, and the other is manually input through the configuration form.

- The configuration form, especially the Parameters field, changes based on the data type and monitor type.
- The Display Column field only appears when the data type is Tabular Column.
- The Processing Steps field only appears when the monitor types are SNMP, MQTT, and Web Crawler.
- The other fields are standard fields that won't change no matter the data type and monitor type.
- Not all types of monitoring protocol support the Tabular Column data type. Tabular data type is only available to SNMP, MODBUS, BACNET, Data mapping, Modbus Serial, MQTT protocols.

19.2.1.2.1.1.1. Add Attributes from MIB

A management information base (MIB) describes the structure of the management data of a device subsystem. Our system supports obtaining attribute information automatically by reading from the MIB file.



1. Click the checkbox to add attribute from MIB.
2. Click the Browse button.
3. Choose and upload a MIB file from your local folders.
4. Select the item of the MIB file you want to monitor.
5. Select the attribute you want to monitor from a dropdown list.
6. Click the **Submit** button.

19.2.1.2.1.1.2. Add Attributes from configuration Form manually

Click the “Add” button allows users to add monitored attributes. The Add Attribute form contains the fields for configuring the monitoring parameters.

Fields	Description
Add Attribute from MIB	Check box to add attribute from MIB. If selected, the user is prompted to browse for a MIB file and then a list of data points from the MIB can be mapped to existing attributes.
Attribute	Select attribute from the attributes list. Choose the New button to create a new Attribute to the list.
Alias	Create an alternate name for the attribute.
Data Type	Set the data type to Scalar or Tabular Column.
Monitor Type	Set the monitoring communication protocol. Options include SNMP, MODBUS, BACNET, IPMI, Data Mapping, Calculated, Flat File, HTTP/XML, API Input, OPC, OPC UA, MQTT, Web Crawler, VFS, Redfish, Webhook, Script.
Value Type	Displays the value type. For example: Decimal, Enum, etc.
Unit	Set the unit value for the returned values. For example: percent, Farenheit, etc.

Archive Mode	Select the mode to view the aggregated data. The function of data aggregation at the point of data acquisition is a real-time data storage solution that enables customers to store the data according to their system capacity. When the customers use BLSS software for the capture and escalation of process critical alerts, high-performance data acquisition is required. The data acquisition drivers attempt to poll each device once per second. The monitoring engine has threads that process the data in different ways: • A “Data Aggregation” thread reads all data points for a monitoring attribute collected within one minute (up to 60 values) and determines only one value to be stored in the database for that channel for that minute. The value to be archived is part of the monitor attribute configuration and can be set to be the average, minimum, maximum, first, or last values (default setting). End users can view trend graphs for a specific period of time based on these data. • An “Alarm" thread” checks every data point provided by the driver against the alarm threshold parameters for the attribute and triggers an alarm when appropriate. • End users can also view “real-time data” for a monitoring attribute, with the driver pushing data as values change.
Polling Group	Select the polling interval group of the attribute. This field is only available when the Monitor Type is Modbus. Options are Baseline, High, Medium, Low. The interval time of the four poling groups can be set in the Devices Menu Item - Device details page – Monitor tab.
Alarm Only	Once the checkbox is selected, the attribute will write to the database when an alarm is triggered. If no alarm is triggered, it will be written to the database every 5 minutes. So that they can balance the need to storage when monitoring large quantities of devices at a high frequency.
Status	Displays if the attribute monitoring is on or off.
Buttons	**Description**
Submit & New	Increases efficiency when adding a number of attributes sequentially by adding a new attribute with existing values and presenting a blank new form.
Submit	If any form fields are edited or new data has been added the Submit button becomes active and is used to add a new attribute or update the existing form.
Cancel	Closes the add attribute form without saving.

The form will be slightly different depends on the Monitor Type and Data Type. We provide configuration examples for SNMP and Modbus monitor type.

Defining User Control for Attributes

Using the Write Parameters options in the Add Attribute form, users can define controls which will allow user defined values to be set for attributes in the device dashboards. This capability is only available for SNMP and Modbus attributes. The control feature is implemented with the following steps:

- Select the Add button to define a new option for user defined controls. A new entry is added to the table.
- If the attribute being updated is SNMP, then these fields will be defined:
    - Choose the Control Type from these selections:
        - Action – Allows user to choose an item in a dropdown list to write a value to a device.
        - Text Input – Allows user to enter a value to be written to the device.

- Attribute – Choose the Attribute which will be used for this write action. The list of available Attributes will be limited to Attributes defined in the current monitoring template.
- Action Name – Name of the menu item on the Device dashboard which will initiate this write action. This field is only enabled with the Action Control Type.
- Value – Value to be written to the selected Attribute. This field is only enabled with the Action Control Type.

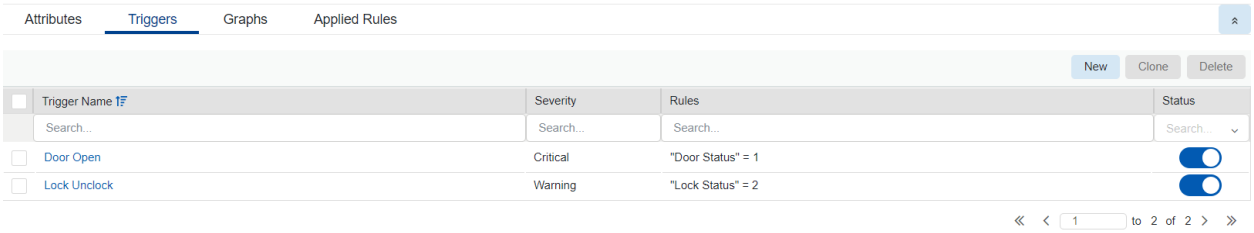
- If the attribute is Modbus, then these fields will be defined:
  - Register – Defines the Modbus register which will be updated on the device dashboard when a user defines a value to write to the device.
  - Register Type – Defines the Modbus Register Type for the register to be updated.
  - Register Length – Defines the Modbus Register Length for the register to be updated.

When these configurations are completed, the option for a user to use the writable action is on the device Real-time Monitoring Data graph. If the Control Type is set to Action, there will be dropdown list next to the attribute in the Actions column with the Writable Parameters options defined for the attribute. Choose the item from the list to initiate the set value controls for devices. If the Control Type is set to Text Input, the Value field will be enabled for user input to define the value for the Attribute.

Note: Users must have Control rights to the device to have access to the Actions menu and the Text Input features on this dashboard.

19.2.1.2.2. Triggers Tab

The Triggers Tab displays a list of triggers configured for the monitoring template.



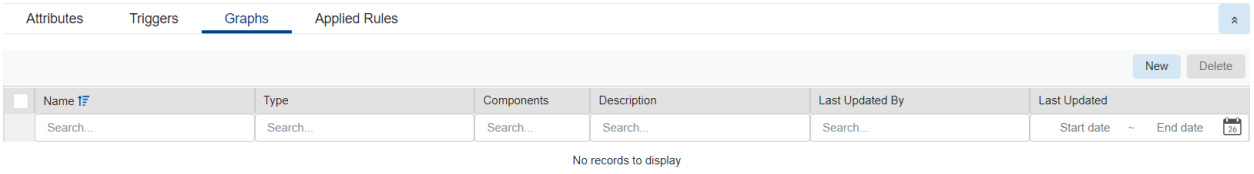
The table list contains the following fields:

List Column	
Trigger Name	Trigger Name is also a link to the trigger's configuration form.
Severity	Displays the alarm level for the trigger.
Rules	Displays the rule details.
Status	Displays if the trigger is on or off.
User List Buttons	
New	New opens form to create a trigger.
Clone	Duplicates the selected trigger.
Delete	Remove the selected trigger from the monitoring template.

The **New** button on the top right corner directs users to the Triggers Menu and allows users to add triggers to the current monitoring template. The detailed configuration processes is listed in *New Trigger Form section*

19.2.1.2.3. Graphs Tab

The Graphs Tab displays a list of graphs configured for the monitoring template.



The table list contains the following fields:

List Column	
Name	Name is also a link to the graph's configuration form.
Type	Displays the type of graph.
Components	Displays the number of components in the graph.
Description	Displays the user defined description.
Last Updated By	Displays the name of the user that last updated the graph.
Last Updated	Displays the date of the last update.
User List Buttons	
New	New opens form to create a new graph.
Delete	Remove the selected graph from the monitoring template.

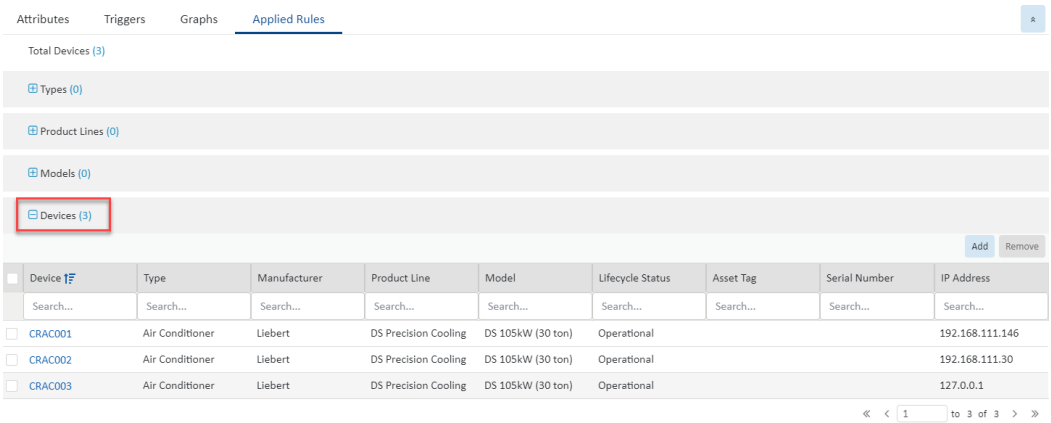
The **New** button on the top right corner directs users to the Graphs Menu under the Data Analysis Menu Group and allows users to create graphs of the current monitoring template. The detailed configuration processes is listed in *Create Graphs section*.

19.2.1.2.4. Applied Rules Tab

Th Applied Rules Tab displays a summary of where the monitoring template will be applied. Options are Type, Product Line, Model and Device level.

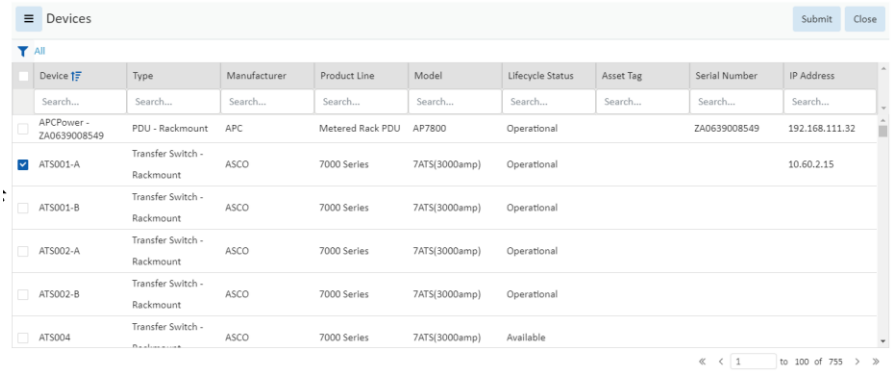
Clicking on the **+** sign next to Types, Product Lines, Models and Devices displays a table list of the respective elements affected by the template.

This example shows the monitoring template is only applied at the devices level to 3 devices:



When the table list is displayed for either Type, Product Line, Model and Device, two buttons are now available:

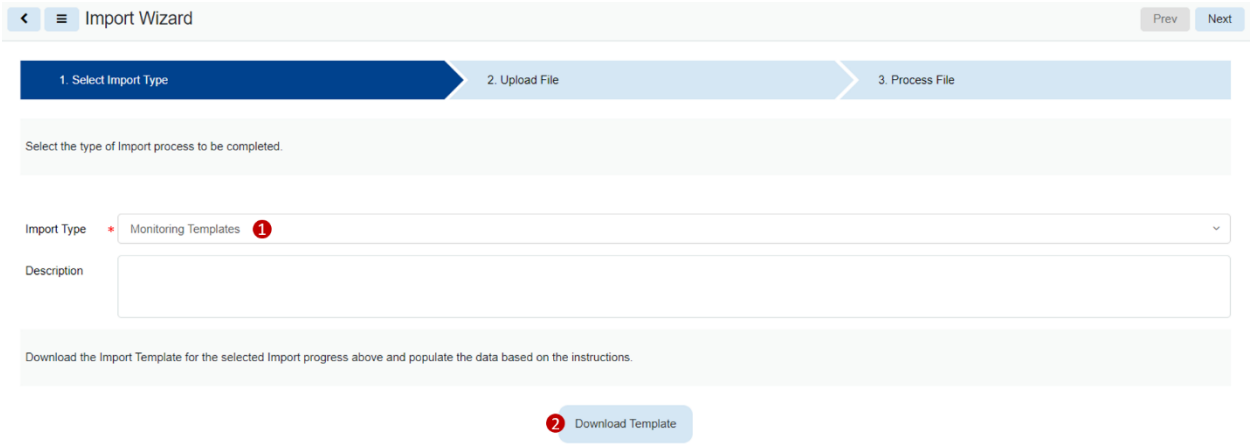
- **Add** button opens a window listing all of the elements of that kind in the system. Here the user can use the check boxes to select the elements. Submit adds the selected items to the monitoring template and Close exits without adding.



- **Remove** button deletes the selected elements from the monitoring template.

19.2.2. Import Monitoring Templates

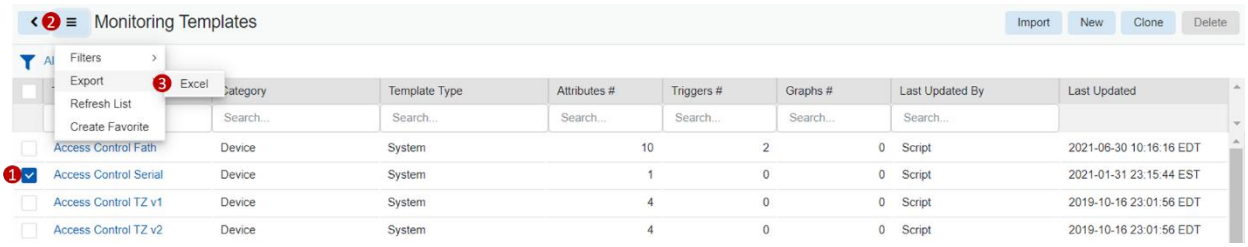
The **Import** button directs users to the Import|Export Menu. A monitoring template can be created by uploading a configured monitoring template spreadsheet to allow users don't add attributes in the web interface one by one.



1. Set the Import Type as Monitoring Templates.
2. Click the Download Template button to download a blank monitoring template spreadsheet.
3. Proceed the later procedures as described in *Import Wizard section.*

19.2.3. Export Monitoring Templates

Monitoring templates can be exported using the Export > Excel from the table list menu.

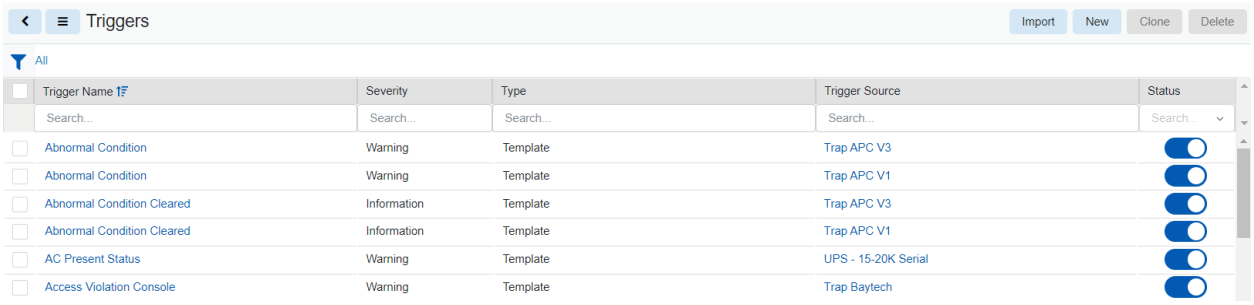


1. Select the template you want to export by clicking the checkbox.
2. Click the table menu.
3. Select Export > Excel.

A sample of the downloaded Excel file is demonstrated in section *Import Wizard section*.

19.3. Triggers Menu Item

The Triggers Menu Item displays a list of all triggers, their severity levels, types, and sources defined by users in the system. Users can control the on-off status by clicking the Status toggle button and manage the trigger properties by clicking the trigger name.

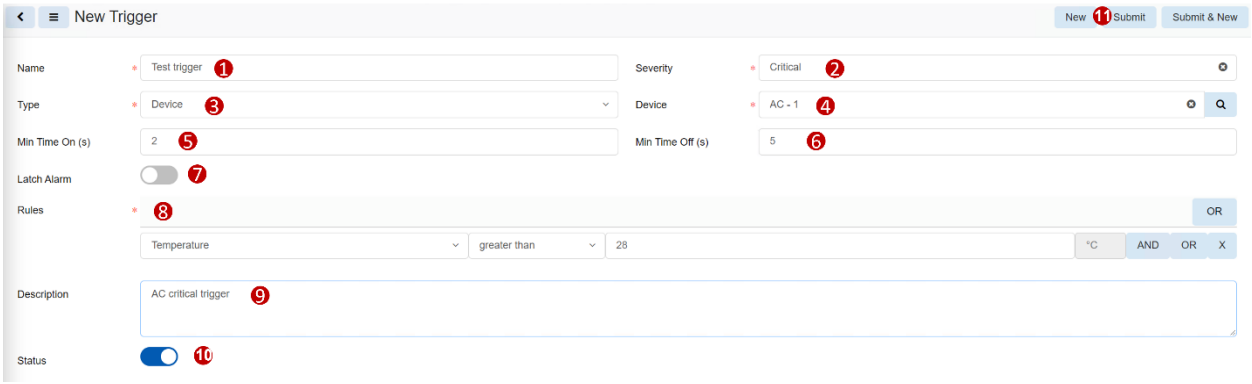


The table list contains the following fields:

List Column	Description
Trigger Name	Displays the trigger name. Clicking the name links to the trigger's configuration form.
Severity	Displays the alarm level for the trigger.
Type	Displays the trigger's type. Options are Template, Rack Group, Device or Location.
Trigger Source	Displays the specific source where the trigger is applied.
Status	Displays the trigger's on-off status. Clicking the toggle button to change the status.
User List Buttons	**Description**
Import	Creates a new trigger by importing from a spreadsheet.
New	Presents a form for creating a new trigger.
Clone	Duplicates the selected trigger.
Delete	Removes the selected trigger from the system.

19.3.1. Create New Triggers

Click the **New** button on the top right corner to present the New Trigger configuration form. The form regulates the trigger's severity level, type, lasting time, and rules for generation alarms.



1. Enter the user-defined trigger name.
2. Select the severity level of the alarm from a dropdown list. Options are Critical, Warning, Minor, and Information.
3. Select the trigger type from a dropdown list. Options are Template, Rack Group, Device, and Location.
4. Select the template/rack group/device/location on which the trigger will be applied. The field name and content is different according to users' selection in step 3.
5. Set the minimum time that a condition(s) must exist to trigger the alarm. As an example of the above graph, the condition of device AC-1's temperature is greater than 28 °F must last for 2 seconds to trigger the critical alarm.
6. Set the minimum time that a condition(s) is in a normal state before changing the alarm status back to normal, which means the critical alarm disappears only when the device AC-1's temperature is less than 28 °F and lasts for at least 5 seconds.
7. The "Latch Alarm" button can enable the latch alarm function. Unlike the ordinary alarm (the alarm will be cleared once the trigger is back to normal), the latch alarm remains active in the alarm panel even if the monitored data value drops back below the user-defined threshold until manually cleared. By default, this button is disabled.

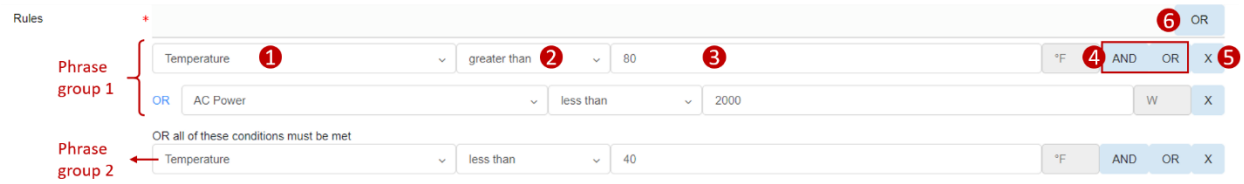
   The latch alarm status is only shown in the Alarm Panel and has no effect on the other alarm functions. For example, there is a critical alarm triggered by a "Latch Alarm" enabled trigger on device eUPS001. According to the rule, this alarm will remain critical in the Alarm Panel even when the alarm is now actually downgraded to a warning level and will only disappear when the user manually clears it. But when users view other pages that show the alarms, this alarm's status should be a warning.
8. Set rules that can trigger alarms. The details are explained in the below section Alarm Trigger Rules section.
9. Enter the user-defined description for the trigger.
10. Click the toggle button to change the trigger status. By default, is a turn-on.
11. Click the Submit button to submit the New Trigger configuration form. The other two buttons are:
    a. New – Opens a configuration form to create a new trigger.
    b. Submit & New – Submits the current configuration form and opens a blank form for a new trigger.

19.3.1.1. Alarm Trigger Rules

Users can define various rules for a particular trigger in the Rules field. A few ground rules are:

- Users can build a condition statement using one or more phrases.
- A phrase consists of a monitored attribute, an operation, and a value for evaluation.
- The phrases are strung together with AND/ OR to define the exact condition that triggers an alarm.
- A complex condition consists of multiple groupings of phrases.

The graphic below illustrates the processes for creating a rule:



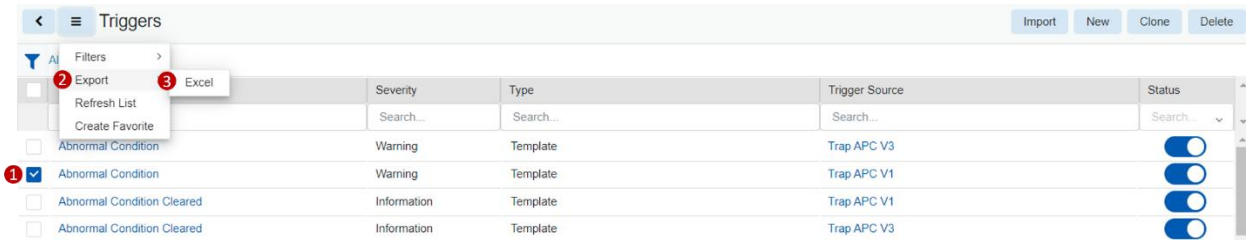
1. Select a monitored attribute from a dropdown list.
2. Choose an operation from a dropdown list. The options are:
    a. equals
    b. does not equal
    c. greater than
    d. less than
    e. greater than or is
    f. less than or is
    g. between
    h. percent comparison, which allows users to compare two attributes and trigger when the percentage meets the defined criteria.
3. Enter a value that works with the operation to evaluate the incoming monitored data point value. The unit information is automatically inherited from the selected monitored attribute.
4. Define the relationship between the current phrase and the next phrase with AND/OR if needed.
5. Use the X button to remove a phrase.
6. Click the OR button at the top of the rule building area to add another condition phrase group if needed. Condition phrases above or below the “OR All of those conditions must be met” are identified as one phrase group.

19.3.2. Import Triggers

The **Import** button directs users to the Import Wizard panel of the Import|Export Menu. A new trigger can be created directly by uploading a configured trigger spreadsheet. For the detailed processes, please refer to section *Import Wizard section.*

19.3.3. Export Triggers

Triggers can be exported using the Export > Excel from the table list menu.

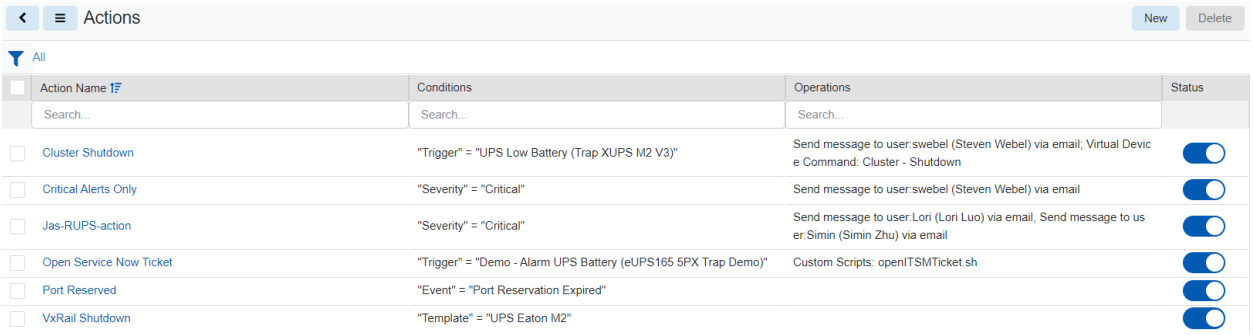


1. Select the trigger you want to export by clicking the checkbox.
2. Click the table menu.
3. Select Export > Excel.

A sample of the downloaded Excel file is demonstrated in section *Import Wizard section*.

19.4. Actions Menu Item

The Actions Menu Item displays a list of actions, their trigger conditions, and the corresponding operations in the system. Users can control the on-off status by clicking the Status toggle button and manage the action properties by clicking the action name.



The table list contains the following fields:

List Column	
Action Name	Displays the action name. Clicking the name links to the action's configuration form.
Conditions	Displays the condition that triggers the action.
Operations	Displays the operations within the action.
Status	Displays the trigger's on-off status. Clicking the toggle button to change the status.
User List Buttons	
New	Presents a form for creating a new action.
Delete	Remove the selected action from the system.

19.4.1. Create New Actions

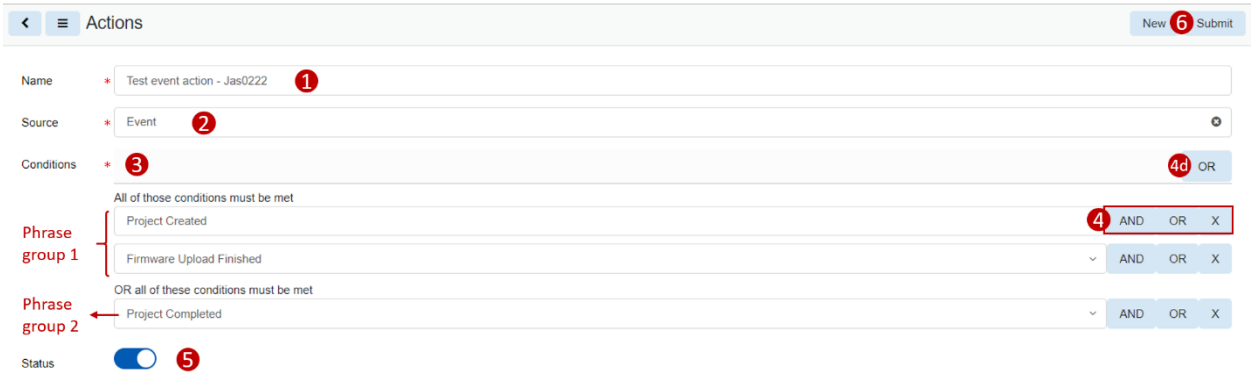
19.4.1.1. Configuration Form

Click the **New** button on the top right corner to present the Actions configuration form, which enable users to define conditions to trigger the action. The form allows following two action sources.

19.4.1.1.1. Event-based Actions

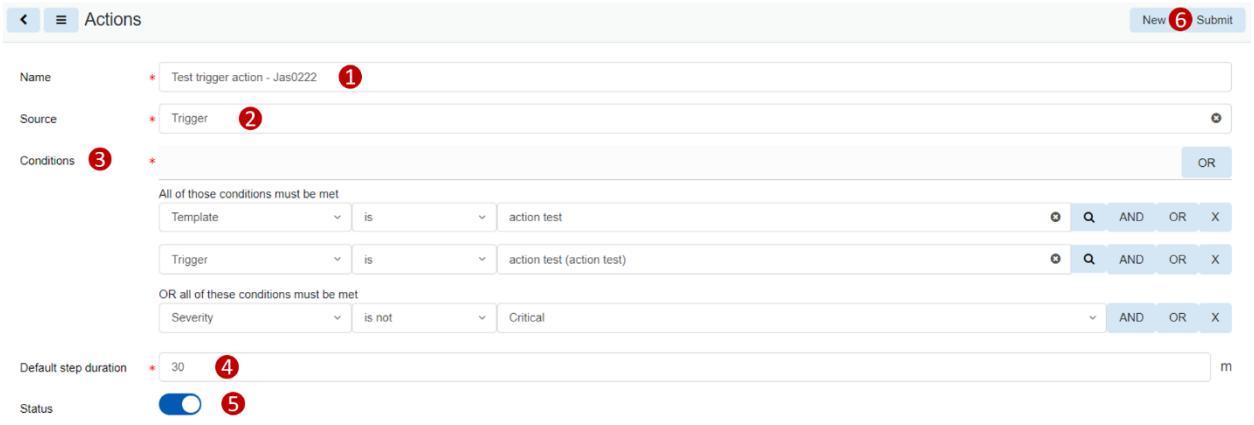
When the Source of the Action is set to Event, users are presented with a list of Calendar events which will initiate the Operations defined in the rule.

An event-based action contains 28 available events categorized into three categories.



1. Enter the user-defined action name.
2. Select Event from the dropdown list as the source.
3. Select one or multiple conditions that will trigger the action. There are a total of 28 events available that related to the status of configuration upload, firmware upload, project, task, and work order stages.
4. For multiple conditions:
    a. The All button indicates all conditions must be met to trigger the action.
    b. The OR button indicates either one of the conditions is met can trigger the action.
    c. Use the X button to remove a condition phrase.
    d. Click the OR button at the top of the condition setting area to add another condition phrase group if needed. Condition phrases above or below the “OR All of those conditions must be met” are identified as one phrase group.
5. Click the toggle button to change the action status. By default, is a turn-on.
6. Click the Submit button to submit the new Action configuration form.

19.4.1.1.2. Trigger-based Actions



1. Enter the user-defined action name.
2. Select Trigger from the dropdown list as the source.
3. Select one or multiple conditions that will trigger the action. The details are explained in the below section Trigger-based Actions Trigger Rules section.
4. Set the default step duration in minutes. This step duration will be applied to each operation by default if users don't specify a step time in the operation step afterward.
5. Click the toggle button to change the action status. By default, is a turn-on.
6. Click the Submit button to submit the new Action configuration form.

19.4.1.1.2.1. Trigger-based Actions Trigger Rules

Users can define various rules for a particular action in the Conditions field. A few ground rules are:

- Users can build a condition statement using one or more phrases.
- A condition phrase consists of level, an operation, and a corresponding level item.
- The condition phrases are strung together with AND/OR to define the exact condition that prompt an action.
- A complex condition statement consists of multiple groupings of phrases.

The graphic below illustrates the processes for creating a rule:

1. Select a level from a dropdown list. Options are Template, Trigger or Severity.
2. Choose an operation. Options are: is or is not.
3. Select a corresponding level item from a dropdown list:
    a. If the Template level is selected, the dropdown list contains all templates in the system.
    b. If the Trigger level is selected, the dropdown list contains all triggers in the system.
    c. If the Severity level is selected, options are Critical, Warning, Minor, Information, Unreachable, Exception.
4. For a complex condition statement:
    a. The All button indicates all conditions must be met to trigger the action.
    b. The OR button indicates either one of the conditions is met can trigger the action.
    c. Use the X button to remove a condition phrase.
    d. Click the OR button at the top of the condition setting area to add another condition phrase group if needed. Condition phrases above or below the "OR All of those conditions must be met" are identified as one phrase group.

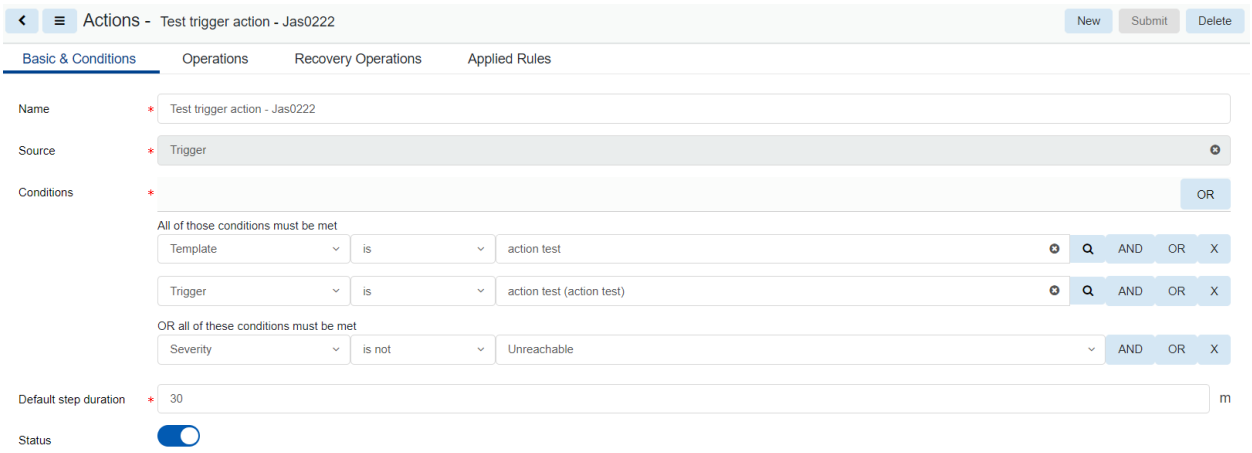
19.4.1.2. Action Panel

A particular action panel appears after submitting the new configuration form. Users can enter the same panel to manage their existing actions by double-clicking the action name.

There are four tabs under this panel, including Basic & Conditions, Operations, Recovery Operations, and Applied Rules.

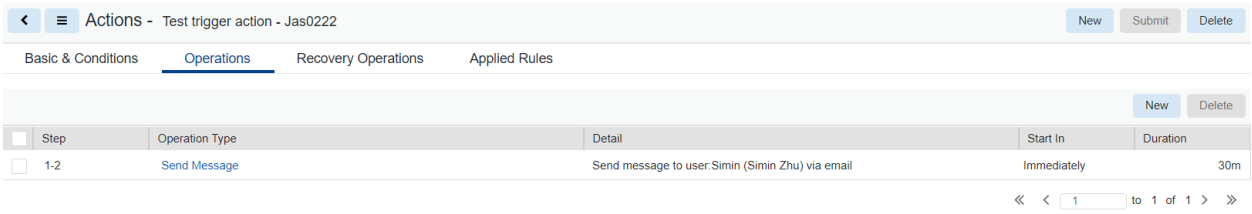
19.4.1.2.1. Basic & Conditions Tab

The Basic & Conditions tab presents the configuration panel of the selected action, which displays the existing setting and enables users to edit the current configurations except the action source.



19.4.1.2.2. Operations Tab

The Operations Tab displays is a list of user-defined operations of the selected actions.



The table list contains the following fields:

List Column	
Step	Displays the step number.
Operation Type	Displays the type of operation.
Detail	Displays the details of the operation.
Start In	Displays the operation start time after the conditions are met.
Duration	Displays the time interval between two steps.
User List Buttons	
New	New opens form to create an action.
Delete	Remove the selected action from the system.

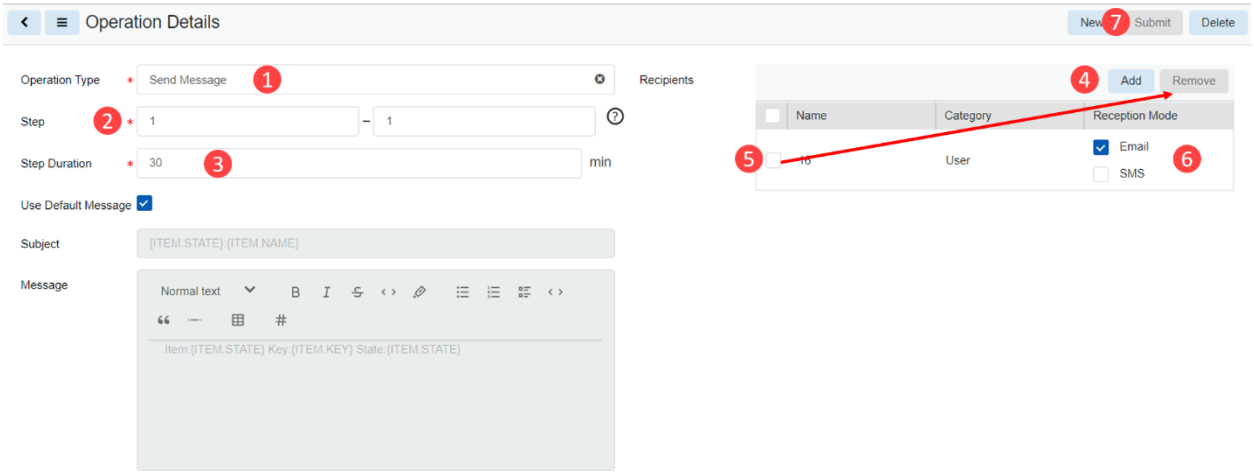
19.4.1.2.2.1. Create New Operations

Click the **New** button to add a new operation to the selected action. There are five operation types in the system, and the configuration processes of each type are different. The details are listed below.

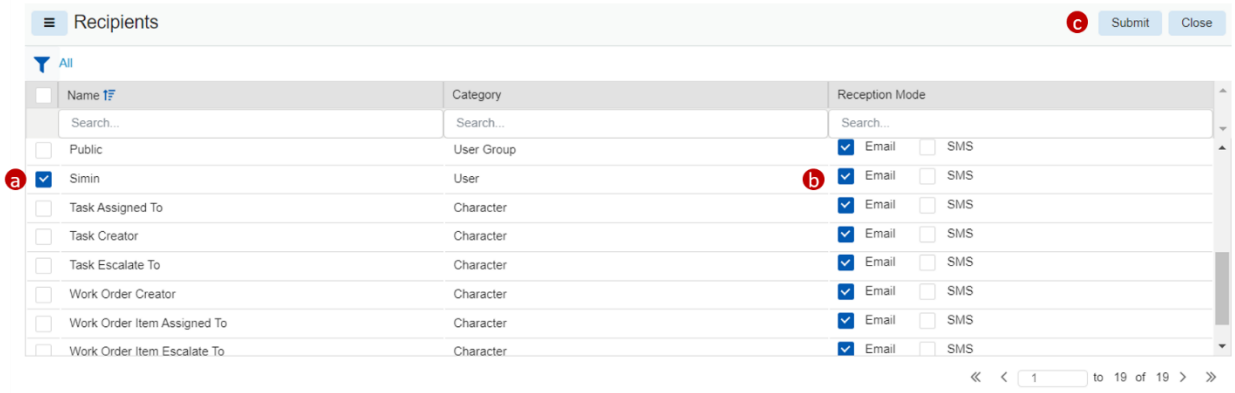
19.4.1.2.2.1.1. Send Message

The Send Message operation enables the system to send a default or customized messages to the selected recipients once the action is triggered.

19.4.1.2.2.1.1.1. Default Message



1. Select the operation type – Send Message from the dropdown list.
2. Set the operation steps. This guide provides a use case scenario in Operation Steps Use Case section.
3. Set the step duration for the step(s) you entered above. The default number is inherited from the action.
4. Add recipients who will receive the message notifications. Click the Add button. A table of recipients pops up:



a. Select the recipients by clicking the checkboxes.
Note:

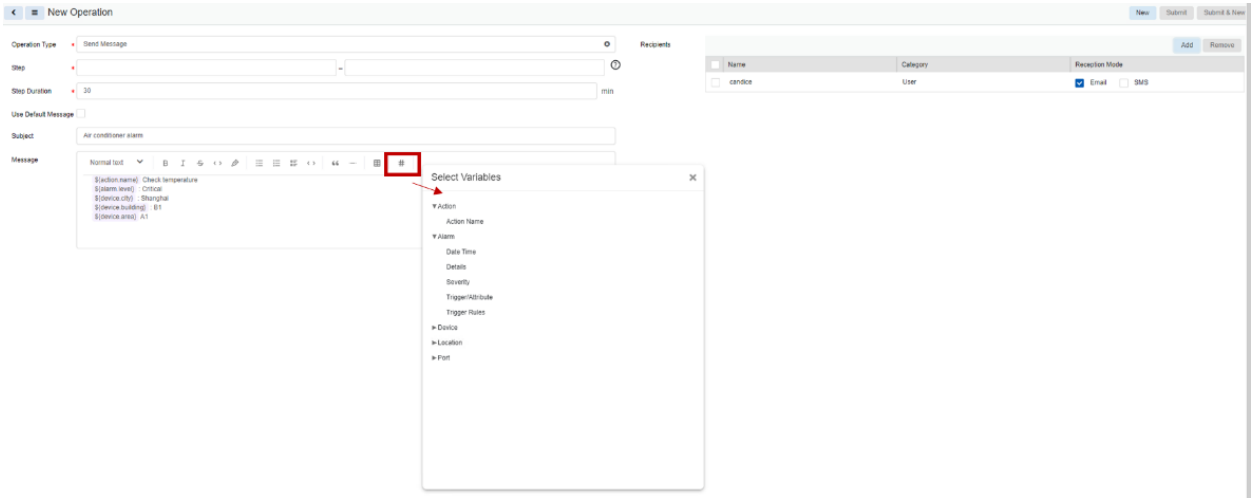
1. The recipients belonging to the Character category can only receive message notifications when it's an event-based action and the trigger events are the Workflow category.
2. If users select the "Impact Device Owner" as recipient, then:
    i. The owner of the device that trigger the alarm and the owners of its downstream devices in the same power path will receive alarm notifications.
    ii. The owner of the device that trigger the alarm and the owners of the devices that directly connect to it in the same network path will receive alarm notifications.

b. Select the Reception Mode. Options are Email and SMS. Select both is allowed. The system will send a mobile message to the user's reserved mobile phone number if the user select the SMS option.
c. Click the Submit button.

5. To remove the selected recipients, click the checkboxes and click the Remove button.
6. It is easy to change the Reception Mode by selecting the corresponding checkbox.
7. Click the Submit button to submit the Send Message type operation configuration form.

If the recipient you select is the "Impact Device Owner", the owner of the device that trigger the alarm and the owners of its downstream devices (power path), and the owners of the devices that directly connect to it (network path) will receive alarm notifications.

19.4.1.2.2.1.1.2. Customized Message:



1. Unclick the checkbox "Use Default Message".
2. Click the hash sign # to select variables to tailor the message. Users can enter the customized content in Subject and Message fields.
   The full variables list is shown below:

	Variables
Action	Action Name
Alarm	Date Time
	Details
	Severity

	Trigger/Attribute
	Trigger Rules
Device	Area
	Asset Tag
	Building
	City
	Column
	Country
	Department
	Device Name
	Enclosure
	Floor
	Host
	Location
	Manufacturer
	Model
	Owner
	Position
	Probe Server
	Product Line
	Rack
	Row
	Serial Number
	Slots
	State
	Type
Location	Location Category
	Location Name
Port	Port Name
	Port Type
	Reservation Expiration Date
	Reserved By
	Reserved Date

The rest steps are the same as the Default Message.

19.4.1.2.2.1.2. Custom Scripts

The Custom Scripts operation enables users to run their own scripts once the alarm is triggered. We provide two system pre-defined scripts.

However, for multi-server architecture, if the URL of the BLSS system has not been registered in the DNS, after the Custom Script "send_report.py" and "send_trend_chart.py" are executed under the Action, there will be no attachment in the email received by the customer.

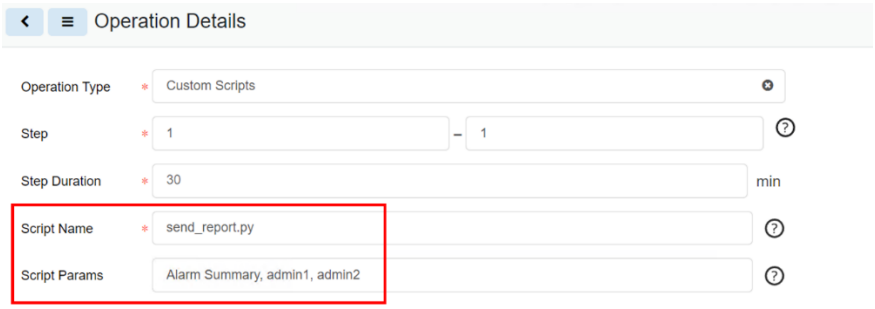
Send Report

This operation will send a report in our system for the device that generates the alarm, and this report will be sent with an email notification as an attachment.

The parameters are:

- Script Name: send_report.py
- Script Params: [report name], [username who will receive the email]

Note: we support entering multiple users separately by a comma.



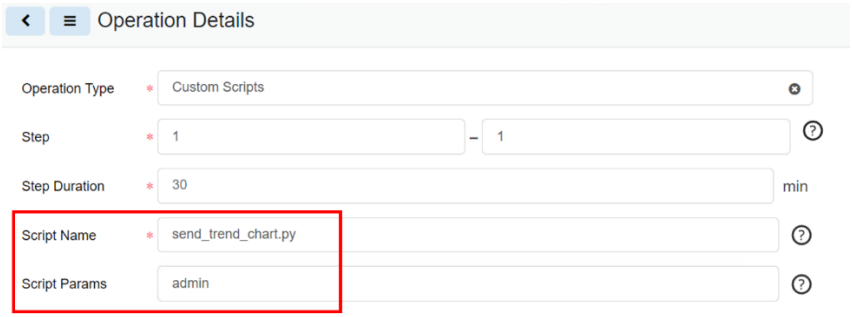
Send Trend chart

This operation will send a trend chart in our system for the device that generates the alarm, and this trend chart will be sent with an email notification as a PDF attachment.

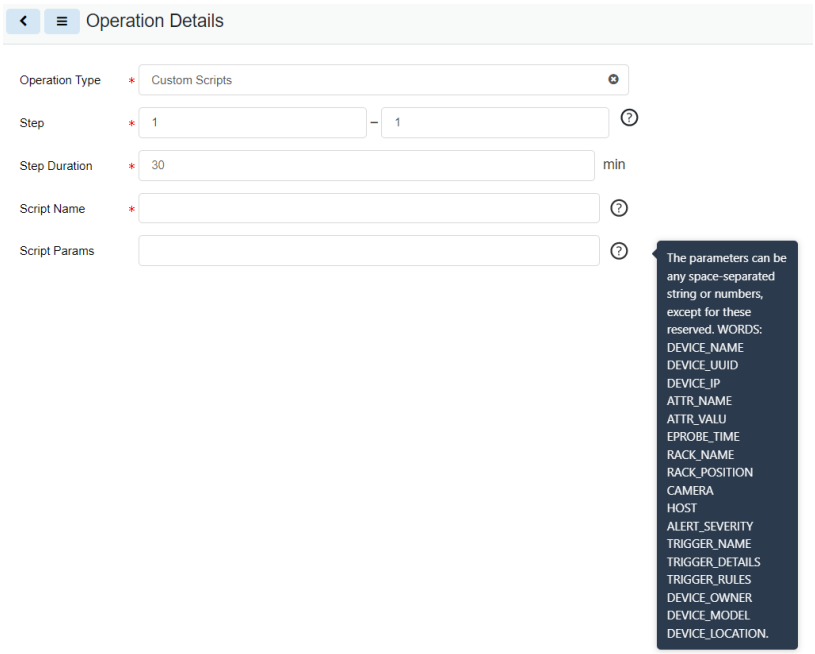
The parameters are:

- Script Name: send_trend_chart.py
- Script Params: [username who will receive the email]

Note: we support entering multiple users separately by a comma.



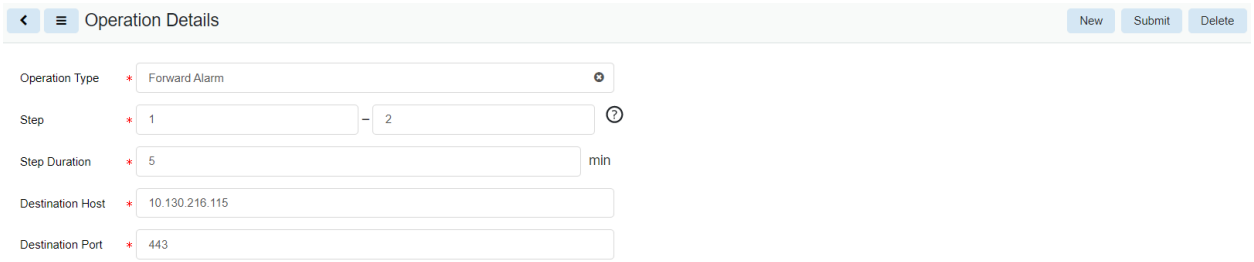
Users can also upload their scripts to the default path "/opt/VDC/monitor/actions/user-scripts/bash" or add the full if they don't want to use the default path. We provide a list of parameters that users can use in their scripts. All the Script parameters users entered are safely encrypted.



We support automated triggers and actions integrated with Remote Desktop Gateway (RDG) as well if the device is monitored by the RDG monitoring protocol. The RDG Client is now equipped to receive triggers from the server, perform associated actions, and execute custom scripts.

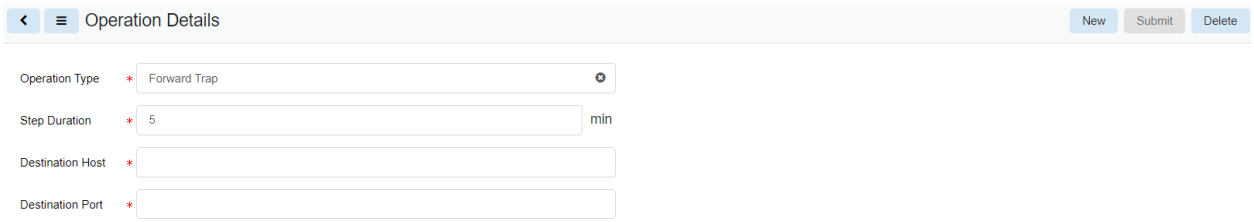
19.4.1.2.2.1.3. Forward Alarm

The Forward Alarm operation enables the system to forward the alarm to a specified user by entering a destination host and port address.



19.4.1.2.2.1.4. Forward Trap

The Forward Trap operation enables the system to forward the trap alarm to a specified user by entering a destination host and port address.

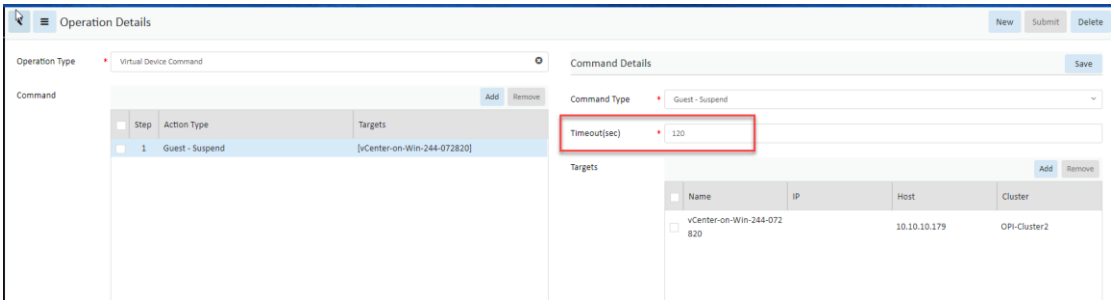


19.4.1.2.2.1.5. Virtual Device Commands

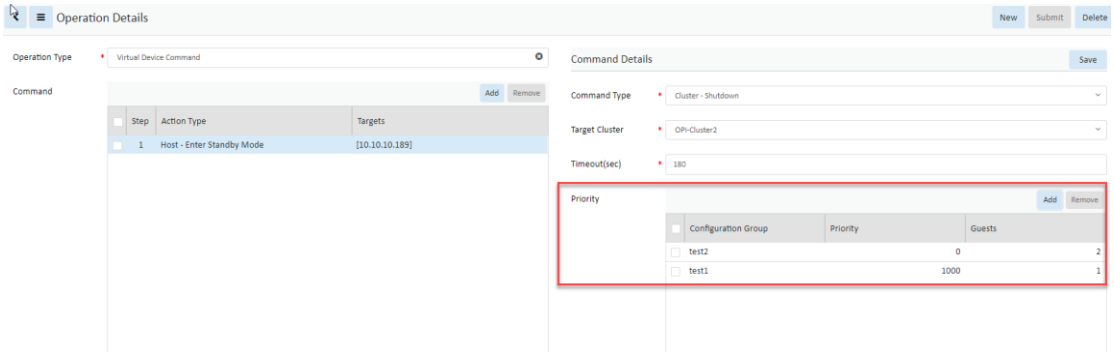
#	Commands	Rules
1	Guest – Power On	Only a power off/suspend/shutdown guest can be powered on
2	Guest – Power Off	Only a power on/suspend guest can be powered off
3	Guest – Suspend	Only a power on guest can be suspended
4	Guest – Shutdown	Only a power on guest with VMtool running can be shutdown
5	Guest - Migrate	A guest can only be migrated in the same cluster
6	Host - Shutdown	Only a host which has no vCenter installed and no BLSS installed can be shutdown
7	Host - Shutdown VMs Then Host	All guests are shutdown at the same time, after all guests are shutdown, the host will be shut down. If there are any errors on guests, it will skip this error and continue shutdown the host.
8	Host - Enter Maintenance Mode	Only a power on host with all vms power off can enter maintenance mode
9	Host - Exit Maintenance Mode	Only a maintenance mode host can enter maintenance mode
10	Host - Enter Maintenance Mode Then Shutdown	If there are any errors enter maintenance mode, the action will be ended with error
11	Host - Enter Standby Mode	
12	Host - Exit Standby Mode	
13	Cluster - Shutdown	Shutdown cluster will shut down all guests in the cluster first, then hosts. All guests will be shut down at the same time. Users can add priority for VMs shutdown in the cluster by creating Configuration Group.

Additional Virtual Command Notes:

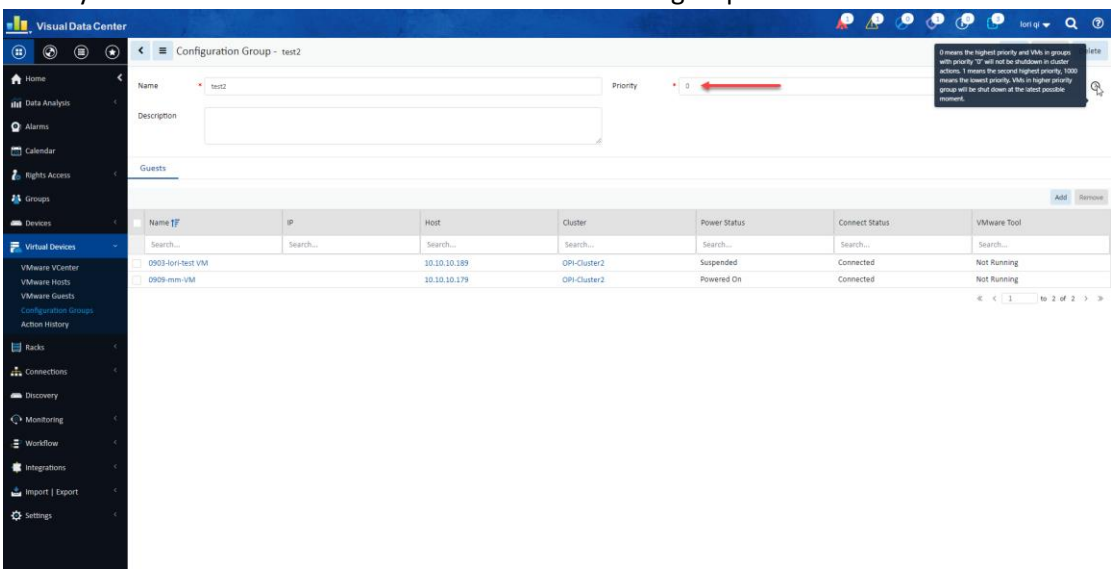
- If a guest/host has vCenter/BLSS installed, the commands will not be executed.
- If there are more than 1 VM is selected for a guest operation, the commands will be executed on the VMs at the same time. Any errors occur on single VM will not affect other VMs.
- If there are more than 1 host is selected for a host operation, the commands will be executed on the hosts at the same time. Any errors occur on single host will not affect other VMs.
- Per Shutdown VMs Then Host, if there are any errors occur on shutdown VMs, then the action will be ended with error. The host will be shut down.
- Per Enter Maintenance Mode Then Shutdown, if there are any errors occur on enter maintenance mode, then the action will be ended with error. The host will be shut down.
- Each command has a timeout set by users; the result will be timeout if there are no results back after the timeout time.



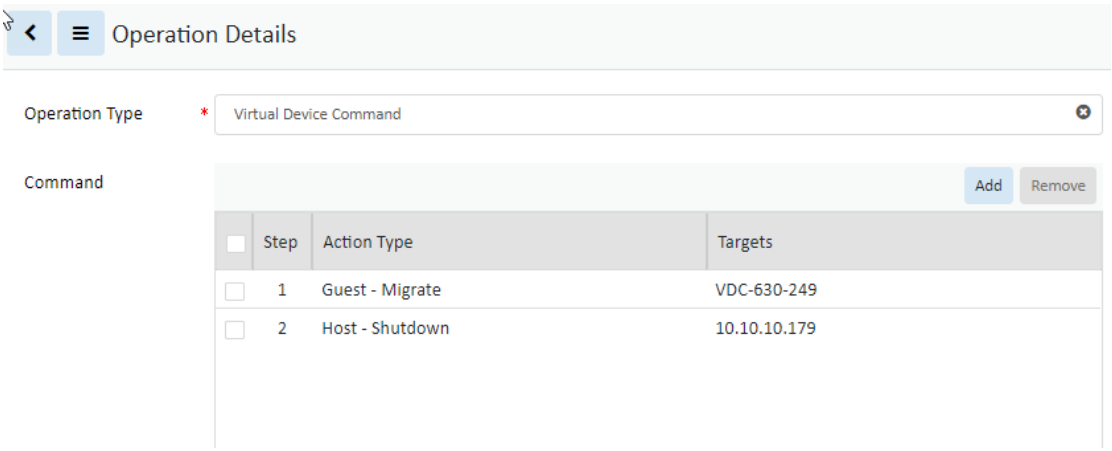
- The Priority allows users to add configuration groups for Cluster – Shutdown to shut down VMs by order. If Priority is empty, then all VMs in the cluster will be shut down at the same time.



- Only guests can be added in configuration groups. A guest can be added in multiple groups and the highest priority will be used in this case. Priority value is smaller, the priority is higher. Priority=0 means BLSS cannot shutdown the VMs in the group.



- It supports Linkage control in actions. Users can add more than 1 command in an operation and the commands will be executed by the steps.



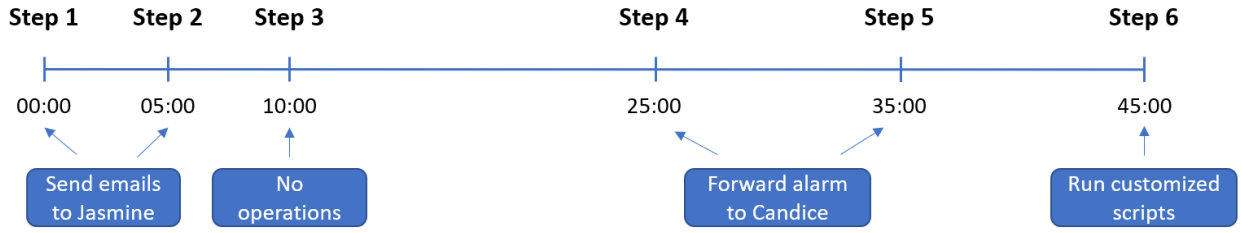
19.4.1.2.2.2. Operation Steps Use Case

Two scenarios are given below for users' better understanding. We assume the default step duration defined in the trigger-based action configuration form is 15 minutes for both scenarios.

Scenario 1

Step	Operation Type	Description	Step Duration
1-2	Send Message	Send email notifications to Jasmine	5 minutes
4-5	Forward Alarm	Forward this alarm to Candice	10 minutes
6-6	Custom Script	Run script	3 minutes

The operations' timeline is given as below.



Step1: Operation – Send an email to Jasmine happens immediately when the alarm is triggered.

Step 2: If the alarm still exists, operation – Send an email to Jasmine happens again after 5 minutes.

Step 3: The step duration between step 2 and step 3 is 5 minutes. But nothing will happen because we didn't define step 3 in the table.

Step 4: The step duration between step 3 and step 4 is the default duration, which is 15 minutes because we didn't set the step duration of step 3. If the alarm is still on after 25 minutes (15 minutes after step 3), the operation – forward alarm to Candice is triggered.

Step 5: The step duration between step 4 and step 5 is 10 minutes. Operation - forward alarm to Candice happens again after 10 minutes of step 4 if the alarm is still on.

Step 6: The system runs a customized script after 10 minutes of step 5.

So far, all operations of this action are over. If the alarm is fixed during the middle of the process, then the rest of the operations won't happen.

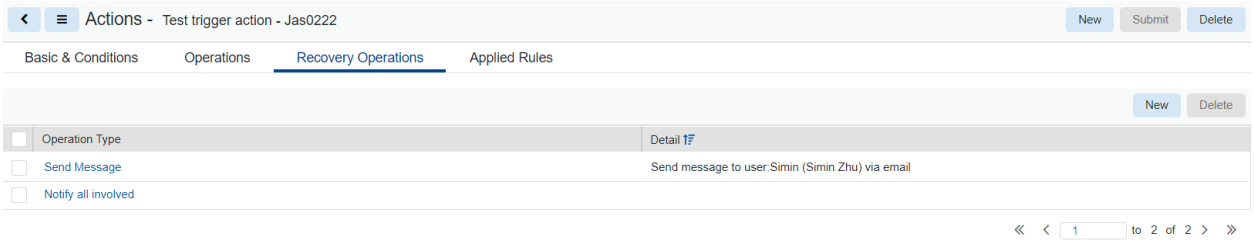
Scenario 2

Step	Operation Type	Description	Step Duration
1-0	Send Message	Send email notifications to Jasmine	5 minutes

0 indicates infinite. While the step is 1-0, it means the system will send an email notification to Jasmine every 5 minutes until the alarm is fixed.

19.4.1.2.3. Recovery Operations Tab

The Recovery Operations Tab displays a list of created recovery operations, which occur when alarm status returns to normal.



The table list contains the following fields:

List Column	
Operation Type	Displays the type of operation.
Detail	Displays the details of the operation.
User List Buttons	
New	New opens form to create an action.
Delete	Remove the selected action from the system.

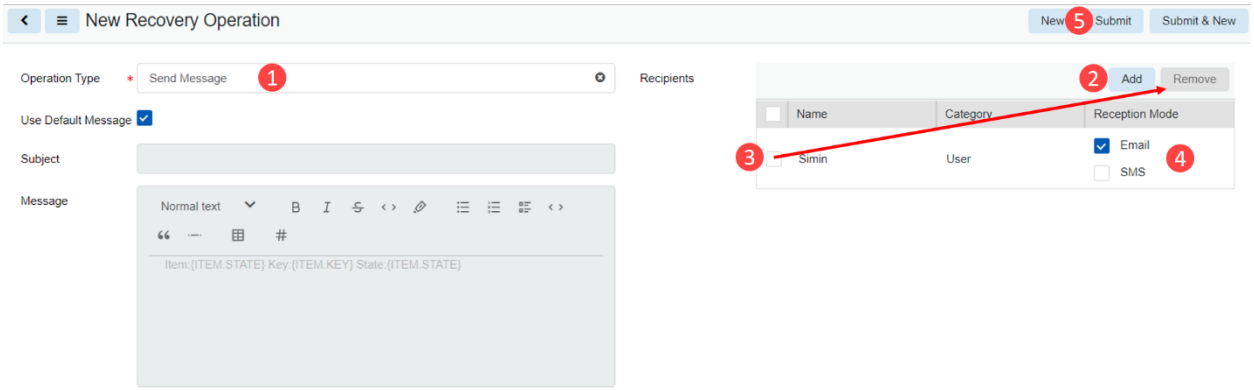
19.4.1.2.3.1. Create New Recovery Operations

Click the **New** button to add a new recovery operation to the selected action. There are five recovery operation types in the system, and the configuration processes of each type are different. The details are listed below.

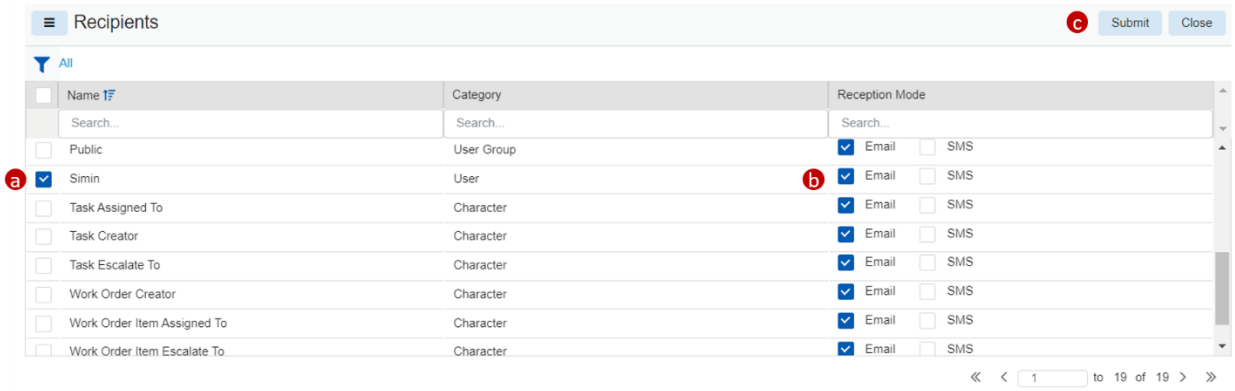
19.4.1.2.3.1.1. Send Message

The Send Message recovery operation enables the system to send messages to selected recipients once the alarm status is back to normal.

19.4.1.2.3.1.1.1. Default Message

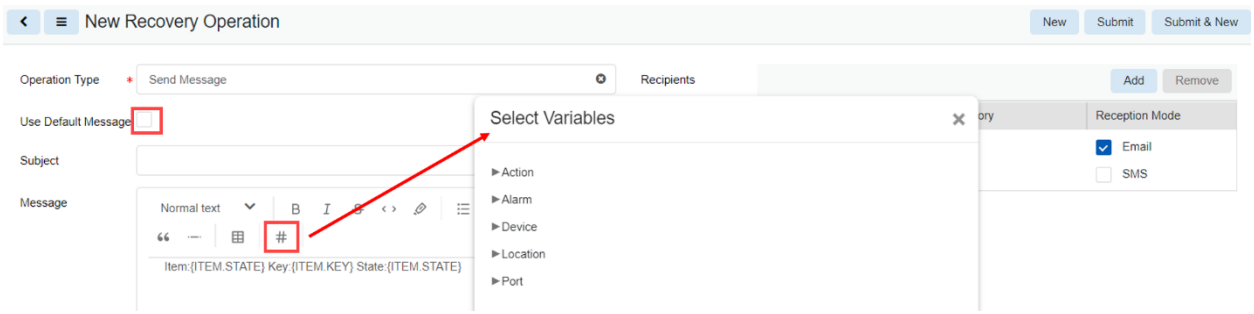


1. Select the recovery operation type from the dropdown list. Please select Send Message.
2. Add recipients who will receive the message notifications. Click the Add button. A table of recipients pops up:



   a. Select the recipients by clicking the checkboxes.
   b. Select the Reception Mode. Options are Email and SMS. Select both is allowed.
   c. Click the Submit button.
3. To remove the selected recipients, click the checkboxes and click the Remove button.
4. It is easy to change the Reception Mode by selecting the corresponding checkbox.
5. Click the Submit button to submit the Send Message type operation configuration form.

19.4.1.2.3.1.1.2. Customized Message



1. Unclick the checkbox “Use Default Message”.

2. Click the hash sign # to select variables to tailor the message. Users can enter the customized content in Subject and Message fields.

19.4.1.2.3.2. Custom Script

The Custom Scripts recovery operation enables users to run their own scripts once the alarm status is back to normal. Users can put their scripts under the default path "/opt/VDC/monitor/actions/user-scripts/bash" or add the full if they don't want to use the default path.

19.4.1.2.3.3. Forward Alarm

The Forward Alarm recovery operation enables the system to forward the alarm to a specified user when the alarm status is back to normal by entering a destination host and port address.

19.4.1.2.3.4. Forward Trap

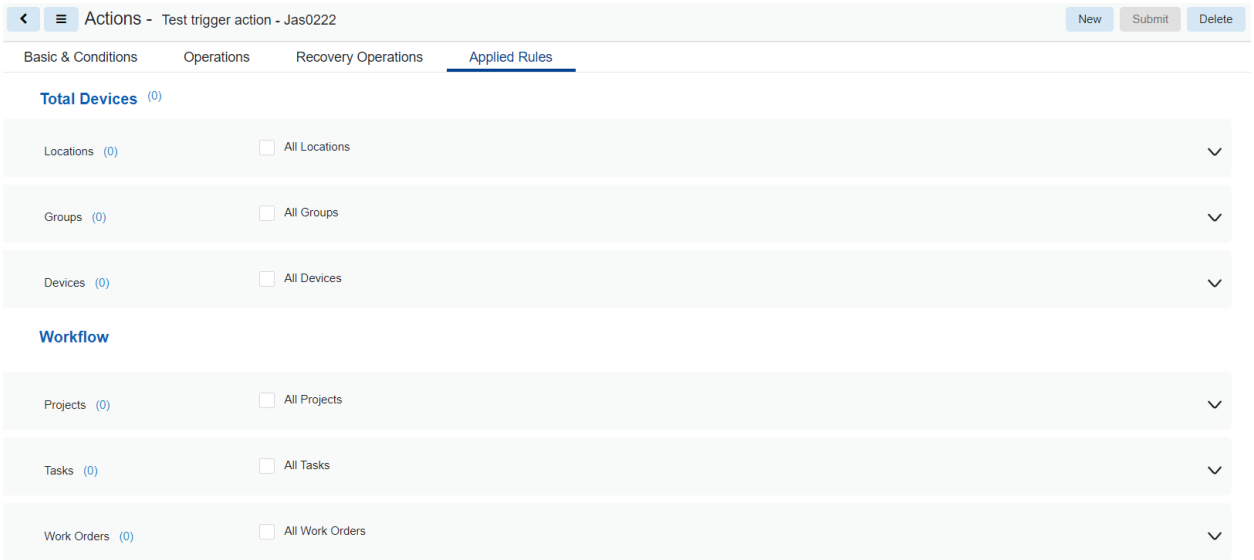
The Forward Trap recovery operation enables the system to forward the trap alarm to a specified user when the alarm status is back to normal by entering a destination host and port address.

19.4.1.2.3.5. Notify all involved

The Notify all involved recovery operation enables the system to send default or customized messages to all users who have received alarm notifications when the alarm status is back to normal.

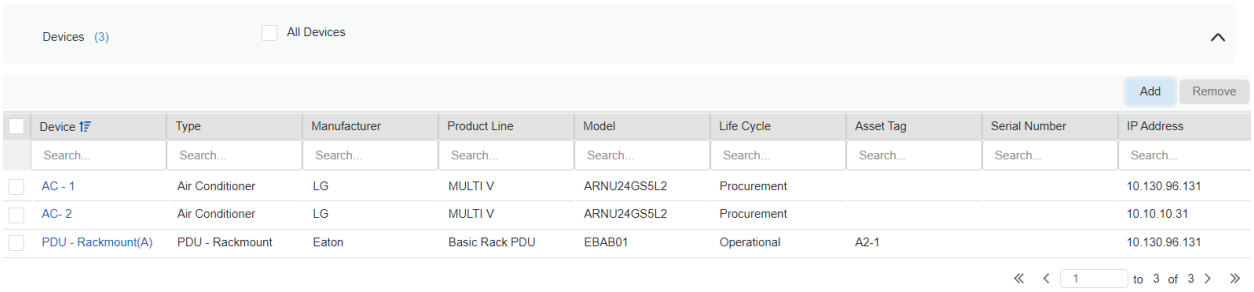
19.4.1.2.4. Applied Rules Tab

The Applied Rules Tab displays that the action can be applied on either Total Devices (Locations, Groups, Devices) level or Workflow (Projects, Tasks, Work Orders) level.



Clicking the **arrow** sign next to each sublevel displays a table list of the respective elements affected by the action.

As an example, the following picture shows that the action is applied to three devices at the devices level.

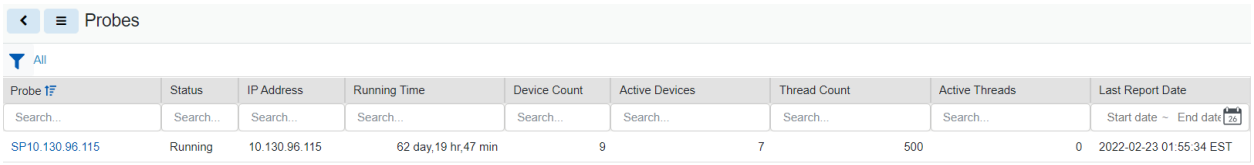


Users can manage the list by adding or deleting the table elements.

- Add table elements:
    a. Click the Add button to open a window listing all the elements of that kind in the system.
    b. Select locations/groups/devices/projects/tasks/work orders you want to be applied by the action.
    c. Click the Submit button.
- Remove table elements:
    a. Select the locations/groups/devices/projects/tasks/work orders you want to remove from the action.
    b. Click the Remove button to delete the selected elements.

19.5. Probes Menu Item

The Probe Menu Item displays a list of probe servers and their related information.



The table list contains the following fields:

List Column	
Probe	Displays the probe name. Clicking the name links to the probe's configuration form.
Status	Displays the status of the probe.
IP Address	Displays the IP address of the probe.
Running Time	Displays the length of time the probe has been running.
Device Count	Displays the number of devices configured for the probe.
Active Devices	Displays the number of devices actively being monitored.
Thread Count	Displays total thread count.
Active Threads	Displays number of active threads.
Last Report Date	Displays the last report date and time.

19.5.1. Probe Configuration Form

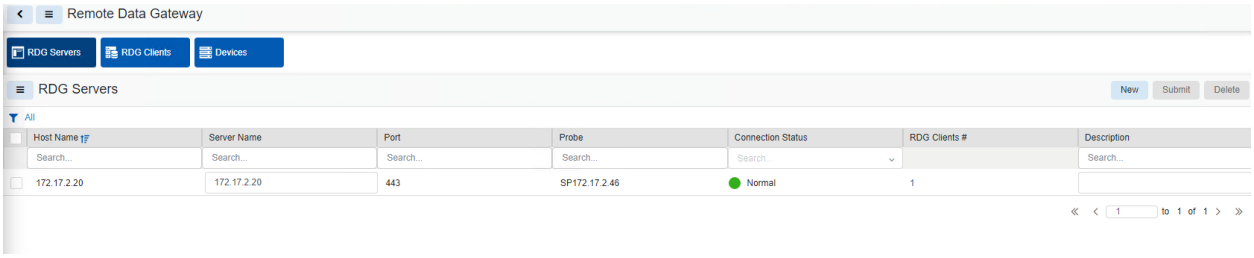
Click the probe name of the Probe column to enter in the probe configuration form.

The Probe form displays configuration information for the probe and allows users to remove devices from the probe. The probe is configured during installation and the fields are read only.

Fields	Description
Probe	Displays probe name.
Status	Displays the probe's current status.
IP Address	Displays the probe's IP address.
Running Time	Displays the length of time the probe has been running.
Device Count	Displays the number of devices configured for the probe.
Active Devices	Displays the number of devices actively being monitored.
Thread Count	Displays total thread count.
Active Threads	Displays number of active threads.
Buttons	**Description**
Remove	Removes selected device from list and turns off monitoring at the device.
List Column	
Device	Device name is also a link to the device form.
Last status	Displays status at last probe interval.
Probe Attempts	Displays the number of probe attempts to contact device.
Probe Success	Displays the number of successful probe attempts.
Recent Missed	Displays the number of times the device did not respond in the past hour.
Missed Count	Displays total failed probe attempts.
Interval (ms)(Avg/Max/Min)	Displays the average, maximum and minimum probe interval in milliseconds.
Response (ms) (Avg/Max/Min)	Displays the average, maximum and minimum response from devices in milliseconds.

19.6. Remote Data Gateway Menu Item

The Remote Data Gateway Menu Item displays a list of RDG servers and their related information.



19.6.1. RDG Servers Tab

The table list contains the following fields:

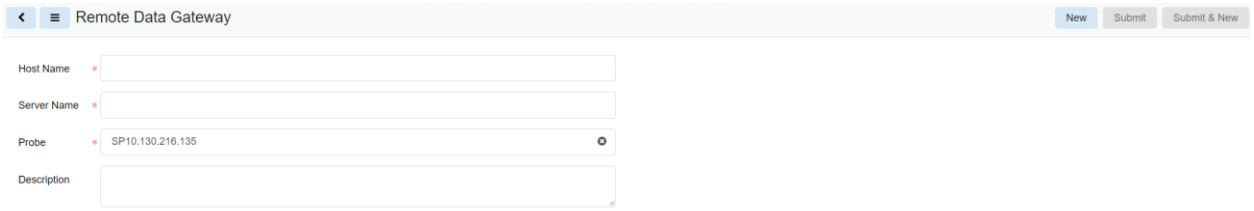
List Column	Description
Host Name	Displays the RDG server's IP. Clicking the name links to the RDG server's configuration form.
Server Name	Displays the RDG server's name. This field is editable.
Port	Displays the port number.
Probe	Displays the probe server address.
Connection Status	Displays the connection status between RDGS and BLSS. • Ready to Connect: While users installed the RDGS but didn't create RDGS in BLSS or vice versa. • Normal: Users installed the RDGS and created RDGS in BLSS.

	• Disconnected: RDGS is disconnected.
RDG Clients #	Displays the number of the RDG clients that connect with this RDG server.
Description	Displays the number of the RDG clients that connect with this RDG server.
Buttons	
New	Adds a new RDG server.
Submit	Updates the Server Name and Description fields when users edit the information. This button is only accessible when these two fields are edited.
Delete	Deletes the selected RDG server. This button is only accessible when one or more RDG servers are selected.

Users can edit the “Server Name” and “Description” fields directly on the same page without entering the RDG server’s detailed page.

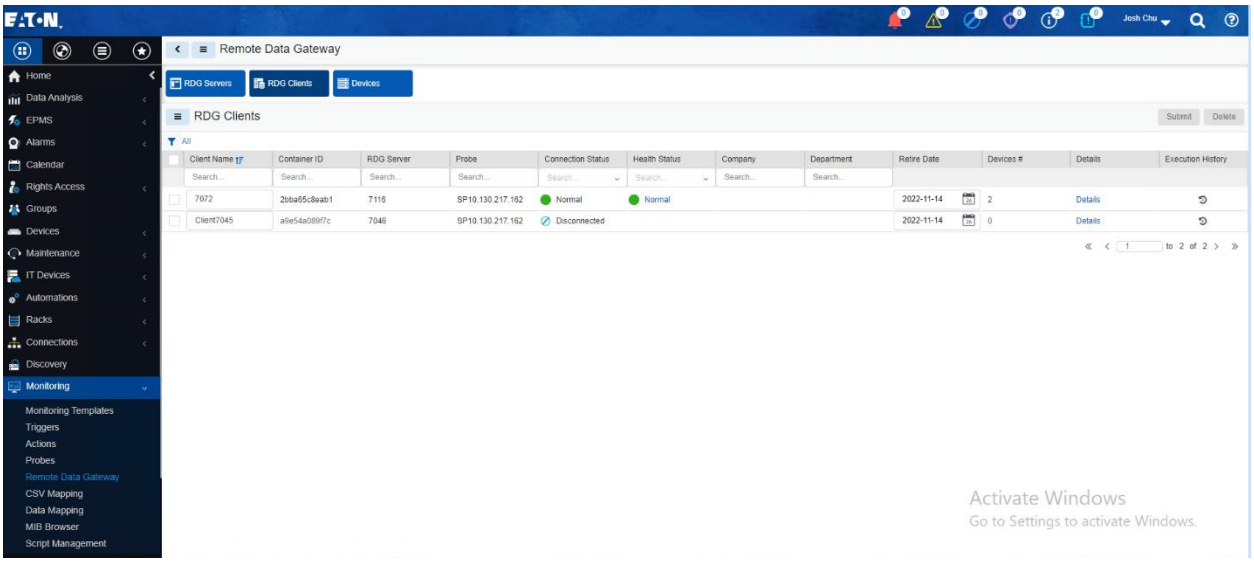
19.6.1.1. Create New RDG Server

Click the **New** button on the top right corner to present the RDG Server configuration form. Fill all the compulsory fields and click “Submit” button.



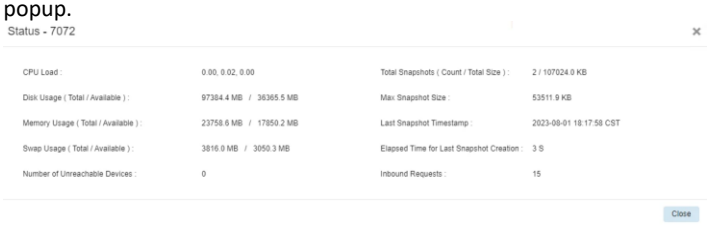
19.6.2. RDG Clients Tab

The RDG Client Tab displays a list of RDG Clients connected with the RDG Server.



The table list contains the following fields:

Fields	Description
Client Name	Displays the RDG client’ name. This field is editable.

Container ID	Displays the container ID.
RDG Server	Displays the corresponding RDG server's name.
Probe	Displays the probe name.
Connection Status	Displays the connection status of each RDG client. • Normal means that the RDG client can be connected and the RDG client is reporting its health status every minute. • Disconnected means the health status cannot be received from the RDG client anymore. If a RDG client's connection status is Disconnected, then it's health status will be empty.
Health Status	Displays the overall health status of each RDG client. • Normal means that the RDG client is in a good health condition. • Warning means the RDG client could in one or some of the following conditions: ○ CPU usage above 80% ○ Memory usage above 80% ○ Disk usage above 80% • Critical means there is a communication issue that has been detected between the RDG client and the device(s) monitored on this RDG client. The health status is shown as a link (e.g., when the health status is Normal, it shows). When users click on the link, The following information will be shown in a popup.  • CPU load – CPU load average for last 1 min, 5 min, 15 min. • Disk Usage – Total and available. • Memory Usage - Total and available. • Swap usage – Total and available. • Number of Unreachable Devices. • Total Snapshots (Count / Total Size) – Snapshots information including how many snapshots are on the RDG client and the total size of all snapshots. • Max Snapshot Size – The largest snapshot file size. • Last Snapshot Timestamp – The timestamp when the last snapshot was taken. • Elapsed Time for Last Snapshot Creation – The elapsed time for creating the last snapshot. • Inbound Requests – Number of end-device asynchronized inbound requests (e.g., SNMP trap).
Company	Displays the company of the RDG client.
Department	Displays the department of the RDG client.
Retire Date	Displays the retire date of the RDG client.
Devices #	Displays the number of devices added and monitored by the RDG.
Details	Displays three lines - Probe Machine ID, RDG Server Machine ID, RDG Client Machine ID in a popup window.
Execution History	Displays the following information in a popup window: • Execution Start Timestamp • Execution Stop Timestamp

	• User – Because only the system level script can be sent to the RDG client, the only user available here is “System”. • Script Name – The system level script name, starts with an underscore. • Results • Download Detailed Log – A link for users to download the package sent from the RDG client for the execution details.
Table List Buttons	Description
Submit	Updates the Client Name field when users edit the information. This button is only accessible when this field is edited.
Delete	Deletes the selected RDG client.

19.6.3. Device Tab

The Device Tab displays a list of devices monitored by the RDG Server. The table list contains the following fields:

Fields	Description
Device Name	Displays the device name.
IP Address	Displays the IP address of the device.
Type	Displays the device’s type.
Manufacturer	Displays the device’s manufacturer.
Model	Displays the device’s model.
RDG Client	Displays the RDG client name that discovers the device.
Data Points (Active/Total)	Displays the active and total discovered data points.
Last Updated	Displays the date and time of last update.
Table List Buttons	Description
Validate	Validates the selected device.
Remove	Deletes the selected device.

19.6.4. RDG Alarms

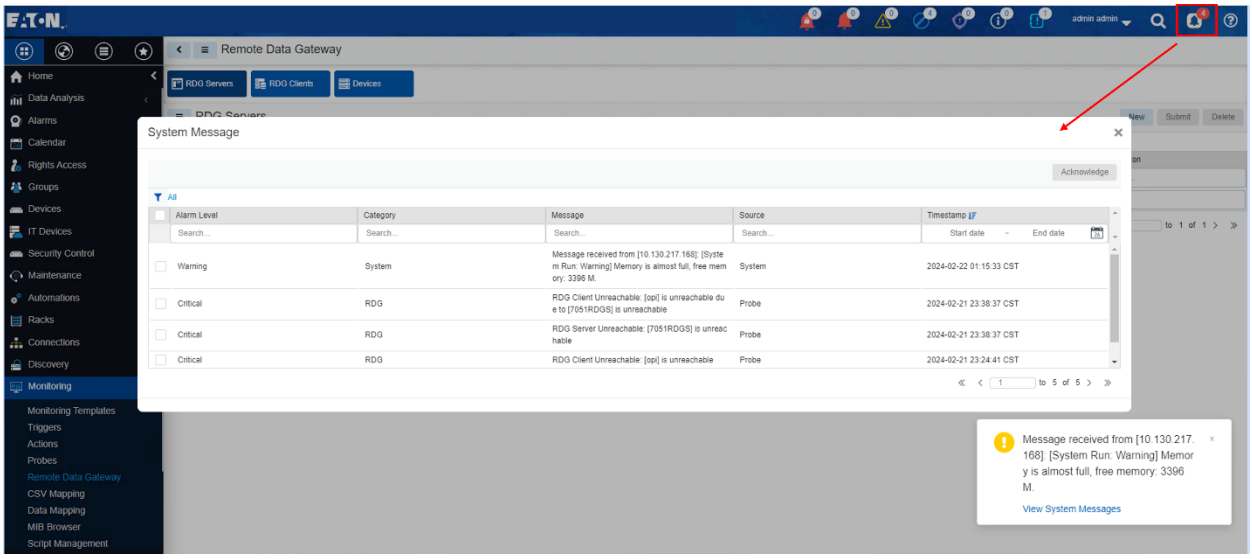
When the communication failure between the RDGS & RDGC:

- A system message will pop up in the lower-right corner.
- All devices monitored on any RDGC will be in Exception alarm status with the message showing that the reason is due to the RDGC communication failure.

When the communication failure between the RDGS & Probe server:

- A system message will pop up in the lower-right corner.
- The connection status of the RDGC(s) that are added to this RDGS will be Disconnected.
- All devices monitored on any RDGC will be in Exception alarm status with the message showing that the reason is due to the RDGS communication failure.

An alarm icon in the upper right corner shows the total number of alarms.  Click the icon, and a System Message window will pop up. Users can select one or more system messages that they want to acknowledge.



Cooperating with alarms, we add new calendar events for the communication failure between RDGS, RDGC, and Device.

- RDG Client Unreachable
- RDG Client Unreachable Due to RDG Server Unreachable
- RDG Server Unreachable
- RDG Client Connected
- RDG Server Connected

19.7. CSV Mapping

The application can retrieve monitoring data for a device from a csv file provided by third-party system. This is also known as Flat File monitoring. The third-party system would provide csv files at regular intervals with updated information.

The configuration phases for working with csv files for monitoring are as follows:

19.7.1. Phase 1: Creating a CSV Mapping Template

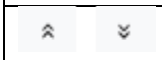
Create a CSV Mapping Template to reconcile the csv file format to the application

The CSV Mapping Menu Item displays a list of all the CSV Mapping templates in the system. The table list contains the following fields:

Table List Column	
Name	Name of the template is also a link to open the CSV Mapping form that contains the details for that template.
Mode	Displays the csv mapping template mode. Options are Single Device in a Data Source or Multiple Devices in a Data Source.
Description	Displays the user defined description for the csv mapping template.
Table List Buttons	**Description**
New	Presents the form for creating a new csv mapping template.
Delete	Deletes the selected csv mapping template from the system.

19.7.1.1. CSV Mapping Form

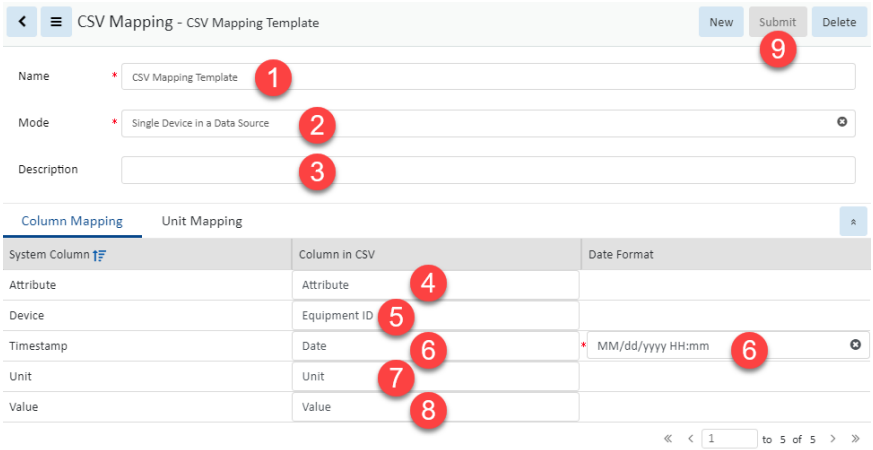
Selecting new or an existing csv mapping template presents the CSV Mapping Template form. The CSV Mapping Template form has static fields in the top section followed by tabs that present their fields related to the csv mapping form.

Fields	Description
Name	Displays the name of the template.
Mode	Displays the csv mapping template mode. Options are Single Device in a Data Source or Multiple Devices in a Data Source.
Description	Displays the text for the monitoring template description field.
Table List Buttons	**Description**
New	Presents the form for creating a new csv mapping template.
Submit	If any form fields are edited or new data has been added the Submit button becomes active and is used to update the form.
Delete	Deletes the current csv mapping template.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

19.7.1.2. Column Mapping Tab

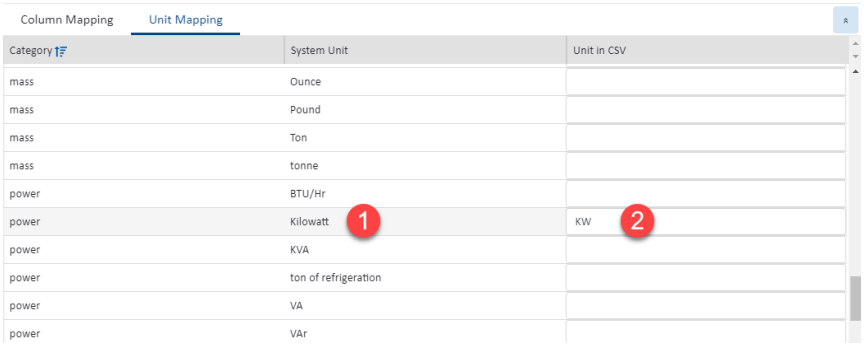
The initial view presented when the Column Mapping Tab is selected is a table mapping the System Column name to a Column in CSV file.

1. Name - enter the CSV Mapping Template Name
2. Mode - Select either Single Device in a Data Source or Multiple Devices in a Data Source
3. Description - enter a user defined description for the template
4. Enter the column name in the CSV file for the column that has the attribute that will be monitored.
5. Enter the column name in the CSV file for the column that has the device name.
6. Enter the column name in the CSV file for the column that has the timestamp for the monitored information
    a. Select the date format that matches the timestamp in the csv file
7. Enter the column name in the CSV file that identifies the unit of measurement for the monitored value
8. Enter the column name in the CSV file for the column that has the monitored value
9. Click the Submit button to save your settings



19.7.1.3. Unit Mapping Tab

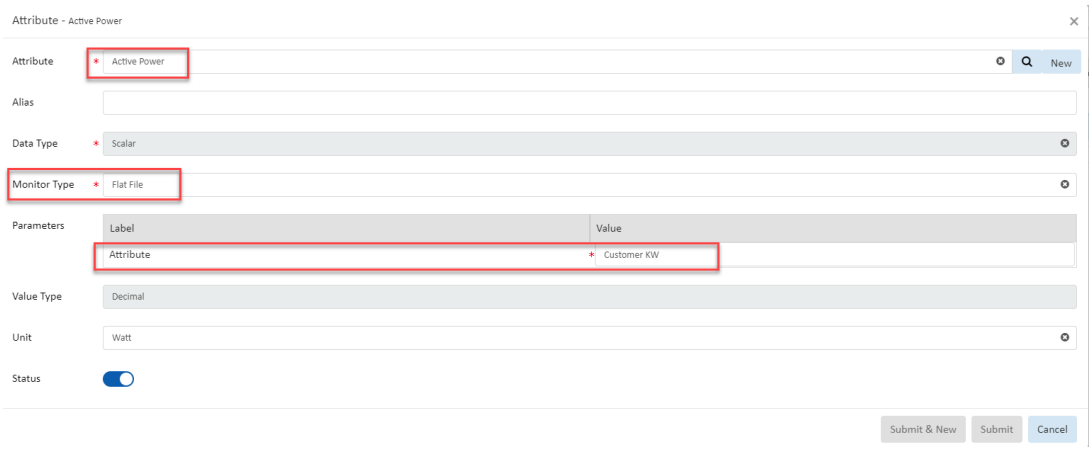
1. Find the relevant unit of measurement
2. Enter the string for the unit of measurement as it appears in the csv file
3. Click the Submit button to save your changes



19.7.2. Phase 2: Create a Monitoring Template

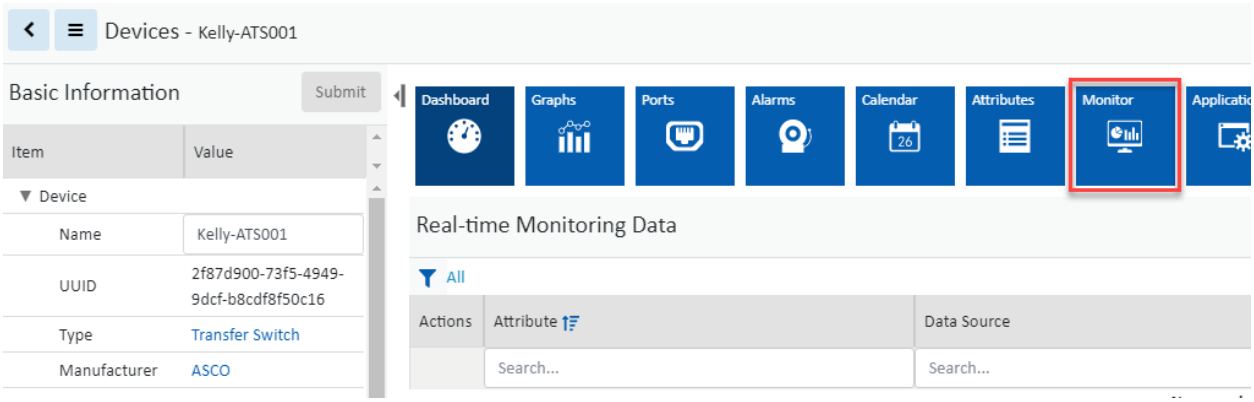
Create a Monitoring Template where the attributes are set to Monitor Type Flat File and the relevant attribute from the CSV file is identified. Refer to the Monitoring Menu Group section for more details.

In this example the application attribute Active Power will be linked to the CSV file attribute Customer KW.

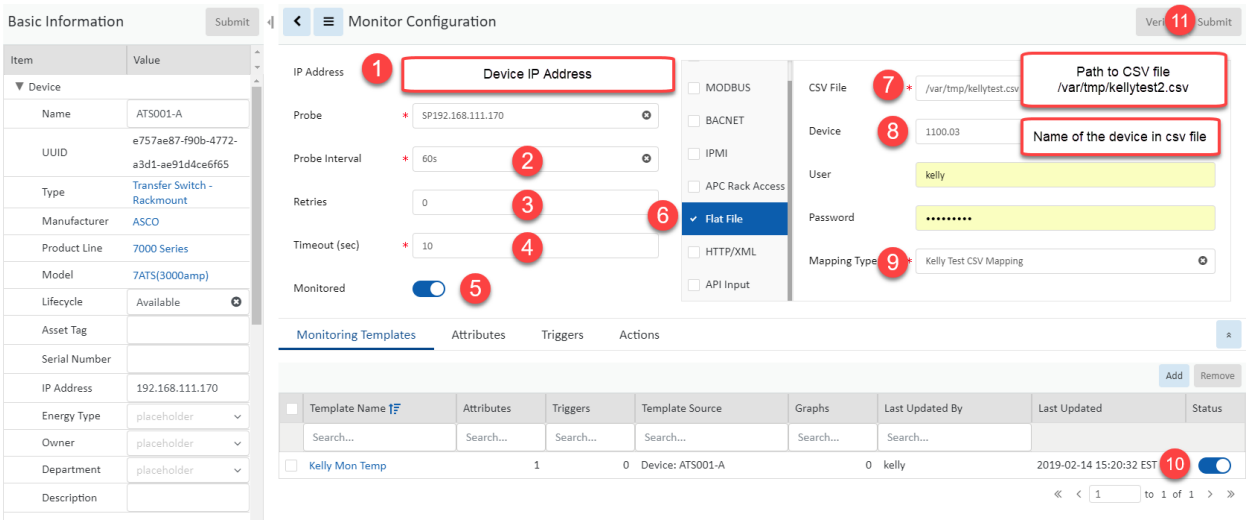


19.7.3. Phase 3: Configure Monitoring for the Device

For the device configure monitoring for protocol Flat File.
Go to the device's Device Central page and select the Monitor function tile.



1. Enter the device's IP Address
4. Set the probe to be used (if all-in-one or only 1 probe it will already be selected)
5. Set the probe interval
6. Set the number of retries
7. Turn on monitoring for the device
8. Set the protocol to Flat File
9. Enter the path to the csv file
   Specify the path to the CSV file. The BLSS application supports FTP, Local File and HTTP. For detailed file path syntax refer to
   https://commons.apache.org/proper/commons-vfs/filesystems.html
10. Enter the name of the device as it appears in the csv file
11. Select the name of the CSV Mapping Template to be used
12. Ensure that the monitoring template is set to active
13. Click Submit to save the settings
14. After a few polling cycles return to the device's main page and you should see values in the Real-time Monitoring Data



19.8. Data Mapping Menu Item

The Data Mapping feature allows you to map the monitored data points from one device (the From Device) to another (the To Device).

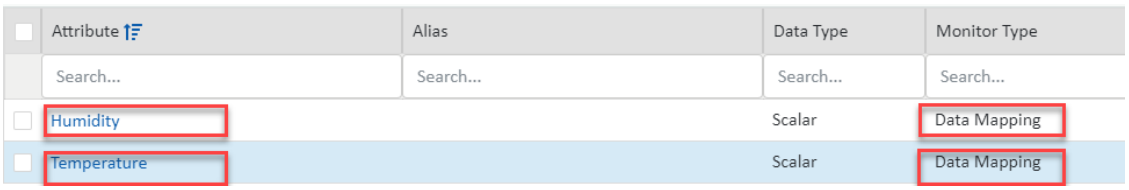
For Example:

- A rack does not typically have any way to monitor its temperature directly.
- A sensor mounted on the rack would indicate the rack's temperature (the sensor is the From Device).
- Data Mapping allows the user to map the temperature from the sensor to a temperature attribute on the rack (the rack is the To Device).
- Then when the rack is viewed it has a temperature value.

19.8.1. Before Data Mapping

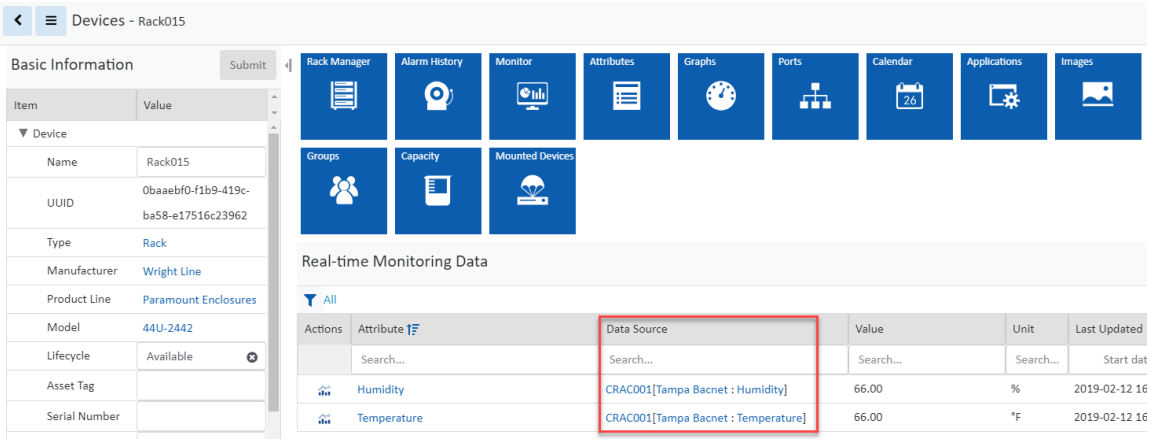
Before you can map data between devices both devices must have associated monitoring templates.

- **From Device:** The device that has actual data points that can be monitored would have a normal monitoring template.
- **To Device:** The device that will indirectly receive the monitored data will also need a monitoring template.
    - The template for the To Device will identify the monitored attributes but the Data Type will be set to Data Mapping.



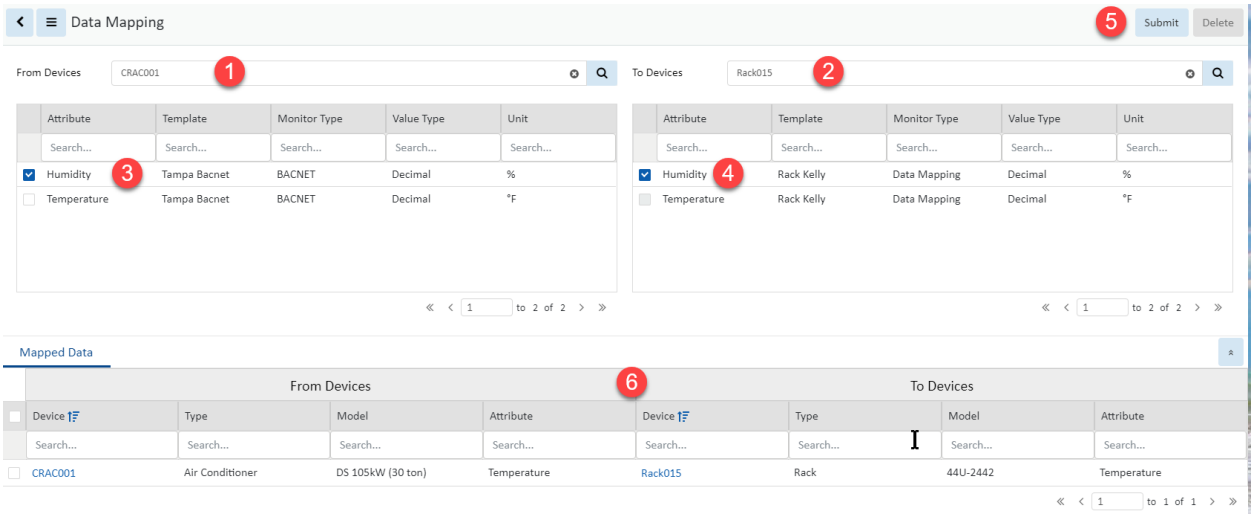
    - The Monitor Configuration for the device should have the monitoring template status set to active.

- After Mapping the device's Real-time Monitoring Data will show the mapped attributes and identify the Data Source as the From Device [Monitoring Template: Monitored Attribute]. In the image below the *To Device* is Rack015 and the *From Device* is CRAC001 using monitoring template Tampa Backnet and monitored attribute Temperature.



19.8.2. Data Mapping Steps

The initial view presented when selecting the Data Mapping Menu Item is the work area for mapping From Devices to To Devices and the list of Mapped Data attributes in the system.



1. Select the From Device from the list of all devices
    a. The list of monitored attributes in the device's monitoring template is shown
2. Select the To Device from the list of all devices
    a. The list of data mapping attributes from the device's monitoring template is shown

3. For the From Device check the attribute that will provide information
4. For the To Device check the attribute that will receive information
5. Click Submit to map
6. The mapped information is added to the Mapped Data table list

List Column	
Device	From Device name and link to device's form.
Type	From Device type.
Model	From Device model.
Attribute	From Device attribute that is mapped to To Device.
Device	To Device name and link to the device's form.
Type	To Device type.
Model	To Device model.
Attribute	To Device attribute that is mapped to From Device.
Buttons	
Submit	Saves the attribute mapped From Device to To Device.
Delete	Deletes the selected row from the Mapped Data list and cancels the mapping.

19.9. MIB Browser Menu Item

A MIB is a formatted text file that lists all the data objects used by a device. The file lists the OIDs (object identifiers) that correspond to specific data points. When configuring monitoring for a device using the SNMP protocol you must have the OIDs for the data points you wish to monitor.

The application has a self-contained MIB Browser that lets you view MIB files in the system and use them to SNMP walk a device to determine which OIDs to use.

The initial view presented when the MIB Browser Menu Item is selected is the SNMP connection configuration fields and a list of MIB files uploaded to the system.

Fields	Description
Probe	Allows the user to select the probe that will be used for the MIB walk.
Version	Allows the user to select the SNMP version to be used. Options are SNMP_VERSION_1, SNMP_VERSION_2C and SNMP_VERSION_3.
Security Level	Allows the user to select the SNMP Version 3 security level to be used. Options are noAuthNoPriv, authNoPrive and authPriv.
Auth Protocol	Allows the users to select the SNMP Version 3 authorization protocol. Options are MD5 or SHA.
Privacy Password	Display and enter the privacy password fpr SNMP Version 3.
IP Address	Display and enter the IP address of the device to be walked.
Protocol	Display and enter the select the protocol. Options are UDB or TCP.
Set Community	Display and enter the set community string.
Password	Display and enter the Password for SNMP Version 3.
Privacy Protocol	Display and enter privacy protocol for SNMP Version 3. Options are DES and AES.
Port	Display and enter the port for connecting to the device.
Get Community	Display and enter the get community string.
User Name	Display and enter the user name for SNMP Version 3.
Context	For SNMP Version 3.
Unit	Display and set the value to replace the unit variable in an OID.
Buttons	Description

Upload File	Used to upload MIB to the MIB Files list.
Delete	Deletes the selected MIB file from the list.
List Column	
File Name	MIB file name is also a link to the MIB's list of OIDs.
Description	Displays user defined description.
Create By	Displays the name of the user that uploaded the MIB.
Created	Displays the date the MIB file was uploaded.

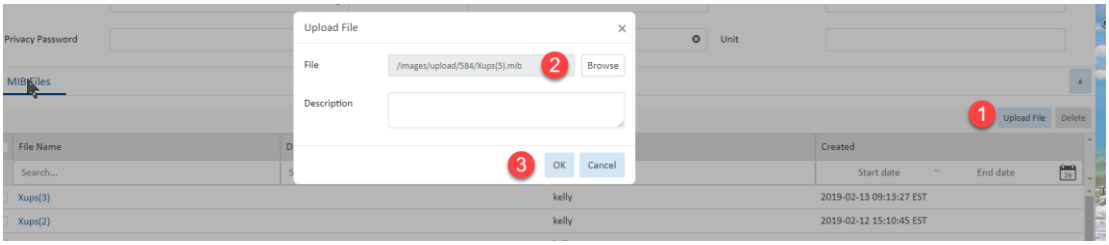
19.9.1. SNMP Walk

An SNMP walk tests the connectivity to a device and helps determine which OIDs (object identifier) should be used to reach the desired data points for monitoring.

19.9.1.1. Uploading a MIB

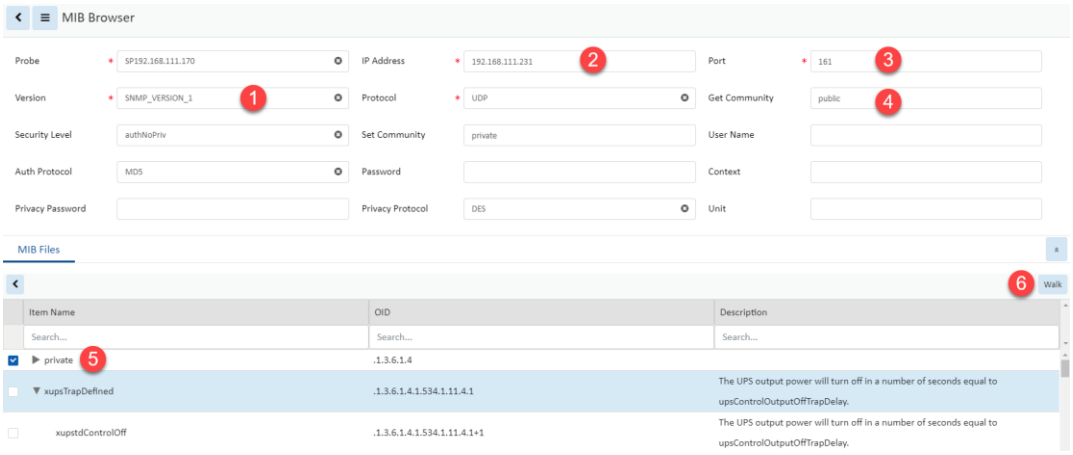
Acquire a MIB for the device to be monitored. These can typically be found at the device manufacturer's web site. Upload the MIB to the application.

1. Click he Upload File button
2. Navigate to the MIB file
3. Click OK to upload and add the MIB to the list



19.9.1.2. SNMP Walk Steps

Determine which SNMP protocol version is appropriate for your device and proceed.



1. Select the SNMP version

a. If the device uses SNMP version 3 then you will also need information for all of the fields noted as specific to version 3 in the fields table above.

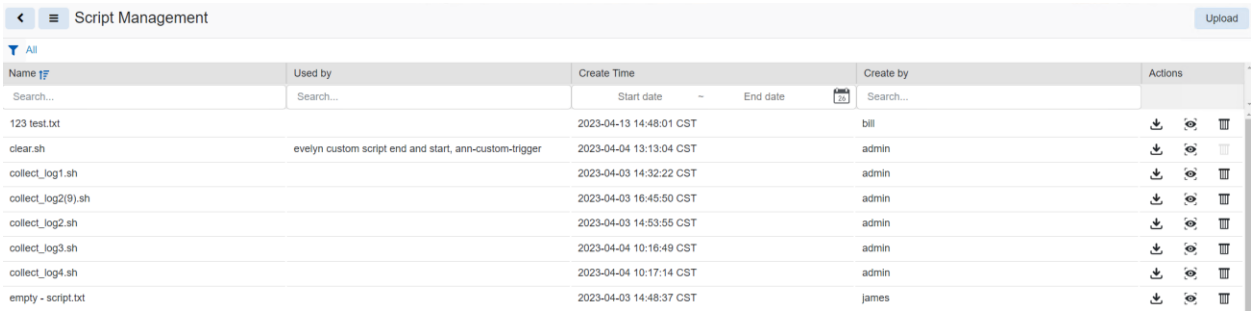
2. Enter the IP address for the device
3. Set the port number, by default it is the standard SNMP port of 161
4. Set the Get Community string, by default it is set to public
5. Click on the MIB name to be used and then select the desired MIB section
    a. The MIB is a hierarchy of folders with OIDs for various functions
    b. If you are unsure which one to select, select private to explore everything
6. Click on the Walk button to initiate the SNMP walk

7. The walk results are displayed in a table

Name/OID	Value	Type
.1.3.6.1.4.1.534.1.1.1.0	EATON	OctetString
.1.3.6.1.4.1.534.1.1.2.0	Eaton 5PX 1000	OctetString
.1.3.6.1.4.1.534.1.1.3.0	INV: 10	OctetString
.1.3.6.1.4.1.534.1.1.4.0	0	Integer
.1.3.6.1.4.1.534.1.2.1.0	2212	Integer
.1.3.6.1.4.1.534.1.2.2.0	52	Integer
.1.3.6.1.4.1.534.1.2.3.0	0	Integer
.1.3.6.1.4.1.534.1.2.4.0	100	Integer
.1.3.6.1.4.1.534.1.2.5.0	4	Integer
.1.3.6.1.4.1.534.1.2.6.0		OctetString
.1.3.6.1.4.1.534.1.3.1.0	599	Integer
.1.3.6.1.4.1.534.1.3.2.0	26	Counter32

19.10. Script Management Menu Item

Users can view, upload, download, and delete scripts in the Script Management menu item directly instead of always using the server console. All scripts are listed as a table in the Script Management menu item.



The table list contains the following fields:

Table List Column	Description
Name	Displays the script name.
Used by	Displays the automation name that the script is used for.
Create Time	Displays the script upload time.
Create by	Displays the user who uploads the script.

Actions	There are three actions in the column. • Download : Download the selected script. • View : View the script content. • Delete : Delete the selected script. A script cannot be deleted if it is used by automation.
Table List Buttons	Description
Upload	Upload a script from local.

20. Workflow Menu Group

The Workflow Menu Group provides important tools for users to create and manage projects and associated activities.

20.1. Workflow Management

Workflow Management is an advanced version of our current workflow function. Instead of following the system-defined workflow processes, this new function aims to allow users to design and use their own workflow processes which are better suit their business needs.

Workflow Management can manage all processes in the BLSS, including system-level processes and newly imported processes and forms.

This is an add-on feature, only a client who additionally subscribes to this feature will have it displayed in the Feature Menus. This feature is designed to quickly and flexibly support any customer to customize their workflow according to their business needs.

The initial process is defined in the Flowable cloud by our development team based on the client's needs. After the process is settled down, it will be imported to the BLSS. If any customers are interested in this function, please contact our support team or your sales.

20.2. My Activity Menu Item

The My Activity Menu Item displays a series of tables showing the current user's open workflow assigned activities.

20.2.1. My Workflow Items

List of all workflow items assigned to the user.

Table List Column	
Status	Current status of the item for example, Pending Approval.
Project Name	Displays the name of the project to which the item belongs.
Project Number	Displays the number of the project to which the item belongs.
Name	Displays the name of the item to be acted upon.
Type	Displays the type of the item.

20.2.2. My Projects

List of projects created by the user.

Table List Column	
Name	Displays the name of the project.
Project Number	Displays the project number.
Status	Displays the current status of the project.
Tasks #	Displays the number of tasks in the project.
Work Orders	Displays the number of work orders in the project.

Start Date	Displays the project start date.
End Date	Displays the project end date.

20.2.3. My Tasks

Lists of tasks assigned to user for approval.

Table List Column	
Name	Name of the task.
Task Status	Displays the task status.
Actions	Displays the number and kind of actions in the task.
Project Name	Displays the name of the project.
Project Number	Displays the project number.
Project Status	Displays the current status of the project.
Created Date	Displays the date the task was created.

20.2.4. My Work Orders

List of work orders assigned to the user.

Table List Column	
Work Order	Displays the name of the work order.
Work Order Number	Displays the work order number.
Status	Displays the current status of the work order.
Assigned To	Displays who is assigned to the work order.
Project Name	Displays the name of the project.
Project Number	Displays the project number.
Start Date	Displays the work order start date.

20.2.5. My Events

List of the events related to projects for the current user.

Table List Column	
Icon	Displays icon indicating the type of activity.
Level	Displays the level of the logged activity. Options include Critical, Exception, Inactive, Info, Minor, Normal, Recovery, Unmonitored, Unreachable and Warning.
Date	Displays the date of the activity.
Category	Displays the category of the activity. Options include Alarm, Device, Discovery, Graphs, Location, Monitor, Project, Service, System, User and Warranty. Here you will only see Project category items.
Event	Displays the project related event name. Examples are Project Approved, Task Created, etc.
Source	Display the name of the user who last updated the template.
Description	Displays the activity details.

20.3. Projects Menu Item

The Project feature is an asset-provisioning and management tool that lets project managers do the following:

- Create a project
- Provision the installing, moving, adding, and decommissioning of devices
- Provision network and power cable connections
- Reserve space in racks and on the floor
- Create work orders that summarize the project components
- Send out project work orders

The Projects Menu Item displays a list of all the projects in the system. The table list contains the following fields:

Table List Column	
Name	Name of the project is also a link to open the Project form that contains the details for that project.
Project Number	Displays the number the user has assigned to the project.
Status	Displays the project status.
Location	Displays the location when an action has been planned that includes a location.
Tasks #	Displays the number of tasks in the project.
Work Orders	Displays the number of pending and completed work orders.
Start Date	Displays the start date for the project.
End Date	Displays the end date for the project.
Created By	Displays the date the project was create.
Completion Date	Displays the date the final work order associated with the project is completed.
Table List Buttons	**Description**
Quick New	Present the form for creating a new quick project that doesn't require approvals.
New	Presents the form for creating a new project.
Delete	Deletes the selected project from the system.

20.3.1. New Button

Selecting the New button presents the New Project form. The New Project form has static fields in the top section and once submitted it converts to the Project form.

Note: See section Steps for Creating a Quick New Project for how to create a quick project.

Fields	Description
Project Name	Enter the name for the new project.
Project Number	Enter the number for the new project.
Project Revision Number	Enter the project version.
Owner	Select an owner from the list of existing owners. Owners are created in the rights access menu group, owner menu item.
Department	Select a department from the list of existing departments.
Start Date	Project start date.
End Date	Project end date.

Expired After End Date	Checking the box will cause the project to expire after its end date regardless of its status.
Table List Buttons	Description
New	Opens a form for creating a new project.
Submit	Saves the form's contents, creates the project and opens the project's form page.
Submit & New	Saves the form's content, creates the project and presents a new project form.

20.3.2. Project Form

Selecting an existing project presents the Project form. The Project form has static fields in the top section followed by tabs that present their own lists related to the project.

Fields	Description
Project Name	Enter the name for the new project.
Project Number	Enter the number for the new project.
Project Revision Number	Enter the project version.
Department	Select a department from the list of existing departments.
Start Date	Project start date.
End Date	Project end date.
Expired After End Date	Checking the box will cause the project to expire after its end date regardless of its status.
Table List Buttons	Description
New	Opens a form for creating a new project.
Approve	Approves the project.
Submit	Saves the changes to the project.
Submit for Approval	Submits the project for approval by specified users.
Delete	Deletes the current project.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

20.3.2.1. Tasks Tab

The initial view presented when the Tasks Tab is selected is a list of tasks for the current project and its actions. A task is a way to categorize actions. Actions types include installing a new device, installing an existing device, moving a device, decommissioning a device, adding a port connection, and disconnecting a port. A task is a grouping of any combination of these types of actions.

Tasks are created from within a project. When you create a new task or open an existing task you enter the tasks feature page. For task feature details please refer to the Tasks Menu Item section of this document. For step-by-step instructions to add actions to a task start at the Add Actions to Tasks section of Steps for Creating and Completing a Project section of this document.

List Column	
Task	Task's name is also a link to the task's form.
Actions	Displays the type of each action in the task.
Details	Displays details about the action, device name, etc.
Device Type	Displays the device type.
Model	Displays the device model.
IP	Displays the device IP address.

Serial Number	Displays the device serial number.
Plan Result	Displays the destination planned for the device.
List Buttons	
New	New opens form to add a new task.
Delete	Removes the selected task from the list.

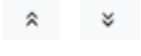
20.3.2.1.1. New Task Form

The New Task form allows users to create a new task. When the new task form is submitted, the task form is opened. For step-by-step instructions to create tasks start at the Create Tasks section of Steps for Creating and Completing a Project section of this document.

Fields	Description
Task	Enter a name for the task.
Project Name	Automatically filled with current project name.
Project Number	Automatically filled with current project number.
Buttons	Description
New	Opens a new task form.
Submit	Creates the new task with existing values in the form.
Submit & New	Increases efficiency when adding a number of tasks sequentially by adding a new task with existing values and presenting a blank new form.

20.3.2.2. Work Orders Tab

Work orders are generated after the project and actions are approved. For step-by-step instructions to create workorders start at the Create Work Order section of Steps for Creating and Completing a Project section of this document.

List Column	
Work Order	Work Order name is also a link to the work order's form. The type of the actions in the work order are also listed in this column under the work order name.
Work Order Number	Displays the automatically generated work order number.
Details	Displays details of the action, device name, etc.
Assigned To	Displays the username of the person assigned the action.
Escalate To	Displays the username of the person to whom the action will be escalated after the designated SLA days.
SLA (Days)	Displays the number of days to escalation for each action.
Status	Displays the status of the work order and each action.
Submit Time	Displays the start date and end date for the work order.
List Buttons	
New	New opens form to add a new work order.
Submit for Deploy	Submits the selected work order for deployment.
Start	Starts the SLA counter for the selected action.
Stop	Stops the SLA counter for the selected action.
Reject	Rejects the selected task and its actions or rejects the selected individual action.
Complete	Completes the selected task and its actions or rejects the selected individual action.
Delete	Deletes the selected item.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

20.3.2.3. Rights Access Tab

Set rights access to the project for user groups.

List Column	
Group Name	Displays the user group name.
Rights Access	Set View, Edit and Delete rights on the project for the designated user group.
List Buttons	
Submit	Saves the changes made to rights access.

20.3.2.4. Attributes Tab

Displays a list of attributes where the Usage is designated as Project.

List Column	
Attribute	Name of the attribute is also a link to open the attribute form that contains the attribute's configuration.
Category	Displays the attribute's Category. Options are Capacity, Common, Electrical/Power, Environmental, Global, Location, Network, Other, Port, Rack and Server.
Value	Enter the attribute's Value.
Unit	Displays the attribute value's corresponding Unit of measurement.
List Buttons	
Add	Opens form to add a new attribute to list.
Submit	Submits the item and adds it to the list.
Remove	Removes the selected attribute from the list.

20.3.2.4.1. Add Attributes Window

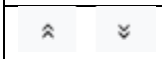
Present a list of attributes where the usage has been designated as project. These can then be added for use in the current project.

List Column	
Attribute	Name of the attribute.
Category	The attributes category. Options are Capacity, Common, Electrical/Power, Environmental, Global, Location, Network, Other, Port, Rack and Server.
Attribute Type	Displays if the attribute is System or Custom generated.
Value Type	Displays the attribute's Value Type. Options are String, Integer, Decimal, Datetime or Enum.
Unit	Displays the attribute's unit of measurement.
List Buttons	
Submit	Adds the attribute to the list.
Close	Closes the window.

20.3.2.5. Approvals Tab (Project)

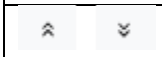
The Approvals Tab displays the list of those users and/or user groups designated as approvers or watchers. The list of project approvers must be defined. A project must be approved before you can begin to plan the task actions.

For step-by-step instructions on how to define approves and approve projects start at the Define Project Approvers section of Steps for Creating and Completing a Project section of this document.

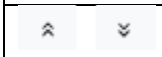
List Column	
Type	Displays if the record is for an approver or a watcher.
Category	Displays if the approver/watcher is an individual user or a user group.
Name	Displays the name of the user or user group.
Status	Displays "approved" next to the user or user group that approved the project.
Descriptions	Displays details about the approval.
List Buttons	
Add	Add opens the form to select approvers and watchers.
Delete	Deletes the selected approver/watcher from the approvals list.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

20.3.2.6. Links Tab

Allows user to add Local File or URL links to be associated with the project.

List Column	
Label	Displays the label for the link.
Link Type	Displays if the link is a Local File or URL.
Content	Displays the path where the file is stored on the application server.
List Buttons	
New	New opens the form to create a new link.
Delete	Deletes the selected item from the list.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

20.3.2.6.1. New Link Window

Form Fields	
Label	Enter the text for the link label.
Link Type	Select Local File or URL.
Content	When Local File is selected the content allows user to browse their computer for a file to be linked. When URL is selected the content area is where the URL is entered.
List Buttons	
New	New opens the form to create a new link.
Delete	Deletes the selected item from the list.
	These buttons collapse and expand the upper area of the form to provide more space for the tables.

20.3.2.7. Comments Tab

The Comments Tab presents a list of comments posted labeled with the username and a time stamp. Comments cannot be edited or deleted.

20.4. Tasks Menu Item

The initial view presented when the Tasks Menu Item is selected is a list of all the tasks for all the projects in the system. Tasks are created from within a project on the tasks tab.

List Column	
Task	Task's name is also a link to the task's form.
Task Status	Displays the status of the task.
Actions	Displays a list of the action types in the task with the number of each of those types.
Project Name	Displays the name of the task's associated project. The project name is also a link to open the Project form that contains the details for that project.
Project Number	Displays the number assigned to the project.
Project Status	Displays the project status.
Created By	Displays the name of the user that created the project.
Created Date	Displays the date that the project was created.

20.4.1. Actions Tab

The Actions Tab is where users can add actions to a task. For step-by-step instructions to add actions to tasks start at the Add Actions to Tasks section of Steps for Creating and Completing a Project section of this document.

List Column	
Action	Displays the type of action.
Details	Displays details about the action, device name, etc.
Type	Displays the device type.
Model	Displays the device model.
IP	Displays the device IP address.
Serial Number	Displays the device serial number.
Plan Result	Displays the destination planned for the device.
List Buttons	
Add Action	Opens form to add new action.
Import	Opens browser to select file for import.
Export	Exports the task's action list to a spreadsheet
Delete	Removes the selected action from the list.

20.4.1.1. Add Action Button: Manage Devices

Click on the Add Action button and select Manage Devices:

- Action Type: Install New Device presents the list of models.
  - Select model checkbox, enter quantity, and name for device and click submit to add action.
- Action Type: Install Existing Device presents a list of existing available devices.
  - Select device checkbox and click submit to add action.
- Action Type: Move Device presents a list of existing operational devices.
  - Select device checkbox and click submit to add action.

- Action Type: Decommission Device presents a list of existing available and operational devices.
    - Select device checkbox and click submit to add action.

20.4.1.2. Add Action Button: Port Connect

When users Click on the Add Action button and select Port Connect, the Port Mapping feature is presented, and cable connections can be specified. For port mapping details please see the Port Mapping Menu Item section under the Connections menu group.

Note: When creating a port connect within a task action the only available option is the Reserve button to reserve the ports.

20.4.1.3. Add Action Button: Port Disconnect

When users Click on the Add Action button and select Port Disconnect, the Cables list is presented, and cable connections can be disconnected.

For cable management details please see the Cables Menu Item section under the Connections menu group.

20.4.2. Rights Access Tab (Task)

Set rights access to the task for user groups.

List Column	
Group Name	Displays the user group name.
Rights Access	Set View, Edit and Delete rights on the project for the designated user group.
List Buttons	
Submit	Saves the changes made to rights access.

20.4.3. Approvals Tab (Task)

The list of those who can approve the task and those designated for escalation if the approver fails to approve in the designated SLA (Days) time frame. For step-by-step instructions to approve tasks start at the Define the Task Approvers section of Steps for Creating and Completing a Project section of this document.

List Column	
Assigned To	Displays the username of the person assigned to approve the task.
Escalate To	Displays the username of the person to whom the task approval will be escalated after the designated SLA days.
SLA (Days)	Displays the number of days to escalation of the task approval.
Status	Displays the status of the approval.
On Time	Displays if the approval is on time or not.
Descriptions	Displays the associated descriptions.
List Buttons	
Add	Opens the Add Approvals form where the user can select who is assigned to approve the task, whom the approval is escalated to and the number of SLA (Days) to escalation .
Delete	Removes the selected approver or watcher from the list.

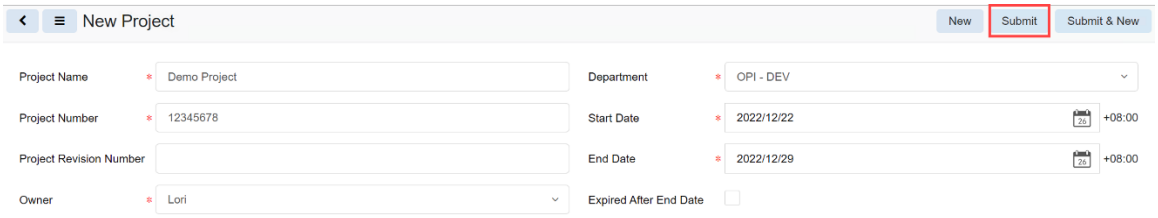
20.4.4. Comments Tab

The Comments Tab presents a list of comments posted labeled with the username and a time stamp. Comments cannot be edited or deleted.

20.5. Steps for Creating and Completing a Project (Regular)

20.5.1. Create Project

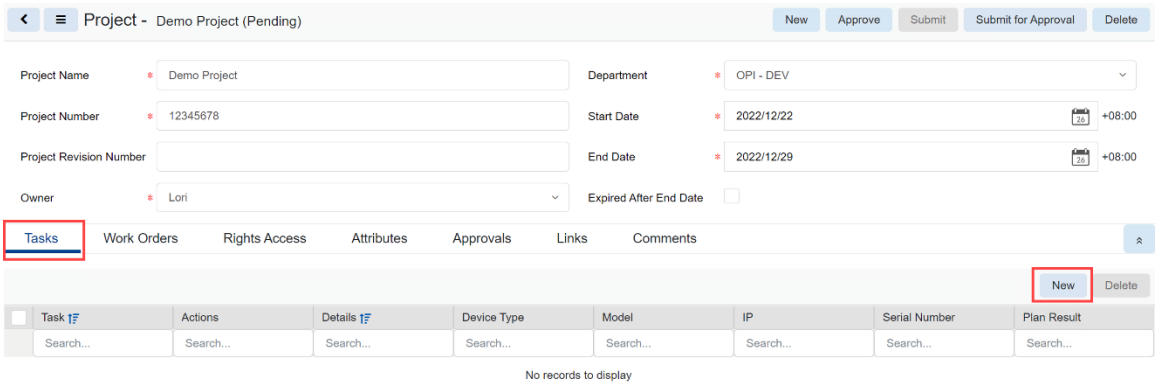
1. From the Workflow Menu Group select the Projects Menu Item
2. Click on the New button



3. Fill out the New Project form and Click the Submit button

20.5.2. Create Tasks

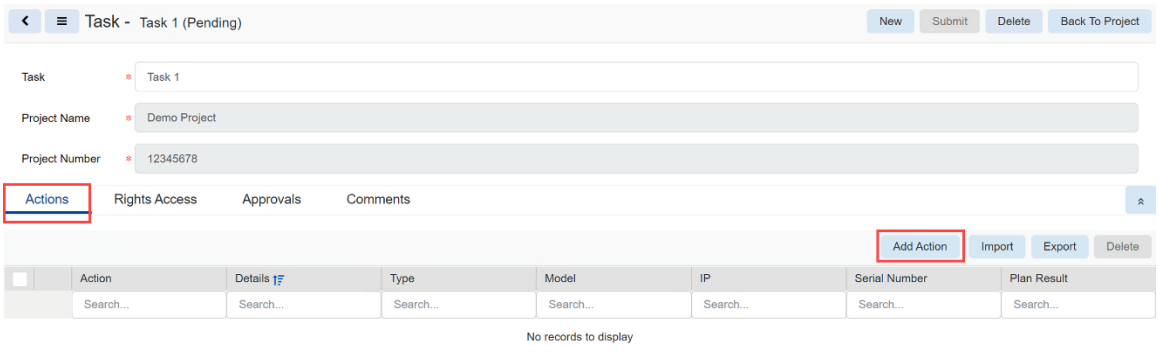
1. In the Project form select the Tasks tab



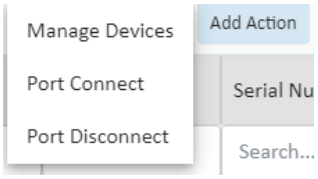
2. Click on the New button above the tasks table list
3. Fill out the New Task form and Click the Submit button

20.5.3. Add Actions to Tasks

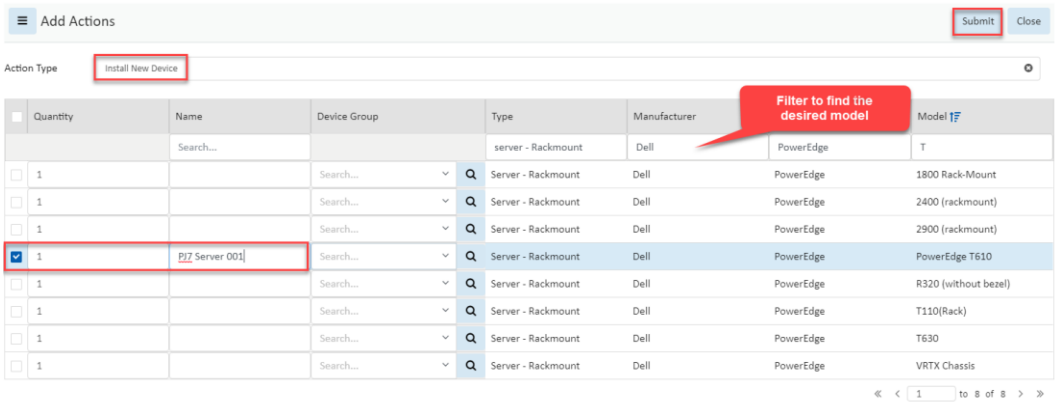
1. In the Task form select the Actions tab
2. Click on the Add Action button above the actions table list



3. Select type of action to add then specify the details in the subsequent window

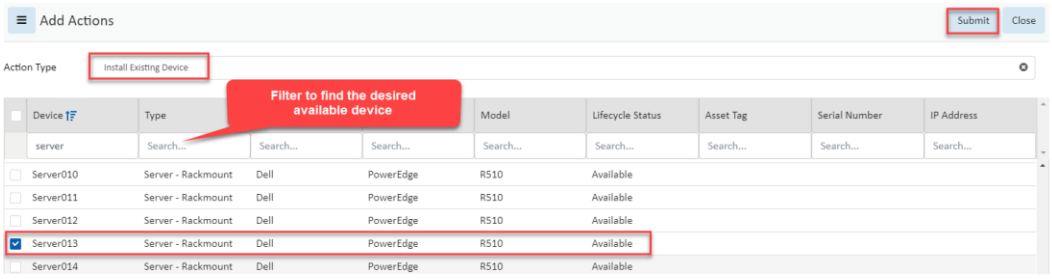


   a. Add Action - Manage Devices - Install New Device



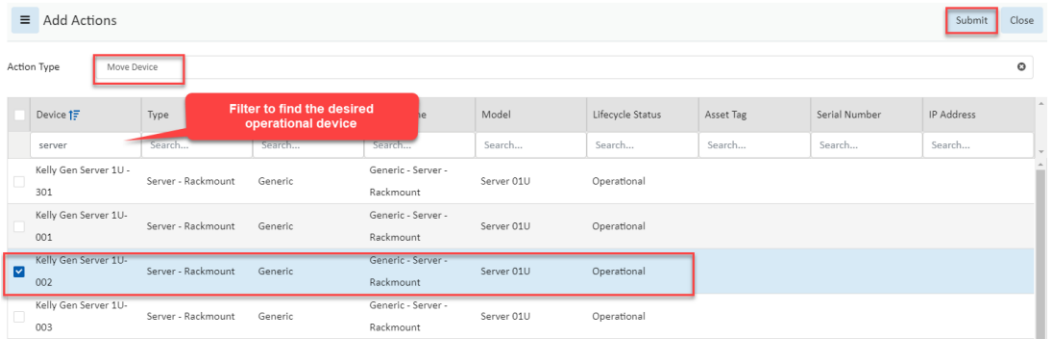
      i. Set the Action Type to Install New Device
      ii. Filter the models list to locate and select the model for the device to be installed
      iii. Enter a name for the new device (if the quantity is greater than 1 each subsequent device will have a number appended to the name)
      iv. Click the Submit button to add the action to the task

   b. Add Action - Manage Devices - Install Existing Device



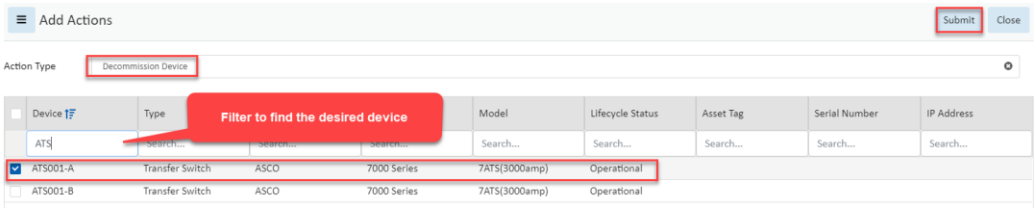
      i. Set the Action Type to Install Existing Device
      ii. Filter the device list to locate and select the device to be installed
      iii. Click the Submit button to add the action to the task

c. Add Action - Manage Devices - Move Device



i. Set the Action Type to Move Device
ii. Filter the device list to locate and select the device to be moved
iii. Click the Submit button to add the action to the task

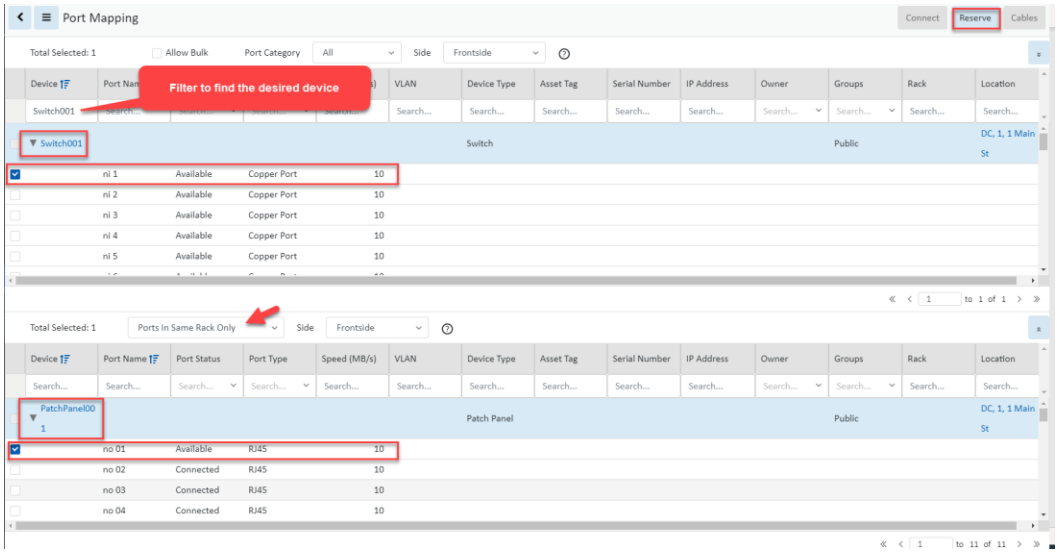
d. Add Action - Manage Devices - Decommission Device



i. Set the Action Type to Decommission Device
ii. Filter the device list to locate the device to be decommissioned
iii. Click the Submit button to add the action to the task

e. Add Action - Port Connect to create power and network connections between devices
Opens the Port Mapping page with only the Reserve button active. For more details on all the port mapping options go to the Port Mapping Menu Item section of this document.

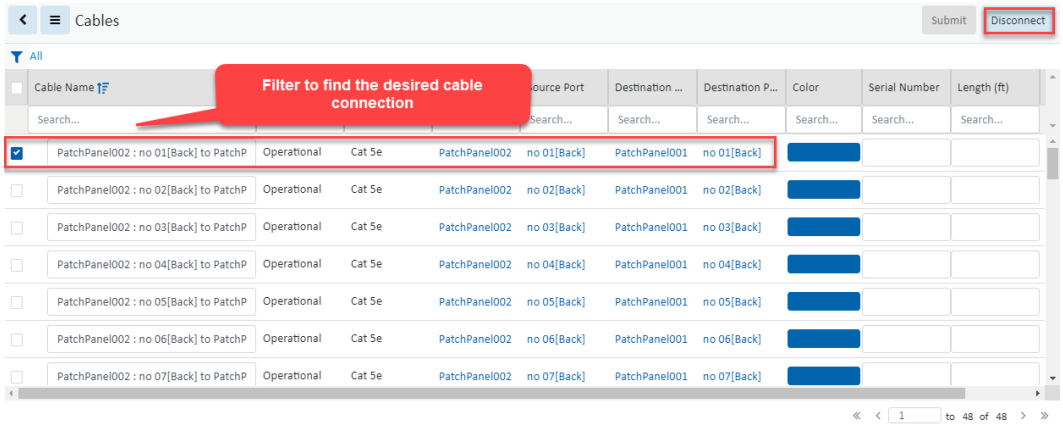
Note: The USB Port and Serial Port are categorized into the Copper Port.



i. In the upper table, filter to find the desired source device
ii. Click the triangle by the device name to expand and show the device ports
iii. Check the box next to the port to be connected

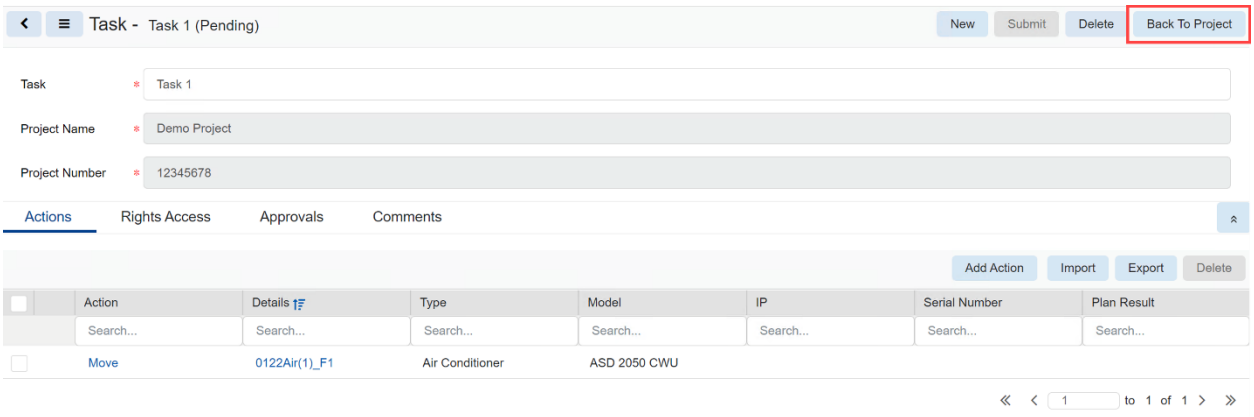
iv. The lower table will automatically list the devices with appropriate ports in the same rack as the device in the upper table
    1. The user can change the lower table list to show Ports in Same Area Only, Ports in Same Floor Only or All Locations
v. Click the triangle by the destination device name to expand and show the device ports
vi. Check the box next to an available port
vii. Click on the Reserve button on the upper right of the page
viii. A New Cables window will open listing the cables/connections to be reserved, add or change information in the fields, confirm that all are correct and Click the Submit button add the action to the task

f. Add Action - Port Disconnect to disconnect existing port connections from the cables list

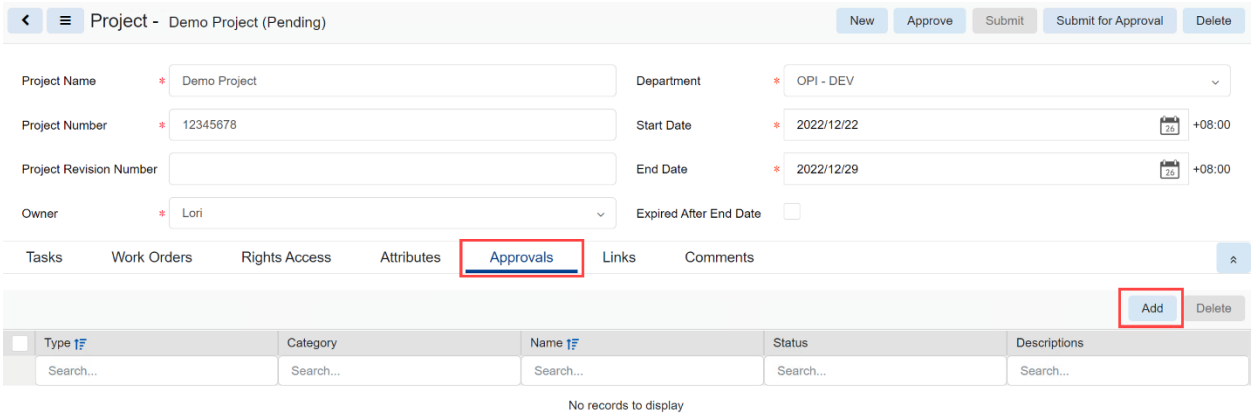


i. Filter to find the desired cable connection
ii. Check the box next to the cable to be disconnected
iii. Click the Disconnect button to add the action to the task
iv. Click the Back To Project Button to return to the project

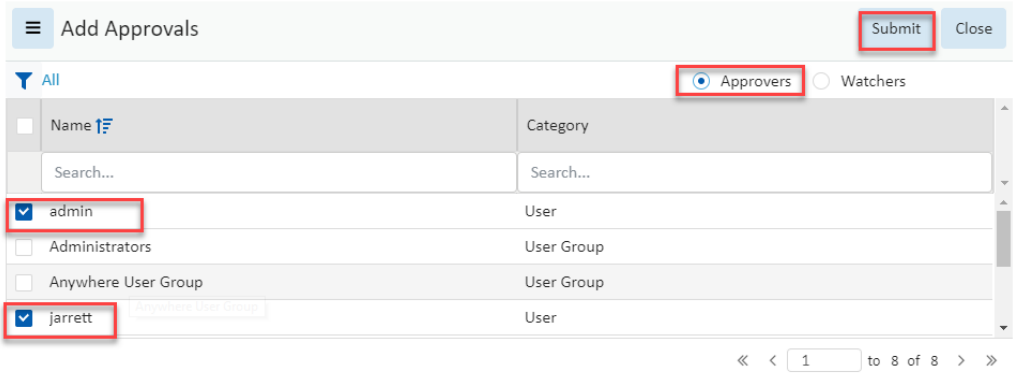
20.5.4. Back to Project



20.5.5. Define Project Approvers

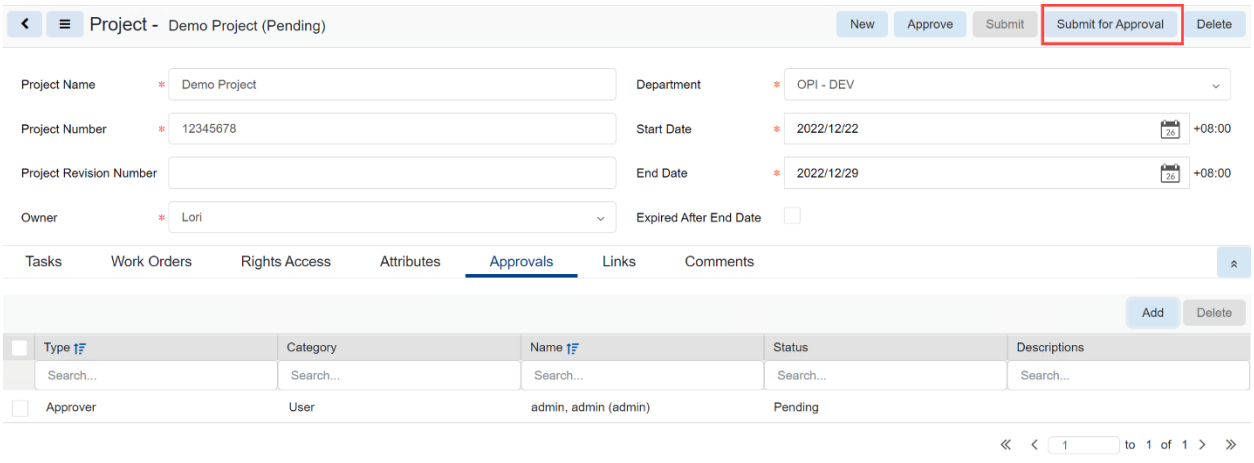


1. On the project page select the Approvals tab
2. Click on the Add button



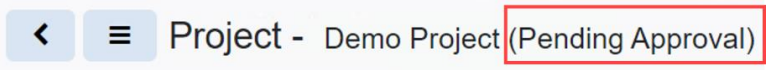
3. Click the check box to select users who will be approving the project
4. Click the Submit button to add the selected users to the project approvals list
   Submit Project for Approval

20.5.6. Submit the Project for Approval



1. On the project page Click the Submit for Approval button

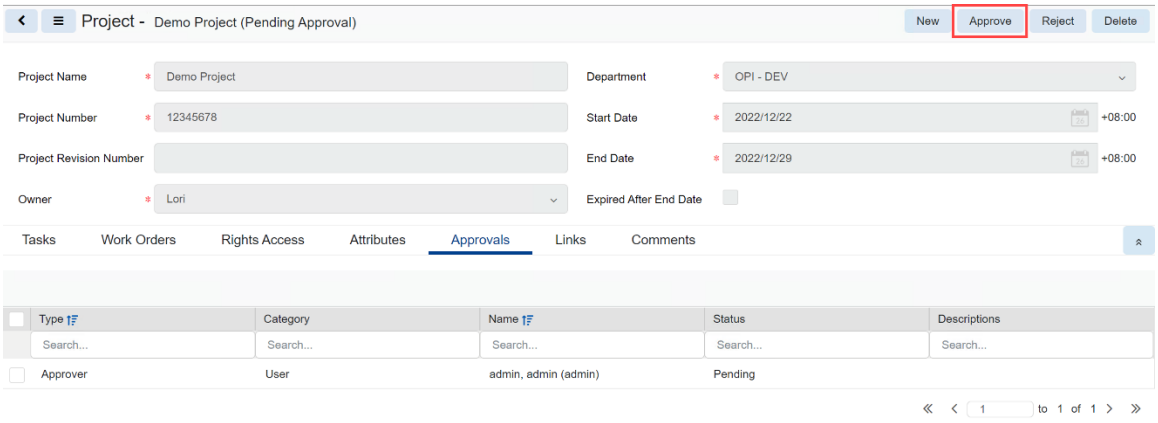
c. The project status changes to Pending Approval



20.5.7. Approve Project

The project pending approval is now listed in the My Workflow Items on the My Activity page for each user designated for approvals.

1. Click on the project name to open the project page



2. Click on the Approve button to approve the project
   a. The project status is changed to Approved

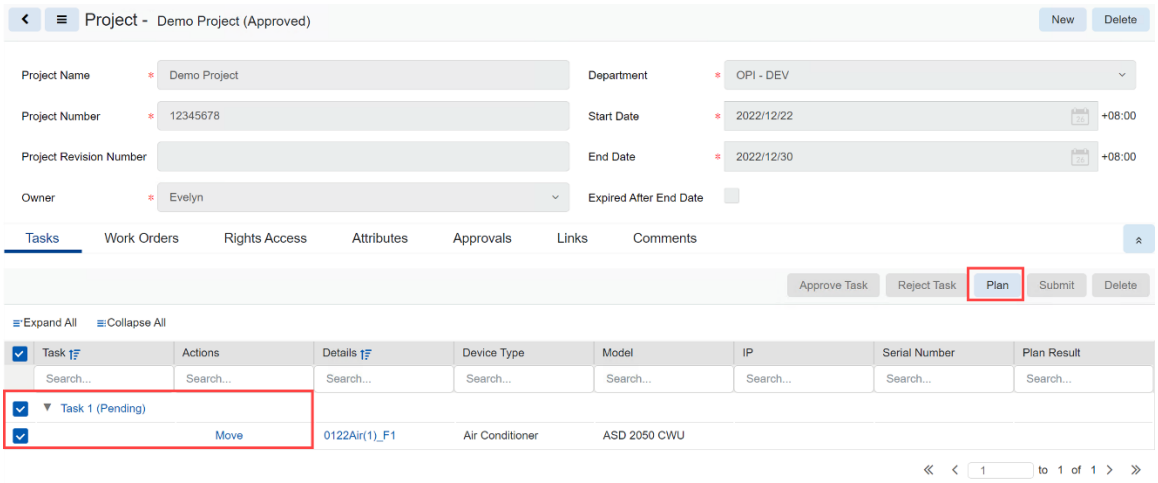
   b. **Note:** If additional actions are added after project has been approved the project status will change back to pending.

20.5.8. Plan the Actions

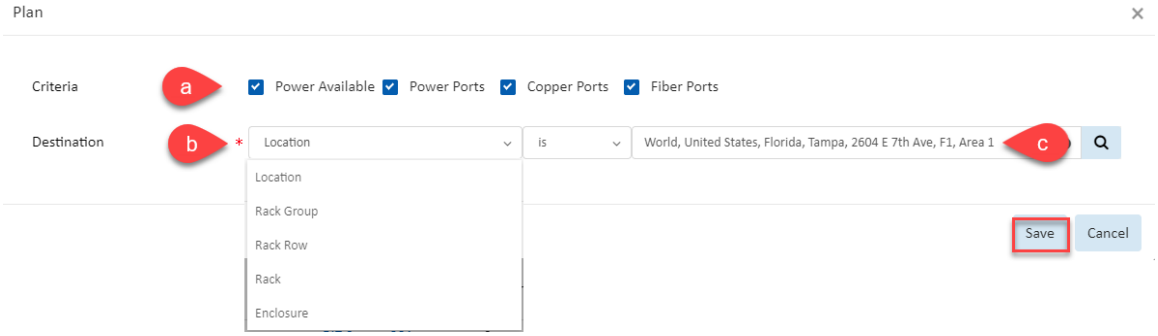
Actions to move or install devices require planning before they can be submitted. The planning activity determines the device's destination. The plan window allows users to specify destination criteria and the system will find a location. Once the system location is found the user can manually edit the plan if another location is desired.

Note: The space utilized by a blanking panel may or may not be considered available depending on the value of the attribute U Blocker.

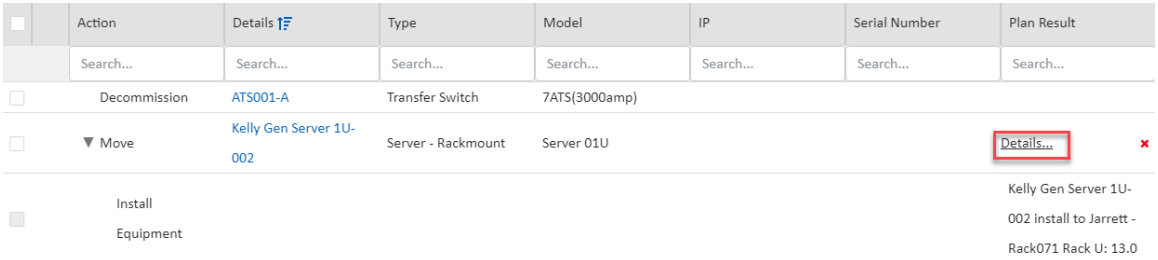
1. From within a project Select a task's name to open the task. The task opens with the actions tab selected and the list of actions visible.



2. Check the box next to an action. If the action needs to be planned before submitting the Plan button is visible.
3. Click the Plan button
4. Configure the plan window to identify where the device in the action should be placed. The system will find a spot for the device within the designated destination.

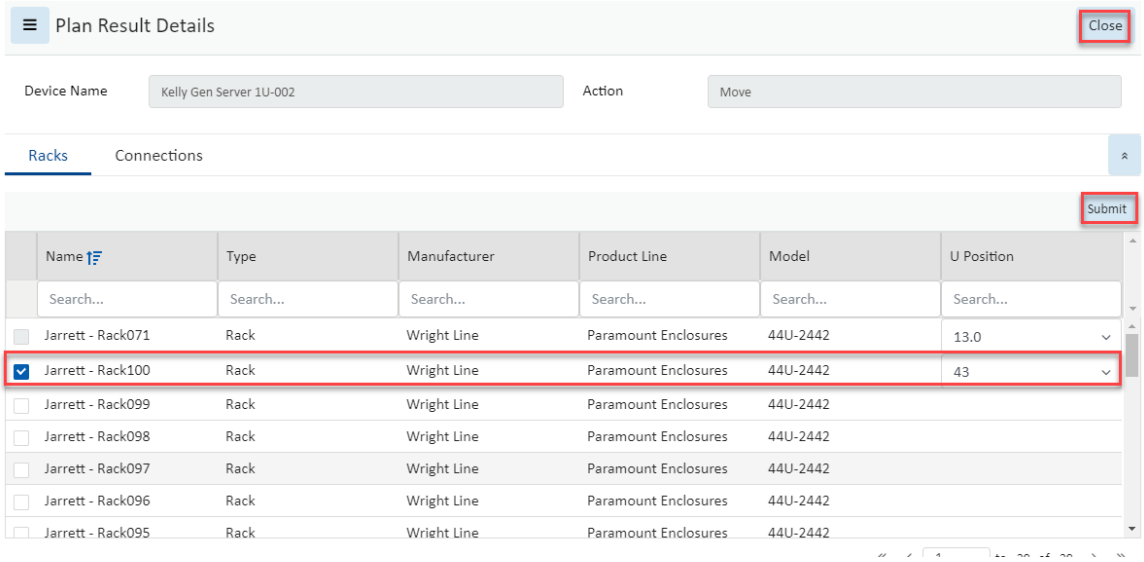


   a. If port connections will be involved, specify the ports needed
   b. Select one of the 5 options for the destination type
      i. When Location is selected the user can select the building, floor or area
      ii. When Rack Group is selected the user can select the group
      iii. When Rack Row is selected the user can select the row
      iv. When Enclosure is selected the user can select the enclosure
   c. Select the destination subset
5. Click the Save button



   a. When the plan is complete (Operation Successful) the location is shown in the Plan Result column

6. Click on the Details link to manually set the destination

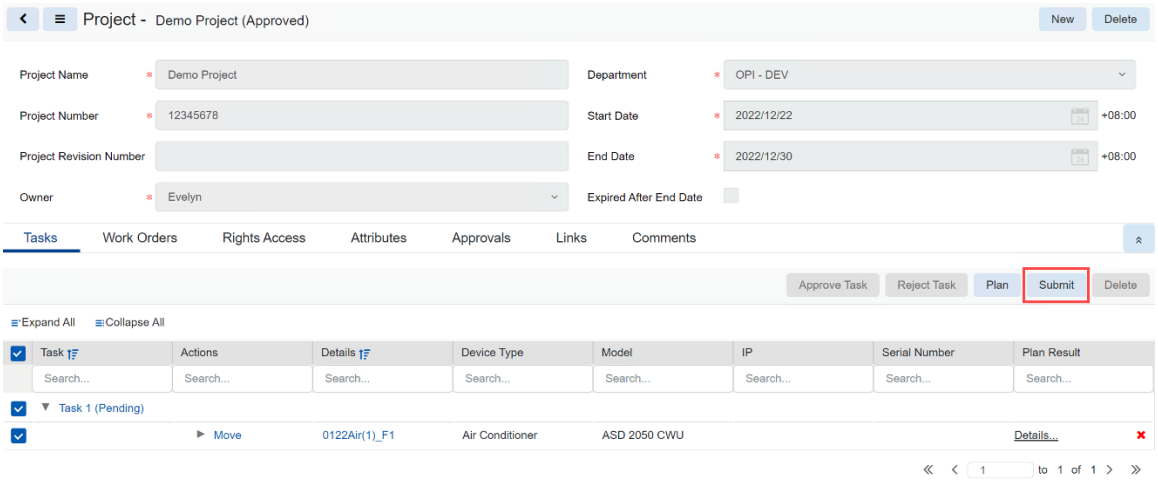


7. Check the box next to the destination and select the U Position from the available pull-down
8. Click Submit to save the selection
9. Click Close to return to the task
10. Continue planning until all of the actions that require planning are completed.

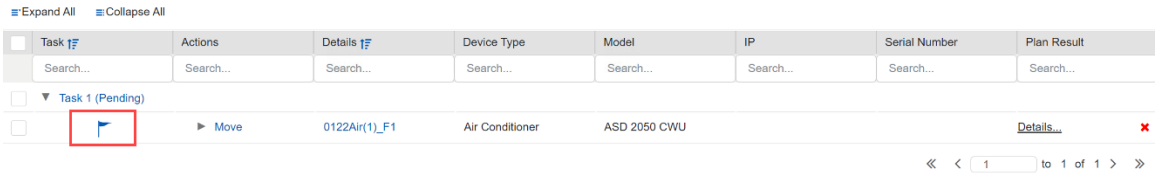
20.5.9. Submit the Actions

Once actions are planned, they can be submitted to the task for eventual task approval.

1. Check the box by each action and Click the Submit button



Actions will have a flag icon indicating that they have been submitted



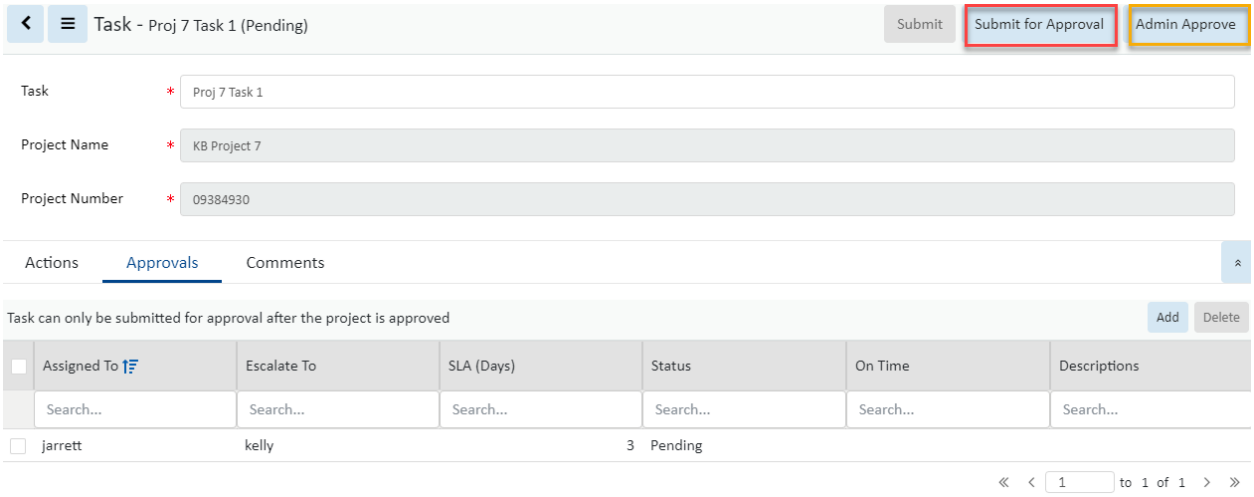
20.5.10. Define the Task Approvers

Individual tasks within the project need to be approved but first the approvers for each task need to be selected.

1. From within a task Select the Approvals tab
2. Click the Add button
3. Click on the Assigned To pull-down menu to select a user or user group for approval
4. Click on the Escalate To pull-down menu to select a user or user group if the approval needs escalation
5. Set the number of SLA (Days) for the escalation
6. Click the Save button

20.5.11. Submit Task for Approval

Once the approvers have been selected the Submit for Approval button is available on the task.

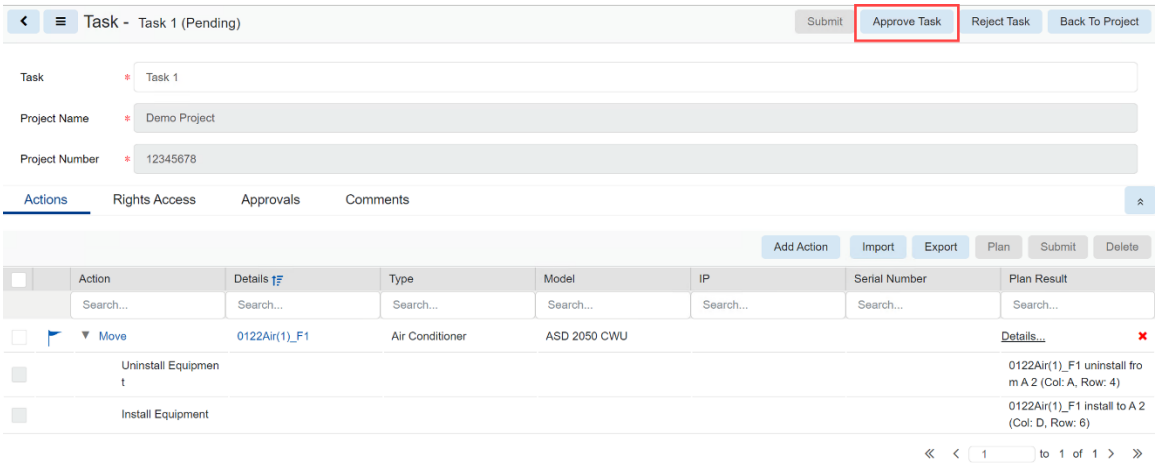


1. From within the task Click the Submit for Approval button
    a. If the current user is a member of the Administrators user group, the Admin Approve button is available.
    b. The Admin Approve button approves the task immediately

20.5.12. Approve Task

The tasks pending approval are now listed in the My Workflow Items for the project creator on the My Activity page. The task approvers will have the tasks pending approval in their My Tasks list on their My Activity page.

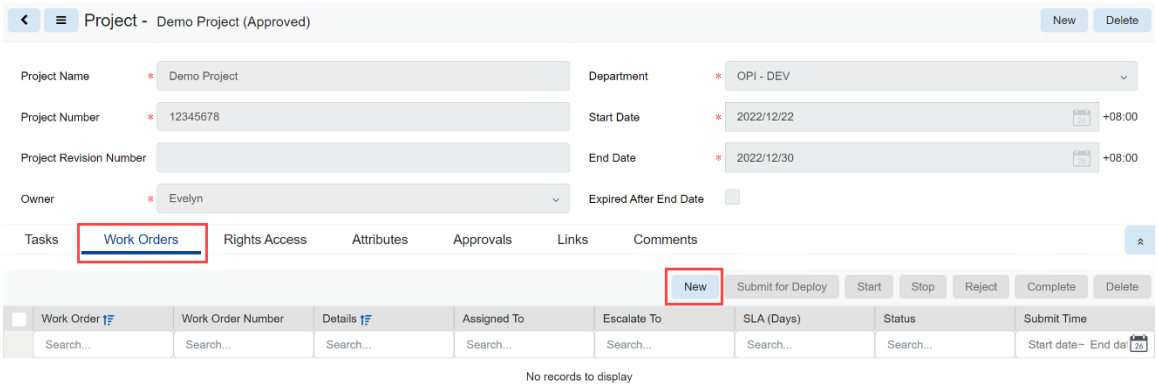
1. From the My Activity page list Click the Task Name to open the task



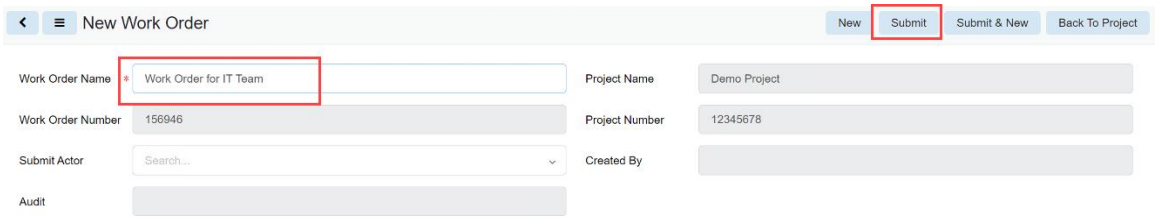
2. Click on the Approve button. The task status changes to (Approved)

20.5.13. Create Work Order

1. In the Project form select the Work Orders tab.



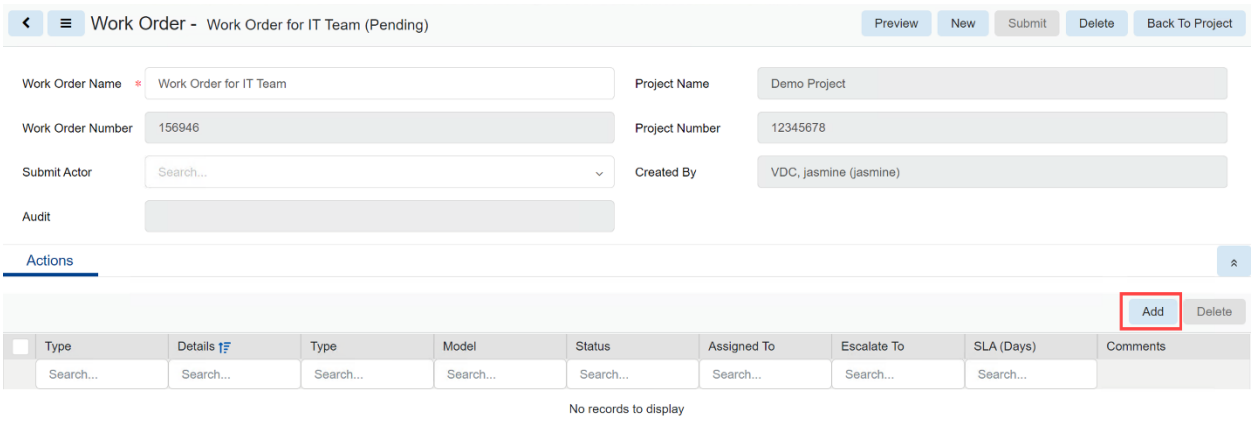
2. Click the New button over the work order table list.
3. On the New Work Order form enter a Work Order Name. The other required fields are already filled in.



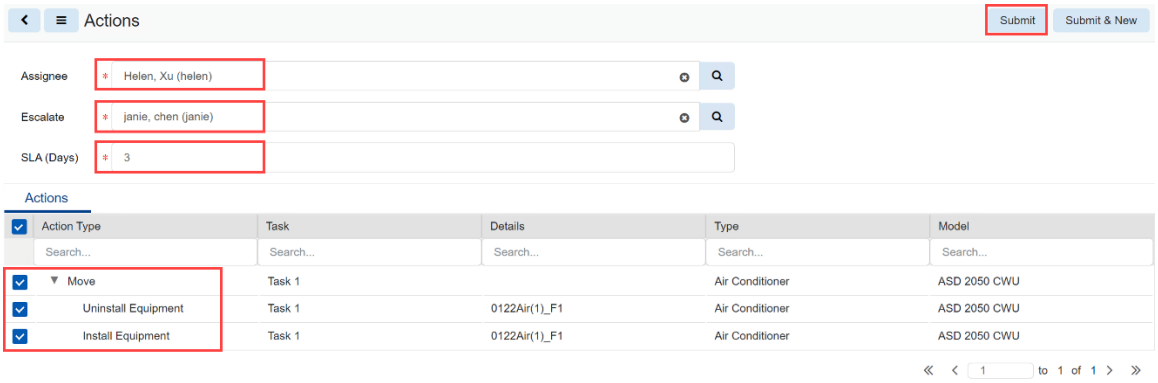
4. Click on the Submit button.

20.5.14. Assign the Work Order and Add Actions

Actions are added to the work order for execution by the assigned users.



1. In the Work Order form Click on the Add button to add actions to the work order. The Actions form opens, here you select actions and assign them to users

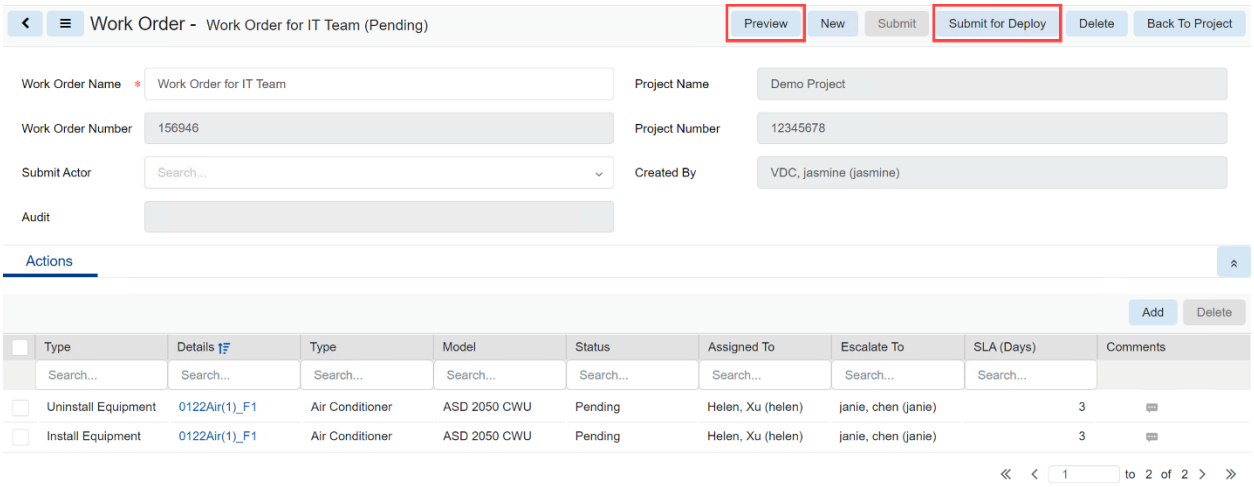


2. Select the Assignee from the pull-down menu, this is the user primarily responsible for completing the action
3. Select the Escalate from the pull-down menu, this is the user that will be assigned the task if it is not completed before the SLA(Days) setting
4. Enter the number of days for the Assignee to complete the action before it is escalated
5. Click on the Submit button to add the selected actions to the work order
    a. The actions selected will be assigned to the designated users
    b. If other actions are to be assigned to different users, repeat the previous step

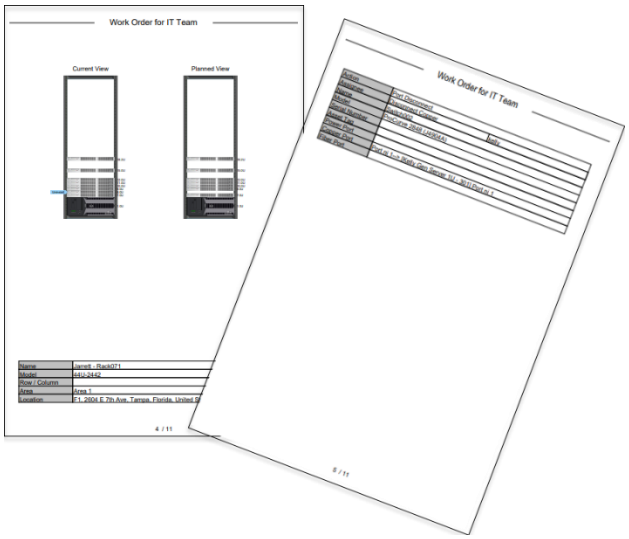
20.5.15. Submit Work Order for Deployment

A project will likely have multiple work orders to be executed by different teams and users.

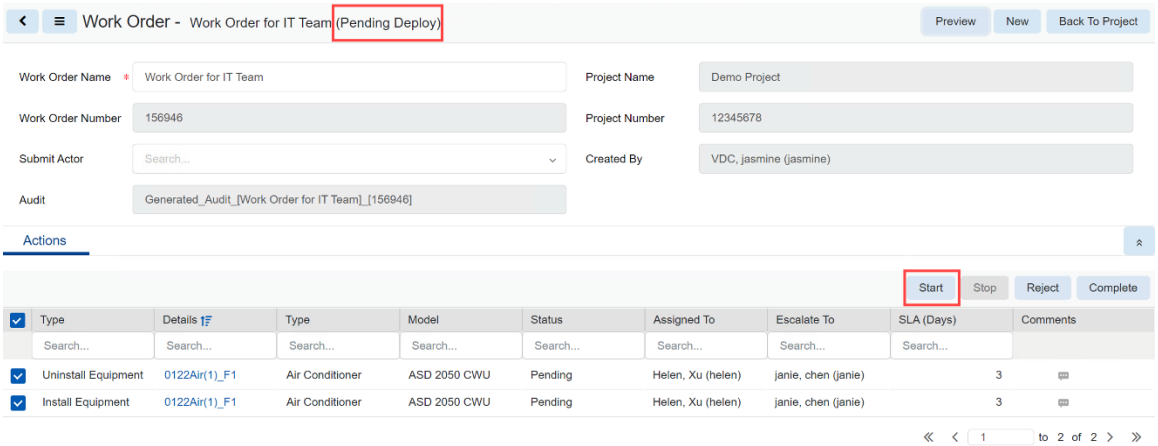
Once all the designated task actions are assigned to a work order, it is ready to be submitted for deployment.



1. Click on the Preview button to see the work order and confirm it is correct
    a. The system will generate and download a pdf file
    b. The file will have multiple pages for each action showing the current and planned view of the rack and details for the action

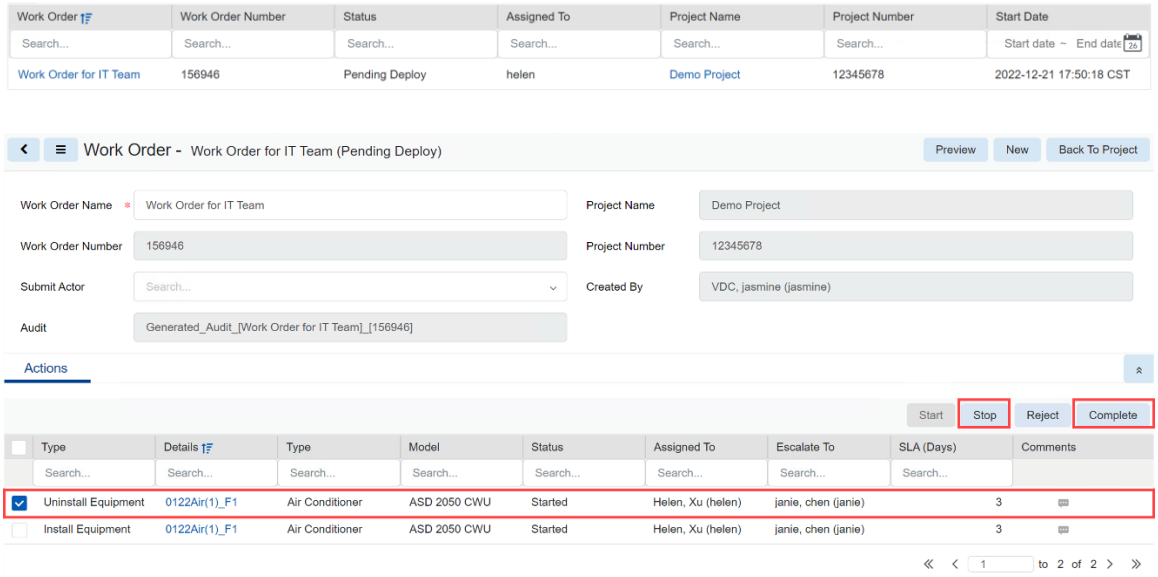


2. Click on the Submit for Deploy button



a. The work order status changes to Pending Deploy
b. The work order will be listed in the assigned users My Work Orders on the users My Activity page.

3. If a work order is assigned to you, Click on the work order name to open the work order



20.5.16. Start SLA | Stop SLA Timer (optional)

The Start and Stop buttons will begin and end the SLA count down. This is an optional feature that allows for the action to be escalated if the SLA days are exceeded before completion.

20.5.17. Complete Work Order

When a user completes an action in a work order they select the action and Click on the Complete button.

20.5.18. Completing the Project

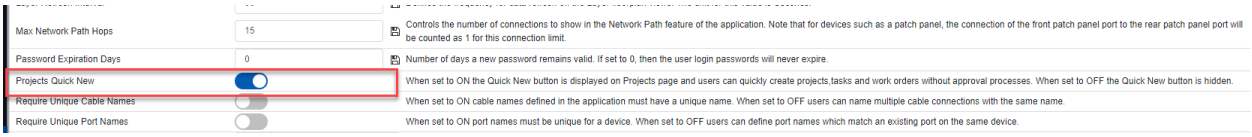
The project is completed when all the associated work orders are completed.

If the project was created with the Expired After End Date option selected then the project will be expired on the end date entered regardless of the status of the tasks, actions and work orders.

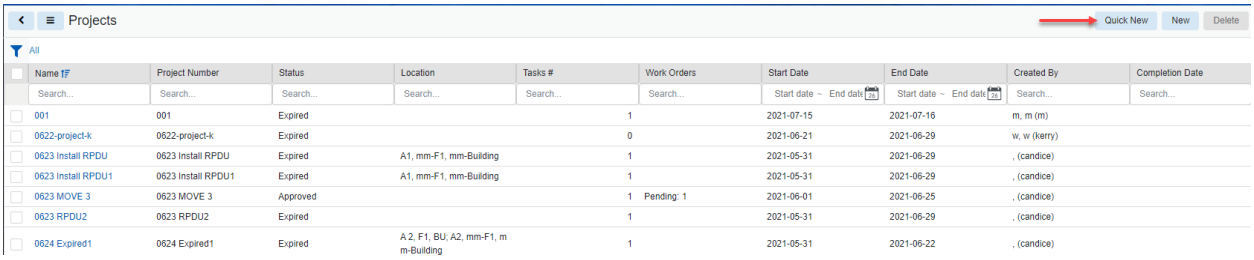
20.6. Steps for Creating a Quick New Project

20.6.1. Enable Quick New Project Function

There is a switch to turn on/off the project Quick New function in System Setting.

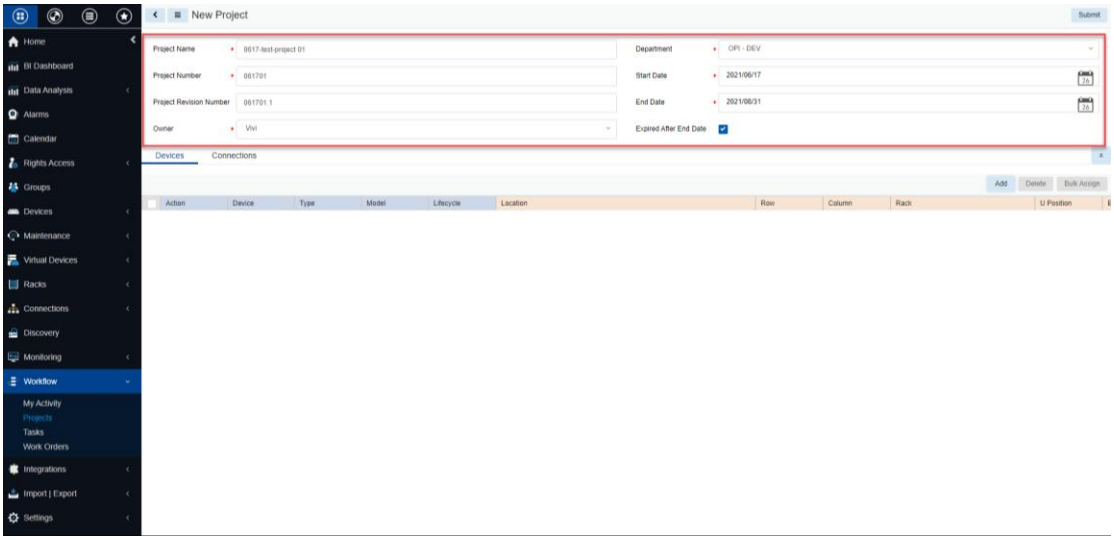


Only when the setting is turn on, the Quick New button is displayed on the Projects page.



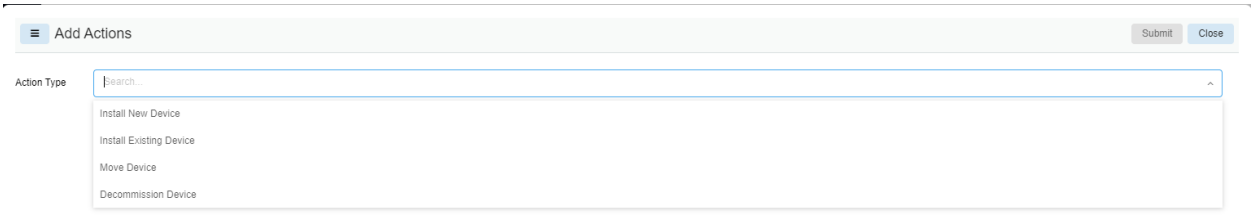
20.6.2. Create the Quick New Project - Basic Information

When the Quick New button is clicked, the project Quick New page is displayed as below. The project basic info is required, which is the same as the standard projects. A project cannot be submitted if the required basic info is not filled in or if there is no action added in the project.



20.6.3. Devices

Users can add actions for devices in Devices tab. Click the Add button and users can add the following 4 actions.

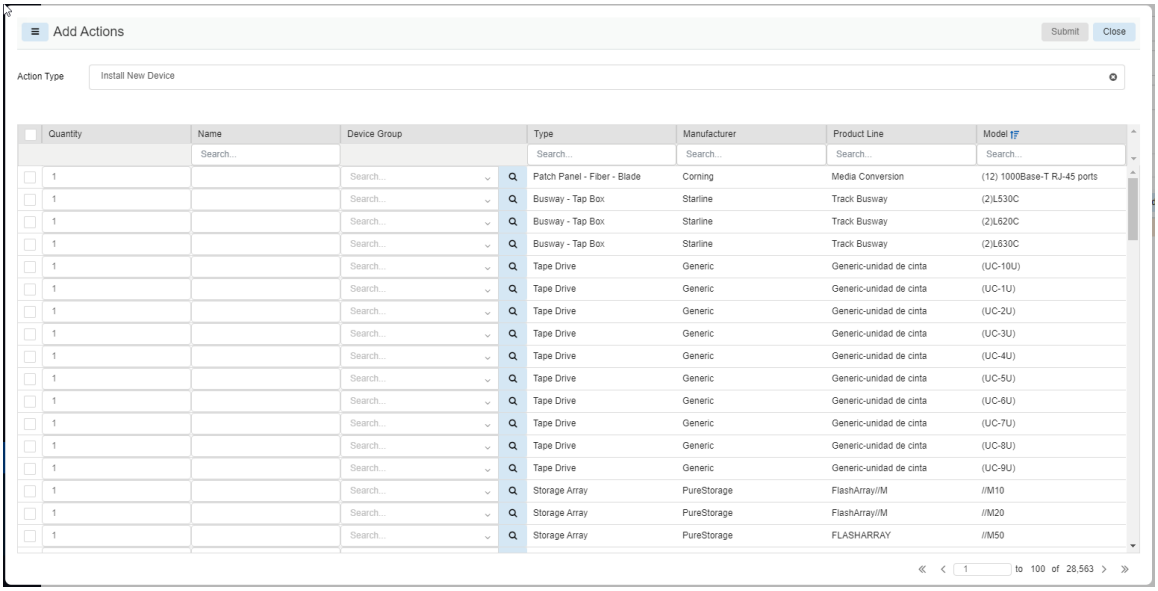


20.6.3.1. Install New Device

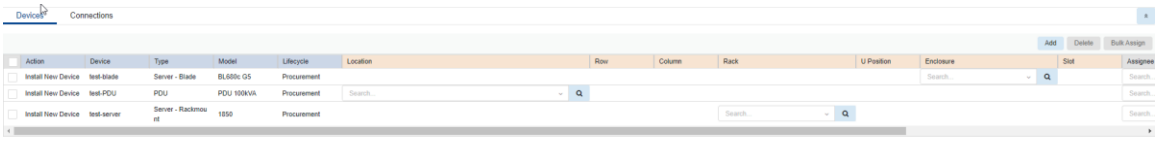
Install New Device provides users a model list which allows users to create devices by these models. If this action type is selected, the devices will be created after the project is submitted. The lifecycle of the devices created in project is Procurement.

The following fields are required to add actions by Install New Device.

- **Quantity** – The quantity of the devices created by this model
- **Name** – The device name. If Quantity is greater than 1, then the device name will be named as device (1), device (2)…. If this is empty, the device will be named by the model name.
- **Device Group** – The devices will be assigned to this device group. If no device group is selected for the devices, the device cannot be viewed by non-admin users. Only users in Administrators group can see the devices.

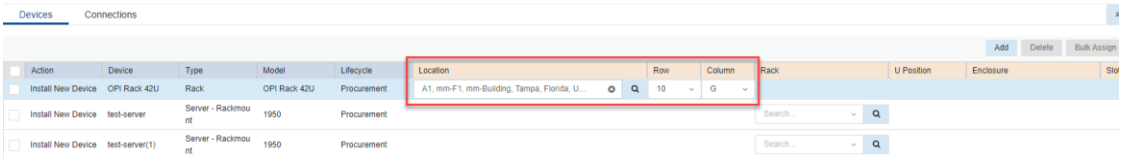


After the actions are added, the devices are displayed in the list as below. The lifecycle of the devices are shown as Procurement. There are no ports automatically added in Connections as the devices are not created in the system until the project is submitted.



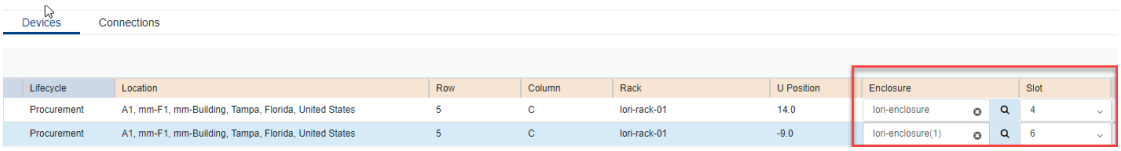
The required location information for different mount types of devices is different.

- **Floor Mount Device** – Location is a selectable dropdown list and areas can be selected from the dropdown list or search list. After the location is selected, the available Row and Column can be selected to allow users to define where the device is located on the floor plan.

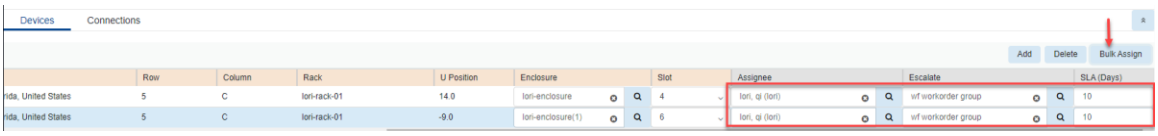


- **Rack Mount Device** – Rack is a selectable dropdown list and racks can be selected from the list or search list. After the rack is selected, the Location, Row and Column of the rack is auto displayed in the table and the available U Position can be selected to allow users to define which U position the device is mounted in the rack.

- **Blades** - The Enclosure column is available to allow users to select an enclosure for the blade. Once an enclousre is selected, the Location, Row, Column, Rack and U of the enclosure should be displayed. Users can select slots of the enclosure for the blade.



After the planned locations are filled in, the last required information for a project is add assignee, escalate to and SLA for the devices. If all the devices are assigneed to the same user or user group, users can select all the devices and use Bulk Assign to do it.

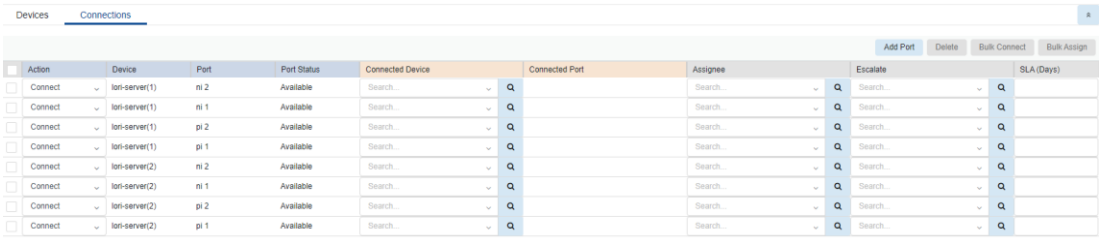


Once all the information is filled in, the Submit button is clickable. Click the Submit button and the project is created, the task, actions and work order are all created. The work order PDF is sent to the assignees via email.

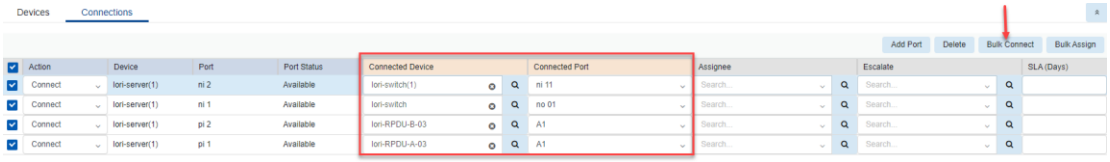
20.6.3.2. Install Existing Device

All Available devices which are not in any other uncompleted projects can be added as Install Existing Device.

- The required information on Devices tab is the same as Install New Device.
- The only difference is that the ports on existing devices are auto added in Connections tab, so that users don't need to manually add the ports in the list.



- Users can select Connected Device and Connected Port from the Dropdown list or from the search window. Bulk Connect is also supported here to allow users to select multiple ports and pick up connected ports from them. The selected ports follow the selected order on Bulk Connect window. If no connections are needed on the devices, users need to delete the ports from the list. It means if a port is added in the list, the connected device and connected port cannot be empty.



20.6.3.3. Move Device

All Operational devices which are not in any other uncompleted projects can be added as Move Device.

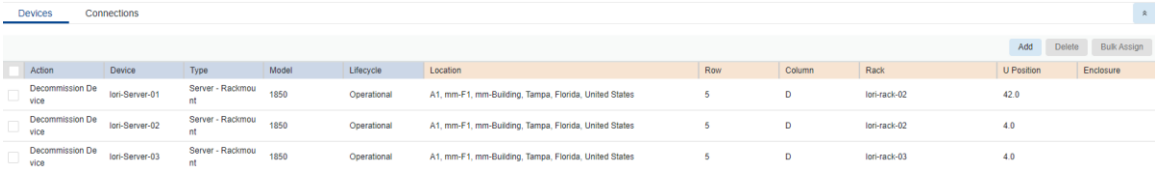
- The required information on Devices tab is the same as Install New Device.
- Like Install Existing Device, the ports on the Move devices are auto added in Connections tab.
- The ports which have been connected will be automatically disconnected for Move devices no matter if the device ports are connected to new devices and ports.

20.6.3.4. Decommission Device

All Available and Operational devices which are not in any other uncompleted projects can be added as Decommission Device.

The location information are auto displayed for Decommission Devices and users only need to add assignee, escalate to and SLA for the decommissioned devices.

All port connections on decommissioned devices are auto disconnected after the project is completed.

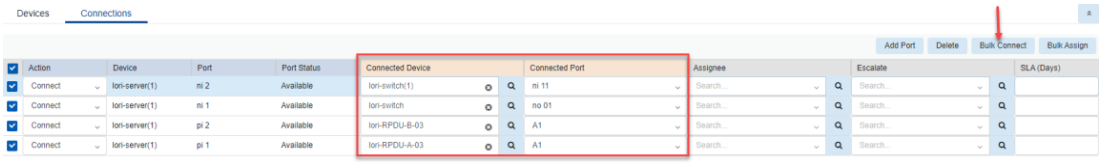


20.6.4. Connections

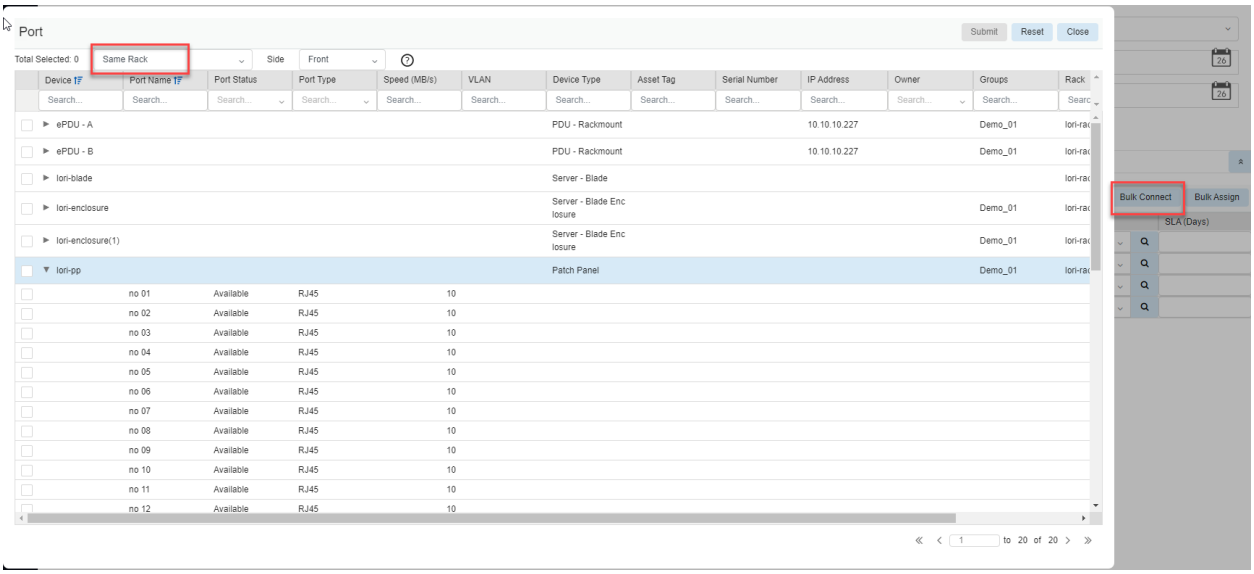
A project can have no devices and only has Connect/Disconnect ports. Both Available and Connected ports can be added by clicking Add Port button in Connections tab.

- If the port is Available, the action type can only be Connect. Users can select Connected Device

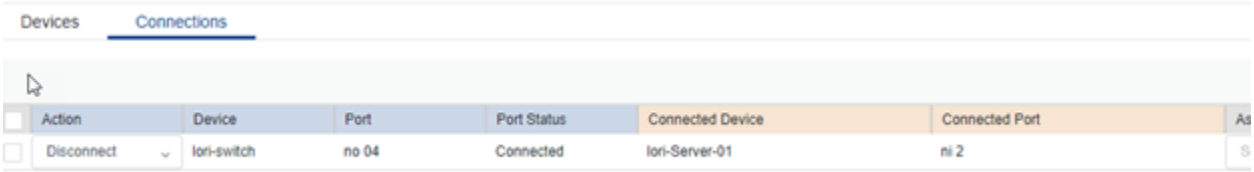
and Connected Port from the Dropdown list or from the search window.



The Search Connected Device and Bulk Connect window is the same as Port Mapping devices list. The devices are auto filtered by Same Rack and users can change the filter if needed.



- If the port is Connected, the action type can be Connect or Disconnect. Select Disconnect will display the connected device and port automatically.

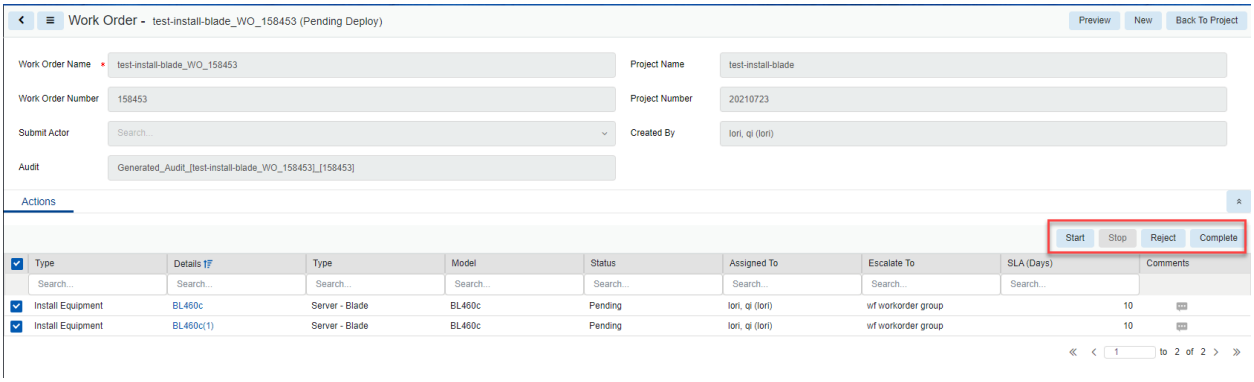


- Assignee, Escalate and SLA are the same as devices. Bulk Assign is also supported for ports.

20.7. Work Orders

After the project is submitted, a work order is auto created and sent to the assignees of the actions in the work order.

Users only need to complete/reject the work order in the system after the deployment has been done.


Work Order - test-install-blade_WO_158453 (Pending Deploy)
Preview
New
Back To Project
Work Order Name
test-install-blade_WO_158453
Project Name
test-install-blade
Work Order Number
158453
Project Number
20210723
Submit Actor
Search...
Created By
lori, qi (lori)
Audit
Generated_Audit_[test-install-blade_WO_158453]_[158453]
Actions
Start
Stop
Reject
Complete
Type
Details
Type
Model
Status
Assigned To
Escalate To
SLA (Days)
Comments
Install Equipment
BL460c
Server - Blade
BL460c
Pending
lori, qi (lori)
wf workorder group
10
Install Equipment
BL460c(1)
Server - Blade
BL460c
Pending
lori, qi (lori)
wf workorder group
10
1 to 2 of 2

21. Integrations Menu Group

21.1. Camera Studio Menu Item

The application provides an interface which allows users to view camera images and configure multi-camera views for cameras created in the device list. This feature works in conjunction with the Visual Data Center Image Server. Instructions for installation and configuration of the image server and physical cameras is provided in the Administration Guide.

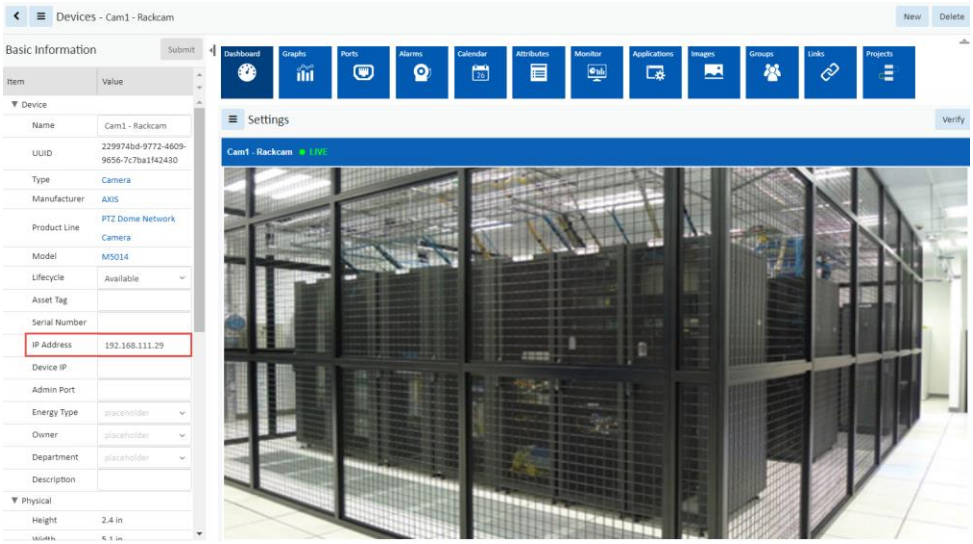
The Camera Studio Menu Item displays the Camera Studio page with dedicated functions for managing and configuring camera views. The information below assumes the following actions have been completed:

- Image Server has been installed and associated to the instance of Visual Data Center
- FTP accounts are created on the Image Server for each of the IP Cameras to be managed
- IP Cameras are configured to deliver FTP images to the Image Server using the correct FTP user and password
- Images are successfully being deposited into the Image Server for the cameras

21.1.1. Create Camera Devices

Camera devices will be created in the application device list using the Device Type which is Camera. These are the only devices which will be managed as a camera device with the Camera Studio and other features in the application related to cameras. When the camera device is created, set the IP Address attribute in the Basic Information section of the device to the IP Address of the IP Camera.

Note: The camera device does not need to reference the FTP account or the IP Address of the Image Server to function correctly in the application.



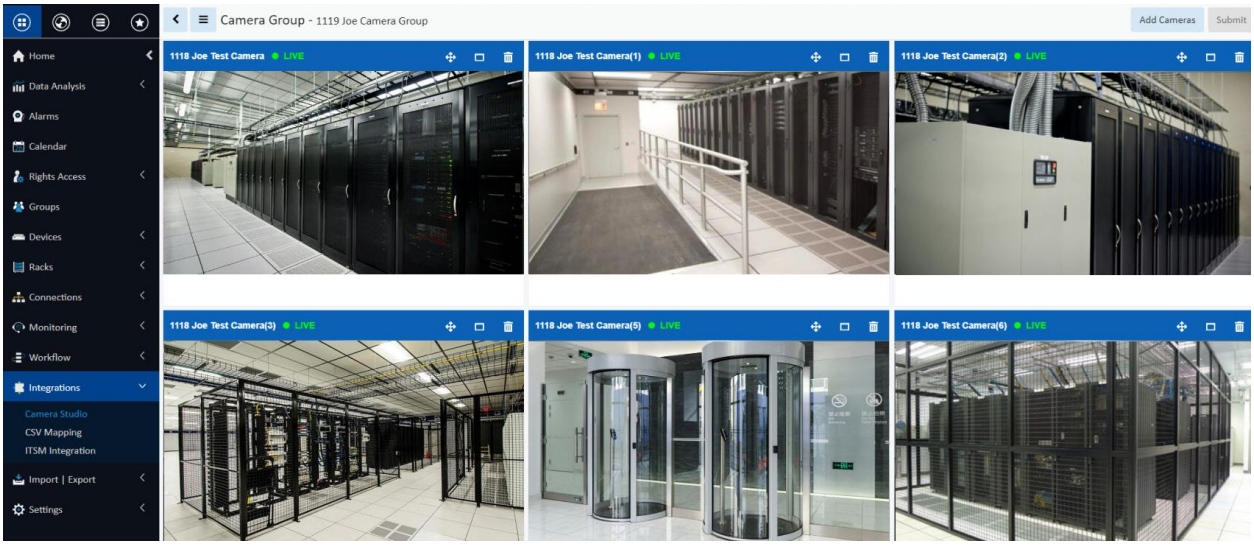
21.1.2. Managing Camera Groups

Camera Groups allow the user to define multi camera views. On the Camera Groups page, select the New button to create a new Camera Group. This will allow the user to select the list of cameras to be associated with the Camera Group. Options available for creating a new Camera Group include the group Name and User Groups which will have rights to view the cameras associated to the Camera Group.

Use the Add and Delete buttons on the Camera Group page to select the cameras which should be included in the Camera Group. Each of the Camera devices in the list will appear in the group camera dashboard.

21.1.3. Viewing Camera Groups

Once the Camera Groups have been defined, clicking the Play icon next to the camera group list will display the real time camera images for cameras defined in the group.



21.1.4. Camera Controls

When viewing the Camera Group dashboard with a multi camera display, the user has options to help manage the Camera Group and camera images.

21.1.4.1. Changing Camera Layout

User can modify the default camera layout by using the arrow icon on the camera to move to a new position in the camera dashboard. Select the Submit button to save any changes to the camera layout.

21.1.4.2. Minimize & Maximize

Each camera in the dashboard has a maximize icon to allow the user to view that camera in full screen mode. In full screen mode, the user can select the minimize icon to return to the multi camera user group view.

21.1.4.3. Delete Camera from View

Users can remove a camera from the Camera Group by clicking the Delete icon on the camera image. Select the Submit button to save the changes to the camera list for the camera group. **Note**: This action removes the camera from the camera group.

21.1.4.4. Live vs Playback Mode

Each camera has its own time manager tool to allow users to view live images or to reply historical images for the camera. On the bottom of the camera image, there is a progress indicator which is by default set to the current, live timestamp for the camera on the far right. When the current, live images are being viewed, there is an indicator on the top status bar for that camera which indicates LIVE images are being viewed.

Users can drag the timeline tool to a time in the past to replay images for that time. When the camera images displayed are historical images, the indicator on the top status bar will change to RECORDED IMAGES. Users can click the Live camera icon in the status bar to return to the live image streaming video feed for the camera.

The timestamp used in the playback tool is based on the time zone of the Image Server.

21.1.5. Viewing Single Cameras

There are two options available for users to view images for a single camera.

21.1.5.1. Device List

In the device list the user can find the device in the table, click the device name to access device central for the camera and view the camera images. Camera images are presented in the Dashboard tile for the camera device in Device Central.

21.1.5.2. Camera Studio

The Camera Studio maintains a list of both Camera Groups and individual Camera devices managed in the application. To view a single camera device simply choose the Camera tab and click the play icon next to the camera device name.

21.1.6. Troubleshooting Camera Images

If the camera images are not being correctly presented in the camera or camera group dashboards, the following tips may help to isolate the cause of the issue:

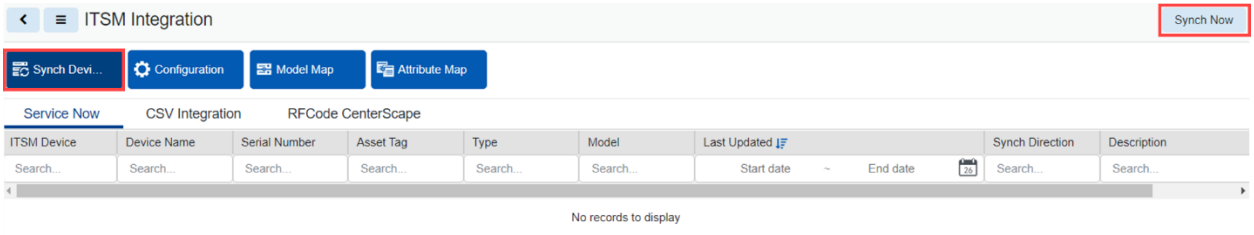
1. Confirm the images are being sent to the Image Server. Each camera has an FTP account created on the Image Server which creates a destination folder for these images to be stored. The path to this folder is /opt/VDCIS/ftpserver/res/home/[FTP Name] where [FTP Name] is the ftp account created for the camera. Under the FTP Name folder, the images will be saves in subfolders by year, month, and day. Confirm there are current images being deposited into the folder by the IP Camera.
2. If the images are NOT being saved correctly then investigate the status of the FTP server on the Image Server and the FTP configuration settings on the actual IP cameras.
3. If the images are being saved correctly then visit the Device Central page for the Camera which is exhibiting an issue. Confirm the following details for the device:
    a. IP Address in the Basic Information section is correctly defined.
    b. Click the Verify button on the Dashboard Tile for the camera device and confirm the Camera process sis working correctly. If there are issues with accessing the Image Server, this Verify process will provide a message indicating there is an issue.

21.2. ITSM Integration Menu Item

The application fully supports interaction with popular third-party IT Service Management (ITSM) applications. A generic framework has been created to allow for automated tasks to be synchronized between this application and the third-party ITSM application. This framework establishes connections with the ITSM solution and performs synchronization actions based on user settings defined in the ITSM page. The synchronization process, if enabled, will perform updates every 30 seconds.

21.2.1. Synched Devices Function Tile

The initial view presented when the ITSM Integration Menu Item is selected is the Synched Devices function tile Service Now tab list.



21.2.1.1. Service Now Tab

Displays the list of devices that have been synchronized with Service Now. The Synch Now button on the upper right initiates an immediate synchronization. Please refer to section ITSM Service Now Integration Specifics for details.

List Column	Description

ITSM Device	Displays the ITSM Display name.
Device Name	Displays the device's name in this application.
Serial Number	Displays the contents of the Serial Number attribute.
Asset Tag	Displays the contents of the Asset Tag attribute.
Type	Displays the device type.
Model	Displays the device model.
Last Updated	Date and time of last update.
Synch Direction	Shows where the synch originated.
Description	Information about the event.

21.2.1.2. CSV Integration Tab

Displays details regarding the CSV integration. Please refer to section ITSM CSV Integration Specifics for details.

21.2.1.3. RFCode CenterScape

Displays the list of devices that have been synchronized with RFCode CenterScape. The Synch Now button on the upper right initiates an immediate synchronization. Please refer to section ITSM Service Now Integration Specifics for details.

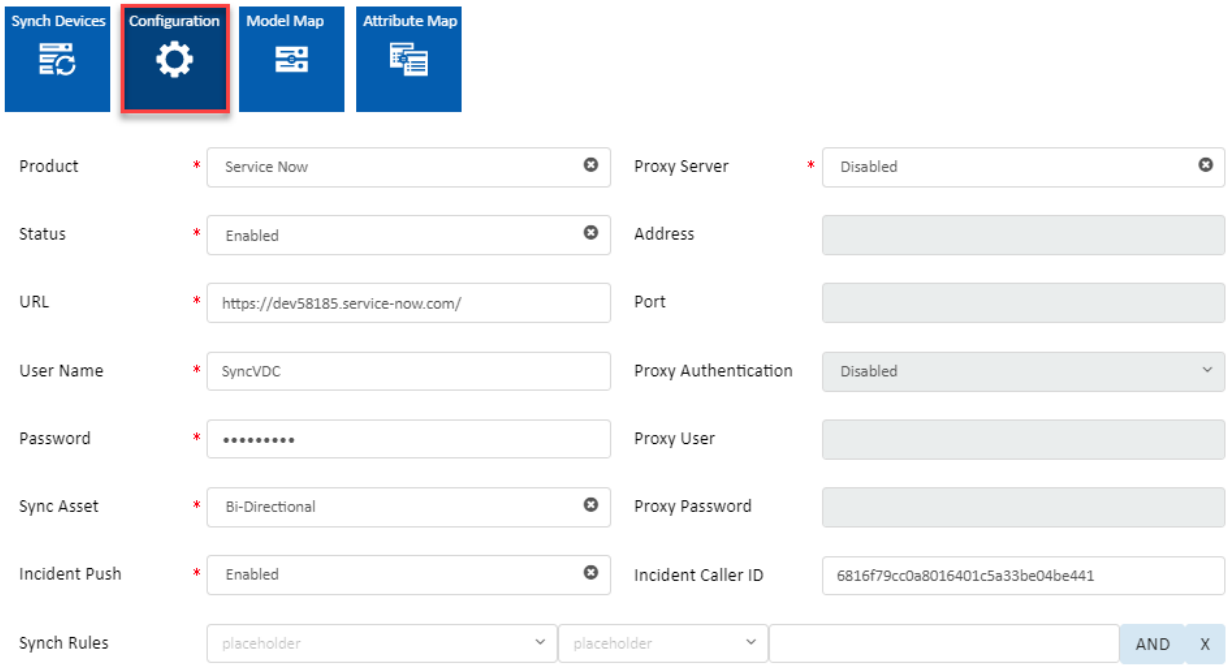
List Column	Description
ITSM Device	Displays the ITSM Display name.
Device Name	Displays the device's name in this application.
Serial Number	Displays the contents of the Serial Number attribute.
Asset Tag	Displays the contents of the Asset Tag attribute.
Type	Displays the device type.
Model	Displays the device model.
Last Updated	Date and time of last update.
Synch Direction	Shows where the synch originated.
Description	Information about the event.

21.2.2. Configuration Function Tile

In order to properly configure the application to synchronize with the ITSM application, there are several settings which must be defined on the Configuration Page to identify the communication settings and synch triggers to be processed.

Click on the Configuration function tile to access the Configuration Page.

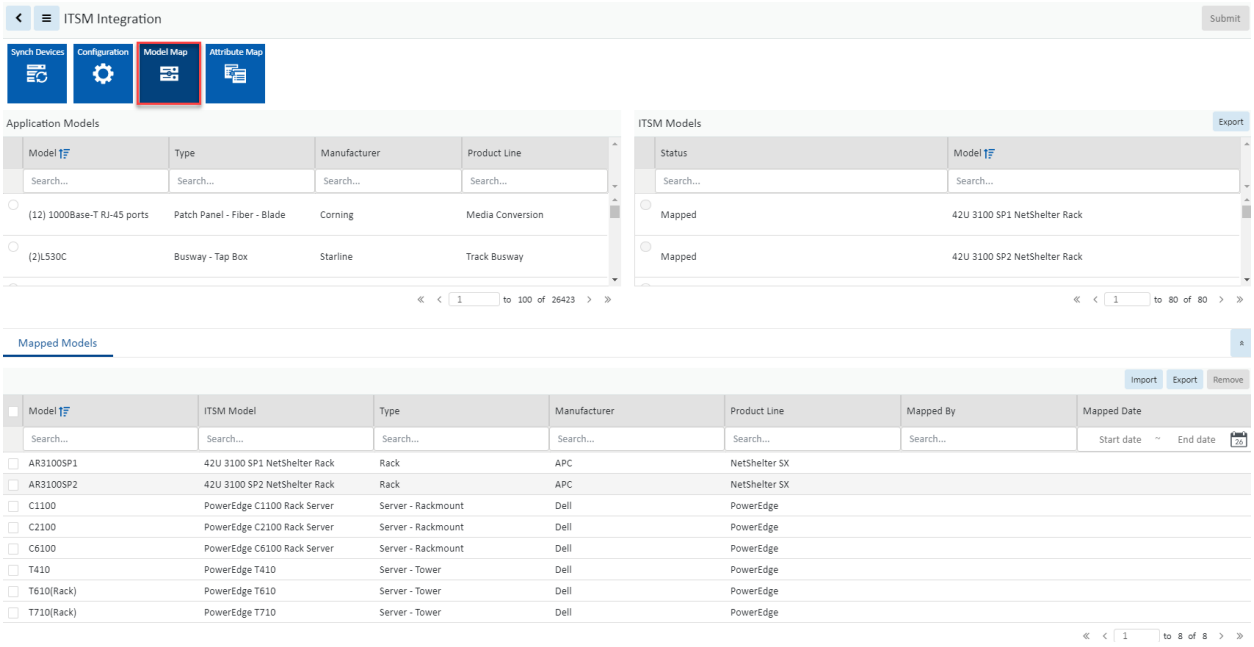
21.2.2.1. ITSM Configuration



Fields	Description
Product	Select the Service Now option from the pull-down menu.
Status	Enable or Disable the functionality.
URL	Enter the URL for the paired Service Now instance.
User Name	Enter the username the application will use to connect to the Service Now instance.
Password	Enter the password that corresponds with the username.
Sync Asset	Set the value for how you want asset synchronization to flow. The options are Disabled, To ITSM Product Only, From ITSM Product Only or Bi-Directional.
Incident Push	If enabled the application alarms will open incident tickets on the Service Now instance. The options are Enabled and Disabled. **Note:** Only alarm changes from Normal to Warning|Critical|Unreachable and back to Normal will generate a ticket on the ITSM system.
Synch Rules	Allows users to restrict the synch activity with the ITSM system. Multiple rules can be added with AND logic to determine which devices will be processed. Only devices which match ALL of the defined rules will be processed with synch activity.
Proxy Server	Status of the proxy communication to the ITSM server.
Address	IP Address of the Proxy Server needed to access the ITSM solution.
Port	Port to be used for Proxy communication.
Proxy Authentication	Status of Proxy Authentication. If Enabled, the Proxy User and Proxy Password are used to establish communication with the ITSM Server.
Proxy User	User name to be submitted for the proxy connection.
Proxy Password	Password used with the proxy connection.
Incident Caller ID	System User ID from ITSM application for the account to be used to open the Incident on the ITSM solution.
Buttons	**Description**
Submit	If any form fields are edited or new data has been added the Submit button becomes active and is used to update the configuration settings.

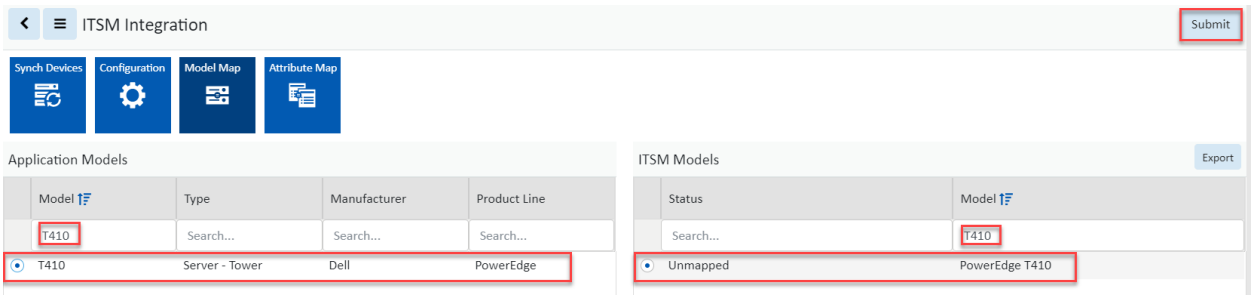
21.2.3. Model Map Function Tile

The ITSM model library will not be using the same naming convention as this application so administrators must establish a mapping between the two systems. The Model Map page allows users to connect the models from the two systems so translation can be performed on synch activity going in each direction.



When the Model Map function tile is accessed, the application will fetch the Application Models from the current Master Model Database and the ITSM Models from the target ITSM solution. The table at the bottom of the page shows the list of models that have been mapped. The tables on the page contain the standard filter rows to assist users in finding the desired models.

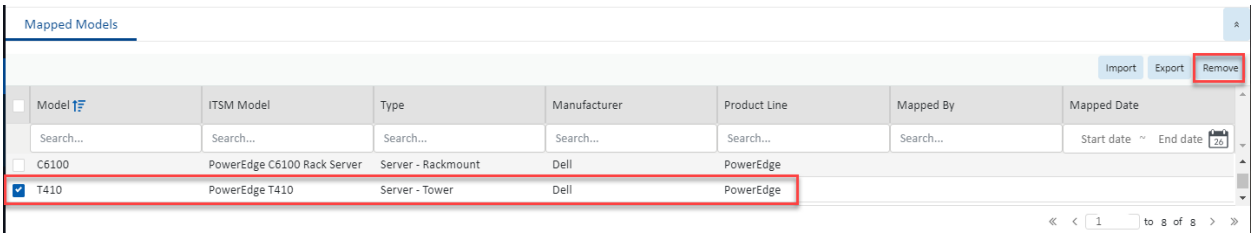
21.2.3.1. Mapping Models



To map models:

1. Filter for the desired model from the Application Models list and select the radio button next to it.
2. Filter for the matching model from the ITSM Models list and select the radio button next to it.
3. Click on the Submit button to map the models.
   The models are added to the Mapped Models table on the Mapped Models tab.

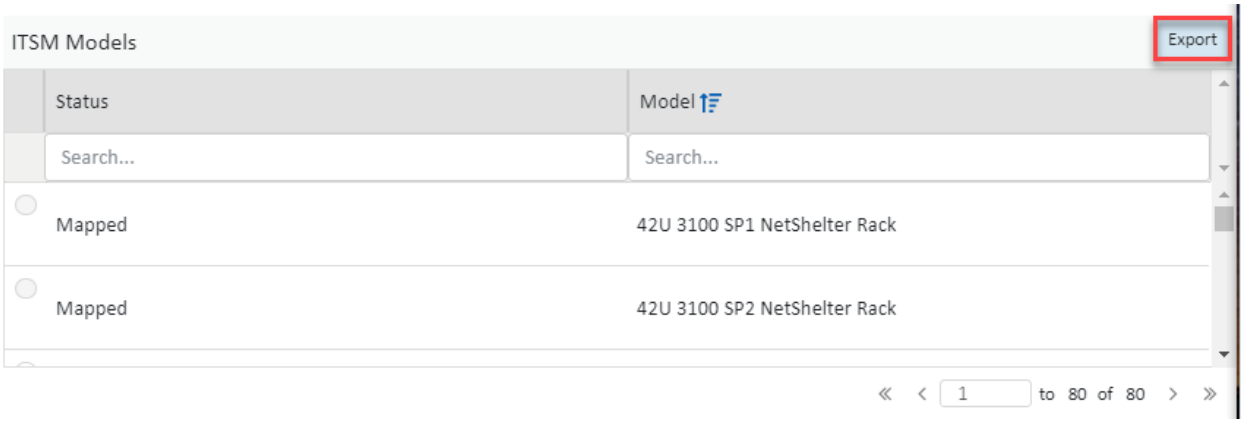
21.2.3.2. Removing Mapping



1. In the Mapped Models table Select the row containing the mapped models to be un-mapped by selecting the check box.
2. Click on the Remove button to remove the mapping.
   The model status is updated in the ITSM Models list.

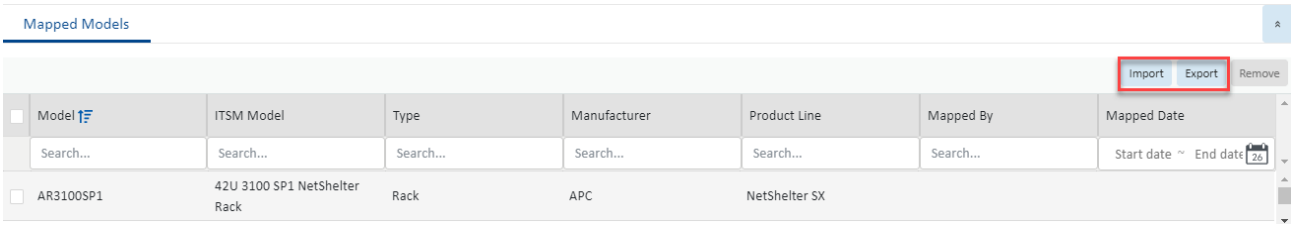
21.2.3.3. ITSM Model Export

The Export button with the ITSM Models list will produce a spreadsheet with the list of models in the ITSM system.



21.2.3.4. Mapped Models Import and Export

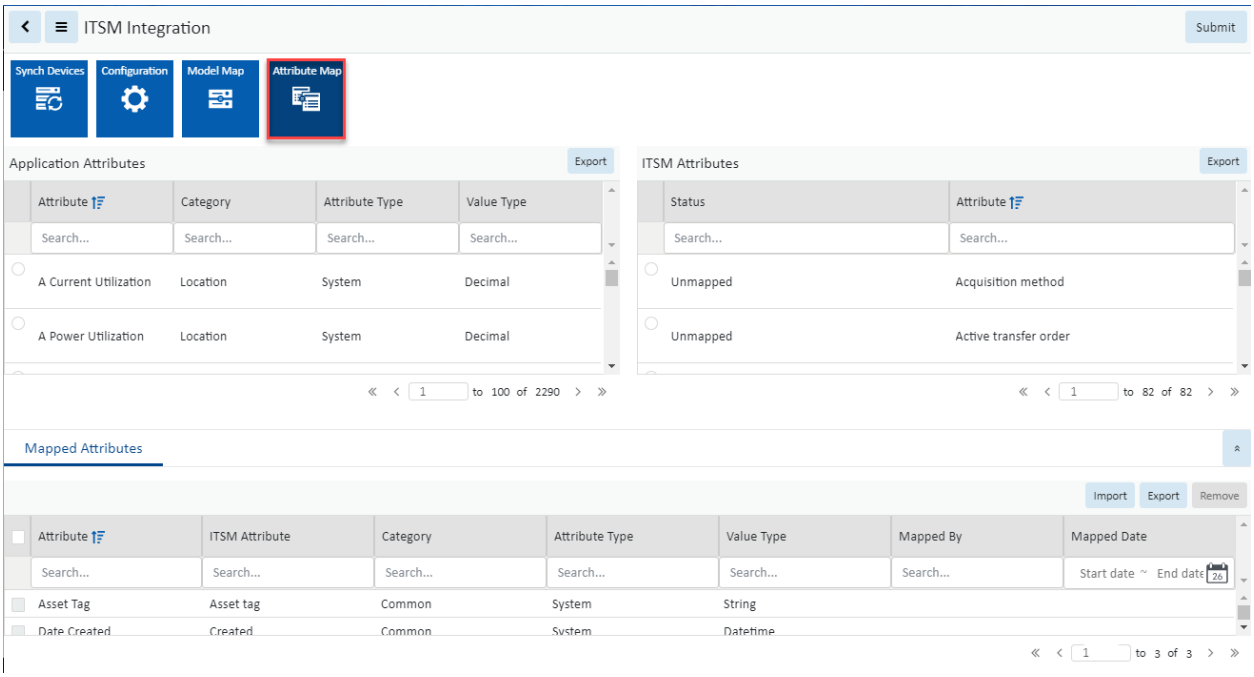
The list of mapped models can be exported to a spreadsheet. The spreadsheet can be edited and then imported to update or add entries to the list. The model names from each system must be entered in the spreadsheet exactly as they appear on their respective applications.



ID	Model	ITSM ID	ITSM Model	Type	Manufacturer	Product Line	Mapped By	Mapped Date
f2a7c35e-4ae2-11de-afaa-000d566af2f2	AR3100SP1	4afe7b733723100044e0bfc8bcbe5d2d	42U 3100 SP1 NetShelter Rack	Rack	APC	NetShelter SX		
f2a9b894-44e2-11de-8c10-000d566af2f2	AR3100SP2	e9aaeb3f3763100044e0bfc8bcbe5db5	42U 3100 SP2 NetShelter Rack	Rack	APC	NetShelter SX		
fb30ccec-fec6-11df-b2d1-001d091dd9dd	C1100	46c9e148a9fe198100d600e3cd276a26	PowerEdge C1100 Rack Server	Server - Rackmount	Dell	PowerEdge		
fb4a81c8-fec6-11df-8d3a-001d091dd9dd	C2100	0c43b77dc611227501522de2c9ba5047	PowerEdge C2100 Rack Server	Server - Rackmount	Dell	PowerEdge		
fb5bd28e-fec6-11df-8ed9-001d091dd9dd	C6100	46d449d5a9fe198101952a675f442619	PowerEdge C6100 Rack Server	Server - Rackmount	Dell	PowerEdge		
b5dd4a82-710d-11de-88f0-001d091dd9dd	T410	46cb9f44a9fe1981012329fa2fcad5f0	PowerEdge T410	Server - Tower	Dell	PowerEdge	kelly	2019-12-20 14:47:13 EST
cbbc4344-14ee-11e1-a1f2-001d091dd9dd	T610(Rack)	46d40981a9fe198101b0c12460db6c4c	PowerEdge T610	Server - Tower	Dell	PowerEdge		
b5e1f668-710d-11de-8490-001d091dd9dd	T710(Rack)	46d42db2a9fe1981004b363b791dc431	PowerEdge T710	Server - Tower	Dell	PowerEdge		

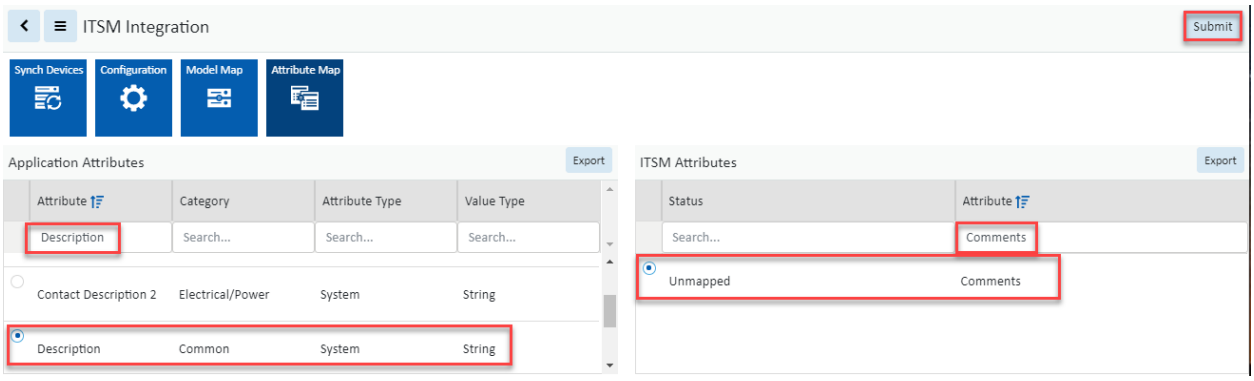
21.2.4. Attribute Map Function Tile

The ITSM asset attribute list will not be using the same naming convention as this application so administrators must establish a mapping between the two systems. The Attribute Map page allows users to connect the asset attributes from the two systems so translation can be performed on synch activity going in each direction.



When the Attribute Map function tile is accessed, the application will fetch the list of Application Attributes from the current instance of the application and the ITSM Attributes from the target ITSM solution. The table at the bottom of the page shows the list of attributes that have been mapped. The tables on the page contain the standard filter rows to assist users in find the desired attributes.

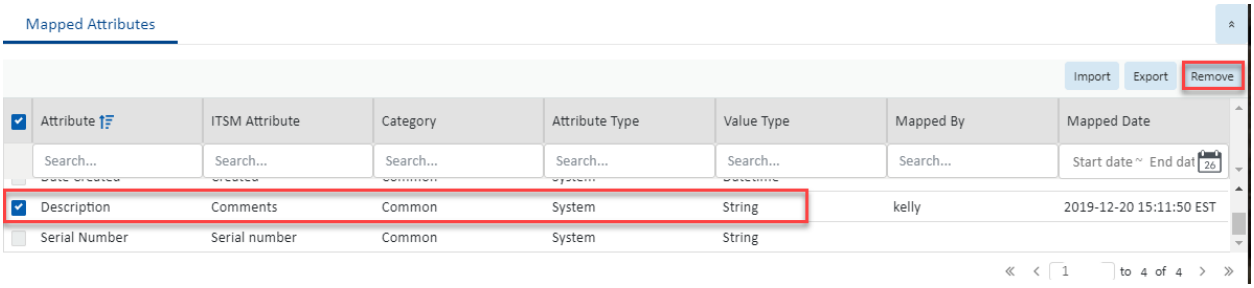
21.2.4.1. Mapping Attributes



To map attributes:

3. Filter for the desired attribute from the Application Attributes list and select the radio button next to it.
4. Filter for the matching attribute from the ITSM Attributes list and select the radio button next to it.
5. Click on the Submit button to map the attributes.
   The attributes are added to the Mapped Attributes table on the Mapped Attributes tab.

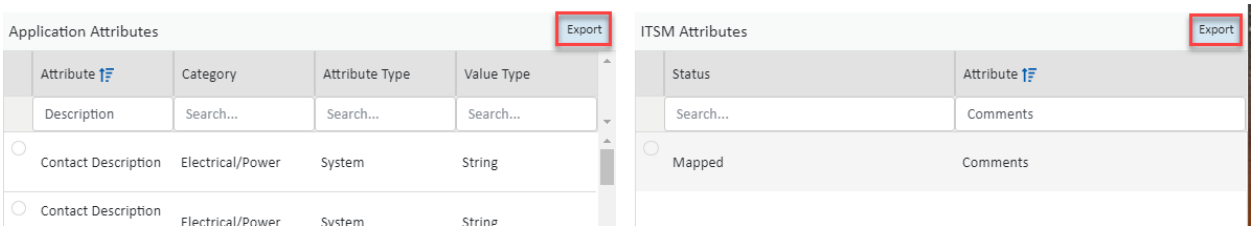
21.2.4.2. Removing Mapping



1. In the Mapped Attributes table Select the row containing the mapped attributes to be un-mapped by selecting the check box.
2. Click on the Remove button to remove the mapping.
   The attribute status is updated in the ITSM Attributes list.

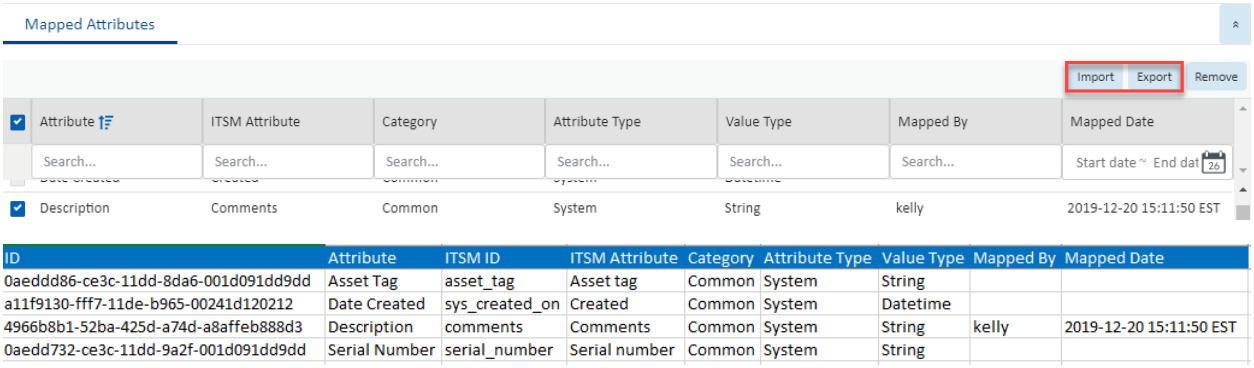
21.2.4.3. Attribute List Export

The Export buttons with the Application Attributes and ITSM Attributes lists will export the respective list of attributes to a spreadsheet. Users can use these lists to acquire the exact attribute name for mapping manually or using the import function described in the next section.



21.2.4.4. Mapped Attributes Import and Export

The list of mapped attributes can be exported to a spreadsheet. The spreadsheet can be edited and then imported to update or add entries to the list. The attribute names from each system must be entered in the spreadsheet exactly as they appear on their respective applications.



ID	Attribute	ITSM ID	ITSM Attribute	Category	Attribute Type	Value Type	Mapped By	Mapped Date
0aeddd86-ce3c-11dd-8da6-001d091dd9dd	Asset Tag	asset_tag	Asset tag	Common	System	String		
a11f9130-fff7-11de-b965-00241d120212	Date Created	sys_created_on	Created	Common	System	Datetime		
4966b8b1-52ba-425d-a74d-a8affeb888d3	Description	comments	Comments	Common	System	String	kelly	2019-12-20 15:11:50 EST
0aedd732-ce3c-11dd-9a2f-001d091dd9dd	Serial Number	serial_number	Serial number	Common	System	String		

21.2.5. ITSM Service Now Integration Specifics

The Service Now application provides a wide range and of asset management functions which can be integrated with this application. The functions supported in the Service Now integration include the following:

- Device Creation – One way to bi-directional support for device creations.
- Attribute Changes – One way or bi-directional support for changes to asset attributes.
- Incident Reporting – Creation of a ticket based on alarm generation in the application.

Specifics for how these integrated features are supported for Service Now are included in the sections below.

21.2.5.1. Configuration

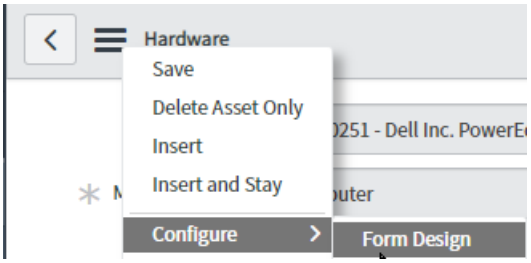
Integration to the Service Now application uses the general parameters defined above. One clarifying note related to the configuration settings is related to the Incident Caller ID. In Service Now, this field is obtained by accessing the Users page in Service Now, right clicking on the User Name to be used for generating Incidents and selecting the Copy sys_id option from the shortcut menu.

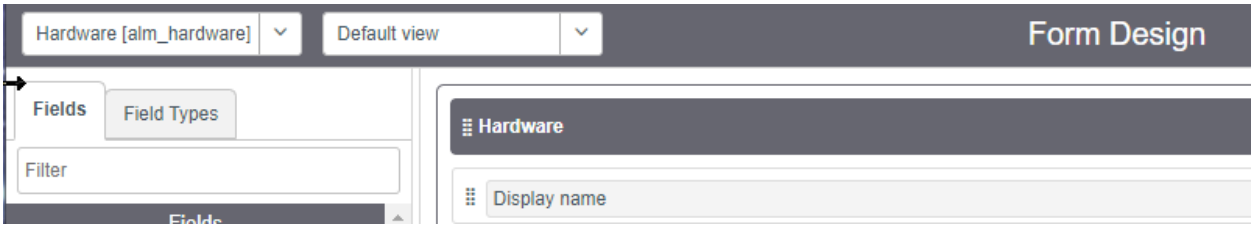
21.2.5.2. Models

As part of the integration configurations for any ITSM solution there needs to be a model map between the two applications. For Service Now, the Model Map list is synchronized from the Hardware Models page which can be accessed by filtering the menu list for “Models” and then choosing the Hardware Models menu item.

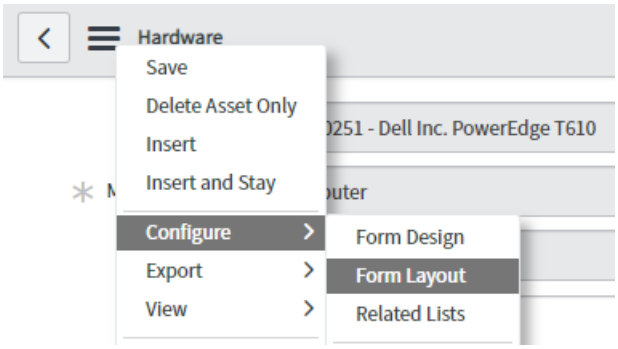
21.2.5.3. Attributes

As part of the integration configurations for any ITSM solution there needs to be an attribute map between the two applications. For Service Now, the Attribute Map list is synchronized from alm_hardware form.





To add attributes in Service Now:



21.2.5.4. Assets

The actual device or asset synchronization will occur in the Assets list of Service Now. Depending on the one way or bi-directional support for ITSM integration which is defined on the Configuration pages, the devices or assets will be automatically created or updated on the respective applications. In Service Now, the Asset list is accessed by entering “Assets” into the menu filter and then selecting the Hardware Assets menu item from the list.

21.2.5.5. Incidents

When alarms are generated in this application, incident tickets can be automatically generated in the Service Now system. The following alarm condition changes will result in the creation of a new incident in the Service Now incident list:

- Normal to Unreachable
- Normal to Warning
- Normal to Critical

In Service Now, the Incident list can be accessed by typing “Incidents” into the menu filter and selecting the Incidents menu item. **Note:** The resulting list of incidents may be filtered to only show the incidents reported by or assigned to the active Service Now user. If needed, remove the filter for the current user to see the list for all Service Now users or the specific user configured to report incidents from this application. In the ITSM Configuration page, the Incident Caller ID setting is used to define the Service Now user who reports the incidents generated by alarms in this application.

21.2.6. ITSM CSV Integration Specifics

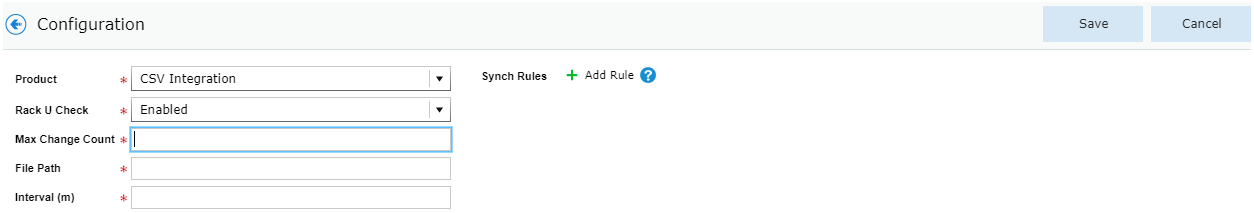
This section describes the integration design between BLSS and DCTrackMobile (DCTM) which uses CSV files to synchronize information between the systems.

21.2.6.1. Prerequisites

In order to properly configure the BLSS application to synchronize with the CSV file, there are several settings which must be defined on the Configuration Page to identify the communication settings and sync triggers to be processed. The Configuration Page has the key parameters which need to be defined to control the communication for the CSV file integration.

- Product - Select CSV Mapping as the 3rd party product used for integration.
- Rack U check - If Enabled, the application will check asset u position specified in the CSV file. If the u position is different, the application will report it as an unmatched asset.
- Max Change Count - Set the number of updates that can be processed at one time.
- File Path - Specify the path to the CSV file. The BLSS application supports FTP, Local File and HTTP. For detailed file path syntax refer to https://commons.apache.org/proper/commons-vfs/filesystems.html
- Interval(m) - Set the time Interval in minutes, between the end of processing the previous CSV file and the start of processing the next CSV file.

Click on the Configuration Button to access the Configuration Page.



21.2.6.2. CSV File Format

The CSV file should be formatted as shown below and placed in the location specified in the File Path configuration field. Once a CSV file has been processed, the application will not process the CSV file again unless the file is changed.

SerialNo	Asset Type	Manufacturer	Model	Asset Name	Rack/Stand	Start RU	End RU	Orientation	Site	Room	Row	Rack
LR201106010276	Network	Checkpoint	SMART-1 5		RackMount	13	13	Front	LY	03NR2	A	LY03NR2A05
1214B00738	Network	Checkpoint	CHECKPOINT 4807		RackMount	20	20		LY	03NR1	C	Rack1 Row04_Robot
	Network	Checkpoint	CHECKPOINT 4807		RackMount	20	20	Front	LY	03NR2	C	LY03NR2C04
1380781	KVM	Avocent	AVOCENT CCM1650		RackMount	1	1		LY	05DH2		Rack1 Row04_Robot
1380712	Storage	Avocent	IBM 3576-E9U		RackMount	3	11	Front	LY	05DH1	B	Rack1 Row04_Robot
1380712	Storage	Avocent	IBM 3576-E9U		RackMount	3	11	Front	LY	05DH1	B	Rack1 Row04_Robot
13807123	Storage	Avocent	IBM 3576-E9U		RackMount	0	11	Front	LY	05DH1	B	Rack1 Row04_Robot
1380783	Storage	IBM	IBM 3576-E9U		RackMount	13	11	Front	LY	05DH1	B	Rack1 Row04_Robot
1380784	Storage	IBM	IBM 3576-E9U		RackMount	15	11	Front	LY	05DH1	B	Rack1 Row04_Robot

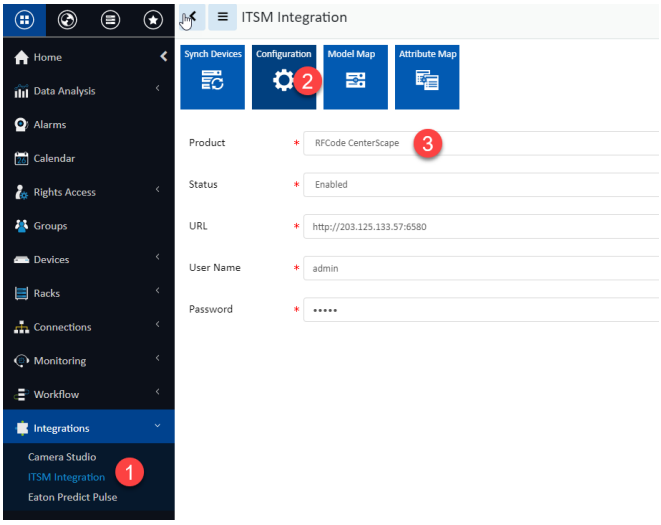
21.2.7. ITSM RFCode CenterScape Integration Specifics

21.2.7.1. Configure RFCode CenterScape

In order to properly configure the application to synchronize with the RFCode CenterScape application, there are several settings which must be defined on the Configuration Page to identify the communication settings and synch triggers to be processed.

Click on the Configuration function tile to access the Configuration Page.

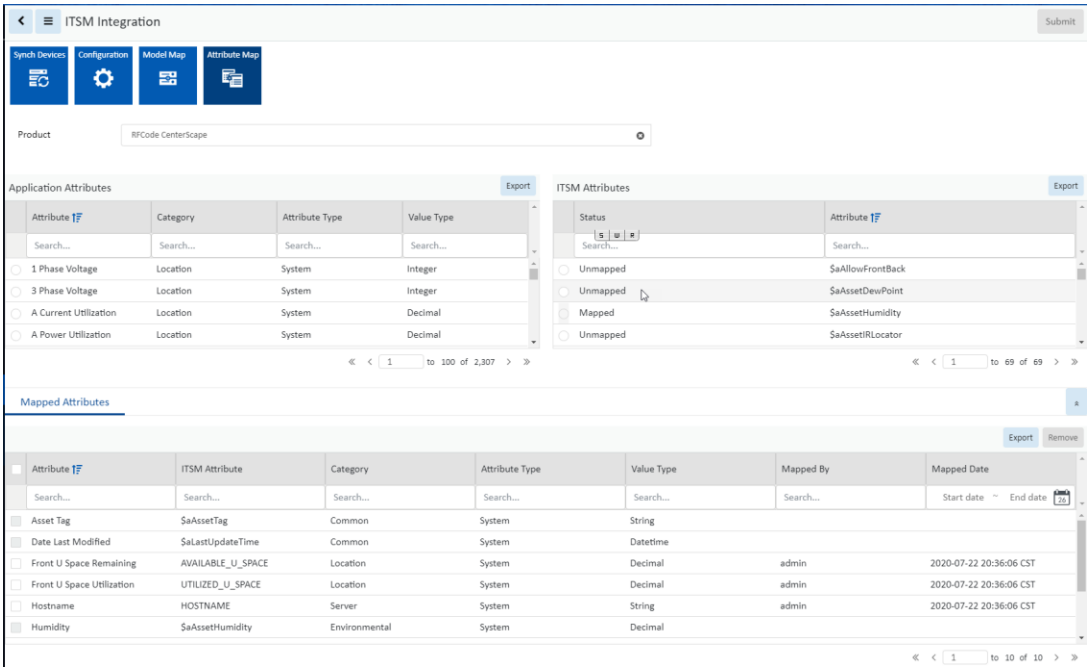
Click on the Configuration function tile and change the Product to RFCode CenterScape.



Fields	Description
Product	Select the RFCode CenterScape option from the pull-down menu.
Status	Enable or Disable the functionality.
URL	Enter the URL for the paired CenterScape instance.
User Name	Enter the username the application will use to connect to the CenterScape instance.
Password	Enter the password that corresponds with the username.

21.2.7.2. Attribute Map Function Tile

The CenterScape asset attribute list will not be using the same naming convention as this application so administrators must establish a mapping between the two systems. The Attribute Map page allows users to connect the asset attributes from the two systems so translation can be performed on synch activity going in each direction.



The following attributes are not shown in the Mapped Attributes list, and they are mapped in code.

1. class: The application generated csv file this column default value is entity
2. type: The application generated csv file this column used the type UUID, the customer needs to create the types in the CenterScape at first
3. guid: If the application doesn't have attribute mapping for this attribute in the Mapped Attributes list, it will use the application asset UUID. If the customer mapped an attribute for guid, it would use the mapped attribute value.
4. Retired: If an asset life cycle is Decommissioned, then the column is TRUE. Otherwise, it is FALSE
5. delectable: The application generated csv file this column default value is true
6. Mount Type:

Mount Type in BLSS	**Mount Type in CenterScape**
Floor Mount	MOUNT_TYPE_FLOOR_MOUNT
Rack Mount External	blank
Shelf Mount	blank
Attach Mount	blank
Rack Mount Internal	MOUNT_TYPE_RACK_U_MOUNT
Chassis Mount	MOUNT_TYPE_BLADE_CHASSIS_MOUNT

The following is the system default attributes mapping and users are unable to remove them.

The Application	CenterScape
Asset Tag	$aAssetTag **Note**: only the type is Sensor and Manufacturer is RF Code will export this value, other types will ignore this attribute
Date Last Modified	$aLastUpdateTime
Humidity	$aAssetHumidity
Last Operator	$aLastUpdateUser
Rack - Capacity RU	$aRackUSpaceCapacity
Serial Number	SERIAL_NUMBER
Temperature	$aAssetTemperature

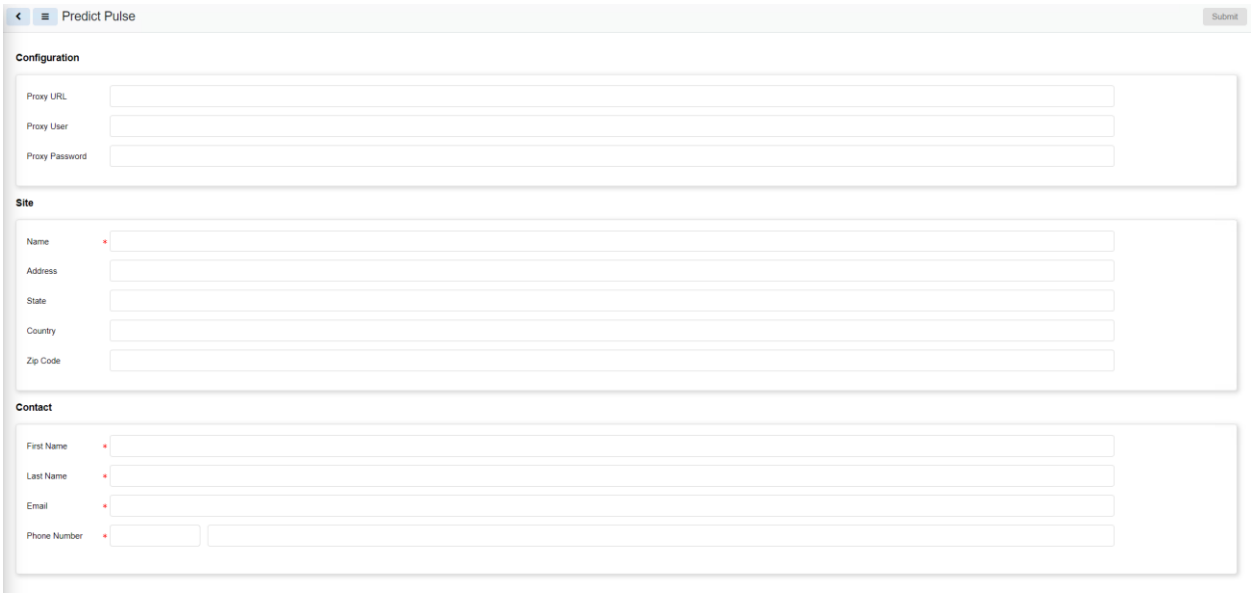
The following is the system default attributes mapping and users can remove it:

The Application	CenterScape
Front U Space Remaining	AVAILABLE_U_SPACE
Front U Space Utilization	UTILIZED_U_SPACE
Hostname	HOSTNAME

21.3. Predict Pulse

The Predict Pulse Integration is an add-on feature for BLSS. Users need to declare that they have purchased and need to activate the Predict Pulse Integration feature when applying for a license. Then the Predict Pulse menu will be shown as a sub menu of the Integration menu.

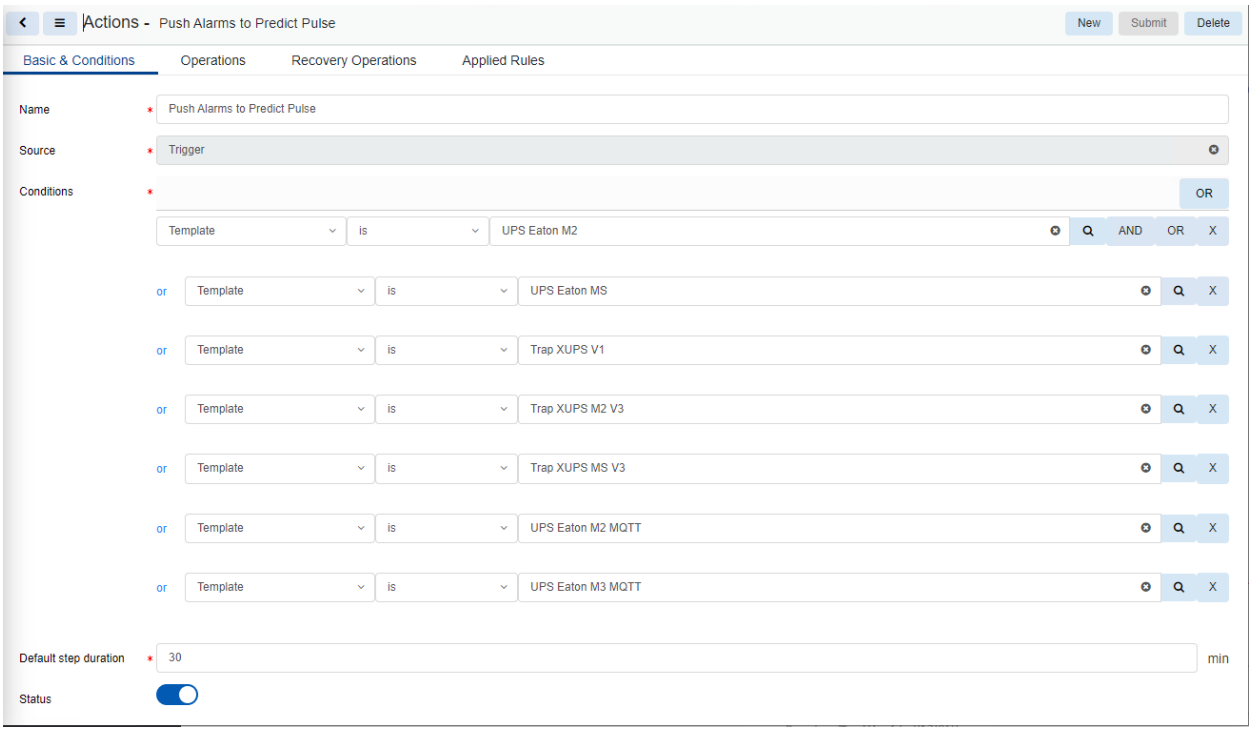
Users will need to fill out the following sections:



- **Configuration** - For the case that the Master server and Probe server cannot access the Predict Pulse on the cloud directly and a proxy is required, users will need to fill out the proxy information.
- **Site** - This Site information will be used when registering the site in the Predict Pulse system. Specified alarms detected by this instance will be pushed to the Predict Pulse system regarding to the registered site. The name field is required. For more information, please reach out to the Predict Pulse support team.
- **Contact** - The contactor information will be saved in the Predict Pulse system after the site above has been registered successfully. Fields marked with an asterisk are required. The email address must be unique. The phone number should be 10 digits and the country code can only be +1. For more information, please reach out to the Predict Pulse support team.

21.3.1. Pushing Alarms to Predict Pulse

For the out-of-box monitoring templates **UPS Eaton M2 MQTT, UPS Eaton M3 MQTT, UPS Eaton M2 MQTT(3 Phase), UPS Eaton M3 MQTT(3 Phase),** total 24 triggers have been included in each template. For the alarm which is triggered by any of these 24 triggers, the alarm will be pushed to the Predict Pulse system by the out-of-box action which name is Push Alarms to Predict Pulse.


Actions - Push Alarms to Predict Pulse
New
Submit
Delete
Basic & Conditions
Operations
Recovery Operations
Applied Rules
Name
Push Alarms to Predict Pulse
Source
Trigger
Conditions
OR
Template
is
UPS Eaton M2
AND
OR
X
or
Template
is
UPS Eaton MS
Trap XUPS V1
Trap XUPS M2 V3
Trap XUPS MS V3
UPS Eaton M2 MQTT
UPS Eaton M3 MQTT
Default step duration
30
min
Status

22. Import | Export Menu Group

The Import | Export Menu Group contains menu items for importing and exporting activities. Presently you can import and export devices, models and PDU/RPP panels.

22.1. Import Central Menu Item

The Import Central Menu Item displays a list of all the import activity sessions in the system. The table list contains the following fields:

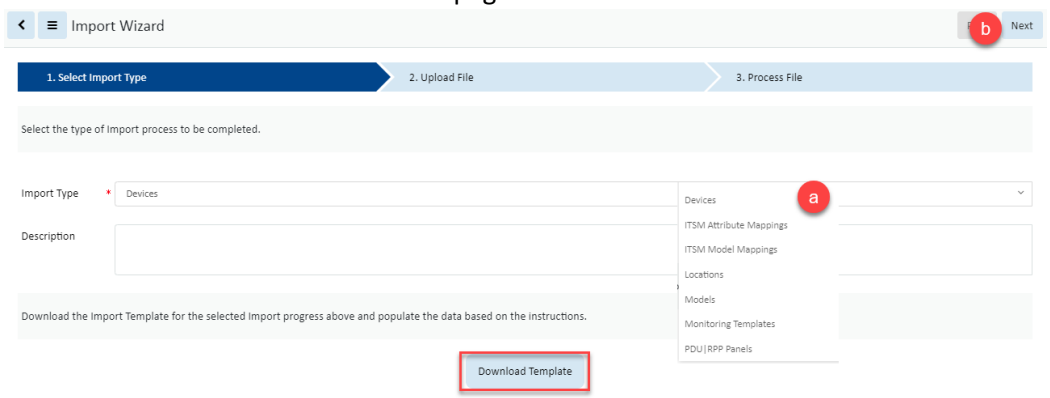
Table List Column	
Type	Displays the type of import activity and is also a link to the page with additional details for the import activity.
Description	Displays the descriptions.
Submitter	Displays the name of the user that initiated the import.
Status	Displays the current status of the import.
Start Time	Displays the start time for the activity.
End Time	Displays the end time for the activity.
Table List Buttons	**Description**
Clear	Clears the table list.
New Import	Opens an import wizard that steps you through the import process.

22.1.1. Import Wizard

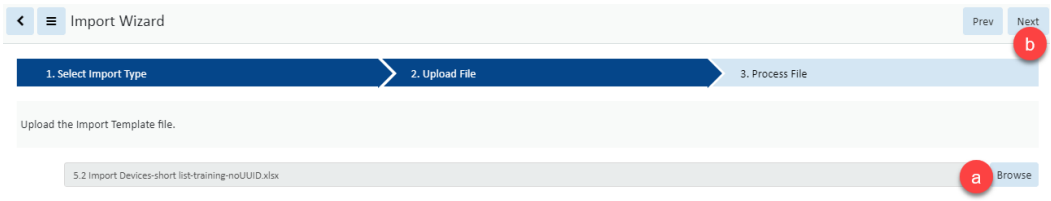
The Import Wizard page is displayed when the “New Import” button is selected. The import wizard is used to import Attributes, Device Firmware, Devices, Graphs, Inventory, ITSM Attribute Mappings, ITSM Model Mappings, Locations, Models, Monitoring Templates, PDU|RPP Panels, and Triggers.

1. Select Import Type
    a. From the Import Type drop-down choose the item to be imported.
    Note: To retrieve a template file, first select the import type and then use the Download Template button. The appropriate template for your import will be downloaded into the downloads folder.
    Note: Populate an import spreadsheet or download the new model package to your local workstation before proceeding to the next step.

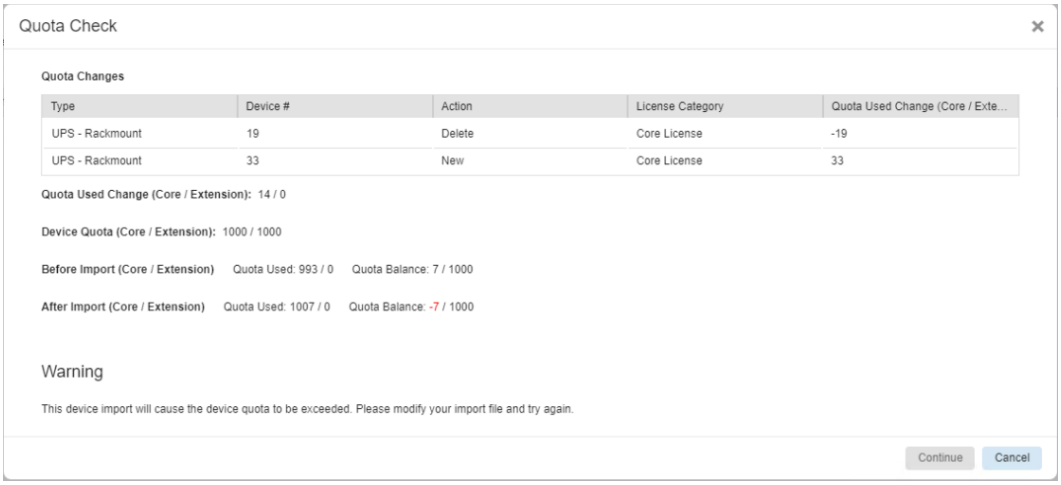
b. Click Next button to move to the next page of the wizard



2. Upload File
   a. Browse to select the import spreadsheet or model package
   b. Click Next button to start import



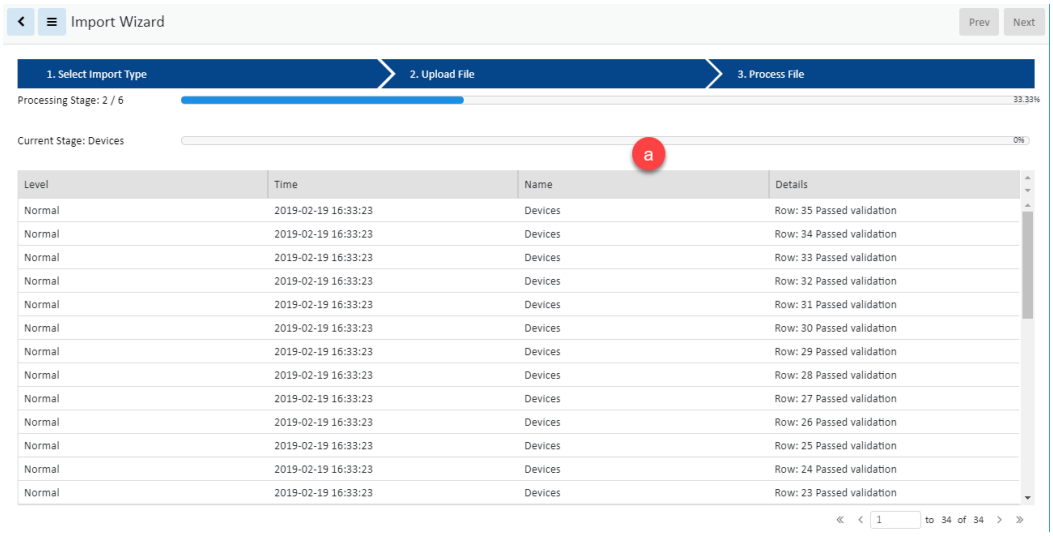
3. Process File
   a. A Quota Check window will pop up.



The Quota Changes table shows the quota change details. The table is displayed based on the Type and Action (add or delete). If the importing causes the quota to exceed, a Warning message will show at the bottom and the “Continue” button will be disabled. When there is a large number of devices to be imported, the Quota Check will take some time.

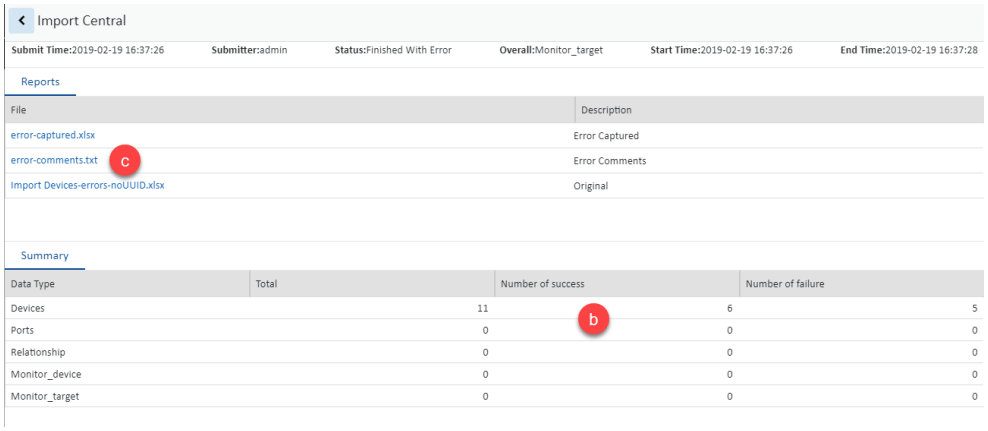
Note: When importing PDU, the existing electrical panels can be added into PDU/RPP, these panels will NOT count against quota.

b. Page displays the import process as it progresses through the import spreadsheet rows and subsequent tabs



c. When complete the page displays a summary indicating the number of each item successfully imported and failures.

d. A link to open the error-comments.txt file is available for troubleshooting the import failures.



e. The error-comments.txt file indicates the sheet and rows where errors occurred.

```
Sheet : Devices
Row : 3          Reason: The Model does not exists in system.
Row : 4          Reason: The Model does not exists in system.
Row : 11            Reason: The Model does not exists in system.
Row : 12            Reason: The Model does not exists in system.
Row : 13            Reason: The Model does not exists in system.
Sheet : Ports
Sheet : Relationship
Sheet : Monitor_device
Sheet : Monitor_target
```

i. Sheet: The Worksheet (in the Excel file) that has an issue

ii. Row: Refers to the row (in the Excel spreadsheet) that has an issue

iii. Reason: Provides information about the issue

22.1.2. Import Devices Spreadsheet

The bulk importing spreadsheet is composed of five spreadsheet tabs – Devices, Ports, Relationship, Monitor_Device, and Monitoring Template. For just creating the actual device and importing it into the device library, Devices is the one sheet that is of concern.

Devices sheet has six major column headers with sub-columns underneath. Following each description below is a graphic showing how it looks in the Excel spreadsheet.

22.1.2.1. Operations

Action option instructs the application on how to process the data in that row. The four action options are either

- A - add the device to the library
- U - update the device in the library
- D - delete the device from the inventory list
- AU - add the device if not already created, if created then update device in library

Operations
Action
AU

22.1.2.2. Model Info

Model Info contains device specific details. While doing a bulk import, either the UUID must be completed or the type, Manufacturer, Product Line, and Model Name must be completed. This is because the model UUID will spell out the device information, and the device information will fill out the model UUID. One or the other is a requirement for bulk import.

Model Info				
UUID	Type	Manufacturer	Product Line	Model Name
97cb43f4-4503-11de-8bac-000d566af2f2	Rack	Wright Line	Paramount Enclosures	44U-2442

- Model UUID – UUID that is specific to the model
- Type – device type
- Manufacturer – device manufacturer
- Product Line – device product line
- Model Name – device model

22.1.2.3. Device Info

Device Info is information that is specific to a single device.

Device Info						
UUID	Device Name	Device Ref ID	Device Group	Description	Department	Owner
000daf91-e8d7-4bf8-9f1a-e8c10347f803	Kelly-Rack001		Public			

- Device UUID – UUID that is specific to that individual device

- Device Name – Name of the individual device. This field is NOT a unique attribute.
- Device Ref ID – “Nickname” for the device. Used as a reference when being referenced by another device. This field will be deleted once imported.
- Device Group – Device group that the device belongs to. Description – Notes to be held on device.
- Department – Department that the device belongs to.
- Owner – The device’s owner.

22.1.2.4. Location

Location information identifies where the device is placed or to be placed.

Location					
Location	Area	Row	Column	X Offset	Y Offset

- Location – where the device is located/going to be placed. {Building – Floor – Area}
- Area – Area on the floor that the device is located in
- Row – Row on the floor within the area specified that the device is located on
- Column – Column on the floor within the area specified that the device is located on
- X Offset – displacement of the floor device on X-axis
- Y Offset – displacement of the floor device on Y-axis

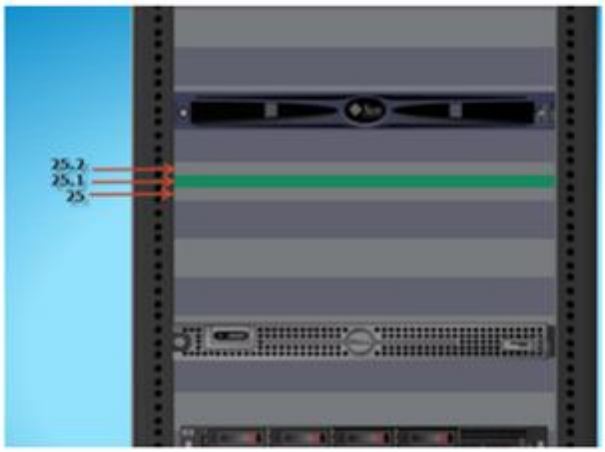
22.1.2.5. Rack Mount

Rack Mount displays details for rack mounted devices including elevation and positioning within a rack.

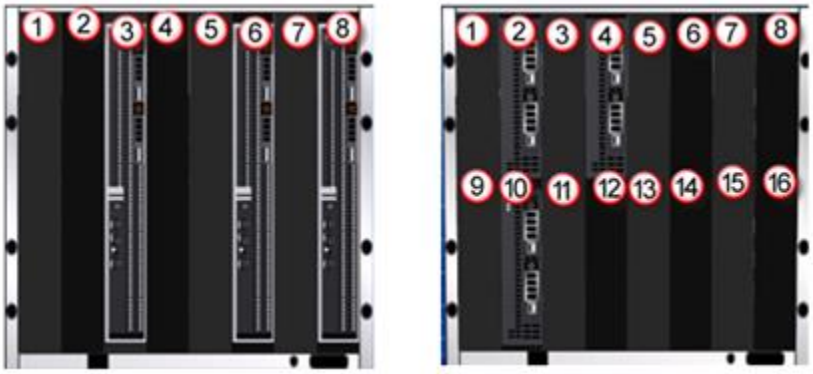
Rack Mount																			
Target Device UUID	Target Device Ref ID	Target Device Name	Mount Type	Local Transform tx	Local Transform ty	Local Transform tz	Local Transform zr	Local Transform xr	Rotation Angle	Position x	Position y	Position z	Rackmount External	U Position	U Size	Shelf ID	Horizontal Slot	Vertical Slot	Slot ID

- Target Device UUID – This is the UUID of the device where the selected device resides.
- Target Device Ref ID – References the Devices Ref ID where the selected device is to be placed.
- Target Device Name – Device name of the device where the selected device resides.
- Mount Type – Type
    - Floor Mount – used for racks and facility devices
    - Attach Mount – used for devices that are placed on side of racks
    - Rack Mount External – used for devices that go on the enclosure of racks
    - Rack Mount Internal – used for server to be placed inside a U position
    - Shelf Mount – used for devices to be placed on rack shelf
    - Chassis Mount – used for blades that are going into chassis
- Rotation Angle - Rotation of devices. Only required for devices that have mount type of Floor Mount. By default, the devices will face the wall that is labeled with the floor grid (Rotation = 0 degrees)
- Rackmount External - Position of the device on the outside of the rack

- U Position – location of device within a rack. There are three rack positions within a rack unit. Refer to the below image for more detail.



- U Size - the U size of the device
- Slot ID – position of blade within blade chassis, refer to diagram below for the naming convention of half and full blades.



22.1.2.6. Device Attributes

Initially the spreadsheet displays a default set of attributes for a device. If within the application values are added to other attributes, those attributes will appear in the exported spreadsheet.

If an attribute does not appear in the spreadsheet, go to the device, add the attribute if necessary and enter a value. When that device is exported the attribute with its value should appear in the spreadsheet

Device Attributes									
Energy Source	Energy Type	Selected Voltage	Power Source	Rack Group	Date Created	Front U Space Remaining	Front U Space Used	Date Last Modified	Life Cycle

22.1.2.7. Creating New Devices from Spreadsheet

This section discusses how to create devices like racks, servers, a blade chassis, and blades through the Excel bulk import spreadsheet. The only prerequisite for this section is the Excel spreadsheet that can be

downloaded from the Import Wizard's first page using the Download Template button. In the example below a rack, 2 blades, blade chassis, and server are created and added to the device library.

Follow these steps:

- With a blank Excel import spreadsheet, fill in the required information. When just creating a device and adding it to the device library, the fields below must be filled out. Below is a screen shot.
- Operations
  - Actions
- Model Info
  - Type
  - Manufacturer
  - Product Line
  - Model Name
- Device Info
  - Device Name

Operations	Model Info						
Action	UUID	Type	Manufacturer	Product Line	Model Name	UUID	Device Name
AU		Rack	Generic	Generic - Rack	Rack 42U		RD - Rack1
AU		Server - Rackmount	HP	Proliant	DL380		RD - Server1
AU		Server - Blade Enclosure	HP	Proliant	BL C7000		RD - Blade
AU		Server - Blade	HP	Proliant	BL480c		RD - Blade1
AU		Server - Blade	HP	Proliant	BL480c		RD - Blade2

*** Don’t create the UUIDs, these will be self-generated by the system. If the Model UUID is known that one can be inserted instead of the other model information. ***

- The model information can be found in the Devices menu group > Models menu item.
- When the spreadsheet is completed use the Import Wizard to import and create the devices.

22.1.2.8. Creating New Devices and Mounting them to a Rack

This section discusses how to create devices like racks, servers, blade chassis, and blades through the BLSS bulk import spreadsheet.

In the example below 1 rack, 1 server, 1 blade chassis and 2 blades will be created.

- The server and blade chassis will be mounted in the rack.
- The blades will be mounted in the blade chassis.

Follow these steps:

- With a blank Excel import spreadsheet, fill in the required information for each of the devices. The following fields must be filled out.
- Operations
  - Actions
- Model Info - must match exactly with the information in the application model database
  - Type

  - Manufacturer
  - Product Line
  - Model Name
- Device Info
  - Device Name

Operations	Model Info						
Action	UUID	Type	Manufacturer	Product Line	Model Name	UUID	Device Name
AU		Rack	Generic	Generic - Rack	Rack 42U		RD - Rack1
AU		Server - Rackmount	HP	Proliant	DL380		RD - Server1
AU		Server - Blade Enclosure	HP	Proliant	BL C7000		RD - Blade
AU		Server - Blade	HP	Proliant	BL480c		RD - Blade1
AU		Server - Blade	HP	Proliant	BL480c		RD - Blade2

*** Leave the UUIDs blank, these will be self-generated by the system. ***

- The next step is to provide the correct Rack Mount information. In this example a server and blade chassis will be mounted in a rack. To accomplish this, the server and blade chassis row will specify the rack they are to be placed in.

  a. When creating a rack and the devices that will be placed in the rack in a single spreadsheet, the rack must be referenced using the Device Ref Id. Enter a Device Ref ID for the rack.
  b. For the server and blade chassis the Target Ref ID is the racks' Device Ref ID. Along with populating the Device Ref ID cell, you must input "Rack Mount Internal" into the Mount Type and the U Position for the devices being mounted within the rack.

     This example would create the rack and then mount the server in U position 33 and the blade enclosure in U position 10 in Rack1

Operations	Model Info				Device Info		Rack Mount			
Action	Type	Manufacturer	Product Line	Model Name	Device Name	Device Ref ID	Target Device Ref ID	Mount Type	U Position	Slot ID
AU	Rack	Wright Line	Paramount Enclosures	44U-2442	KB-Rack001	Rack1				
AU	Server - Rackmount	Dell	PowerEdge	R510	KB-Server002		Rack1	Rack Mount Internal	33.0	
AU	Server - Blade Enclosure	HP	Proliant	BL C7000	KB-ServerEnc001		Rack1	Rack Mount Internal	10.0	

  c. In order for the blades to go into the chassis during the import, the blade chassis must also use a Device Ref ID. Enter a Device Ref ID for the blade chassis.
  d. The Target Device Ref ID for the blades is the blade chassis' Device Ref ID. Select “Chassis Mount” as Mount Type and specify the Slot ID for the blades.

     Note: Slot ID/U position collision during import is supported. If there is a conflict with either the Slot ID and/or U Position, the user will be notified of the failure.

     Note: In the graphic below many columns have been hidden so the relevant columns are visible.

Operations	Model Info				Device Info		Rack Mount			
Action	Type	Manufacturer	Product Line	Model Name	Device Name	Device Ref ID	Target Device Ref ID	Mount Type	U Position	Slot ID
AU	Rack	Wright Line	Paramount Enclosures	44U-2442	KB-Rack001	Rack1				
AU	Server - Rackmount	Dell	PowerEdge	R510	KB-Server002		Rack1	Rack Mount Internal	33.0	
AU	Server - Blade Enclosure	HP	Proliant	BL C7000	KB-ServerEnc001	Enc001	Rack1	Rack Mount Internal	10.0	
AU	Server - Blade	HP	Proliant	BL465c G7	KB-ServerBlade001		Enc001	Chassis Mount		8
AU	Server - Blade	HP	Proliant	BL465c G7	KB-ServerBlade002		Enc001	Chassis Mount		5

- When the spreadsheet is completed use the Import Wizard to import and create the devices.

22.1.2.9. Mounting Existing Devices

If all of the devices (rack, server, blade chassis and blades) already exist on the server then you can mount them using their unique device names or the UUIDs (if the device names are not unique).

- Export the existing devices to a spreadsheet. This exported spreadsheet will contain the UUID (database Unique Identifiers) for the devices
- Edit the spreadsheet adding the Target Device UUID or Target Device Name, U position/Slot ID.

  This example places the KB-Server001 into KB-Rack001 in U position 35.
  KB-ServerEnc001 into KB-Rack001 in U position 10 and the blades into the enclosure.

  Since these devices have UUIDs, no new devices are created. The existing devices are updated with the rack mount information and will now appear within the rack in all the graphic displays.

Operations	Model Info				Device Info		Rack Mount					
Action	Type	Manufacturer	Product Line	Model Name	UUID	Device Name	Target Device UUID	Target Device Name	Mount Type	U Position	U Size	Slot
AU	Rack	Wright Line	Paramount Enclosures	44U-2442	000daf91-e8d7-4bf8-9f1a-e8c10347f803	KB-Rack001			Floor Mount			
AU	Server - Rackmount	Dell	PowerEdge	R510	2e6c5748-1174-4116-80a0-b139f1750d98	KB-Server001	000daf91-e8d7-4bf8-9f1a-e8c10347f803	Kelly-Rack001	Rack Mount Internal	35.0	2.0	
AU	Server - Blade Enclosure	HP	Proliant	BL C7000	c18576af-0867-4738-9d2c-d84fed5588a7	KB-ServerEnc001	000daf91-e8d7-4bf8-9f1a-e8c10347f803	Kelly-Rack001	Rack Mount Internal	10.0	10.0	
AU	Server - Blade	HP	Proliant	BL465c G7	4aa6a83c-a087-4d77-bc8b-bc3e2512424f	KB-ServerBlade007	c18576af-0867-4738-9d2c-d84fed5588a7	Kelly-ServerEnc001	Chassis Mount			7
AU	Server - Blade	HP	Proliant	BL465c G7	ab83e447-efea-456d-88cb-03e805577994	KB-ServerBlade001	c18576af-0867-4738-9d2c-d84fed5588a7	Kelly-ServerEnc001	Chassis Mount			1

- When the spreadsheet is completed use the Import Wizard to import and create the devices.

22.1.2.10. Import Devices Spreadsheet: Ports Tab

List all of the ports for the devices on the devices tab.

Port Info												
UUID	Port Ref ID	Port Name	Port Type	Description	Inherited	Network	Speed(MB/s)	VLAN Name	Port Number	MAC Address1	Port Status	Has Back	Service Type
05401d8c-4737-11e6-8fa2-d39f039224ff		A17	NEMA 5-20R		Yes				17		Available	No	Out
054f6dfa-4737-11e6-b76e-b3e79ab62410		A23	NEMA 5-20R		Yes				23		Available	No	Out

22.1.2.11. Import Devices Spreadsheet: Relationship Tab

Lists all of the power and network connections for the devices on the devices tab. Bulk connections can be created using the relationship tab.

Operations	General Information							Provider Device				Consumer Device				
Action	UUID	Name	Cable Type	Description	rial Number	Length	Color	mber of co	evice UUID	evice Nam	Port UUID	Port Ref ID	Port Name	Port Type	evice UUID	evice Nam	Port UUID	Port Ref ID	Port Name	Port Type
AU	58e43e93-	Buck-ATS(	Generic Power Cable				#FF0062B1		3a8d7457-	Buck-ATS(	f4e55450-		po 1	Power Poi	1b8cead4-	Buck-UPS:	c275282a-		pi 1	Power Port
AU	a1c5e041-	Buck-UPS:	Generic Power Cable				#FF0062B1		1b8cead4-	Buck-UPS:	c273c75a-i		po 1	Power Poi	61b6496f-	Buck-PDU	d18ad155-		pi 1	Power Port

22.1.2.12. Import Devices Spreadsheet: Monitor_device Tab

Lists all of the Monitor Config tab settings from the device central monitor function tile for each device on the devices tab. Bulk configurations and modifications can be done using the monitor_device tab.

Operation	Device Information						Common Settings						SNMP Settings															
Action	evice Nam	UUID	Type	anufactur	roduct Lin	Model Nam	evice Ref I	duction Sta	IP Address	obe Interv	meout(se	Retry	Probe	Port	Protocol	Version	t Commun	t Commun	User Name	Password	uth Protoc	ontext Na	rivacy Pro	rivacy Pas	ecurity Lev	Unit	ip Commu
AU	CA2 - Sens	8c698c9b	Sensor	RF Code	Sensors - I	RFCode - R		productio	127.0.0.1	60	29	2	SP192.168	2162	UDP	SNMP_VEF	public	private	jarrett		MD5		DES	0	noAuthNo		
AU	HA1 - Sens	3952918d	Sensor	RF Code	Sensors - I	RFCode - R		productio	127.0.0.1	60	29	2	SP192.168	2162	UDP	SNMP_VEF	public	private	jarrett		MD5		DES	0	noAuthNo		
AU	HA2 - Sens	e942e799	Sensor	RF Code	Sensors - I	RFCode - R		productio	127.0.0.1	60	29	2	SP192.168	2162	UDP	SNMP_VEF	public	private	jarrett		MD5		DES	0	noAuthNo		

SNMP Settings								IPMI Settings					Modbus Settings		Http Settings					DCM Settin	BACNET Setting			
Password	uth Protoc	ontext Na	rivacy Pro	rivacy Pas	ecurity Lev	Unit	ip Commu	User Name	Password	Port	mmand Ty	Auth Type	Priv Level	Interface	vice Numb	Port	Type	Tag ID	Port	User Name	Password	Node	vice Instar	Port	work Num
	MD5		DES	0	noAuthNo																				
	MD5		DES	0	noAuthNo																				
	MD5		DES	0	noAuthNo																				

22.1.2.13. Import Devices Spreadsheet: Monitoring Template Tab

Lists all of the monitoring templates assigned to the devices on the devices tab. The Operations/Actions column is where users can use A to enable and D to disable a monitoring template for the device specified.

Operations	Device Information		Monitoring Template
Action	Device UUID	Device Name	Template Name
A	0130cadc-48b8-441d-81ef-aac6cb3431fe	Buck-ePDU-002-B	Rackmount PDU Eaton
A	04a1ba33-a11c-489c-9aaa-82df2d169e53	Buck-ePDU-001-A	Rackmount PDU Eaton
D	1b8cead4-6b7e-46b8-869e-850e5220883b	Buck-UPS1A	UPS Eaton M2
A	b2238dfe-c721-4a76-a756-484c572908a3	Buck-UPS-Rackmount-001-A	UPS Eaton M2
A	d97c3820-3c9d-4616-858a-aeeda3af7f68	Buck-UPS-Rackmount-002-B	UPS Eaton M2

22.1.2.14. Decommission Devices in Bulk with Spreadsheet

Devices can be decommissioned in bulk by changing the Life Cycle value on the devices tab to Decommissioned.

AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	
Device Attributes										
Date Created	Current - Derated	Current - Rated	Space Rei	Space Ret U	Space I	Space Uti	Date Last Modified	Life Cycle	Power - Derated	Pov
2020-06-04 14:34:30.515-04			35 U	0 U	7 U	0.17 %	2020-06-04 14:35:43.411825-04	Decommissioned		
2020-06-04 14:34:30.442-04			37 U	0 U	5 U	0.12 %	2020-06-04 14:35:41.778394-04	Decommissioned		
2020-06-04 14:34:30.687-04							2020-06-04 16:26:43.66824-04	Operational		
2020-06-04 14:34:31.350-04	180.00 A	225.00 A					2020-06-04 14:36:19.39691-04	Operational	323856.00 W	4048
2020-06-04 14:34:31.030-04							2020-06-04 16:15:08.949882-04	Operational		

22.1.3. Import Locations Spreadsheet

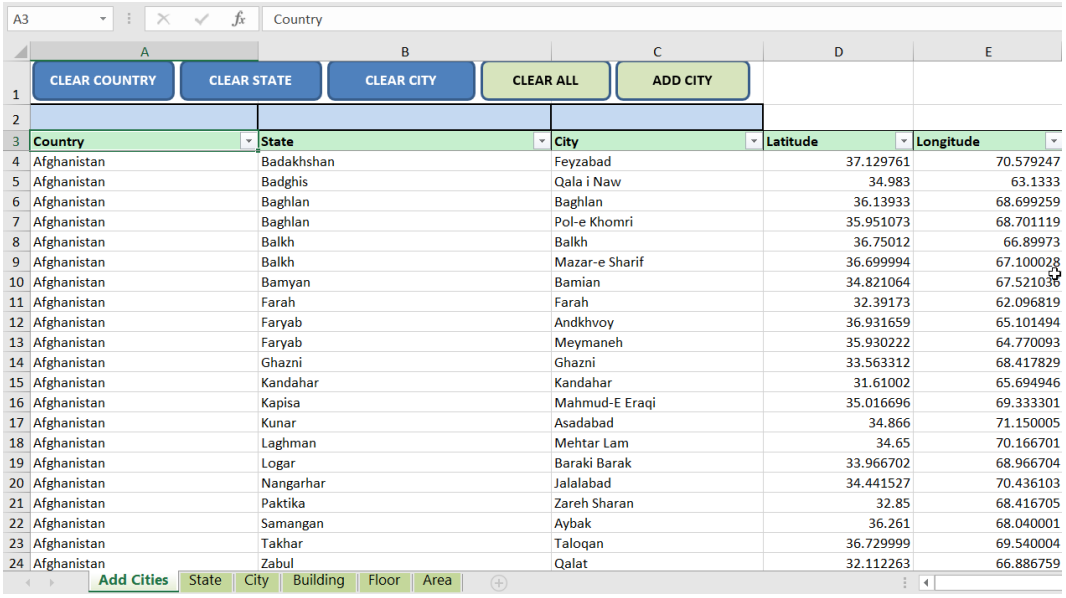
Locations can be created by using the Location Import Template available from the Import Wizard page. The template allows users to add countries, states, cities, buildings, floors and areas to the navigation tree in bulk.

1. From the Import | Export menu group select the Import Central menu item.
2. Click on the New Import button.
3. Select Locations from the dropdown list.
4. Click on the Download Template button and a Location Import Template Excel file will be downloaded to your downloads folder.

The Location Import Template includes 6 tabs where the location specifics are entered to create nodes on the navigation tree.

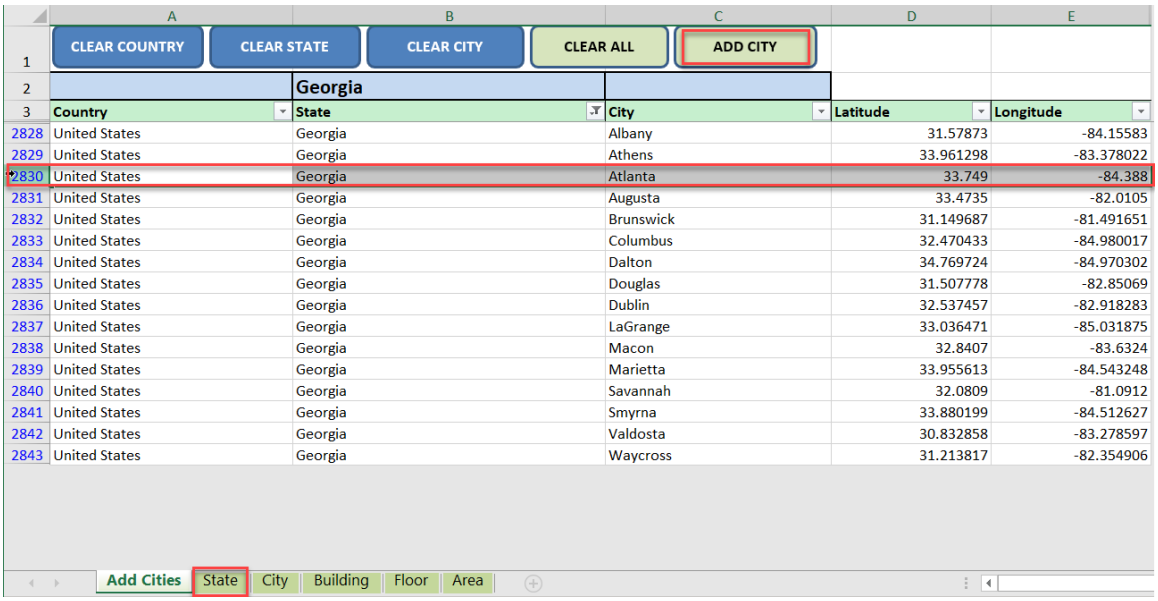
22.1.3.1. Add Cities Tab

Displays the list of known cities available using the Add Cities button when creating a new location.
Note: This table does not change the list in the application. Do not edit.



Country	State	City	Latitude	Longitude
Afghanistan	Badakhshan	Feyzabad	37.129761	70.579247
Afghanistan	Badghis	Qala i Naw	34.983	63.1333
Afghanistan	Baghlan	Baghlan	36.13933	68.699259
Afghanistan	Baghlan	Pol-e Khomri	35.951073	68.701119
Afghanistan	Balkh	Balkh	36.75012	66.89973
Afghanistan	Balkh	Mazar-e Sharif	36.699994	67.100028
Afghanistan	Bamyan	Bamian	34.821064	67.521035
Afghanistan	Farah	Farah	32.39173	62.096819
Afghanistan	Faryab	Andkhvoy	36.931659	65.101494
Afghanistan	Faryab	Meymaneh	35.930222	64.770093
Afghanistan	Ghazni	Ghazni	33.563312	68.417829
Afghanistan	Kandahar	Kandahar	31.61002	65.694946
Afghanistan	Kapisa	Mahmud-E Eraqi	35.016696	69.333301
Afghanistan	Kunar	Asadabad	34.866	71.150005
Afghanistan	Laghman	Mehtar Lam	34.65	70.166701
Afghanistan	Logar	Baraki Barak	33.966702	68.966704
Afghanistan	Nangarhar	Jalalabad	34.441527	70.436103
Afghanistan	Paktika	Zareh Sharan	32.85	68.416705
Afghanistan	Samangan	Aybak	36.261	68.040001
Afghanistan	Takhar	Taloqan	36.729999	69.540004
Afghanistan	Zabul	Qalat	32.112263	66.886759

1. Filter to find the desired city. If your city is not present find a city in the same country and state.



	Country	State	City	Latitude	Longitude
2828	United States	Georgia	Albany	31.57873	-84.15583
2829	United States	Georgia	Athens	33.961298	-83.378022
2830	United States	Georgia	Atlanta	33.749	-84.388
2831	United States	Georgia	Augusta	33.4735	-82.0105
2832	United States	Georgia	Brunswick	31.149687	-81.491651
2833	United States	Georgia	Columbus	32.470433	-84.980017
2834	United States	Georgia	Dalton	34.769724	-84.970302
2835	United States	Georgia	Douglas	31.507778	-82.85069
2836	United States	Georgia	Dublin	32.537457	-82.918283
2837	United States	Georgia	LaGrange	33.036471	-85.031875
2838	United States	Georgia	Macon	32.8407	-83.6324
2839	United States	Georgia	Marietta	33.955613	-84.543248
2840	United States	Georgia	Savannah	32.0809	-81.0912
2841	United States	Georgia	Smyrna	33.880199	-84.512627
2842	United States	Georgia	Valdosta	30.832858	-83.278597
2843	United States	Georgia	Waycross	31.213817	-82.354906

2. Select the row that contains your city.
3. Click on the ADD CITY button.
    a. Continue to filter and add cities as needed.
4. Select the State tab.

22.1.3.2. State Tab

On the State Tab users specify the countries and states to be created on the navigation tree. The tab is populated with the cities selected and added on the Add Cities tab.

Note: If your city was not on the Add Cities tab and the state is not listed for your country, enter "All

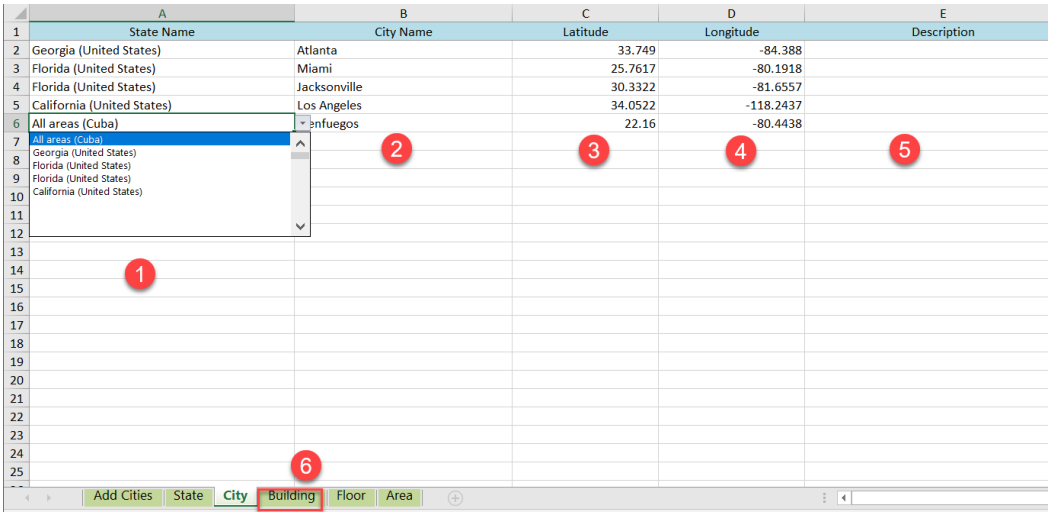
areas" for the State Name and manually add the city name as seen in row 2 below. "All areas" is case sensitive and must be entered as noted.

	A	B
1	Country Name	State Name
2	Cuba	All areas
3	United States	Georgia
4	United States	Florida
5	United States	Florida
6	United States	California
7		

1. Edit the State tab if needed.
2. Select the City tab.

22.1.3.3. City Tab

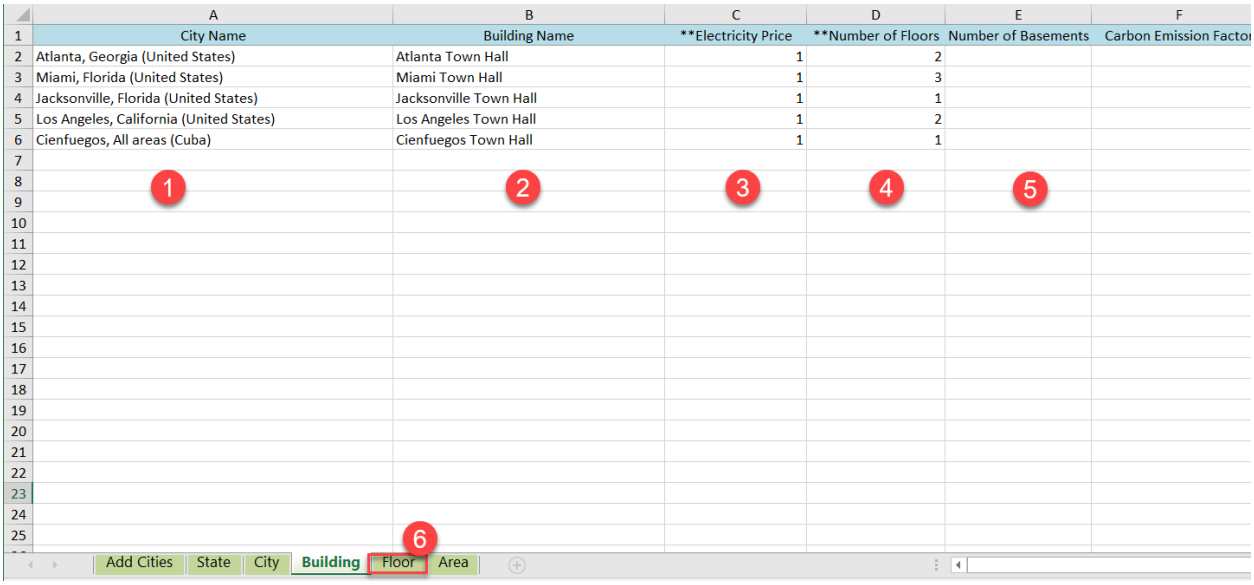
On the City Tab users specify the cities to be created on the navigation tree. The tab is populated with the cities selected and added on the Add Cities tab.



1. Select the State from State Name pull-down menu, you may need to scroll up, to see the list of states that were previously specified on the State tab.
    a. The state drop-down menu includes the states listed on the State tab.
2. Enter the City Name.
3. Enter the latitude for the city in the decimal format (do not include the degree symbol or N/S). Positive number is North (33.152). Negative number is South (-33.3152).
4. Enter the longitude for the city in the decimal format (do not include the degree symbol or E/W). Positive number is East (44.3661). Negative number is West (-44.3661).
5. Optional - Enter description for city.
6. Select the Building tab.

22.1.3.4. Building Tab

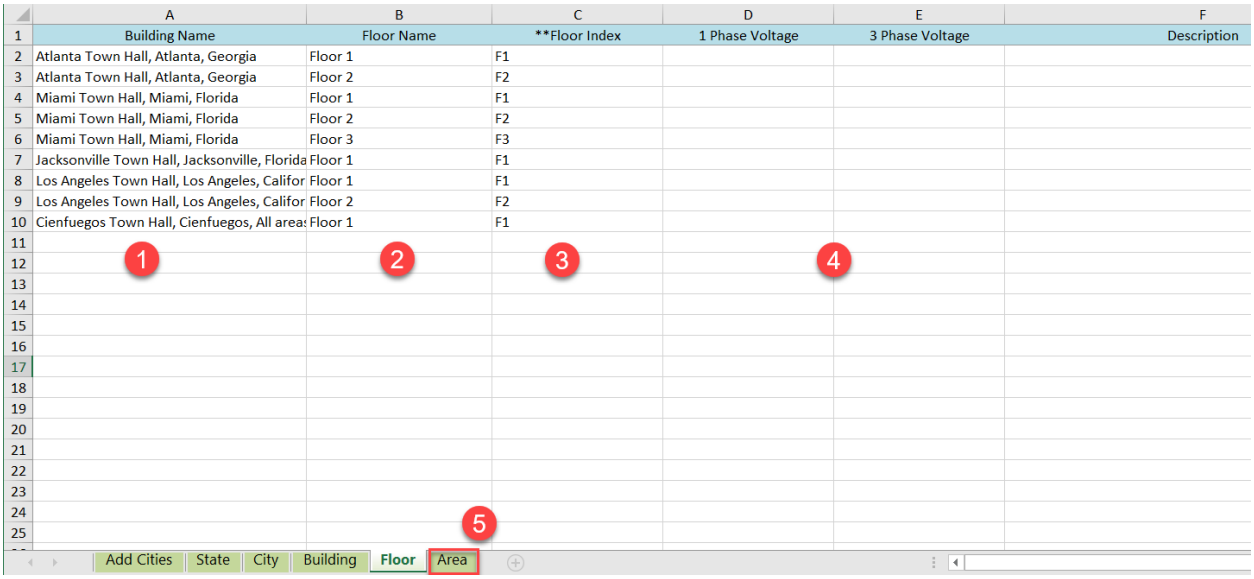
On the Building Tab users specify the buildings to be created on the navigation tree.



1. Select the City from City Name pull-down menu, you may need to scroll up, to see the list of cities that were previously specified on the City tab.
2. Enter the Building Name.
3. Enter the Electricity Price, cost per kwh. (** indicates required field).
4. Enter the number of floors. (** indicates required field).
5. The other fields are optional.
6. Select the Floor tab.

22.1.3.5. Floor Tab

On the Floor Tab users specify the floors to be created on the navigation tree for each building.

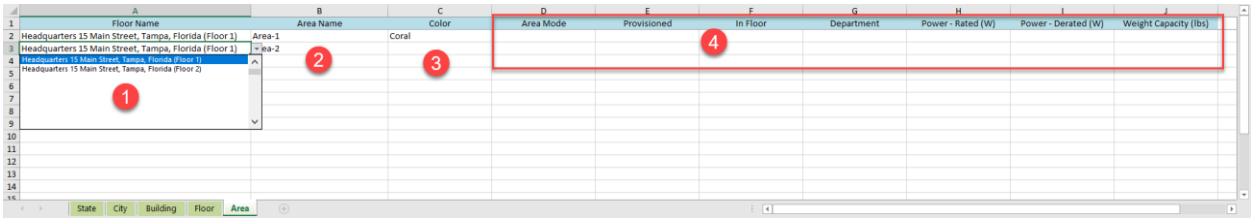


1. Select the Building from Building Name pull-down menu, you may need to scroll up, to see the list of buildings that were previously specified on the Building tab.

2. Enter the Floor Name.
3. Enter the Floor Index. (** indicates required field).
   The floor index syntax is:
   F1 - first floor
   F2 - second floor
   F3 - third floor, additional floors if specified would follow this naming convention
   Ground - there is automatically a ground floor to represent the outside surroundings of the building. If needed add to floor list.
   B1 (etc) - if basements were specified, B1 is the first basement just below F1 or Ground
4. The other fields are optional.
5. Select the Area Tab

22.1.3.6. Area Tab

On the Area Tab users specify the areas to be created on the navigation tree.



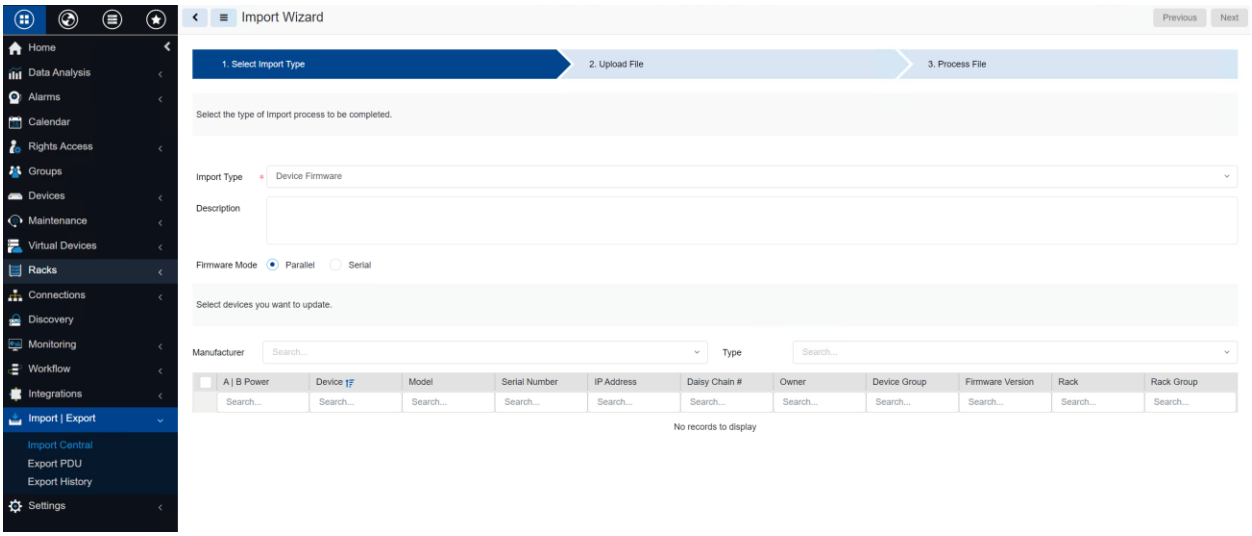
1. Select the Floor from Floor Name pull-down menu, you may need to scroll up, to see the list of floors that were previously specified on the Floors tab.
2. Enter the Area Name.
3. Select a color from the Color pull-down menu.
4. The other fields are optional. **Note**: The Space column is only used if the Area Mode field is set to Manual.
5. Save the spreadsheet and Import.

22.1.4. Import Device Firmware

The UI is different when the import type is Device Firmware. Users can now select the firmware uploading mode in either parallel or serial.

If users select the Parallel mode, then the firmware will be pushed to multiple devices simultaneously.

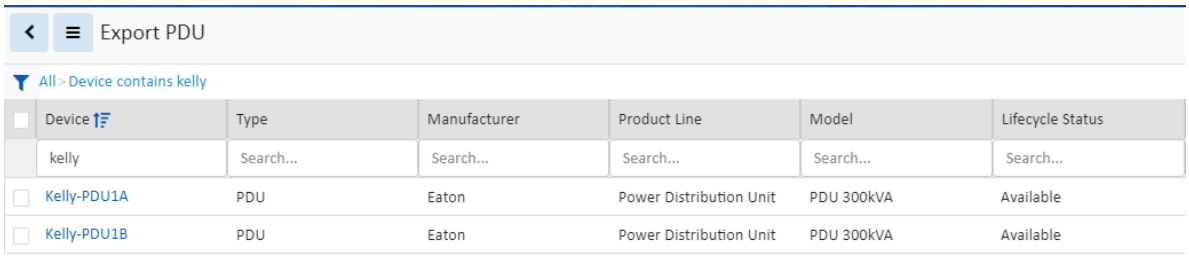
If users select the Serial mode, then the firmware will be uploaded to multiple devices, one device by one device.



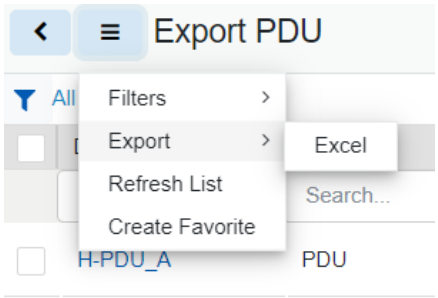
22.2. Export PDU Menu Item

The Export function for PDUs produces a spreadsheet where the user can manage breakers and panels on PDUs and RPPs for bulk import.

1. Filter the list to display the devices to be managed.



2. Click on the table filter button, select Export > Excel



3. The Excel file will be in your Downloads folder named Export Pdu.xlsx
4. Edit the file as needed
5. When the spreadsheet is completed use the Import Wizard to import and create the devices

22.2.1. Edit the PDU Spreadsheet

The exported PDU spreadsheet has two tabs of data with the fields listed in the table below.

Note: When creating new panels and breakers there is no need to define the UUDI fields since the devices do not currently exist. The UUID field acts as the unique identifier in the application database to help identify objects when a referenced object has one instance in the list.

Panel Tab	***Defines the panel and breaker configuration settings.***
PDU UUID	System identifier for the PDU device.
PDU Name	Name of the PDU device.
Panel UUID	System identifier for the Panel device.
View Mode	Defines how the circuits will be presented in the panel schedule. Options are Single Table or Double Table.
Numbering Scheme	Defines how the circuits will be arranged in each column of a Double Table panel schedule. Options are 1,3,5… or 1,2,3…
Department	Default department for all new breakers configured on the panel. This field is in the format of Company – Department which are defined on the System menu.
Power Rated	Rated power setting for the panel.
Power Derated	Derated power setting for the panel.
Current Rated	Rated Current setting for the panel.
Current Derated	Derated current setting for the panel.
Voltage	Voltage setting for the panel.
Breaker UUID	System identifier for the breaker device.
Breaker Name	Name of the Breaker device.
Phase	Number of phases used by the breaker. Options are 1-Pole Breaker, 2-Pole Breaker and 3-Pole Breaker.
Circuit#	Circuit numbers included in the definition of the breaker. The number of values included in this field must match the number of phases defined in the line above. Circuit values should be separated with a comma and no spaces should be used. For example, an entry of 1,3,5 would be a 3-pole circuit using circuits 1, 3 and 5.
Department	Department assigned to the Breaker and associated power/current data. This field is in the format Company – Department which are defined on the System menu.
Current Rated	Rated current setting for the breaker.
Current Derated	Derated current setting for the breaker.
Voltage	Voltage setting for the breaker.

Connections Tab	**Defines the connections between the breaker and the end device.**
Cable UUID	System identifier for the cable used to establish the connection.
Cable Name	Name of the cable connecting the breaker to the end device.
Serial Number	Serial number for the cable connecting the breaker to the end device.
Cable Color	Color of the cable connecting the breaker to the end device. **Note:** The field requires the hexadecimal code used for the color. These codes can be retrieved by defining a connection and exporting the connection to the spreadsheet.
Cable Length	Length of the cable connecting the breaker to the end device.
Breaker UUID	System identifier for the breaker device.
PDU Name	Name of the PDU where the Breaker is configured.
PDU Panel	Name of the Panel where the Breaker is configured.
Breaker Name	Name of the Breaker device.
Poles	Listing of the Poles used on the breaker. Options are
Power To (uuid)	Device and port system identifiers for the end device connected to the breaker.

Power To (name)	Device and port names for the end device connected to the breaker.

22.2.1.1. Best Practice

As a best practice, users should import the panel and breaker settings in different phases. This approach can help limit the number of configuration issues that may occur during the import process (i.e., breakers cannot be created until after panels are created). The following three phases are recommended for the import process to create new panels, breakers, and connections:

- Create Panels – Complete columns A-L on the Panels tab but there is no need to define the UUID fields since the panels are newly create through the import process.
- Create Breakers – Export the PDU and Panels with the Export spreadsheet and add support for the Breakers which need to be defined. It may be helpful to define a Breaker manually, so it is included in the export process and can be used to easily copy/paste for other breakers which need to be created.
- Create Connections – Using the panel and breaker information imported above, the Connections tab can be completed to establish connections from the breakers to end device.

22.3. Export History

The Export History Menu Item displays a list of the export history. The table list contains the following fields:

Table List Column	
Type	Displays the type of import activity and is also a link to the page with additional details for the import activity.
Submitter	Displays the name of the user that initiated the import.
Status	Displays the current status of the import.
Start Time	Displays the start time for the activity.
End Time	Displays the end time for the activity.
Table List Buttons	**Description**
Clear	Clears the table list.

23. Settings Menu Group

23.1. Attribute Manager Menu Item

The Attributes Manager Menu Item displays a list of all the attributes in the system. The table list contains the following fields:

Table List Column	
Attribute	Name of the attribute is also a link to open the attribute form that contains the attribute's configuration.
Category	Displays the attribute's Category. Options are Capacity, Common, Electrical/Power, Environmental, Global, Location, Network, Other, Port, Rack and Server.
Attribute Type	Displays if the attribute is System or Custom generated.
Value Type	Displays the attribute's Value Type. Options are String, Integer, Decimal, Datetime or Enum.
Metric Unit	Displays the attribute value's corresponding Metric Unit of measurement.
US Unit	Displays the attribute value's corresponding US Unit of measurement.
Table List Buttons	**Description**
Import	Imports
New	Presents the form for creating a new attribute.
Delete	Deletes the selected attributes from the system.

23.1.1. Attribute Form

Selecting the New button presents the New Attribute form. The New Attribute form has the following fields:

Fields	Description
Name	Attribute name
Category	Display or select the attribute's Category. Options are Capacity, Common, Electrical/Power, Environmental, Global, Location, Network, Other, Port, Rack and Server.
Value Type	Displays the attribute's Value Type. Options are String, Integer, Decimal, Datetime or Enum. For a new attribute select the Value Type. For existing attributes, the field is not changeable.
Usage	The usage checkboxes indicate where the attribute is available. Options are Device, Location, Port, Cable and Project.
Show on Data Plate	Determine if this attribute will be shown on the site data .
Tag ID	Enter the tag ID of the attribute.
UUID	The UUID will be automatically generated once the attribute is created.
US Unit	Display or select the attribute value's corresponding US Unit of measurement.
Precision	Numeric value indicates the number of decimal places in value.
Metric Unit	Display or select the attribute value's corresponding Metric Unit of measurement.
Precision	Numeric value indicates the number of decimal places in value.
Description	Enter user defined description for the attribute.
Table List Buttons	**Description**
New	Presents a form for creating a new attribute.
Submit	Creates the new attribute with information from form. Submit also saves changes to an existing attribute's form.

Submit & New	Creates the attribute as specified and opens a new attribute form.

23.2. Unit Manager Menu Item

The Unit Manager Menu Item displays a list of all the units used in the system. The table list contains the following fields:

Table List Column	
Name	Name of the unit is also a link to open the unit form that contains the unit details.
Symbol	Displays the symbol to be used when the unit is applied to a value.
Physical Quantity	Displays the unit's Physical Quantity. Options are area, currency, electric current, electric resistance, energy, flow rate, frequency, information storage, length, mass, power, pressure - stress, ratio, temperature, time, voltage or volume.
Description	Displays user defined description for the unit.
Table List Buttons	**Description**
New	Presents the form for creating a new unit.
Delete	Removes the select units from the system.

23.2.1. Unit Manager Form

Selecting the New button presents the New Unit Manager form. The form has the following fields:

Fields	Description
Name	Display or edit the Name of the Unit.
Symbol	Display or edit the Symbol to be used when the unit is applied to a value.
Quantity	Display or select the unit's Physical Quantity. Options are area, currency, electric current, electric resistance, energy, flow rate, frequency, information storage, length, mass, power, pressure - stress, ratio, temperature, time, voltage or volume.
Unit Converter	Display or enter the unit value in relationship to a known unit based on the physical quantity.
Description	Enter user defined description for the unit.
Table List Buttons	**Description**
New	Presents a form for creating a new unit.
Submit	Creates the new unit with information from form. Submit also saves changes to an existing unit's form.
Submit & New	Increases efficiency when creating a number of units sequentially by creating a new unit with existing values and presenting a blank new form.

23.3. Applications Menu Item

The Applications Menu Item displays a list of all the applications that have been manually added to the system. The table list contains the following fields:

Table List Column	
Application	Name of the application is also a link to open the application form that contains the application details.
OS Type	Displays if the application runs on Windows or Non-Windows platforms.

Purchased License Count	Displays the value entered that designates how many licenses the facility has for a particular application.
Actual Number of Installs Found	Displays a count for the number of instances where the application was manually associated with devices. The application is associated with a device via the application function tile in device central.
Table List Buttons	Description
New	Presents the form for creating a new application.
Delete	Deletes the selected applications from the system.

23.3.1. Application Form

Selecting the New button presents the New Application form. The form has the following fields:

Fields	Description
Name	Display or edit the Name of the Application.
OS Type	Display or edit the application's OS Type. Options are Windows and Non-Windows.
Purchased Licensed Count	Display or enter the number of licenses available for the application.
Table List Buttons	Description
New	Presents a form for creating a new application.
Submit	Creates the new application with information from form. Submit also saves changes to an existing application's form.
Submit & New	Increases efficiency when creating a number of applications sequentially by creating a new application with existing values and presenting a blank new form.

23.4. System Settings Menu Item

The System Settings Menu Item displays an interactive list of the system's settings.

Setting Name	Value	Description
3D Client Alarm Popup	Switch to turn on and off	Allows the user to control the behavior of the alarm popup message in the 3D client. When alarms are generated in the application, the alarm popup will provide a visual and audio notification in the bottom right of the 3D client. Users can click the popup message for more detail on the alarm which was generated.
Access Control Passcode	Click on the field to change the passcode	Access Control Passcode, default passcode "000000" is for communicating with rack access control devices (electronic rack handles).
Access Control Tag Attribute	Click to select from the drop-down list	The system attribute that will correlates to the lookup and unlock functions in Mobile Security Manager.
Access Control User ID	Click on the field to enter value	The User ID that pairs with the Access Control Passcode for communicating with rack access control devices (electronic rack handles).
Allow Multiple Port Connection	Switch to turn on and off	When set to ON users can define multiple connections to a single port. When set to OFF users are not able to define multiple connections on a single port.
Allow Project Creator to Approve Project	Switch to turn on and off	When set to TRUE users are allowed approve the projects created by themselves. When set to FALSE users are not allowed to approve the projects created by themselves, only users in Administrators group and in project approvals list can approve the project.

Allow Rack Overlap	Switch to turn on and off	When set to on users can place racks on the floorplan which overlap other racks. When set to off users are not allowed to place racks on the floorplan which are within the specified distance. This setting is particularly important when using the Join feature for racks on the floorplan. The distance between racks using the Join feature must be equal to or greater than the distance defined with this setting when enabled.
Allow Rackmount Device Overlap	Switch to turn on and off	When set to on this feature will allow users to place devices into a Rack with overlap to other device already mounted into the rack. When set to off the user is not allowed to place devices in the rack which overlap with other devices.
Authentication Configuration	Click the "Details" button	There are three authentication options. 1. Default - Users can select if they want to enable the two-factor authentication. • None - Disable the two-factor authentication. • Email - Enable the two-factor authentication via Email • Security Token - Enable the two-factor authentication via Security Token 2. AD - Users can config Bind DN and Base DN to manage organizations' users and user groups. • Bind DN (either one of two): ○ Username +@ + domain. For example: Hailing.Yang@dev.opi.zone ○ CN=Hailing.Yang,CN=Users,DC=DEV,DC=OPI,DC=ZONE • Bind Password: The password of the VDS system. • Base DN (either one of two): ○ Domain. For example: dev.opi.zone ○ DC=DEV,DC=OPI,DC=ZONE 3. RADIUS – Users can choose to apply the RADUIS authentication method. • Common ○ Protocol: RADIUS protocol. Options are PAP and CHAP. ○ Default Department: Select a department from the dropdown list. ○ NAS IP: The IP address of the server. ○ Identifier: Server name. **Note**: One of the NAS IP or Identifier field must be filled. • Server List ○ Name: Alias of the server. ○ Secret: The secret attribute in the clients.conf ○ Address: The IP address of the Radius server. ○ UDP port: The port of the Radius server. ○ Time out: The period the Radius server considers the system to be unreachable for a specific polling attempt if no response is received. ○ Retry number: The Radius server retries a polling attempt that did not respond during the timeout period. • Attribute Mapping: Please follow the ID in the dictionary file. Only the "User Group" and "Email" attributes are mandatory. • Profile Mapping

		○ Vendor: Please follow the VENDOR ID in the dictionary file. ○ Value: The mapping value between the Radius and the system. ○ Profile: Select the User Group/Company/Department.
Automatically Monitor Discovered Devices	Switch to turn on and off	When set to ON existing device which is matched with discovered device is auto monitored with the discovered IP address and attributes. When set to OFF users need to manually update the device.
Automatically Update Discovered Device Name	Switch to turn on and off	When set to ON, if there is an existing device matched with the discovered device, the existing device name will be overridden by the discovered device name automatically. When set to OFF, the existing device name won't be overridden.
Currency Symbol	Click to select from the drop-down list	Currency Symbol
Delegated License Mode	Click to select from the drop-down list	If MSP is selected, it tracks licenses at Department level. If Enterprise is selected, it doesn't assign licenses to the Department.
Derated Power Percentage (%)	Click in field to enter value	If set value for it, Power - Derated is auto calculated and model Power - Derated = Power Rated * Derated Power Percentage
Device Grid Reference Point	Click to select from drop-down menu	Allows users to define the point on a device which is used to populate the Row and Column attributes. For a device to inherit the Row and Column values, the area on the floor must have a grid defined in the Floor Studio feature of the application and the device must be assigned to a location. Options: Left Front Corner, Right Front Corner, Front Middle
Email Content Format	Click to select from drop-down menu	"Rich Text" option supports pictures and tables in emails, while "Plain Text" option only supports pure text.
End Network Path at End Device	Switch to turn on and off	When set to on the Network Path will only show connections to the next End Device. When set to off the Network Path will show all connections beyond the End Device until the Max Network Path Hops limit is reached.
Generate Audit When Work Order is Submitted	Switch to turn on and off	Generate Audit When Work Order is Submitted
Generate event logs for unmatched traps	Switch to turn on and off	Allows users to decide whether to log unmatched trap events. True indicates the system will log the unmatched trap event in the Alarms Menu Group – Traps Menu Item. False indicates the system won't log the unmatched trap event.
Layer Refresh Interval	Click in field to enter value	Defines the frequency for data refresh on the Layer floorplan views. The unit for this value is Seconds.
Linux Server Auto Scan	Click to select from drop-down menu.	If the "Override and Remove" option is selected, not only will the machine ID be overridden if it is different, but any machine ID that matches the current one will also be removed, regardless of its IP address.
Match discovered devices with device name	Switch to turn on and off	When set to ON will discover devices whose names perfectly match the application devices name. When set to OFF, it won't use the perfect match.
Max Network Path Hops	Click in field to enter value	Controls the number of connections to show in the Network Path feature of the application. **Note:** For devices such as a patch panel, the connection of the front patch panel port to the rear patch panel port will be counted as 1 for this connection limit.
Navigation Settings	Click the "Details" button	This is the system level Navigation Settings. The configuration done in the System Settings will be applied to the whole system no matter which account is logged in, but users can still make their personal level setting when the system level navigation setting is applied. The personal level setting has the higher priority, and it will overwrite the system level navigation setting.

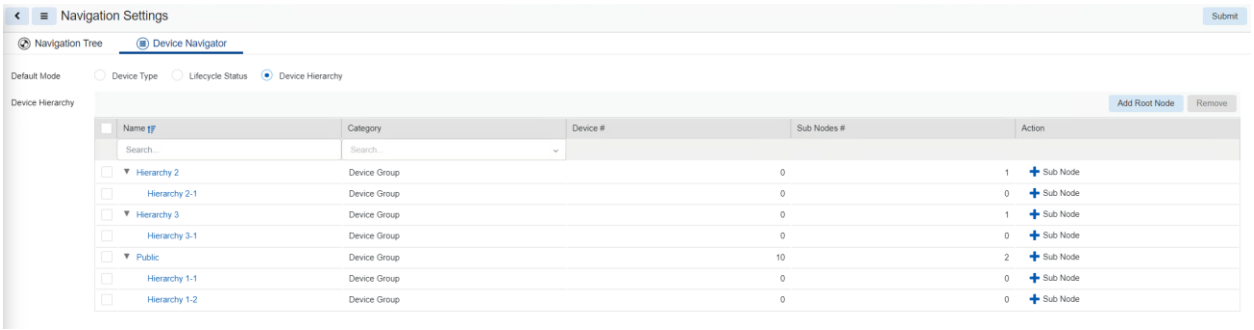
		Users can configure the system level “Navigation Settings” and “Devices Navigator” here.
Password Expiration Days	Click in field to enter value	Number of days a new password remains valid. If set to 0, then the user login passwords will never expire.
Projects Quick New	Switch to turn on and off	When set to ON the Quick New button is displayed on Projects page and users can quickly create projects, tasks and work orders without approval processes. When set to OFF the Quick New button is hidden.
Rack U Index Order	drop-down menu	Users can configure the rack U index order by selecting from the dropdown list and click the save icon to save the change. By default, the order is from bottom to top. If users want to apply the configuration on a specific rack, they can go to the Devices menu item, select a specific rack device and add the “U Index Order” attribute in the Attributes panel. This U Index Order attribute is enumerable with 2 options: From bottom to top and From top to bottom. If this attribute has not been defined at the rack level, the value of the Rack U Index Order is inherited from the System Setting.
Require Unique Cable Names	Switch to turn on and off	When set to on all cable names defined in the application must have a unique name. When set to off users can name multiple cable connections with the same name. **Note:** This is a global setting for all locations and devices in the application.
Require Unique Port Names	Switch to turn on and off	When set to on users are not allowed to create ports on a device with the same port name as an existing port. When set to off users can define port names which match an existing port. This setting applies to a single device only. The same port name can be defined on different devices regardless of the value of this setting.
Show All Available Color	Switch to turn on and off	When choosing a color from the color palette the available options can be limited. If this setting is on, then all of the available colors will be shown. If this setting is off, then a limited subset of colors will be available to choose from the color palette.
SNMP Trap Sending Setting	Click in field to enter details	Allows users to send an SNMPv3 trap when forwarding alarm to third party system.
SNMPV3 Trap Receiving Setting	Click in field to enter details	Allows trap server to receive SNMPv3 trap.
Timestamp Format	Click to select from drop-down menu	Timestamp Format
UPS Service Life	Click in field to enter value	Enter the suggested duration (year) that an Eaton 1-phase UPS can be reasonably expected to perform before requiring replacement. The default value is 4 years. we support getting the Eaton 1-phase UPS device’s manufacturing date through monitoring. The prerequisite is we could get the device’s serial number through monitoring. Now these two monitoring attributes “Serial Number” and “Manufacturing Date” have been added to the UPS Eaton M2 template and UPS Eaton MS template. After setting the UPS Service Life, users can use the “UPS Service Life” report to see all UPS and UPS Rackmount devices’ current service life, whether they are within the service life, reached the service life, or exceeding the end of service life, and get the email notification by using the Scheduled Report function.

Verify Rack U Collision	Switch to turn on and off	In the 3D Client, when set to ON the user is not allowed to place devices in the rack which collide with devices mounted to the other side of the rack. When set to OFF users may place devices into a rack which collide with other devices already mounted into the rack.
Table List Buttons		Description
Submit		Click to save changes to any of the settings.
Use Default		Resets to default values.

23.4.1. Device Hierarchy

We allow administrators to manage their infrastructure as a hierarchy of devices rather than a hierarchy of locations by grouping device groups into other device groups.

Click the “Details” button of the Navigation Settings. Then go to the Device Navigator panel. Click the Device Hierarchy radio button for the Default Mode. Once the radio button is selected, the mode will be set as the default mode on the Device Navigator panel  . The Device Hierarchy manager then appears.



The device hierarchy manager allows administrators to configure the hierarchy by adding device groups and configure sub-groups for each hierarchy node. It supports up to 9 levels of hierarchy.

- Click the “Add Root Node” to select the root device groups for each level.
- Then click the “+ Sub Node” to select the sub-groups for each hierarchy node. Users can select multiple device groups as sub-groups at one time.
- If users want to delete hierarchy nodes, select the checkboxes of the hierarchy nodes and click the “Remove” button.
    - If a NODE is removed from the hierarchy, all downstream groups of this node will be removed from the hierarchy.
    - If a device group is deleted from the system, all downstream groups of this device group will be removed from the hierarchy.

Table List Column	Description
Name	Displays the hierarchy node’s name. Users can click the icon to collapse and expand the sub-groups.
Category	Displays the category of the node in the device hierarchy. Five categories are supported: Device Group, Rack Group, Camera Group, Associated Device Group, and Dynamic VM Group.
Device #	Displays the number of devices included in the group.

Sub Node #	Displays the number of device groups under the given device group.
Action	Click the “+ Sub Node” to select the sub-groups for each hierarchy node.

After completing the configuration, users can see the effect in the Devices Navigator panel. The “Group By” field will display the “Device Hierarchy” option automatically. The content area shows the details of the selected group .

24. Branch Circuit Monitoring

When the device type is a PDU or RPP the Device Central page has two extra function tiles for branch circuit monitoring.

- Panels function tile displays the panel schedule, existing breaker, existing circuits, and the ability to edit and create new ones.
- Device function tile displays devices that are mounted on it, and the ability to remove or decommission them.

The following sections detail the specific steps needed to configure branch circuit monitoring for PDU panels and to map the data to Rackmount PDU devices.

24.1.1. Create PDU Device

The first step is to create a standard PDU or RPP device in the device list. This can be done manually in the Devices menu group > Devices menu item of the application or this device can be cloned from an existing device or imported using the bulk import tool. Branch circuit monitoring is only available for devices where the device type is PDU or RPP. Once created, users should place this device on the floorplan.

Note: The PDU should have values in the following attributes before moving forward with creating panels and breakers.

- Current - Derated in Amps
- Current - Rated in Amps
- Power - Derated in Watts
- Power - Rated in Watts
- Circuit % Critical - when the monitored value on a breaker exceeds this percentage of the derated current the value is shown in red on the PDU dashboard.
- Circuit % Warning - when the monitored value on a breaker exceeds this percentage of the derated current the value is shown in yellow on the PDU dashboard.

  Note: This does NOT trigger alarms, those would need to be configured separately.

24.1.2. Creating Panels and Breakers

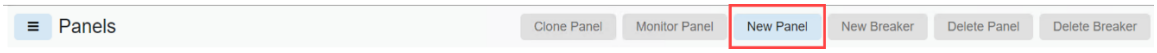
For data to be properly displayed in the panel schedules and to allow users to map the data to other power consuming devices, users must create the Panels and Breakers for the PDU or RPP device.

24.1.2.1. Create Panels

1. Go to the Devices menu group and Select the Devices menu item.
2. Filter for the desired PDU or RPP device.
3. Click on the device name to open its Device Central page.

4. Select the Panels function tile.

5. Click on the New Panel button.



6. Fill out the New Panel form.

a. Panel Name – Define the panel name.
   Note: This device will be created in the device list so if there are many PDU devices with Panel A then you should differentiate the panel name so it can be distinguished in the full device list.
   A panel becomes a device in the system and as such panels should have unique names. We recommend naming the panel to indicate the PDU to which it belongs, for example, PDU1A-Panel 1.
b. Quality – The number of panels you'd like to create.
c. # of Circuits – Enter the number of circuits of the panel.
d. Mode – The panel schedule can be displayed in a single column of circuits or in two columns of circuits.
e. Circuit Numbering – Circuits in the panel schedule can be either 1, 3, 5, etc. or 1, 2, 3, etc. Users should select the appropriate setting for their PDU/RPP device.
f. Current Rated (A) – Enter the rated current value. The rated/derated power and derated current will be automatically calculated and filled in the fields.
g. Volts (V) - The Voltage is a system-defined attribute. The Voltage of the 1 and 2 phase breaker is 120V, and the Voltage of 3 phase breaker is 208V.

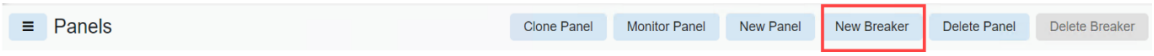
h. Department – This value will be used as the default setting for new Breakers defined on the panel. **Note:** The breaker can override this setting.

7. Click the Submit button to create the panel.

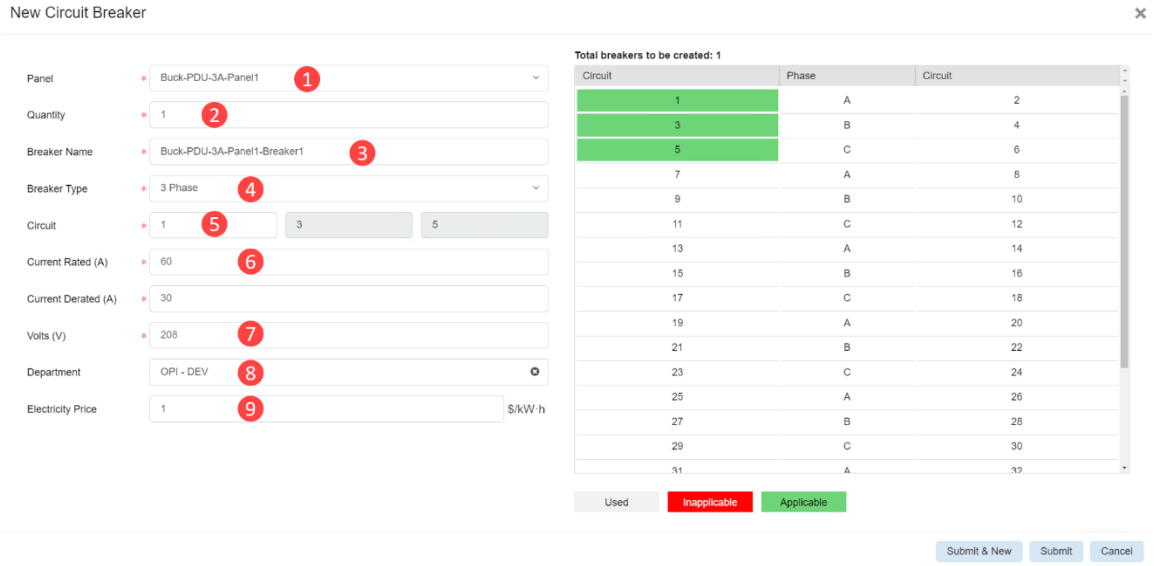
24.1.2.2. Create Breakers

1. Go to the Devices menu group and Select the Devices menu item.
2. Filter for the desired PDU or RPP device.
3. Click on the device name to open its Device Central page.
4. Select the Panels function tile.

5. Click on the New Breaker button.



6. Fill out the New Breaker form:



a. Panel - Select the panel (from the pull-down list) where this breaker will be created.
b. Quality - The number of breakers you'd like to create.
c. Breaker Name – Define the breaker name.
Note: A breaker becomes a device in the system and as such breakers should have unique names. We recommend naming the breaker to indicate the PDU and panel to which it belongs, for example, PDU1A-Panel 1-Breaker 2.
d. Breaker Type – Define if the breaker is a 1, 2, or 3 phase breakers. The number of Circuit input boxes will update based on the selection of the Breaker Type option.
e. Circuit – Define the circuit numbers which comprise the breaker. Users only need to input the first circuit value and the other circuit input boxes will be populated automatically based on the panel settings.

f. Current Rated|Derated – Enter the rated current value. The derated current will be automatically calculated and filled in the fields
g. Volts – The Voltage is a system-defined attribute. The Voltage of the 1 and 2 phase breaker is 120V, and the Voltage of 3 phase breaker is 208V.
h. Department – Department for the breaker. This setting can help provide billing reports for customers using data from the PDU branch circuit monitoring data.
i. Electricity Price - Set the

7. Click the Submit button to create the breaker.

24.1.3. Create a Monitoring Template for the Panels

Create a monitoring template for the panels using the following Attributes and Applied Rules. There are two monitoring templates and choose either one of them work.

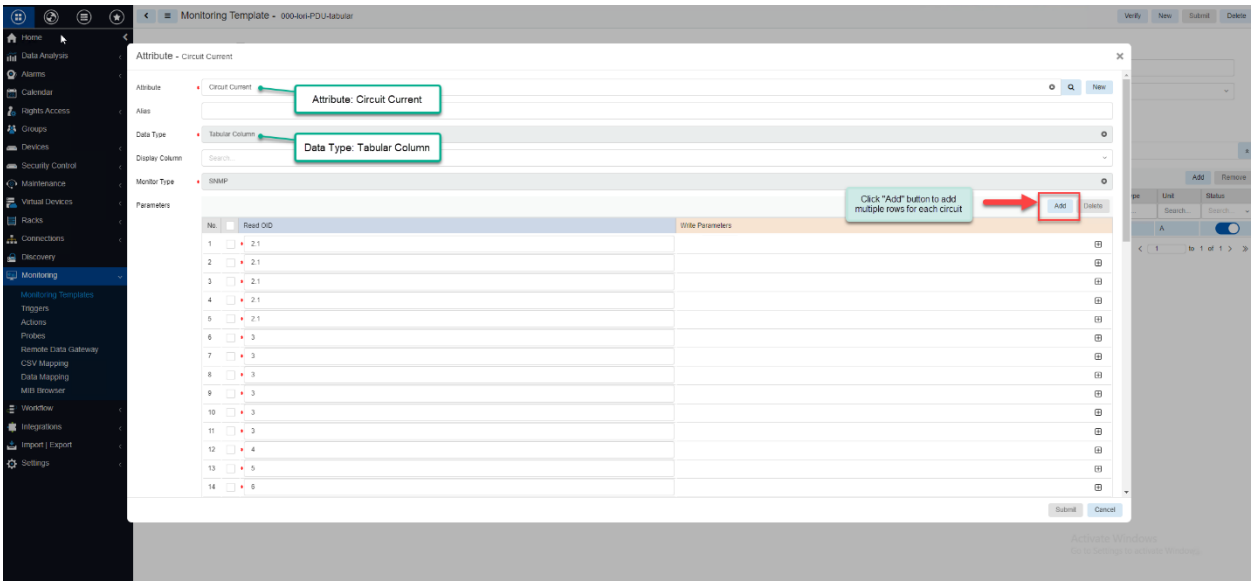
"PDU Current" Monitoring Template – only suitable for the 42 circuits panel

- For each circuit add the corresponding attribute with the name *PDU - P1C0# Current* where the # matches the circuit number. For example:
  - Attribute PDU - P1C01 is for Circuit 1
  - Attribute PDU - P1C03 is for Circuit 3
  - **Note:** Use these same attributes for all panels to ensure that monitored information flows to the dashboard.
- Configure the attribute to communicate via the appropriate protocol to the data point. For SNMP enter the OID.
- Set the Applied Rules at the appropriate level to link the monitoring template to your PDU panels.

"Circuit Current" Monitoring Template – Suitable for 42 or over 42 circuits panel

Users need to configure 42 attributes if they choose to use the above monitoring template. To make the configuration more efficient, we provide a new Tabular type of attribute "Circuit Current".

Create monitoring template and add monitor attribute "Circuit Current" for branch circuits as below. To support more than 42 circuits on a single electrical panel, users can define a single attribute with the system attribute "Circuit Current" and add all circuits monitoring parameters in this attribute.

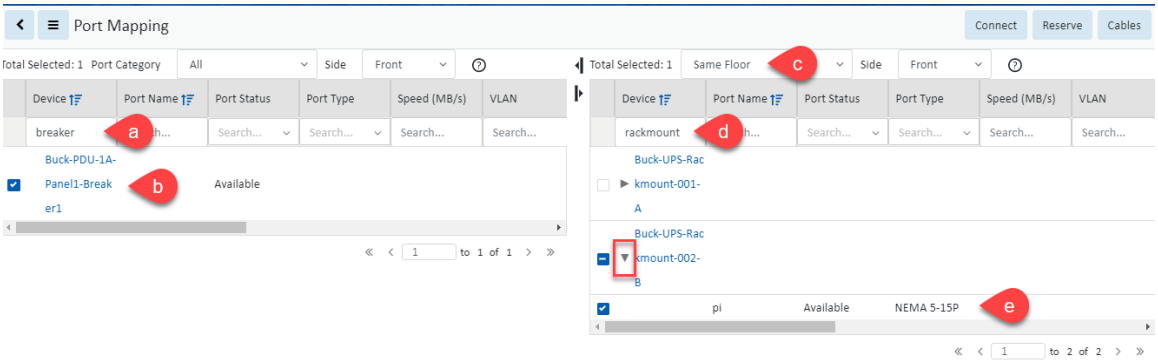


Note: See the Monitoring Templates Menu Item section of this document for monitoring template details.

24.1.4. Connecting Breakers to Rack PDU Devices

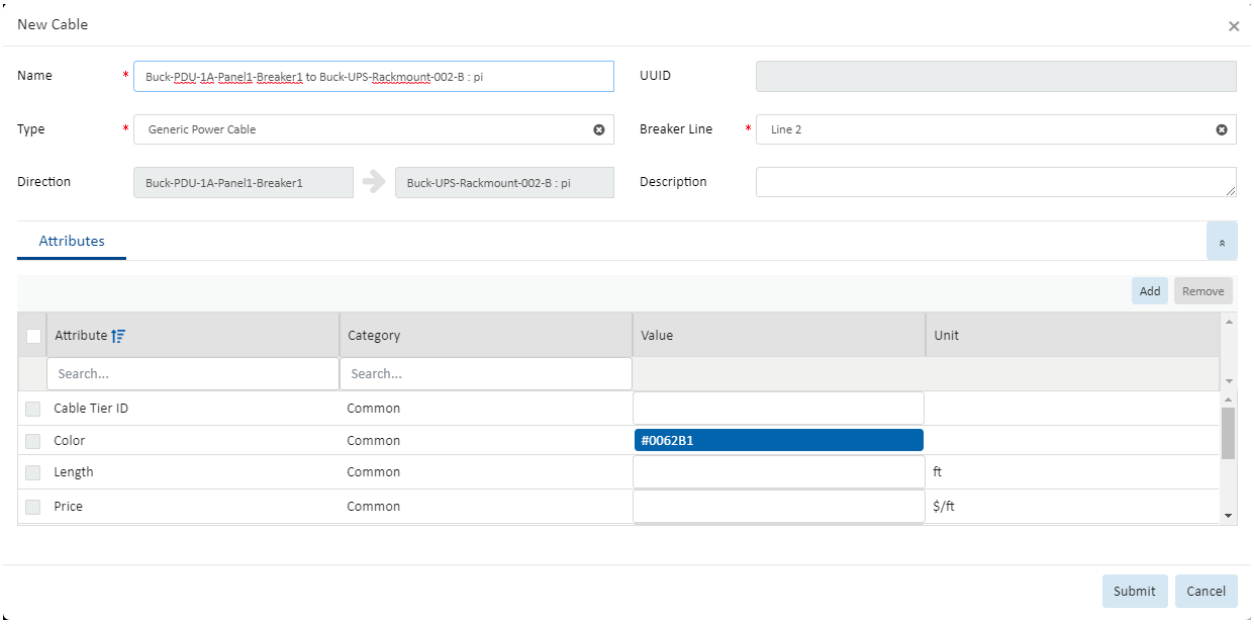
A common need for power management and properly defining the full power path for end IT devices is to connect Rack PDU devices to the Breakers. This function is performed with the Port Mapping tool and is similar to connecting standard power in|out ports on IT devices.

1. From the Connections menu group select the Port Mapping menu item
2. On the Port Mapping page



   a. Filter the left table to display the breakers.
   b. Select the breaker by checking the box next to the breaker name.
   c. Filter the right table to show devices on Same Floor.
   d. Filter the device field to display the desired rack PDU.
   e. Click the triangle next to the rack PDU name to show ports and select the desired port by checking the box next to the port name.
3. Click the Connect button.

4. Edit the New Cable page as desired.



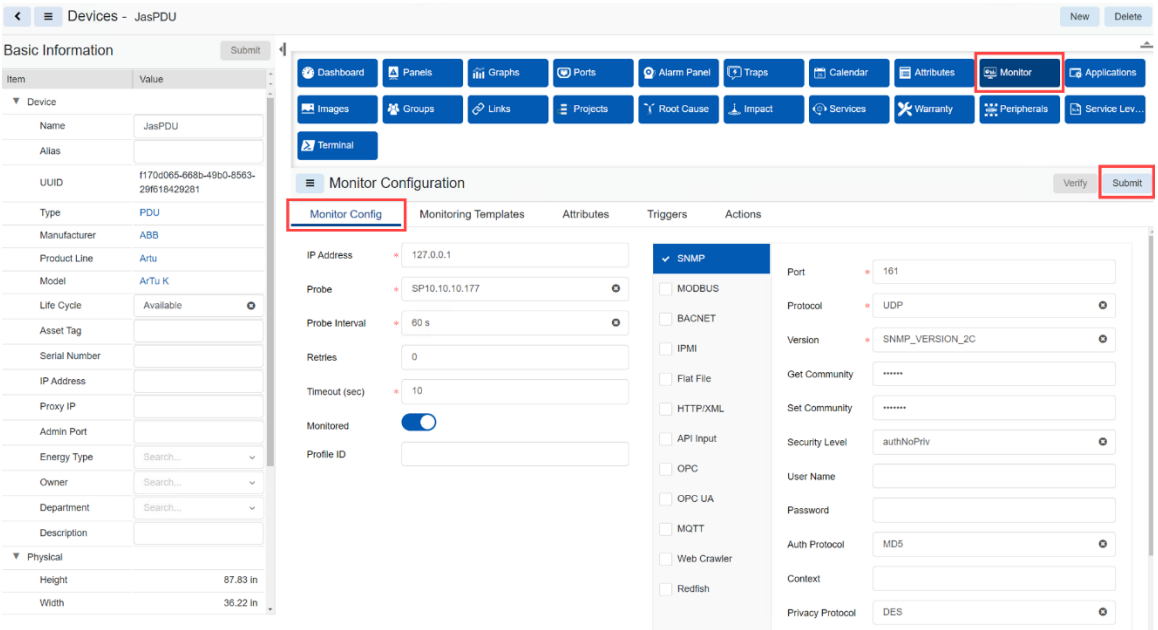
5. Click the Submit button to complete the connection.

Once these connections are established the power path for the Rack PDU device will now include the breaker, panel and PDU device to which was connected.

24.1.5. Activating Monitoring for Branch Circuit Data

Activating monitoring is done at the panel level. Panel monitoring requires the panel IP address, protocol configuration and turning on the monitoring template to fully activate monitoring.

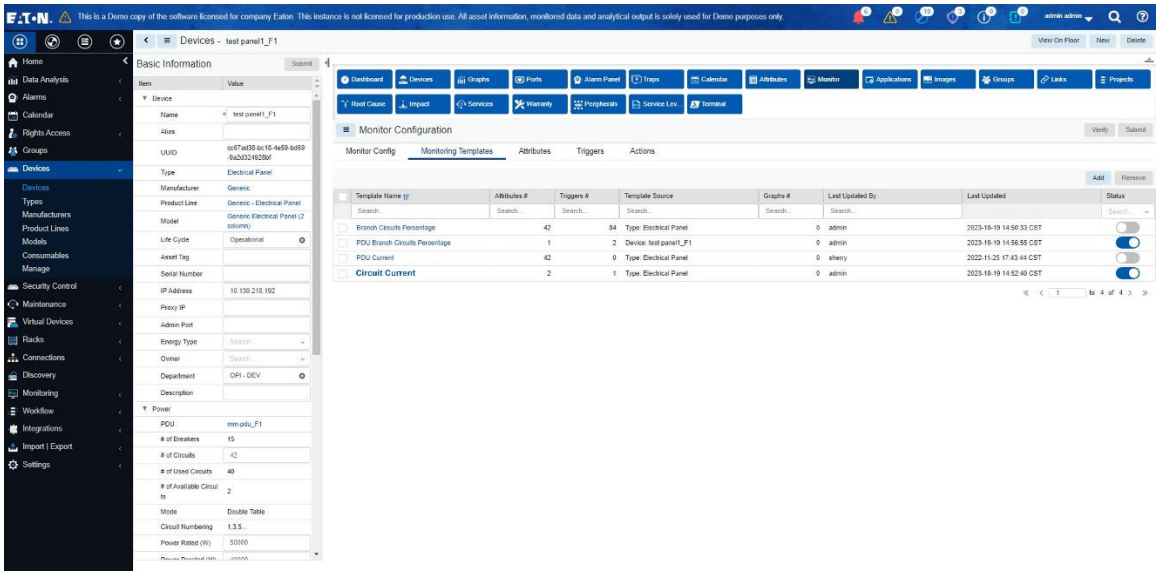
1. From the PDU device central page Select the Monitor function tile.
2. Edit the Monitoring Config tab for the panel and Click the Submit button



3. Select the Monitoring Template tab. Enable either the monitoring template sets:

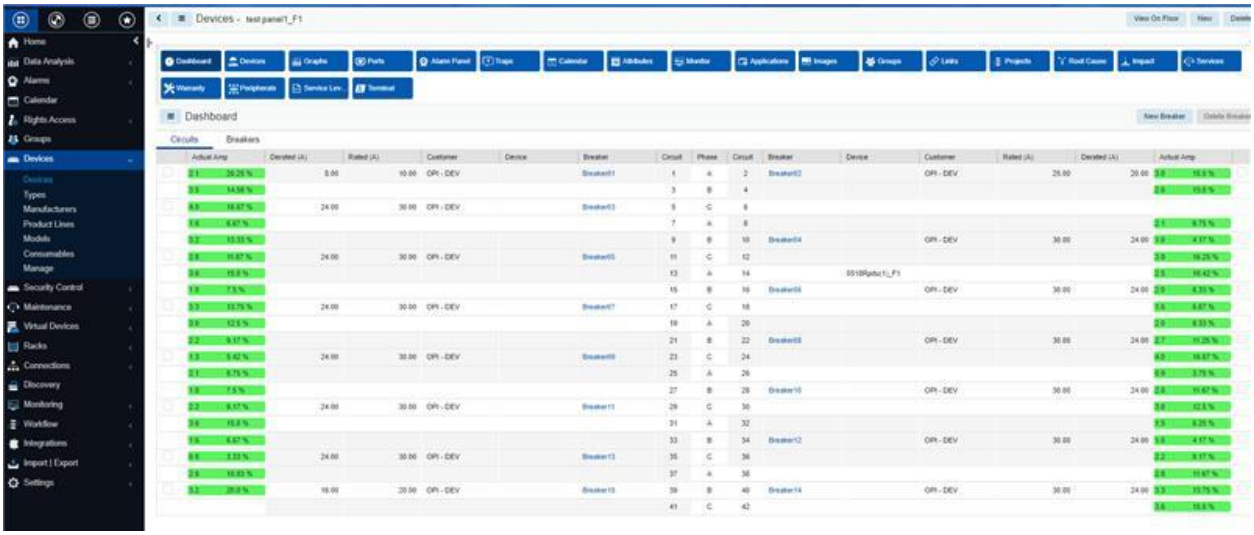
    a. System monitor template “PDU Branch Circuits Percentage” and “Circuit Current” monitoring template.

    b. System monitor template “Branch Circuit Percentage” and “PDU Current” monitoring template.



24.1.6. Viewing Panel Schedules

When the configuration and monitoring settings have been completed users can view the PDU/RPP panel schedules and other relevant PDU/RPP device information by selecting the device in the devices list and viewing the Circuits function tile. If multiple panels are defined for the PDU/RPP they will be listed in separate tabs at the top of the panel schedule listing.



Item	Description

Actual Amp and %	Displays the live data which is collected and mapped to the circuits on the panel and its percentage of the derated value. The Circuit % Critical and Circuit % Warning PDU attribute values determine if the background color for the column reports normal (green), warning (yellow) or critical (red).
Derated (A)	Attribute defined by users for the selected device. The Current – Derated attribute is used for this value.
Rated (A)	Attribute defined by users for the selected device. The Current – Rated attribute is used for this value.
Customer	Displays the Department set at the breaker or the panel if not set at the breaker.
Device	Displays the name of the device that has been connected via port mapping to the circuit.
Breaker	Displays the name of the breaker.
Circuit	Displays the circuit number.
Phase	Displays the phase.

24.1.7. PDU Floor Device Dashboard Attribute Map

Device Type: PDU Section: Panel Schedule Field Title	Scalar Attribute	Tabular Attribute
Actual Amp	PDU - P1C01 Current	Circuit Current
	PDU - P1C02 Current	
	PDU - P1C03 Current	
	PDU - P1C04 Current	
	PDU - P1C05 Current	
	PDU - P1C06 Current	
	PDU - P1C07 Current	
	PDU - P1C08 Current	
	PDU - P1C09 Current	
	PDU - P1C10 Current	
	PDU - P1C11 Current	
	PDU - P1C12 Current	
	PDU - P1C13 Current	
	PDU - P1C14 Current	
	PDU - P1C15 Current	
	PDU - P1C16 Current	
	PDU - P1C17 Current	
	PDU - P1C18 Current	
	PDU - P1C19 Current	
	PDU - P1C20 Current	
	PDU - P1C21 Current	
	PDU - P1C22 Current	
	PDU - P1C23 Current	
	PDU - P1C24 Current	
	PDU - P1C25 Current	
	PDU - P1C26 Current	
	PDU - P1C27 Current	
	PDU - P1C28 Current	
	PDU - P1C29 Current	
	PDU - P1C30 Current	
	PDU - P1C31 Current	

	PDU - P1C32 Current	
	PDU - P1C33 Current	
	PDU - P1C34 Current	
	PDU - P1C35 Current	
	PDU - P1C36 Current	
	PDU - P1C37 Current	
	PDU - P1C38 Current	
	PDU - P1C39 Current	
	PDU - P1C40 Current	
	PDU - P1C41 Current	
	PDU - P1C42 Current	

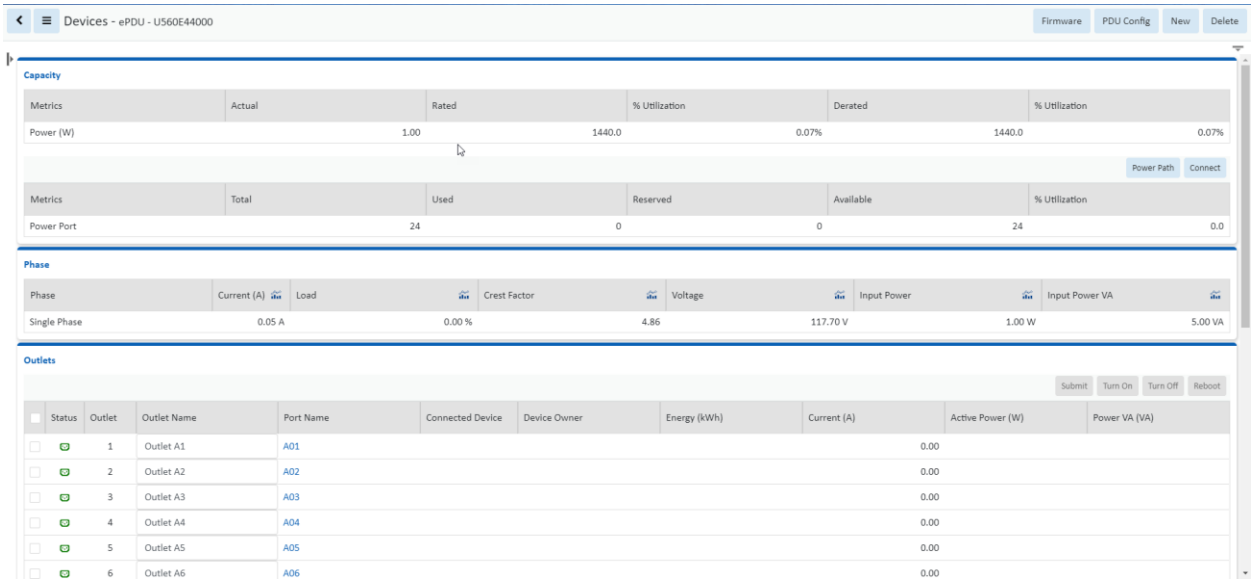
25. Device Dashboards

Standard device dashboards show Real-time Monitoring Data for the monitored data points. The device types in this section have enhanced dashboards. When a device name link is selected from the devices list or other views, the Device Central page is loaded. Device Dashboards are visible when the Dashboard function tile is selected. The Dashboard function tile is selected by default when the Device Central page opens.

The following sections will provide details for the various enhanced device dashboards accessed through the Dashboard function tile. For details regarding the other function tiles please refer to the Device Central section of this document.

25.1. PDU Rackmount Device Dashboard

When the device type is PDU - Rackmount the PDU Rackmount Dashboard page is loaded when the Dashboard function tile is selected in device central.



25.1.1. Buttons

Item	Description
Firmware Button	Allows user to select a firmware file from the firmware library and upload to the current PDU. The Firmware Management section of this document details how to add files to the firmware library and bulk load to multiple PDUs.
PDU Config Button	Allows user to browse for the manufacturer's xml configuration file from their local workstation and upload it to the PDU.
New Button	Opens the form to create a new device.
Delete Button	Deletes the current device.

25.1.2. Capacity Tables

25.1.2.1. Power Capacity Table

Item	Description
Actual	Power value collected from the device using the Active Power monitor attribute.
Rated	Attribute defined by users for the selected device. The Power – Rated attribute is used for this value.
% Utlization	Percent of Rated value that the actual power represents.
Derated	Attribute defined by users for the selected device. The Power – Derated attribute is used for this value.
% Utilization	Percent of Derated value that the actual power represents.
Power Path Button	Displays the power path flow chart for the device.
Connect Button	Opens the port mapping page filtered for the current device ready to create connections.

25.1.2.2. Port Capacity Table

Item	Description
Metrics	Indicates type of port.
Total	Displays total number of ports on the device.
Used	Displays number of ports used.
Reserved	Displays number of ports reserved.
Available	Displays number of ports available.
% Utilization	Displays the percentage of ports used.

25.1.3. Phase Table

Item	Description
Phase	Power Phase of the device.
Current (A)	Current value of the Phase.
Load	Percentage Load of the Phase.
Crest Factor	Crest factor of the Current that is provided by the Phase.
Voltage	Voltage of the Phase.
Input Power	Input Power in Watts of the Phase.
Input Power VA	Input Power in Voltamps of the Phase.

25.1.4. Outlets Table

The Outlets table provides several outlet level data and control features for the selected device. Not all models support the outlet level data collection and/or data control features. Turn On, Turn Off and Reboot features are only enabled for Eaton devices which support this capability.

When an outlet is selected and the Reboot command is issued, the user will be prompted to reboot all power outlets of the device connected to the chosen port or to only reboot the selected port. Rebooting all outlets will issue simultaneous reboot commands to all power outlets connected to the device which will result in a hard reboot of the device. A 20 second delay will be assigned to the restart of these outlets.

If more than one outlet is selected and the Reboot command is issued, then the user will be prompted to determine if remote outlets should be rebooted for each device individually. This will allow users to determine how to handle each outlet independently.

Item	Description
Turn On Button	Outlets which are selected will be sent the command to turn On. A warning appears before the command is sent to the target device.
Turn Off Button	Outlets which are selected will be sent the command to turn Off. A warning appears before the command is sent to the target device.
Reboot Button	Outlets which are selected will be sent the command to Reboot the outlet. A warning appears before the command is sent to the target device. When sent there may be a delay on processing at the end device. The application will immediately show the outlet state as Off and will return to On when a polled data returns an On value.
Warning	The warning gives users the option of cancelling the On, Off and Reboot commands. Users can select to stop showing the warning for the current login session by checking "Don't show this message again."
Checkbox	When selected, the outlets will be included in the On, Off and Reboot functions.
Status	Shows the status of the LED for On (Green) and Off (Red) values. These outlet status icons do not relate to monitoring or alarm thresholds defined for the device.
Outlet	Outlet index number for the outlet on the selected device.
Outlet Name	Outlet name collected from the device. Users can select the Edit icon to update the Outlet name and the name will be written to the target device. **Note:** The outlet name must be under 12 characters.
Connected Device	Device name of the device connected to the outlet in the Port Mapping feature of the application.
Device Owner	Owner of the device connected to the outlet in the Port Mapping feature of the application.
Energy kWh	Energy value collected from the device using the Outlet Energy_Port## attribute. The date listed in this field is collected from the device and indicates the "Energy Since" date for the reported Energy value. Resetting this counter must be done on the device web interface directly.
Current (A)	Current value collected from the device using the Outlet Current Port## attribute.
Active Power (W)	Active Power value collected from the device using the Outlet Power Port## attribute.
Power VA (VA)	Voltamp value collected from the device using the Outlet VA Port## attribute.

25.1.5. PDU Rackmount Device Dashboard Attribute Map

Device Type: PDU - Rackmount Section: Capacity Field Title	Scalar Attribute	Tabular Attribute
Actual	Active Power	
Rated	Power - Rated	
% Utilization	Active Power/Power - Rated	
Derated	Power - Derated	
% Utilization	Active Power/Power - Derated	
Section: Phase **Field Title**	**Scalar Attribute**	**Tabular Attribute**
Phase	Input Phase 1 Name	Input Phase Name
	Input Phase 2 Name	

	Input Phase 3 Name	
Current	Input Current 1	Input Current
	Input Current 2	
	Input Current 3	
Load	Input Current % Load Phase 1	Input Current % Load
	Input Current % Load Phase 2	
	Input Current % Load Phase 3	
Crest Factor	Input Current Crest Factor Phase 1	Input Current Crest Factor
	Input Current Crest Factor Phase 2	
	Input Current Crest Factor Phase 3	
Voltage	Input Voltage Phase 1	Input Voltage
	Input Voltage Phase 2	
	Input Voltage Phase 3	
Input Power	Input Power Phase 1	Input Power
	Input Power Phase 2	
	Input Power Phase 3	
Input Power VA	Input Power VA Phase 1	Input Power VA
	Input Power VA Phase 2	
	Input Power VA Phase 3	
Section: Outlets		
Field Title	**Scalar Attribute**	**Tabular Attribute**
Status	Outlet Status 1…48	Outlet Status
Outlet	Outlet ID 1…48	Outlet ID
Outlet Name	Outlet Name 1…48	Outlet Name
Energy(kWh)	Outlet Energy 1...48	Outlet Energy
Current	Outlet Current 1...48	Outlet Current
Active Power	Outlet Power 1…48	Outlet Power
Power VA	Outlet VA 1…48	Outlet VA

25.2. Rack Device Dashboard

When the device type is a rack the Rack Dashboard page is loaded when the Dashboard function tile is selected in device central.

Trend Chart icons are located on the dashboard which will open a trend chart interface for the selected data point or multiple data points. The following sections and detailed data are available on this dashboard interface.

25.2.1. Manage Button

The Manage button opens the Rack Manager page for the selected rack allowing users to manage devices within the rack and to view rack detail and capacity information.

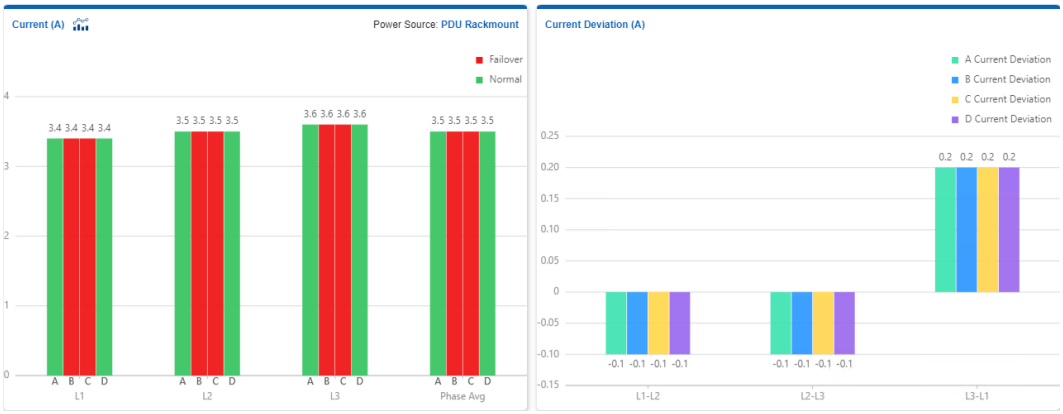
25.2.2. Current (Amps) Capacity Charts

Two charts are presented to the user to provide information related to the capacity and actual values of the racks for current (Amps). The values shown in the rack charts are inherited from one of three locations based on the following rules. This source of power is defined at the top of the chart with the Power Source designation.

- PDU – Rackmount – If the rack has one or more PDU – Rackmount devices mounted into the rack which are actively being monitored for actual current then the Rackmount PDU values will be used.
- PDU/RPP – If the PDU – Rackmount devices are not actively being monitored AND the Rackmount – PDU devices are connected to PDU/RPP Branch Circuit monitoring panels then the current and power data for the rack will be pulled from the Branch Circuit monitoring configurations.
- UPS – Rackmount – If neither of the conditions above exists and the rack has monitored UPS – Rackmount devices then the power data for the rack will be pulled from these devices.

In either case, the A/B/C/D Power setting for the data is derived from the attribute setting at the monitored device. The name of the attribute is Power Side in the Electrical/Power attribute category.

The actual current values will be compared to the Derated Current values for the rack device. There are two attributes to define with the racks to establish this derated value for the A/B/C/D sides of the power connections. The attribute names to define for this feature are A Current Derated, B Current Derated, C Current Derated, And D Current Derated in the Electrical/Power attribute category.



- Current Chart – Shows the A/B/C/D Current actual values for each phase (L1, L2 and L3) connected to the rack. If there is a single-phase power source for the rack, then only one bar will be displayed.
- Current Deviation – Shows the balance of current on phases by showing the difference on phases for A/B/C/D rated power sources.

Note: If the rack has an IP address the alarm subsystem will generate a Critical alarm for the Rack indicating which phase and power side is in this important alarm condition. These alarms can be managed and routed with the standard alarm processing tools covered in a separate section of this document.

25.2.3. Power

In the top table, a summary of A/B/C/D Current readings is provided. The following defines the values used in this table:

- Rack UPS
- Power Side

- UPS Remaining Time
- UPS Load (W)
- Rated Utilization
- Derated Utilization
- Redundancy Test
- Input Voltage (V)

25.2.4. Environment

This table will list the Temperature and Humidity data points for all mounted devices which are collecting this value.

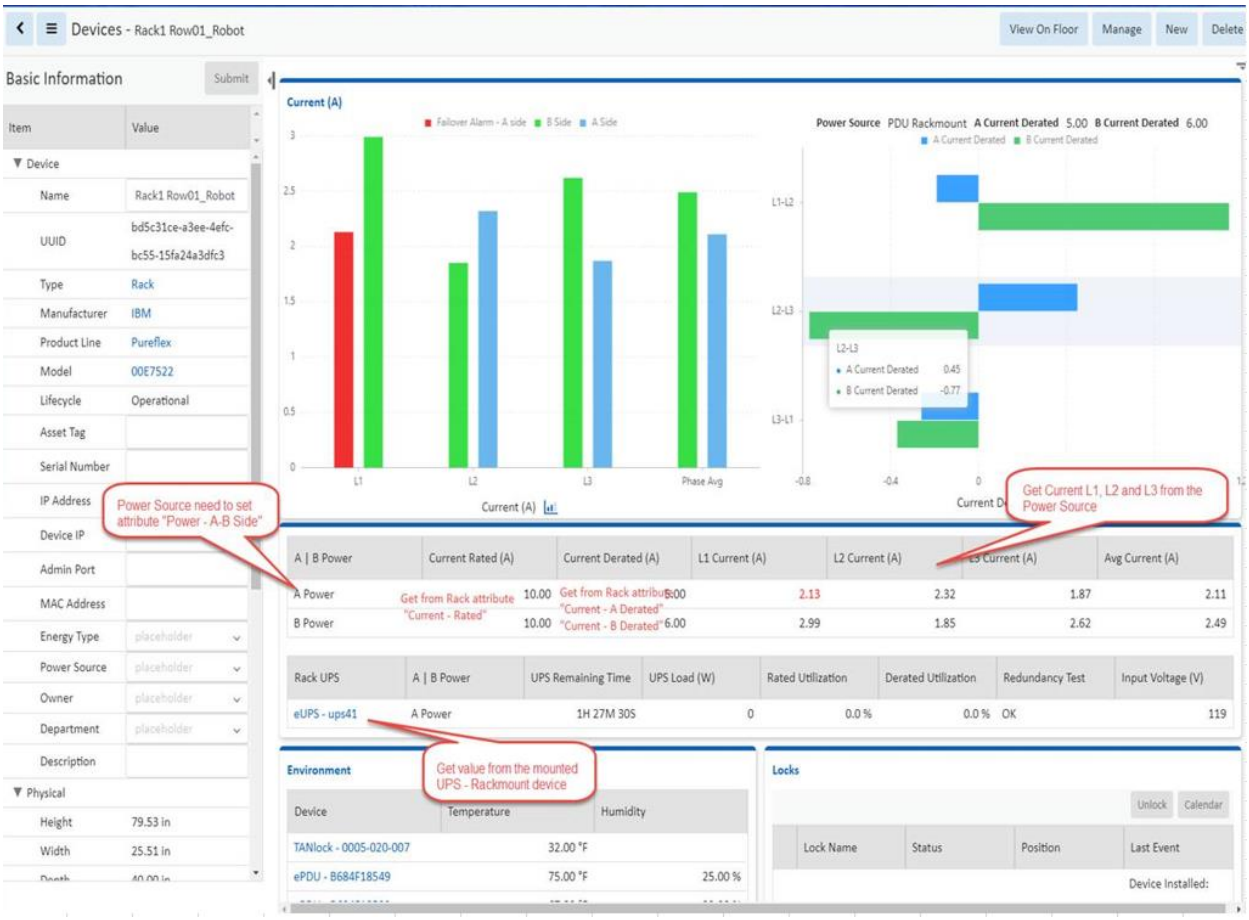
25.2.5. Locks

This table will list the Locks associated with the rack. The table fields include:

- Lock Name
- Status
- Position
- Last Event
- Unlock button to open the lock
- Calendar button to access the list of events associated with the lock

25.2.6. Rack Device Dashboard Attribute Map

The graphic below displays the name of the device attribute that is feeding data to the dashboard item.



25.3. Rack Group Dashboard

When the device type is a rack and it belongs to a rack group, the Rack Group page is loaded when the Rack Group function tile is selected in device central. If a rack is not associated with a rack group, then the Rack Group function tile is black and cannot be selected.

25.3.1. Capacity Chart

The upper portion of the Rack Group dashboard displays the aggregated values of all racks in the Rack Group for key performance metrics. Beneath the aggregated data is a table with each rack's individual power metrics.

25.3.2. RU Fragmentation Chart

The RU Fragmentation chart shows the rack unit size across the bottom axis. The left axis indicates how many devices of that unit size can be accommodated in the rack group.

25.3.3. 7-Day Rack Group Power Consumption Chart

The 7-Day Rack Group Power Consumption chart displays a trend line for power consumption over the last 7 days.

25.3.4. Power By Racks (W) Chart

The Power By Racks chart shows how much power in watts is currently used by each rack in the rack group.

25.4. UPS Floor Device Dashboard

When the device type is a UPS the UPS Dashboard page is loaded when the Dashboard function tile is selected in device central.

The following sections and detailed data are available on this dashboard interface.

Several Trend Chart icons are located on the dashboard which will open a trend chart interface for the selected data point or multiple data points.

25.4.1. Buttons

Item	Description
New Button	Opens the form to create a new device.
Delete Button	Deletes the current device.

25.4.2. Input

Item	Description
Frequency	Value collected from the device.
Line Beads	Value collected from the device.
Number of Phases	Value collected from the device.
Source	Value collected from the device.
Bad Status	Value collected from the device.
Phase	Value collected from the device.
Voltage	Value collected from the device.
Current	Value collected from the device.
Power	Value collected from the device.
Frequency	Value collected from the device.

25.4.3. Output

Item	Description
Load	Value collected from the device.
Frequency	Value collected from the device.
Number of Phases	Value collected from the device.
Source	Value collected from the device.
Phase	Value collected from the device.
Voltage	Value collected from the device.
Current	Value collected from the device.
Power	Value collected from the device.
Load	Value collected from the device.

25.4.4. Battery

Item	Description
Charge Remaining	Value collected from the device.
Current	Value collected from the device.
Last Replace Date	Value collected from the device.
Remaining Time	Value collected from the device.
Seconds On Battery	Value collected from the device.
Status	Value collected from the device.
Temperature	Value collected from the device.
Voltage	Value collected from the device.

25.4.5. Segments

Item	Description
Delay	Amount of time in seconds to wait before sending the Control command to the selected Segment.
Index	Reference to the load segment number.
Status	Current status of the load segment.
Turn On Button	Turns on the selected load segment.
Turn Off Button	Turns off the selected load segment.
Reboot Button	Reboots the selected load segment.

25.4.6. Contact

Item	Description
Type	Value collected from the device.
Status	Value collected from the device.
Description	Value collected from the device.

25.5. UPS Rackmount Device Dashboard

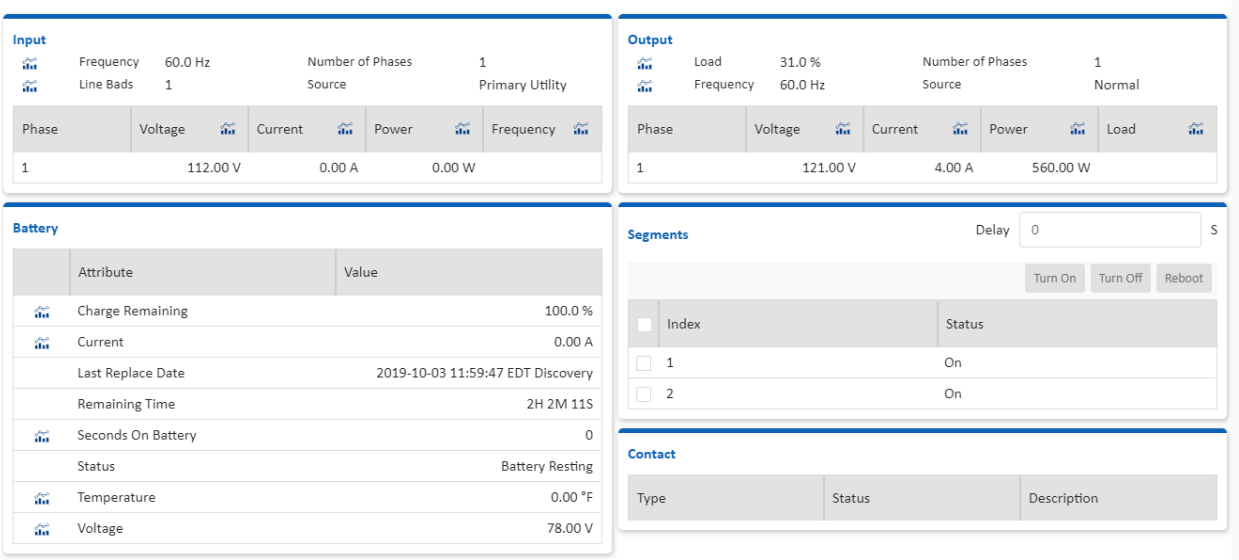
When the device type is a UPS - Rackmount the UPS Rackmount Dashboard page is loaded when the Dashboard function tile is selected in device central.

The following sections and detailed data are available on this dashboard interface.

Several Trend Chart icons are located on the dashboard which will open a trend chart interface for the selected data point or multiple data points.

The buttons located on the top right of the dashboard provide integrated functions with other parts of the application.

Note: Instructions for bulk configuration of an Eaton UPS with the M2 card can be found in the Bulk Configuration for Eaton UPS M2 Card section in this document.



25.5.1. Buttons

Item	Description
Firmware Button	Allows user to select a firmware file from the firmware library and upload to the current UPS. The Firmware Management section of this document details how to add files to the firmware library and bulk load to multiple UPS.
New Button	Opens the form to create a new device.
Delete Button	Deletes the current device.

25.5.2. Input

Item	Description
Frequency	Value collected from the device.
Line Beads	Value collected from the device.
Number of Phases	Value collected from the device.
Source	Value collected from the device.
Bad Status	Value collected from the device.
Line Fail Cause	Value collected from the device.
Phase	Value collected from the device.
Voltage	Value collected from the device.
Current	Value collected from the device.
Power	Value collected from the device.
Frequency	Value collected from the device.

25.5.3. Output

Item	Description
Load	Value collected from the device.
Frequency	Value collected from the device.
Number of Phases	Value collected from the device.
Source	Value collected from the device.

Phase	Value collected from the device.
Voltage	Value collected from the device.
Current	Value collected from the device.
Power	Value collected from the device.
Load	Value collected from the device.

25.5.4. Battery

Item	Description
Charge Remaining	Value collected from the device.
Current	Value collected from the device.
Last Replace Date	Value collected from the device.
Remaining Time	Value collected from the device.
Seconds On Battery	Value collected from the device.
Status	Value collected from the device.
Temperature	Value collected from the device.
Voltage	Value collected from the device.

25.5.5. Segments

Item	Description
Delay	Amount of time in seconds to wait before sending the Control command to the selected Segment.
Index	Reference to the load segment number.
Status	Current status of the load segment.
Turn On Button	Turns on the selected load segment.
Turn Off Button	Turns off the selected load segment.
Reboot Button	Reboots the selected load segment.

25.5.6. Contact

Item	Description
Type	Value collected from the device.
Status	Value collected from the device.
Description	Value collected from the device.

25.5.7. UPS Rackmount Device Dashboard Attribute Map

Device Type: UPS - Rackmount Section: Input Field Title	Scalar Attribute	Tabular Attribute
Frequency	Input Frequency	
Number of Phases	Input Number of Phases	
Lines Beads	Input Lines Beads	
Source	Input Source	

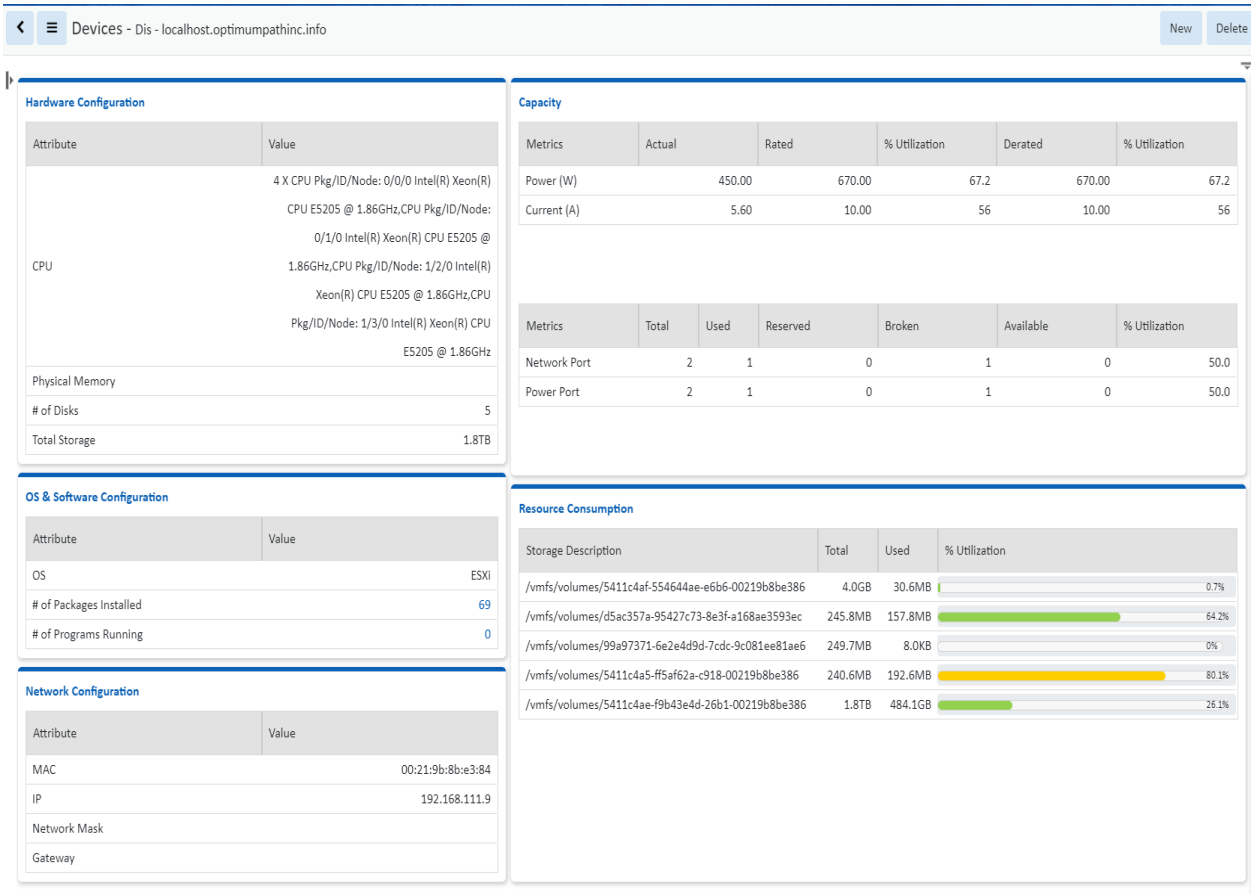
Phase	Input Phase_1	Input Phase ID
	Input Phase_2	
	Input Phase_3	
Voltage	Input Voltage Phase 1	Input Voltage
	Input Voltage Phase 2	
	Input Voltage Phase 3	
Current	Input Current 1	Input Current
	Input Current 2	
	Input Current 3	
Power	Input Power Phase 1	Input Power
	Input Power Phase 2	
	Input Power Phase 3	
Frequency	Input Frequency_1	Input Phase Frequency
	Input Frequency_2	
	Input Frequency_3	
Field Title	**Section: Input Scalar Attribute**	**Tabular Attribute**
Load	Output Load	
Number of Phases	Output Number Phases	
Frequency	Output Frequency	
Source	Output Source	
Phase	Output Phase_1	Output Phase ID
	Output Phase_2	
	Output Phase_3	
Voltage	Output Voltage Phase 1	Output Voltage
	Output Voltage Phase 2	
	Output Voltage Phase 3	
Current	Output Current 1	Output Current
	Output Current 2	
	Output Current 3	
Power	Output Power Phase 1	Output Power
	Output Power Phase 2	
	Output Power Phase 3	
Load	Output Load 1	Output Phase Load
	Output Load 2	
	Output Load 3	
Field Title	**Section: Battery Scalar Attribute**	**Tabular Attribute**
Remaining Time	Battery Time Remaining	
Voltage	Battery Voltage	
Current	Battery Current	
Charge Remaining	Battery Capacity	
Status	Battery Status	
Last Replace Date	Last Replace Date	
Seconds on Battery	Seconds on Battery	
Temperature	Battery Temperature	

25.6. Server Device Dashboard

When the device type is a server the Server Dashboard page is loaded when the Dashboard function tile is selected in device central.

The following sections and detailed data are available on this dashboard interface.

Several Trend Chart icons are located on the dashboard which will open a trend chart interface for the selected data point or multiple data points.



25.6.1. Hardware Configuration

Item	Description
CPU	Value collected from the device.
Physical Memory	Value collected from the device.
# of Disks	Value collected from the device.
Total Storage	Value collected from the device.

25.6.2. Capacity

25.6.2.1. Power Capacity Table

Item	Description
Metrics	Row indicates Power (W) attribute information for the device. Power Actual may be monitored data or static data based on the Energy Data Source attribute for the device. Current (A) attribute information for the device. Current Actual may be monitored data or static data based on the Energy Data Source attribute for the device.

Actual	Power value collected from the device using the Active Power monitor attribute.
Rated	Attribute defined by users for the selected device. The Power – Rated attribute is used for this value.
% Utlization	Percent of Rated value that the actual power represents.
Derated	Attribute defined by users for the selected device. The Power – Derated attribute is used for this value.
% Utilization	Percent of Derated value that the actual power represents.

25.6.2.2. Port Capacity Table

Item	Description
Metrics	Indicates type of port.
Total	Displays total number of ports on the device.
Used	Displays number of ports used.
Reserved	Displays number of ports reserved.
Broken	Displays number of ports broken.
Available	Displays number of ports available.
% Utilization	Displays the percentage of ports used.

25.6.3. OS & Software Configuration

Item	Description
OS	Value collected from the device.
# of Packages Installed	Value collected from the device.
# of Programs Running	Value collected from the device.

25.6.4. Network Configuration

Item	Description
MAC	Value collected from the device.
IP	Value collected from the device.
Network Mask	Value collected from the device.
Gateway	Value collected from the device.

25.6.5. Resource Consumption

Shows disks volumes (partitions) and percent of space used.

25.6.6. Environmental

Displays a chart tracking temperature and humidity for the device.

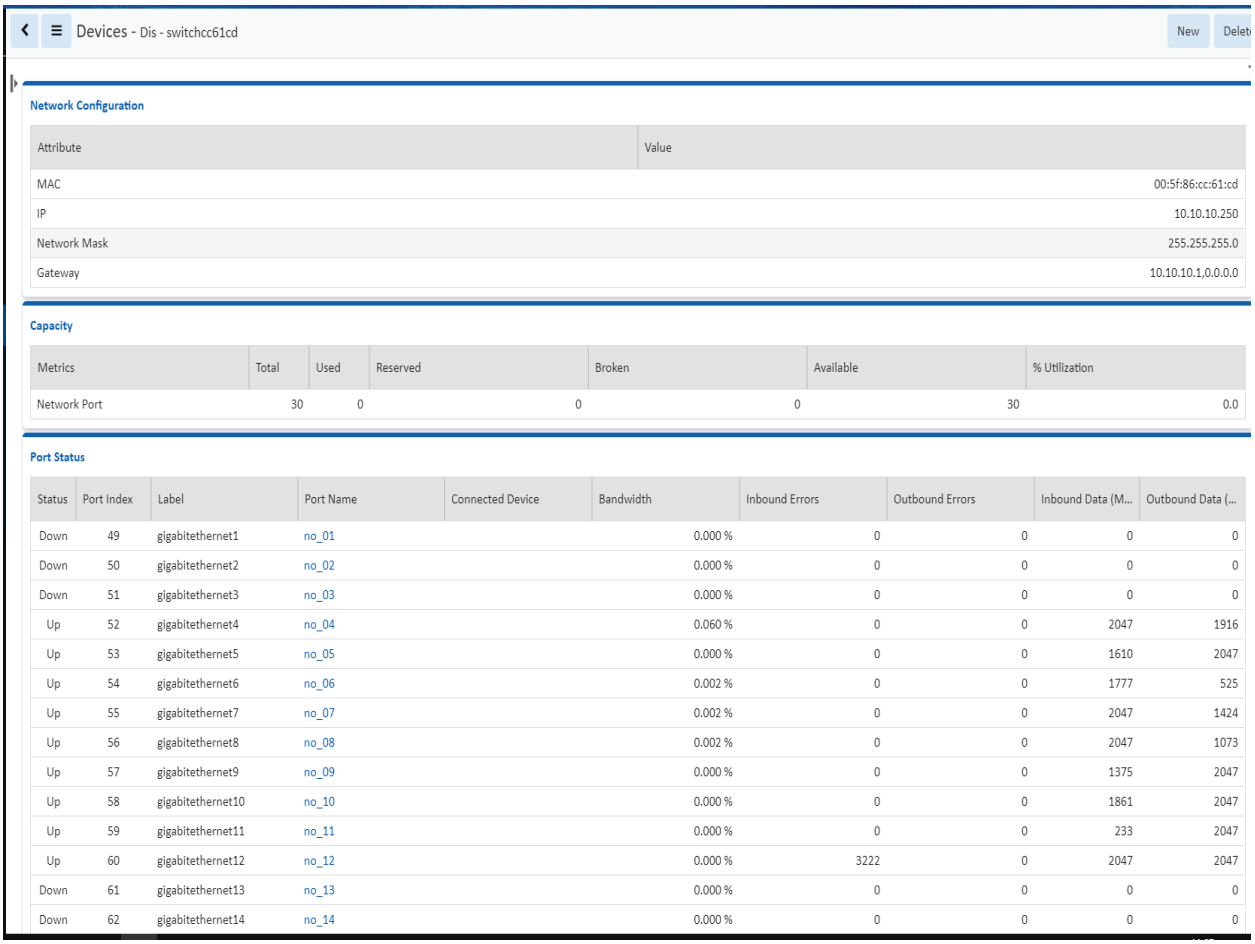
25.6.7. Port Status

Item	Description
Status	Displays connection status collected directly form the device.
Port Index	Displays the port number.

Label	Displays the port label collected from the device.
Port Name	Displays the port name.
Connected Device	Name of the device connected to the port as defined in port mapping.
Bandwidth	Value collected from the device.
Inbound Errors	Value collected from the device.
Outbound Errors	Value collected from the device.
Inbound Data (MB)	Value collected from the device.
Outbound Data (MB)	Value collected from the device.

25.7. Switch Device Dashboard

When the device type is a switch the Switch Dashboard page is loaded when the Dashboard function tile is selected in device central.



The following sections and detailed data are available on this dashboard interface.

25.7.1. Network Configuration

Item	Description
MAC	Value collected from the device.
IP	Value collected from the device.
Network Mask	Value collected from the device.

Gateway	Value collected from the device.

25.7.2. Capacity

Item	Description
Metrics	Indicates type of port.
Total	Displays total number of ports on the device.
Used	Displays number of ports used.
Reserved	Displays number of ports reserved.
Broken	Displays number of ports broken.
Available	Displays number of ports available.
% Utilization	Displays the percentage of ports used.

25.7.3. Port Status

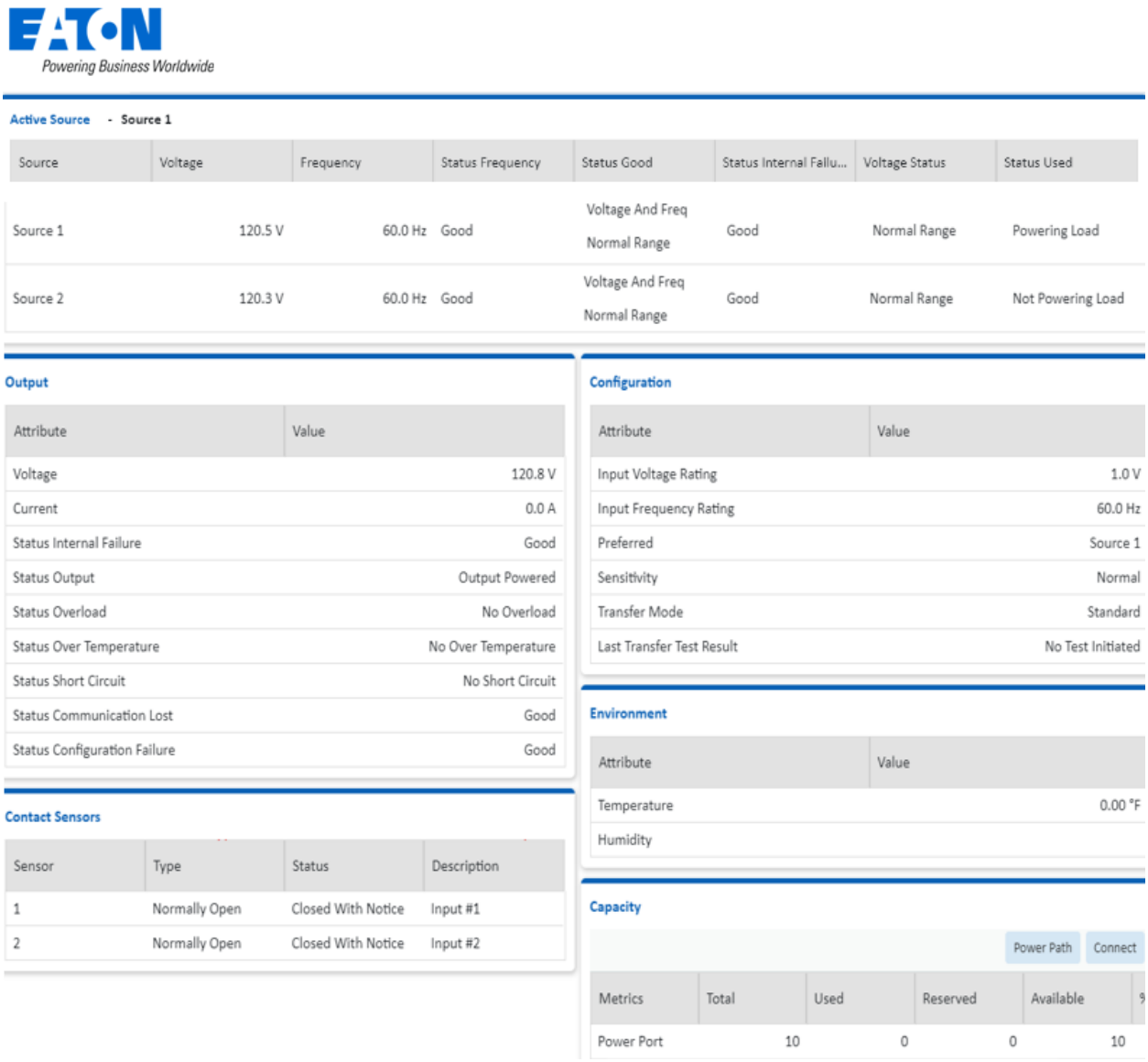
Item	Description
Status	Displays connection status collected directly form the device.
Port Index	Displays the port number.
Label	Displays the port label collected from the device.
Port Name	Displays the port name.
Connected Device	Name of the device connected to the port as defined in port mapping.
Bandwidth	Value collected from the device.
Inbound Errors	Value collected from the device.
Outbound Errors	Value collected from the device.
Inbound Data (MB)	Value collected from the device.
Outbound Data (MB)	Value collected from the device.

25.8. Transfer Switch Rackmount Device Dashboard

When the device type is a Transfer Switch - Rackmount the Transfer Switch - Rackmount Dashboard page is loaded when the Dashboard function tile is selected in device central.

The following sections and detailed data are available on this dashboard interface.

Several Trend Chart icons are located on the dashboard which will open a trend chart interface for the selected data point or multiple data points.



25.8.1. Buttons

Item	Description
New Button	Opens the form to create a new device.
Delete Button	Deletes the current device.

25.8.2. Active Source

Item	Description
Source	Value collected from the device.
Voltage	Value collected from the device.
Frequency	Value collected from the device.
Status Frequency	Value collected from the device.
Status Good	Value collected from the device.
Status Internal Failure	Value collected from the device.
Voltage Status	Value collected from the device.
Status Used	Value collected from the device.

25.8.3. Output

Item	Description
Voltage	Value collected from the device.
Current	Value collected from the device.
Status Internal Failure	Value collected from the device.
Status Output	Value collected from the device.
Status Overload	Value collected from the device.
Status Over Temperature	Value collected from the device.
Status Short Circuit	Value collected from the device.
Status Communication Lost	Value collected from the device.
Status Configuration Failure	Value collected from the device.

25.8.4. Configuration

Item	Description
Input Voltage Rating	Value collected from the device.
Input Frequency Rating	Value collected from the device.
Preferred	Value collected from the device.
Sensitivity	Value collected from the device.
Transfer Mode	Value collected from the device.
Last Transfer Test Result	Value collected from the device.

25.8.5. Environment

Item	Description
Temperature	Value collected from the device.
Humidity	Value collected from the device.

25.8.6. Contact Sensors

Item	Description
Sensor	Value collected from the device.
Type	Value collected from the device.
Status	Value collected from the device.
Description	Value collected from the device.

25.8.7. Capacity

Item	Description
Power Path Button	Displays the power path based on port mapping.
Connect Button	Opens the port mapping page with the current device selected.
Metrics	Displays port type as collected from the device.
Total	Displays total number of ports.
Used	Displays the number of ports used.

Reserved	Displays the number of ports reserved.
Available	Displays the number of ports available.
% Utilization	Displays the percentage of ports utilized.

25.8.8. Transfer Switch Rackmount Device Dashboard Attribute Map

Device Type: ATS - Rackmount Section: Active Power Field Title	Scalar Attribute	Tabular Attribute
Active Power	Active Source	
Source	Input Index_1	Input Index
	Input Index_2	
Voltage	Input Voltage_1	Input Voltage
	Input Voltage_2	
Frequency	Input Frequency_1	Input Frequency
	Input Frequency_2	
Status Frequency	Input Frequence Status_1	Input Frequence Status
	Input Frequence Status_2	
Status Good	Contact State 1	Contact State
	Contact State 2	
Status Internal Failure	Input Interval Failure Status_1	Input Interval Failure Status
	Input Interval Failure Status_2	
Voltage Status	Input Voltage Status_1	Input Voltage Status
	Input Voltage Status_2	
Status Used	Input Used Status_1	Input Used Status
	Input Used Status_2	
Section: Output **Field Title**	**Scalar Attribute**	**Tabular Attribute**
Voltage	Output Voltage	
Current	Output Current	
Status Internal Failure	Output Internal Failure Status	
Status Output	Output Status	
Status Overload	Overload Status	
Status Over Temperature	Over Temperature Status	
Status Short Circuit	Short Circuit Status	
Status Communication Lost	Communication Lost Status	
Status Configuration Failure	Configuration Failure Status	
Section: Configuration **Field Title**	**Scalar Attribute**	**Tabular Attribute**
Input Voltage Rating	Config Input Voltage Rating	
Input Frequency Rating	Config Input Frequency Rating	
Preferred	Config Preferred	
Sensitivity	Config Sensitivity	
Transfer Mode	Transfer Mode	
Last Transfer Test Result	Transfer Test	
Section: Environment **Field Title**	**Scalar Attribute**	**Tabular Attribute**
Temperature	Temperature	
Humidity	Humidity	
Section: Contact Sensors **Field Title**	**Scalar Attribute**	**Tabular Attribute**
Type	Contact Type 1	Contact Type

	Contact Type 2	
Status	Contact State 1	Contact State
	Contact State 2	
Description	Contact Description 1	Contact Description
	Contact Description 2	

25.9. Access Control Device Dashboard

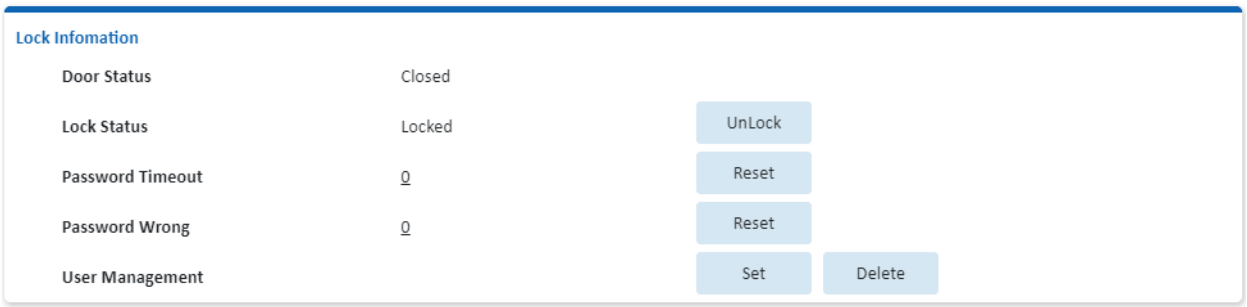
When the device type is access control the Access Control Dashboard page is loaded when the

An Access Control device must be created, configured for monitoring and mounted in order for the dashboard to be fully populated.

The FATH TANLOCK locks that have firmware version 8 is now supported be auto discovered in the system. Users can open the lock remotely. Version 8 firmware supports v3 and v4 MIB files. The corresponding monitoring templates in the system are Access control Fath 3_v3(Legacy) and Access Control Fath 3_v4.

If a device is discovered by the Discovery function, the suited monitoring template will be automatically applied. If a device is manually created by a user, then the user needs to choose the correct monitoring template.

WARNING: Due to the MIB file provided by the manufacturer doesn't contain the OID of the attributes "password timeout" and "password wrong", the value of these two attributes on the Dashboard will remain zero until we obtain the OID from the manufacturer.

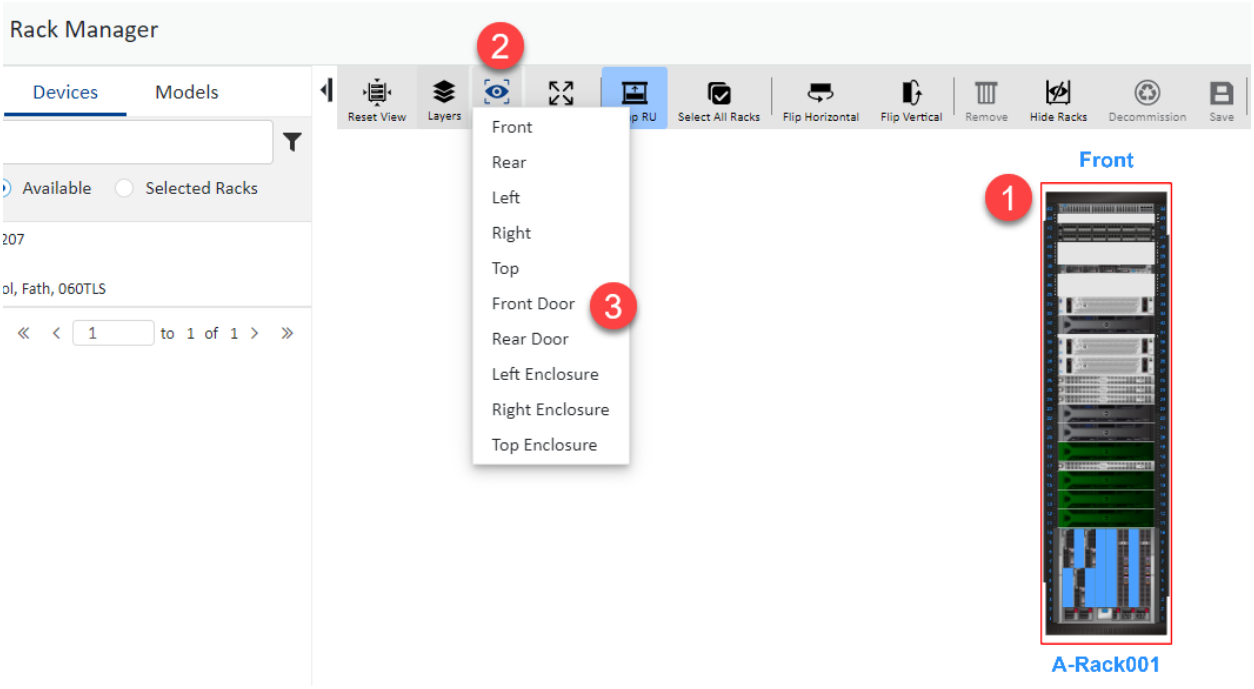


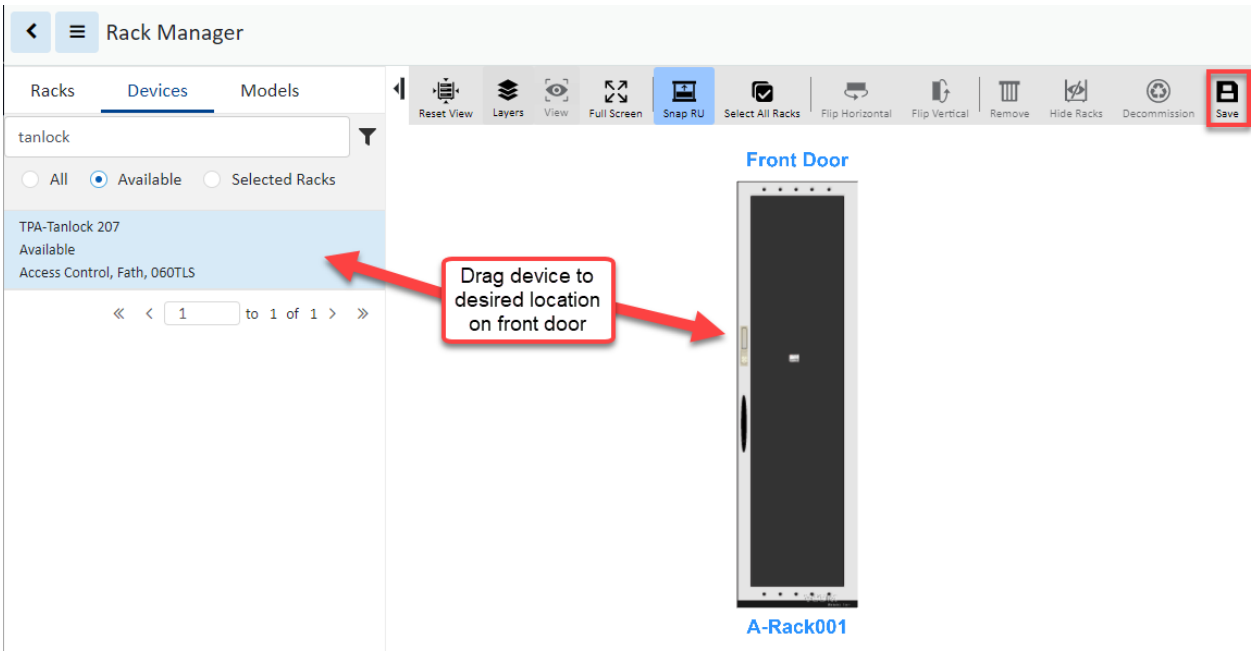
25.9.1. Creating the Device and Configuring Monitoring

- Create the Access Control device
- Select the new device from the device list to go to its Device Central page
- Click on the Monitoring function tile to access device's monitoring page
- Activate monitoring by configuring the Monitoring function tile as described in the Function Tiles section.

25.9.2. Mounting an Access Control Device on a Rack

An Access Control Device is mounted directly on the rack front door. From the Racks menu group select the Rack Manager menu item. Search for and select the rack to mount the device and then select the rack (see red outline), click the View icon and select Front Door. From the device list, search and select the access device, drag the device to the desired position and Save.





25.9.3. Access Control Device Dashboard

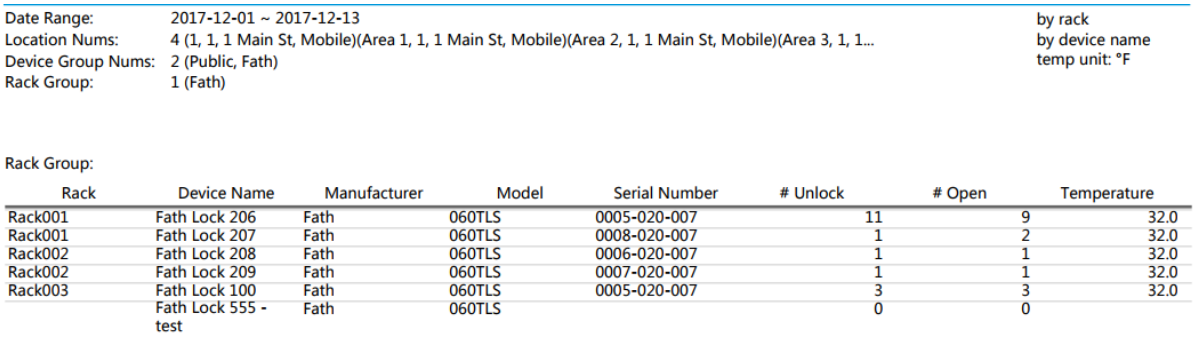
The Access Control dashboard contains information and buttons for controlling the device.

25.9.3.1. Lock Information

Item	Description
Door Status	Closed or Open status which is collected from the device.
Lock Status	Locked or Unlocked status which is collected from the device and button to Lock or Unlock
Password Timeout	Number of times a user timed out while entering name or password at the access device. Hover over the number and “since YYYY-MM-DD HH-MM-SS TZ” shows start date of the count. Reset button resets the count start date and the value of the counter to 0
Password Wrong	Number of time a user entered the wrong password at the access device or from the application. Hover over the number and “since YYYY-MM-DD HH-MM-SS TZ” shows start date of the count. Reset button resets the count start date and the value of the counter to 0.
User Management	Set button lets you add a new user with a password. Delete button lets you name a user to be deleted.

25.9.3.2. Reporting

A Rack Lock Summary report provides summary data for the actions performed on the Access Control devices. The report can be found by selecting the Reports Menu Item and expanding the Asset category.



Date Range: 2017-12-01 ~ 2017-12-13
Location Nums: 4 (1, 1, 1 Main St, Mobile)(Area 1, 1, 1 Main St, Mobile)(Area 2, 1, 1 Main St, Mobile)(Area 3, 1, 1...
Device Group Nums: 2 (Public, Fath)
Rack Group: 1 (Fath)

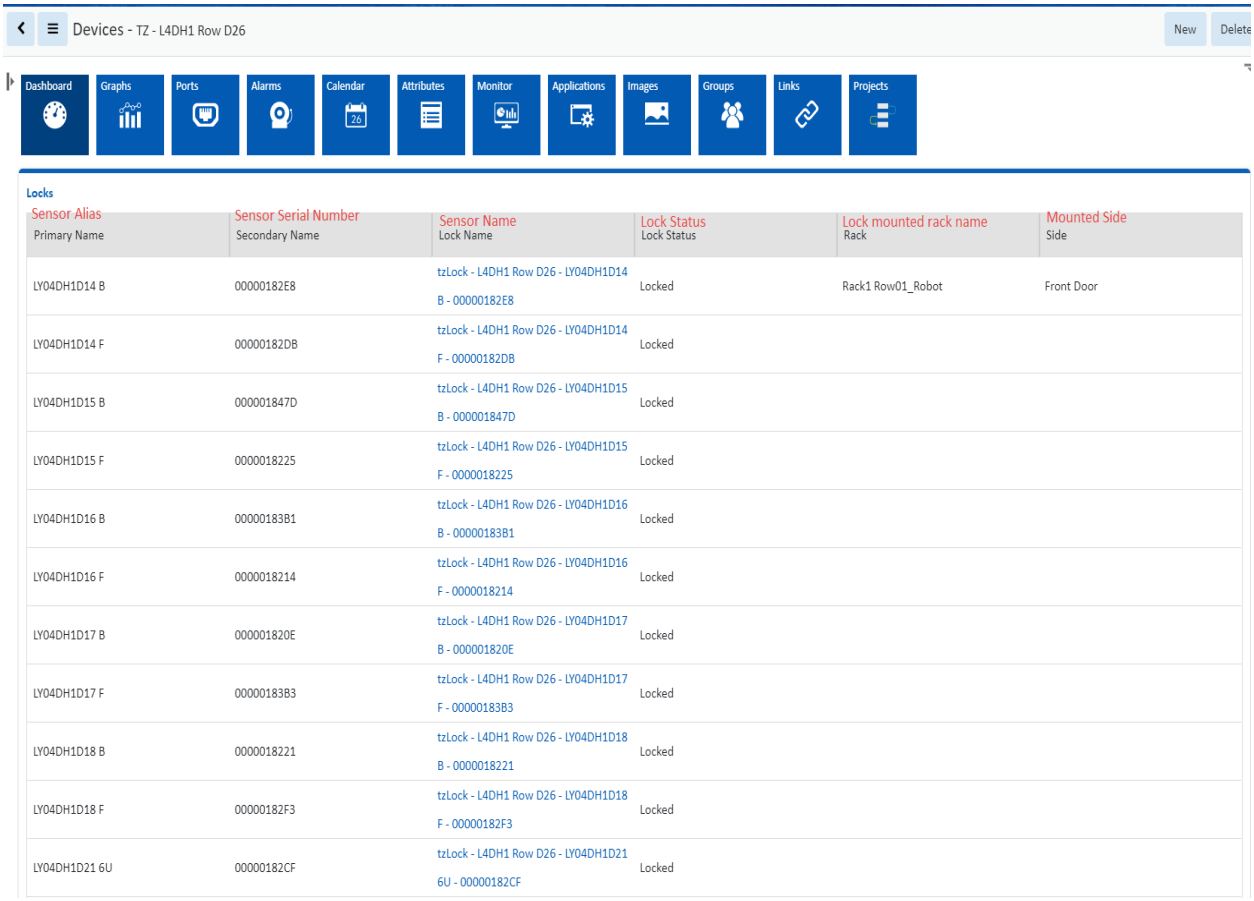
by rack
by device name
temp unit: °F

Rack Group:

Rack	Device Name	Manufacturer	Model	Serial Number	# Unlock	# Open	Temperature
Rack001	Fath Lock 206	Fath	060TLS	0005-020-007	11	9	32.0
Rack001	Fath Lock 207	Fath	060TLS	0008-020-007	1	2	32.0
Rack002	Fath Lock 208	Fath	060TLS	0006-020-007	1	1	32.0
Rack002	Fath Lock 209	Fath	060TLS	0007-020-007	1	1	32.0
Rack003	Fath Lock 100	Fath	060TLS	0005-020-007	3	3	32.0
	Fath Lock 555 - test	Fath	060TLS		0	0	

25.9.4. TZ Gateway Lock Dashboard

If the device is a TZ Gateway reporting rack lock status, the system will display the following dashboard:



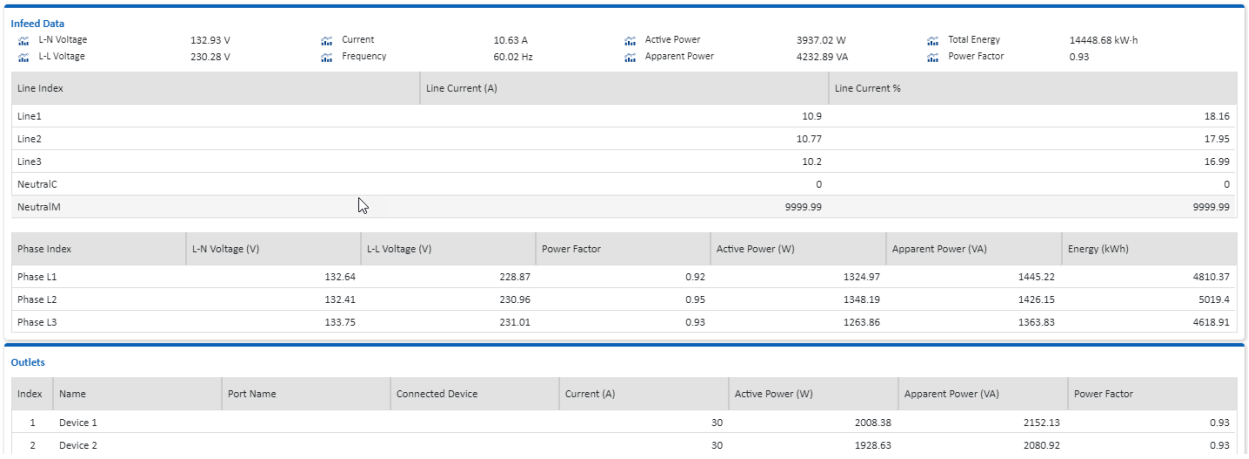
Sensor Alias Primary Name	Sensor Serial Number Secondary Name	Sensor Name Lock Name	Lock Status Lock Status	Lock mounted rack name Rack	Mounted Side Side
LY04DH1D14 B	00000182E8	tzLock - L4DH1 Row D26 - LY04DH1D14 B - 00000182E8	Locked	Rack1 Row01_Robot	Front Door
LY04DH1D14 F	00000182DB	tzLock - L4DH1 Row D26 - LY04DH1D14 F - 00000182DB	Locked		
LY04DH1D15 B	000001847D	tzLock - L4DH1 Row D26 - LY04DH1D15 B - 000001847D	Locked		
LY04DH1D15 F	0000018225	tzLock - L4DH1 Row D26 - LY04DH1D15 F - 0000018225	Locked		
LY04DH1D16 B	00000183B1	tzLock - L4DH1 Row D26 - LY04DH1D16 B - 00000183B1	Locked		
LY04DH1D16 F	0000018214	tzLock - L4DH1 Row D26 - LY04DH1D16 F - 0000018214	Locked		
LY04DH1D17 B	000001820E	tzLock - L4DH1 Row D26 - LY04DH1D17 B - 000001820E	Locked		
LY04DH1D17 F	00000183B3	tzLock - L4DH1 Row D26 - LY04DH1D17 F - 00000183B3	Locked		
LY04DH1D18 B	0000018221	tzLock - L4DH1 Row D26 - LY04DH1D18 B - 0000018221	Locked		
LY04DH1D18 F	00000182F3	tzLock - L4DH1 Row D26 - LY04DH1D18 F - 00000182F3	Locked		
LY04DH1D21 6U	00000182CF	tzLock - L4DH1 Row D26 - LY04DH1D21 6U - 00000182CF	Locked		

25.10. Power Bus Bar Device Dashboard

When the device type is a Power Bus Bar the Power Bus Bar Dashboard page is loaded when the Dashboard function tile is selected in device central.

The following sections and detailed data are available on this dashboard interface.

Several Trend Chart icons are located on the dashboard which will open a trend chart interface for the selected data point or multiple data points.



Line Index	Line Current (A)	Line Current %
Line1	10.9	18.16
Line2	10.77	17.95
Line3	10.2	16.99
NeutralC	0	0
NeutralM	9999.99	9999.99

Phase Index	L-N Voltage (V)	L-L Voltage (V)	Power Factor	Active Power (W)	Apparent Power (VA)	Energy (kWh)
Phase L1	132.64	228.87	0.92	1324.97	1445.22	4810.37
Phase L2	132.41	230.96	0.95	1348.19	1426.15	5019.4
Phase L3	133.75	231.01	0.93	1263.86	1363.83	4618.91

Outlets

Index	Name	Port Name	Connected Device	Current (A)	Active Power (W)	Apparent Power (VA)	Power Factor
1	Device 1			30	2008.38	2152.13	0.93
2	Device 2			30	1928.63	2080.92	0.93

25.10.1. Infeed Data

Item	Description
L-N Voltage	Value collected from the device.
L-L Voltage	Value collected from the device.
Current	Value collected from the device.
Frequency	Value collected from the device.
Active Power	Value collected from the device.
Apparent Power	Value collected from the device.
Total Energy	Value collected from the device.
Power Factor	Value collected from the device.
Line Index	Value collected from the device.
Line Current (A)	Value collected from the device.
Line Current %	Value collected from the device.
Phase Index	Value collected from the device.
L-N Voltage (V)	Value collected from the device.
L-L Voltage (V)	Value collected from the device.
Power Factor	Value collected from the device.
Active Power (W)	Value collected from the device.
Apparent Power (VA)	Value collected from the device.
Energy (kWh)	Value collected from the device.

25.10.2. Outlets

Item	Description
Index	Value collected from the device.
Name	Value collected from the device.
Connected Device	Value collected from the device.
Current Rating	Value collected from the device.
Active Power (W)	Value collected from the device.
Apparent Power (VA)	Value collected from the device.
Power Factor	Value collected from the device.

25.10.3. Power Bus Bar Device Dashboard Attribute Map

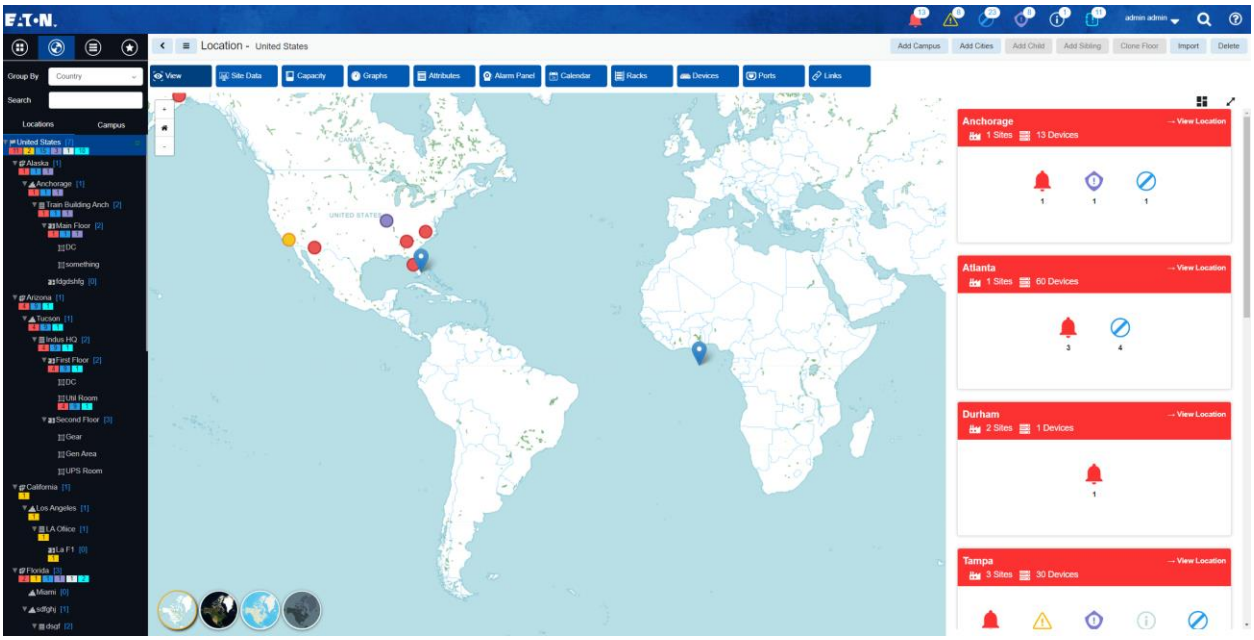
Device Type: Power Bus Section: Infeed Data Field Title	Scalar Attribute	Tabular Attribute
L-N Voltage	Infeed L-N Voltage	
Current	Current	
Active Power	Active Power	
Total Energy	Energy	
L-L Voltage	Infeed L-L Voltage	
Frequency	Input Frequency	
Apparent Power	Apparent Power	
Power Factor	Power Factor	
Line Index	Infeed Line Index 1	Infeed Line Index
	Infeed Line Index 2	
	Infeed Line Index 3	
	Infeed Line Index 4	

	Infeed Line Index 5	
Line Current(A)	Infeed Line Current 1	Infeed Line Current
	Infeed Line Current 2	
	Infeed Line Current 3	
	Infeed Line Current 4	
	Infeed Line Current 5	
Line Current(%)	Infeed Line Current Percentage 1	Infeed Line Current Percentage
	Infeed Line Current Percentage 2	
	Infeed Line Current Percentage 3	
	Infeed Line Current Percentage 4	
	Infeed Line Current Percentage 5	
Phase Index	Input Phase 1 Name	Input Phase Name
	Input Phase 2 Name	
	Input Phase 2 Name	
L-N Voltage	Infeed Phase L-N Voltage 1	Infeed Phase L-N Voltage
	Infeed Phase L-N Voltage 2	
	Infeed Phase L-N Voltage 3	
L-L Voltage	Infeed Phase L-L Voltage 1	Infeed Phase L-L Voltage
	Infeed Phase L-L Voltage 2	
	Infeed Phase L-L Voltage 3	
Power Factor	Input Power Factor 1	Input Power Factor
	Input Power Factor 2	
	Input Power Factor 3	
Active Power	Input Power 1	Input Power
	Input Power 2	
	Input Power 3	
Apparent Power	Input Power VA 1	Input Power VA
	Input Power VA 2	
	Input Power VA 3	
Energy	Infeed Phase Energy 1	Infeed Phase Energy
	Infeed Phase Energy 2	
	Infeed Phase Energy 3	
Section: Outlets		
Field Title	**Scalar Attribute**	**Tabular Attribute**
Outlet	Outlet ID 1…48	Outlet ID
Outlet Name	Outlet Name 1…48	Outlet Name
Current	Outlet Current 1…48	Outlet Current
Active Power	Outlet Power 1…48	Outlet Power
Power VA	Outlet VA 1…48	Outlet VA
Power Factor	Outlet Power Factor 1…48	Outlet Power Factor

26. Navigation Tree

The Navigation tree creates, displays, and manages the sites in the application. These are visible as nodes for countries, states, cities, buildings, floors, and areas. The floor building tools become available when the floor and area nodes are selected. The information below will describe the components and features of the navigation tree for the application.

The highest alarm level among all devices of the location node will be displayed on the map. The alarm refresh frequency is 30 seconds.



Users can select the map icons in the lower left corner to switch the map displaying styles.

To add new maps, users need to add the following parameters in the '/opt/VDC/apps/ng-dcim/assets/global/config.json' file behind the parameter - define.

```
"Maps": {
        "17f47582-d28a-11de-98a3-00241d120212":{
         "zoom":{
           "2": 8,
           "3": 10,
           "4": 12
   }
  }
},
"MapsConfig": {
    "selected": 0,
    "tileLayers": [
     {
       "disabled": false,
       "url":
"https://api.mapbox.com/styles/v1/freesky/cl8axk5at002514s1n0kr9ar3/tiles/256/{z}/{x}/{y}@2x?access_token=pk.eyJ1Ijoi
ZnJlZXNreSIsImEiOiJjbDg5bmk3MmkwOHFzM3ZwMnF1ejJmN2ZiIn0.PFeJ1Z77i525l_yOq4M1QA",
```

```
      "minZoom": 2,
      "maxZoom": 20,
      "attribution": "Made with Natural Earth."
     },
     {
      "disabled": false,
      "url":
"https://api.mapbox.com/styles/v1/freesky/cl8bdu289000g15nnj3za9ir2/tiles/256/{z}/{x}/{y}@2x?access_token=pk.eyJ1Ijoi
ZnJlZXNreSIsImEiOiJjbDg5bmk3MmkwOHFzM3ZwMnF1ejJmN2ZiIn0.PFeJ1Z77i525l_yOq4M1QA",
      "minZoom": 2,
      "maxZoom": 20,
      "attribution": "Made with Natural Earth."
     }
    ]
   }
```

Users need to replace the URL that given in the example. They can apply for their own APIs through MapBox, Bing Maps, Esri ArcGIS, MapQuest etc.

Users can add more maps by adding the below parameters. We support switching among multiple maps. In the above example, there are two maps in the system.

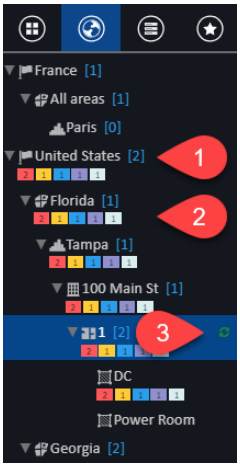
```
      {
       "disabled": false,
       "url":
"https://api.mapbox.com/styles/v1/freesky/cl8bdu289000g15nnj3za9ir2/tiles/256/{z}/{x}/{y}@2x
?access_token=pk.eyJ1IjoiZnJlZXNreSIsImEiOiJjbDg5bmk3MmkwOHFzM3ZwMnF1ejJmN2ZiIn0.PFeJ
1Z77i525l_yOq4M1QA",
       "minZoom": 2,
       "maxZoom": 20,
       "attribution": "Made with Natural Earth."
      }
```

26.1. Tree Nodes

The navigation tree has nodes for locations displayed in a hierarchical format by default. The navigation tree nodes can be grouped by Country, State, City and Building. Users can also filter the nodes by entering text into the search field. The navigation tree nodes listed in the table below are available to help users organize their sites for easy management.

Node	Description	Selection Behavior
Country	List of countries that can be managed in the application.	Shows the selected country with alarm LEDs for sites within that country.
State	List of States or Provinces for the selected country. **Note:** If a country does not have predefined States to choose from the list, the All Areas option can be selected to create a State node in the navigation tree.	Shows the selected State or Province with alarm LEDs for cities within that State or Province.

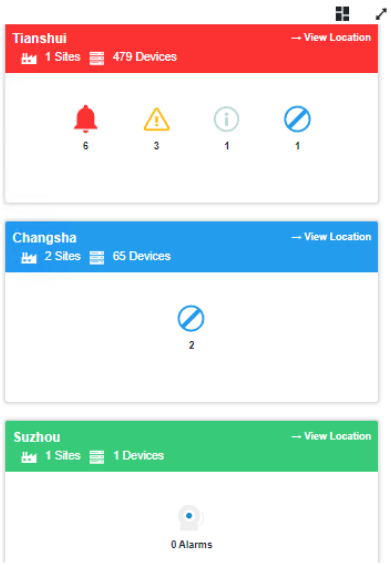
Campus/City	Under the State node, users can create a Campus or City node. There is not a predefined list of these locations available for the user to select. Users enter the city name in the Name field.	Highlights the selected City in the State or Province view.
Building	Address or other reference to the building being managed.	Displays the image of the building if it was loaded when the building is defined in Location Studio.
Floor	Reference to the floor within the selected building.	Displays the full floor layout with devices assigned to this floor location.
Area	Multiple options for Area types to help organize the navigation tree to match the needs of the customer. Multiple types of Area can be included under a single Floor node.	Zooms to only the Area level of the floor with the devices mounted to this area location. Other floor names and devices are hidden.



1. Next to each node of the tree is a blue number in square brackets. This indicates the number of next level nodes under the selected node.

2. Under each location node of the navigation tree will be a summary count of alarms for that node. The alarm refresh frequency is 30 seconds, and the number is the counts of device alarms. There are 5 possible alarm types: Critical (red), Warning (yellow), Unreachable (blue), Minor (purple) and Information (light blue). The device counts are aggregated for all locations under the selected node. The summary count boxes are colorized and visible when the value is greater than 0. **Note:** The Alarm count information will be automatically updated every 5 minutes, but users can choose to refresh manually to get updated data between the auto refresh cycles.

3. When a node is selected the refresh icon is displayed to the right of the node.



A list of city panels that display the site, device, and alarm information is shown on the right side when users select the Campus tab or the World, Country, and State nodes in the Locations tab.

Campus Tab

- If a Campus is selected, buildings belong to this campus will be displayed.

Locations Tab

- If the World node is selected, all cities in the system will be displayed.
- If a Country node is selected, cities located in this country will be displayed.
- If a State is selected, cities located in this state will be displayed.

If more than one city panel is displayed, they are ordered by the alarm severity, and then by name. The color of the panel is in accord with the alarm status color in the system.

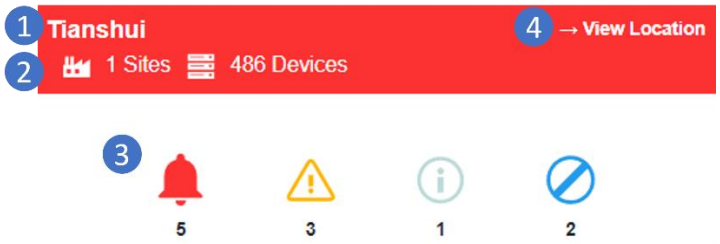
Click the Expand/Collapse icon ⤢ ⤡ to switch on/off the full screen mode.

Click the icon to switch to the Detailed Information from the Summary Information.

Summary Information

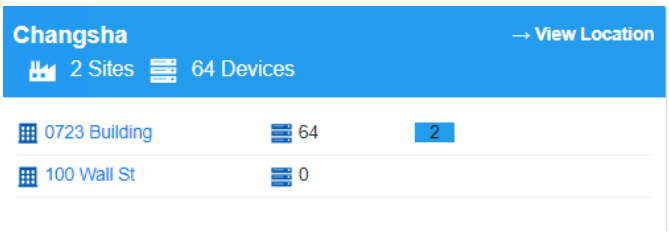
The Summary Information is shown by default on the panel.

1. Displays the City Name or its alias.
2. Displays the number of sites and number of devices belongs to this city. A site can be a campus with multiple buildings or a single building.
3. Display the number of alarms for each alarm severity generated in this city.
4. Click the "View Location" will link users to the City node and display the sites (buildings/campus) detail panels.
    a. Click the "View Location" on the building's panel will direct users to the Graphs Function Tile of the building location.
    b. Click the "View Location" on the campus panel will link users to the buildings panels of this campus. The it follows the above rule.



Detailed Information

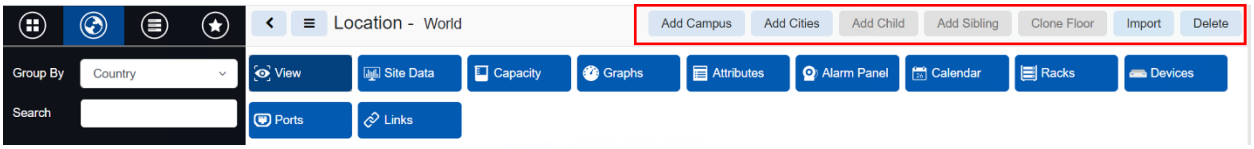
Instead of the alarm severity icons, the detailed information panel lists the number of devices and alarms of each site (building/campus).



Click the icon to back to the Summary Information panel.

26.2. Creating Locations (Navigation Tree Nodes)

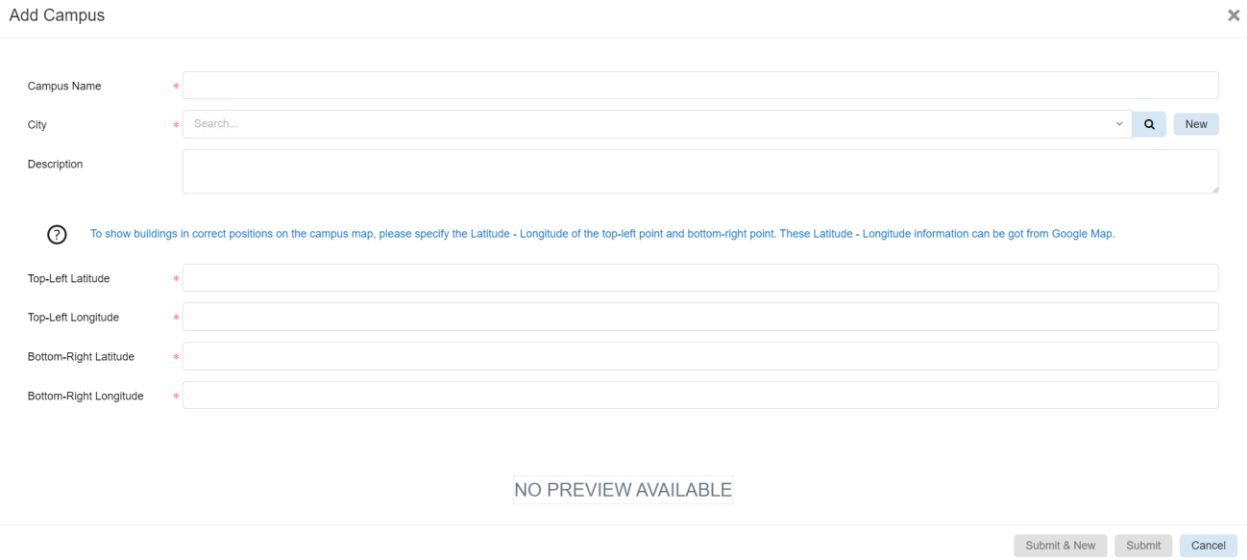
There are seven buttons on the upper right corner of the navigation tree page for creating locations. These include Add Campus, Add Cities, Add Child, Add Sibling, Clone Floor, Import and Delete.



26.2.1. Add Campus Button

Campus is a collection of nearby buildings. The Add Campus button can group them together to create a campus in the system.

26.2.1.1. New Campus Form



Fields	Description
Campus Name	Sets the name of the campus.
City	Select the city where the campus located from the list.
Description	User defined description of the campus.
Top-Left Latitude	Enter the top-left latitude for the campus in the decimal format (do not include the degree symbol or N/S). Positive number is North (33.152). Negative number is South (-33.3152).
Top-Left Longitude	Enter the top-left longitude for the city in the decimal format (do not include the degree symbol or E/W). Positive number is for East (44.3661). Negative number is West (-44.3661).
Bottom-Right Latitude	Enter the bottom-right latitude for the campus in the decimal format (do not include the degree symbol or N/S). Positive number is North (33.152). Negative number is South (-33.3152).
Bottom-Right Longitude	Enter the bottom-right longitude for the campus in the decimal format (do not include the degree symbol or N/S). Positive number is North (33.152). Negative number is South (-33.3152).
Buttons	**Description**
New	New opens a form to create a campus.
Submit	If any form fields are edited or new data has been added the Submit button becomes active and is used to add a new campus or update the existing city.
Cancel	Does not create new campus and closes the form.

26.2.2. Add Cities Button

The Add Cities button displays a list of over 3000 known cities with their country, state, latitude and longitude information. Select a city by checking the box and click Submit to add the Country, State and City nodes for the location to the tree.

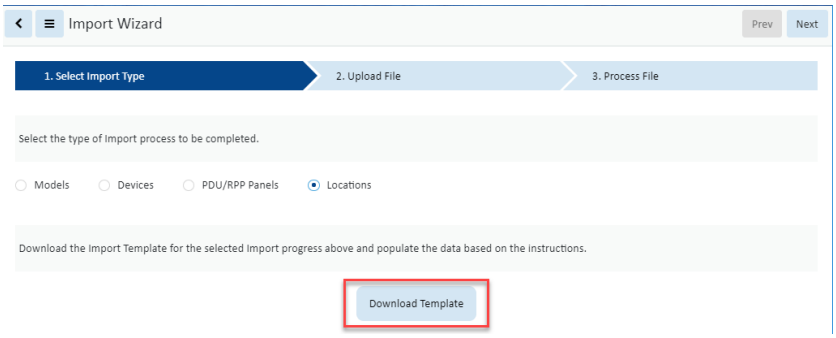
If your city is not listed, click New and fill out the New City form.

26.2.2.1. New City Form

Fields	Description
Name	Sets the name of the city.
Country	Select the country from the list.
State	Select the state. If the country's states are unknown, the system will present "All area" as the option.
Latitude	Enter the latitude for the city in the decimal format (do not include the degree symbol or N/S). Positive number is North (33.152). Negative number is South (-33.3152).
Longitude	Enter the longitude for the city in the decimal format (do not include the degree symbol or E/W). Positive number is for East (44.3661). Negative number is West (-44.3661).
Description	User defined description of the city.
Buttons	**Description**
New	New opens a form to create a city.
Submit	If any form fields are edited or new data has been added the Submit button becomes active and is used to add a new city or update the existing city.
Cancel	Does not create new city and closes the form.

26.2.3. Import Button

The Import button displays the Import Wizard page with the Locations radio dial selected. Locations can be imported from a Location Import Template spreadsheet. The template can be downloaded with the Download Template button. For instructions on filling out the location spreadsheet see the Import Locations Spreadsheet section in the Import | Export Menu Group chapter of this guide.



26.2.4. Add Child Button

The Add Child button is available when a city, building or floor node is selected.

- When a city node is selected, Add Child will present a form to create a building.

- When a building node is selected, Add Child will present a form to create a floor.
- When a floor node is selected, Add Child will present a form to create an area.

26.2.5. Add Sibling Button

The Add Sibling button is available when building, floor or area node is selected.

- When a building node is selected, Add Sibling will present a form to create a building.
- When a floor node is selected, Add Sibling will present a form to create a floor.
- When an area node is selected, Add Sibling will present a form to create an area.

26.2.6. Clone Floor

The Clone Floor button is accessible when a floor node is selected. Click the button and a Floors panel will pop up. All the empty floor nodes in the system will be listed and can be selected. The empty floor node means the floor node that only created but not designed.

Click the Submit button, then the selected empty floor node will completely inherit the design of the current floor. (only the design, not the device)

26.2.7. Delete Button

The Delete button will delete the selected node and all its children.

26.2.8. New Building Form

The new building form is presented when a building is the sibling or child for the node selected on the navigation tree.

Fields	Description
Name	Sets the name of the building.
Type	Preset to Building.
Description	User defined description of the building.
Required Attributes*	Number of Floors and Electricity Price require values for a floor.
Non-required Attributes	Users can enter values as needed to the other attributes. Attributes can be added to the list or removed using the Add and Remove buttons
User Group	Select the user groups and set their access for the floor.
Buttons	**Description**
Submit & New	Creates the building as specified and opens a new building form.
Submit	Creates the building as specified.
Cancel	Does not create the new building and closes the form.

26.2.9. New Floor Form

The new floor form is presented when a floor is the sibling or child for the node selected on the navigation tree.

Fields	Description
Name	Sets the name of the floor.

Type	Preset to Floor.
Description	User defined description of the floor.
Clone Floor	Select the floor to be cloned from the drop-down list of existing floors or Generic Floor. Generic floor creates a 15 ft. by 15 ft.
Add Generic Rack	The checkbox becomes active when Generic Floor is selected as the clone floor option. Adds a generic 42U rack to the floor.
Required Attributes*	Floor index requires a value for a floor.
Non-required Attributes	Users can enter values as needed to the other attributes. Attributes can be added to the list or removed using the Add and Remove buttons
User Group	Select the user groups and set their access for the floor.
Buttons	**Description**
Submit & New	Creates the floor as specified and opens a new floor form.
Submit	Creates the floor as specified.
Cancel	Does not create the new floor and closes the form.

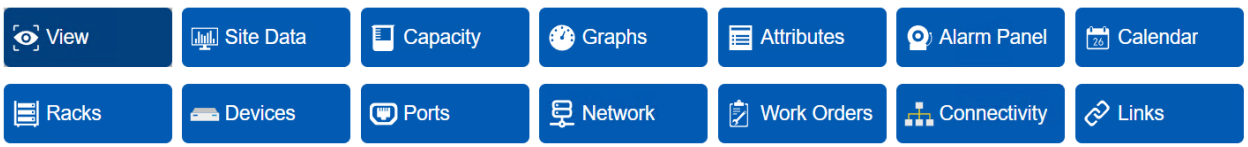
26.2.10. New Area Form

The new area form is presented when an area is the sibling or child for the node selected on the navigation tree.

Fields	Description
Name	Sets the name of the area or the prefix of the areas created, if the quantity is set to more than 1.
Type	Preset to Area.
Quantity	Enter the number of areas to be created.
Preview Button/Clear	Displays the area names as they will appear. Clear button removes the preview.
Required Attributes*	There are no required attributes for areas.
Non-required Attributes	Users can enter values as needed to the other attributes. Attributes can be added to the list or removed using the Add and Remove buttons
User Group	Select the user groups and set their access for the floor.
Buttons	**Description**
Submit & New	Creates the area(s) as specified and opens a new area form.
Submit	Creates the area(s) as specified.
Cancel	Does not create the new area and closes the form.

26.3. Tree Node Function Tiles

Tree Node Function Tiles are displayed when a node in the tree is selected. These tiles control what is displayed in the content area of the navigation tree page.



26.3.1. View Function Tile

Selected by default it causes the content area to display the map of the area (world, country, state, city), the associated graphic (building) or floorplan (floor).

26.3.2. Site Data Function Tile

Displays capacity metrics for the selected location in graphs and tables.

- Attributes lists attribute values and accompanying trend charts
- Devices provides device counts
- Cooling Devices shows cooling device counts in a pie chart

26.3.3. Capacity Function Tile

Displays capacity metrics for the selected location in graphs and tables.

- Space (ft^2) shows overall floor space details
- Raise Floor Space (ft^2) shows raised floor space details
- Available Space for Racks calculate how may racks of size can be placed. The settings gear icon allows users to add custom rack sizes to the calculations.
- RU Capacity table shows used and available rack space
- RU Fragmentation indicates the number of devices able to be mounted for 2-10 RU sizes

26.3.4. Graphs Function Tile

Displays the Graphs associated with the selected node. Click the play button to see the graphs reflect the data from the node. For information on creating new graphs see the Graphs Menu Item sub-section of the Data Analysis Menu Group section.

26.3.5. Attributes Function Tile

Displays the attributes associated with the selected node. Users can modify entries and add additional attributes from the application attribute list. For information on creating new attributes see the Attribute Manager Menu Item sub-section of the Settings Menu Group section.

When the user logs in and reviews the location Attributes function tile page, the value of attributes from the Location Department Template are restricted to the user's department. Users can only see the data for areas belonging to the same department.

26.3.6. Alarms Panel Function Tile

Displays the Alarms for the selected node. For details on managing alarms see the Alarms section.

26.3.7. Calendar Function Tile

Displays the calendar log for the selected node. For details on using the calendar filters and functions see the Calendar section.

26.3.8. Racks Function Tile

Displays list of racks on the node and the selected rack details.

26.3.9. Devices Function Tile

Displays the list of devices deployed on the selected node in a standard table that can be filtered, searched, and exported. For details using a table list see the Standard Table Features section.

26.3.10. Ports Function Tile

Displays the ports list for the devices deployed on the selected node. When a port is selected the port management buttons are activated for Circuit Trace, Power Path, Network Path and Connect. For details on these functions see the Ports Function Tile sub-section of the Device Central for Existing Devices section.

26.3.11. Network Function Tile

Displays the network hierarchy of devices located on this location node.

26.3.12. Work Order Function Tile

Displays all work orders related to this location node.

26.3.13. Connectivity Function Tile

Displays all cable connections related to this location node, including the connections within the same node and the connections across nodes.

26.3.14. Links Function Tile

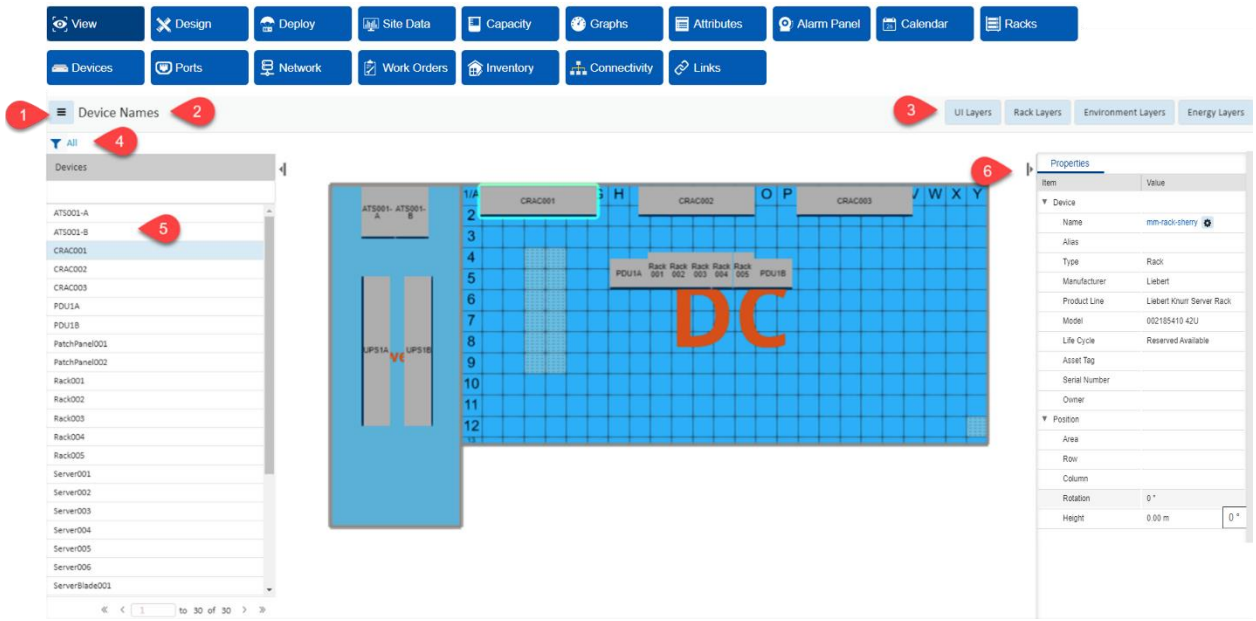
Displays existing links and allows the user to associate a URL or local file to the location node.

26.4. Floor Node

Selecting a floor node displays the floor plan for the selected floor and adds the Design and Deploy function tiles.

26.4.1. View Function Tile (Floor)

The default View displays the presents the published floor with devices in place.



1. Menu has the following features:
    a. Filters - a list of saved filters
    b. Export - export device list to Excel, export floor/area image to PDF or export Rack details to PDF
    c. Refresh - refreshes the display
2. Displays current layer view name
3. Layer view buttons
    a. UI Layers - The values for the select UI layer are superimposed on the floor devices.
        i. Alarm – all devices deployed on the node display colors according to the alarm. Meanwhile, the device name will be displayed on the device.
        ii. Device Names – displays the name of each device deployed on the node.
        iii. Device Type - all devices deployed on the node display colors according to the device type.
        iv. Life Cycle - all devices deployed on the node display colors according to the lifecycle. Meanwhile, the device name will be displayed on the device.

            Users can edit the displaying color of each lifecycle status by clicking the edit icon ⚙ next to the legend title. A Color Setting page will then pop up. Click the color of the lifecycle status you'd like to change and select a new color from the color disc.
        v. Department - all devices deployed on the node display colors according to the department. If a device does not belong to any department, it will be grayed out. Meanwhile, the device name will be displayed on the device.

            The department legend only lists the company - department name of the devices deployed on the current floor and the corresponding color.

            Users can edit the displaying color of each department by clicking the edit icon ⚙ next to the legend title. A Color Setting page will then pop up. Click the color

of the department you'd like to change and select a new color from the color disc.

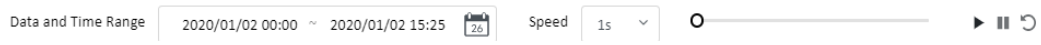
b. Rack Layers include rack and port metrics. The values for the select rack layer are superimposed on the floor devices.

   Among them, Rack Group and Rack Category have legends displayed on the right-side of the floorplan. All devices deployed on the floor display colors according to the rack group/rack category. If a device does not belong to any rack group/rack category, it will be grayed out. Meanwhile, the device name will be displayed on the device.

   For Rack Group, the legend only lists the rack group name of the devices deployed on the current floor and the corresponding color.

   Users can edit the displaying color by clicking the edit icon ⚙ next to the legend title. For Rack Category, if users don't have access to the Attribute Manager function, this edit icon will be hidden.

c. Environment Layers show temperature, thermal and humidity maps.
   Note: Some layers have replay capability where you can view the changes to the layer over time (For example: Any of the Thermal Environment Layers). When available the player is visible and allows for a date and time range, video speed, timeline, video play, pause and replay buttons.

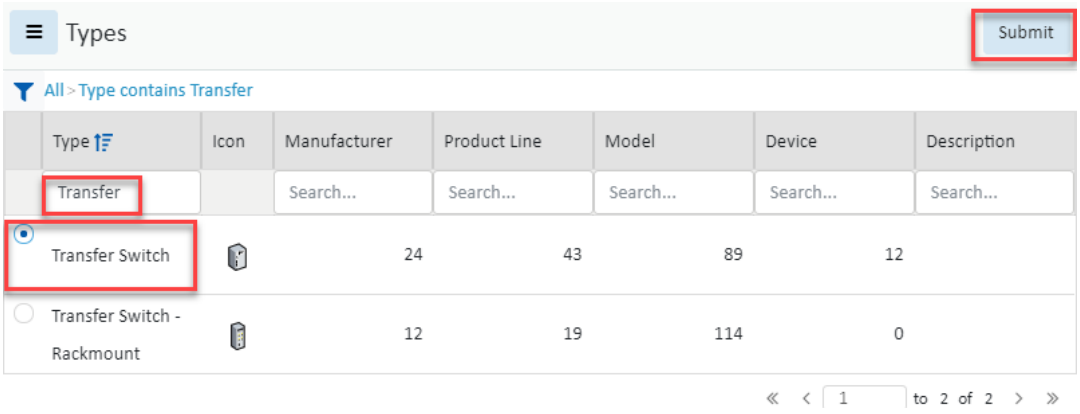


d. Energy Layers show power metrics. The values for the selected energy layer are superimposed on the floor devices.

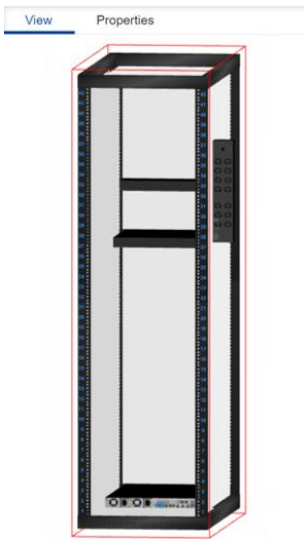
4. Filter Icon - Filters are used to restrict the devices which show the attribute data on the selected layer to only devices which match the filter criteria. Users may define complex filter criteria by defining filter rules for any of the available layer attributes associated to the devices. To define a filter for a layer view, users can click the Filter icon on the left side of the workspace. This will present standard application filter tool where the user can build simple and complex filters utilizing AND and OR clauses. See the Filter Options section for details on creating filters.

To clear or reset the view on the floorplan users can hit the X button to delete each filter rule.
Note: If the Search field in the rule is a long drop-down list the user can used the Magnifying Glass to open a table list view of the options that can be filtered by column. To select an option,

click the radio button and Submit.



5. The Devices list shows the full list of devices on the floor.
    a. Use the collapse icon next to the top of the devices to hide and show the list.
6. When a device is selected the device and position properties are listed.
    a. Use the collapse icon next to the top of the devices to hide and show the list.
    b. Click the ⚙ icon in the Name field to jump to the Rack Manager page when selecting a rack.
    c. If a Rack type device is selected, an additional View tab will be displayed next to the Properties tab to display the 3D rack evolution view, including the sub-devices mounted on the rack.



Users can rotate the rack view by clicking and dragging. Users can view detailed information about the sub-device by right-clicking it. The menu includes:

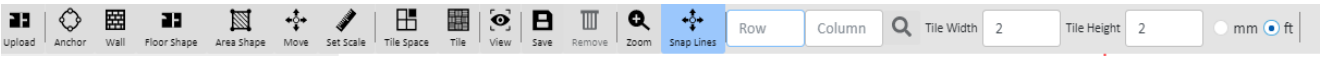
- Graphs
- Alarm Panel
- Calendar
- Network Path
- Power Path
- Impact Analysis
- Root Cause
- Projects

Select any of these options, the corresponding information panel will pop up.

26.4.2. Design Function Tile - Creating a Floorplan

When a floor node is selected, the Design function tile displays the workspace where users upload and configure the floorplan for their particular location. Once the floorplan is constructed, users can mount devices onto the floorplan using the Deploy function tile. When the Design function tile is accessed, there are two sets of icons available to help with the tasks needed to create the floorplan. Select the floor to be defined and then use the tools provided to construct the floor views.

Along the top of the screen the following icons are available:



26.4.2.1. Upload Icon

The Upload icon allows users to upload floorplan images so they can define attributes of the floor. Supported file type for the upload include jpg, png and bmp. Floor Image window shows the floor plan and presents buttons to rotate Counter-Clockwise or Clockwise before submitting.

- Zoom In: Use the mouse roller ball to zoom in and out on the floorplan.
- Move Floorplan: Click and hold the right mouse button to move the floorplan on the workspace.

Note: To upload a 3D CAD file for the floor plan users must use the CAD Tool in the application 3D Client.

26.4.2.2. Anchor Icon

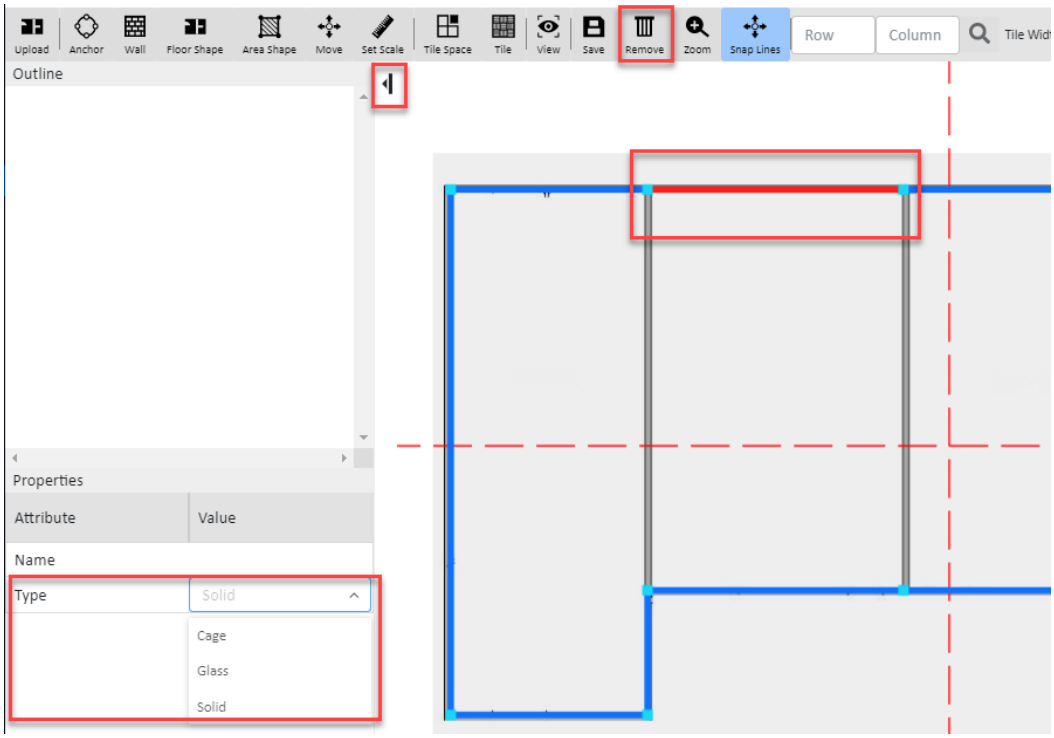
The Anchor icon allows users to place anchor points on each corner where walls connect on the floorplan drawing. This will allow the connecting walls to be created properly. Users click this icon to enter the mode to place anchor points. Mouse clicks will assign an anchor point to the image. Users can click the Escape key to exit the anchor point mode and return to the standard edit mode.

- To delete anchor points, Escape key to standard edit mode, click anchor point (turns red) and click the remove icon (trash can).

26.4.2.3. Wall Icon

The Wall icon allows users to connect anchor points to create the walls of the floorplan. Clicking this icon will enter the draw wall mode. Users select the type of wall from the pull-down menu and can then systematically click anchor points to draw a set of walls around the floorplan image.

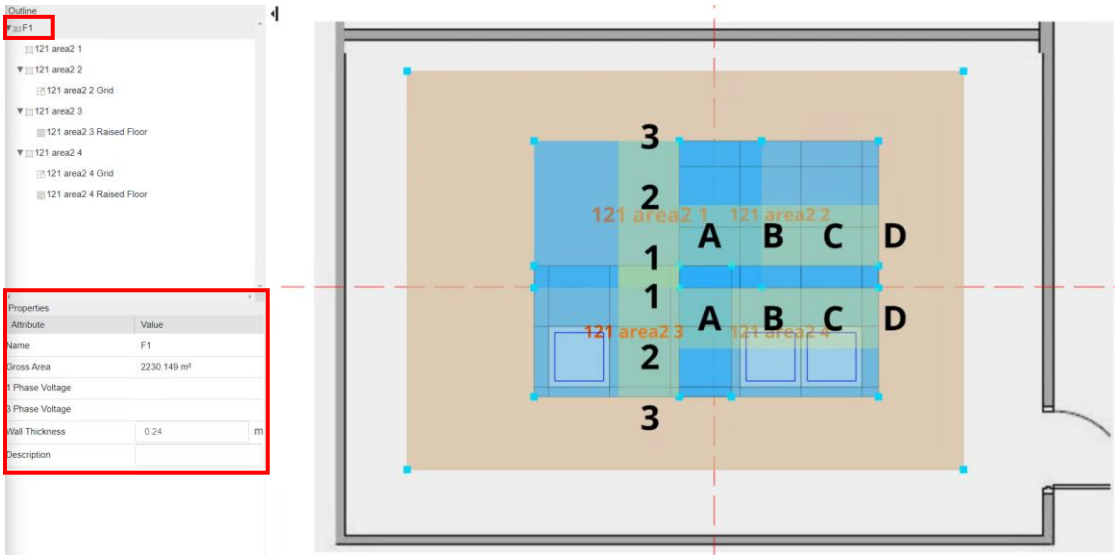
- No pre-existing anchor points - The wall tool also works without pre-existing anchor points. Select the wall type and then click on the floorplan to start the wall and also create anchor points as the user clicks to create walls.
- Non-contiguous walls - If the user needs to create a non-contiguous wall or there is an opening between anchor points, use Escape to exit the wall drawing tool. Click the wall drawing tool to start a new wall at a new anchor point.
- Delete wall – Exit the wall tool with Escape key, left click select the wall (turns red) and click the remove icon (trash can).
- Change wall type - Exit the wall tool with Escape key, left click select the wall (turns red) and change the wall Type in the properties window.
- Use the collapse icon to hide the properties window.



26.4.2.4. Floor Shape Icon

After the walls have been created the full area of the floor is defined by selecting the Floor Shape icon and then clicking the anchor points around the perimeter of the entire floor. This process establishes the area of the floorplan for capacity planning purposes. As the perimeter anchor points are selected, they turn red. To complete the floor definition process users must "close" the perimeter by selecting the first anchor point again and the floor shape color is applied. To start the process over, users can select the Escape icon to return to the standard Edit mode.

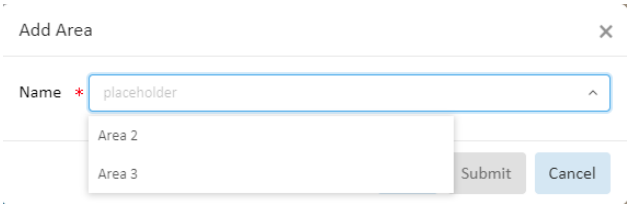
When the full floor area has been defined the floor name is shown in the outline and when selected the properties can be seen and altered as needed. Users can set the thickness of the wall on the floor, and all walls will follow this setting by default. They can also set different wall thickness, and set the thickness of individual walls as required.



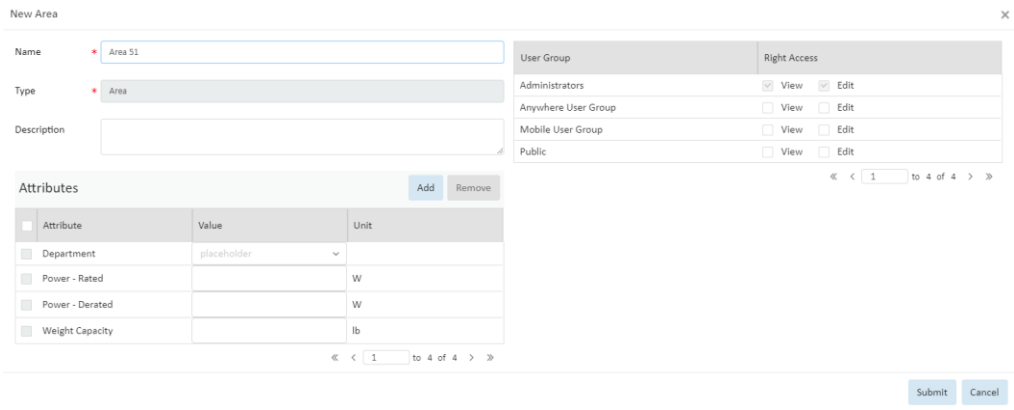
26.4.2.5. Area Shape Icon

After the floor is defined, users can then define areas of the floor. This process is similar to the floor definition feature. Users select the Area Shape icon and then connect wall anchor points until a full area is defined. As the perimeter anchor points are selected, they turn red. To complete the area definition users "close" the perimeter by selecting the first anchor point again and the area color is applied. To start the process over, users can select the Escape icon to return to the standard Edit mode.

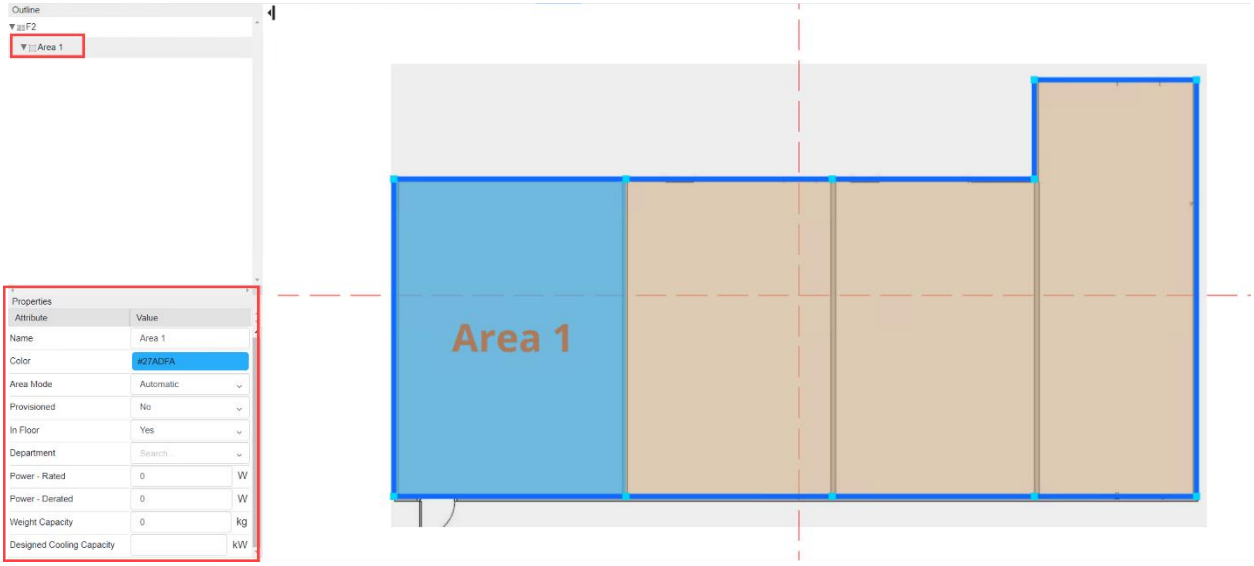
When the area has been defined the Add Area form opens and the user selects the area name from the drop-down menu.



If the area name does not exist, the user can click the New button and fill out the New Area form to create and apply the new name.



Once the area is created the area name is shown in the outline and when selected the properties can be seen and altered as needed.



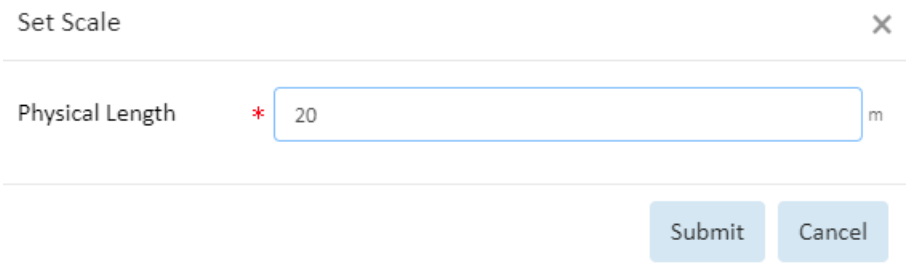
26.4.2.6. Move Icon

The Move icon allows users to select an anchor point and move it to a new location.

26.4.2.7. Set Scale Icon

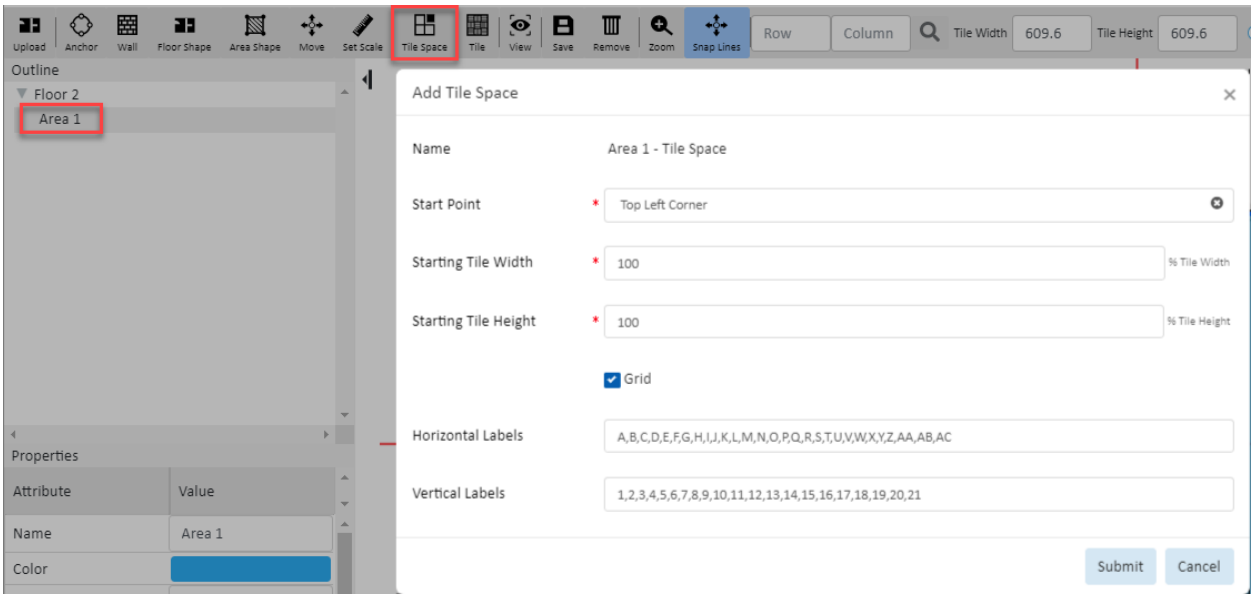
The Set Scale icon allows user to define the length of a wall. The units displayed will be presented based on the user settings. Exit the wall tool with Escape key, left click select the wall (turns red), select the Set Scale tool and enter a value.

Note: Set scale on one wall and the other walls will be set proportionally.

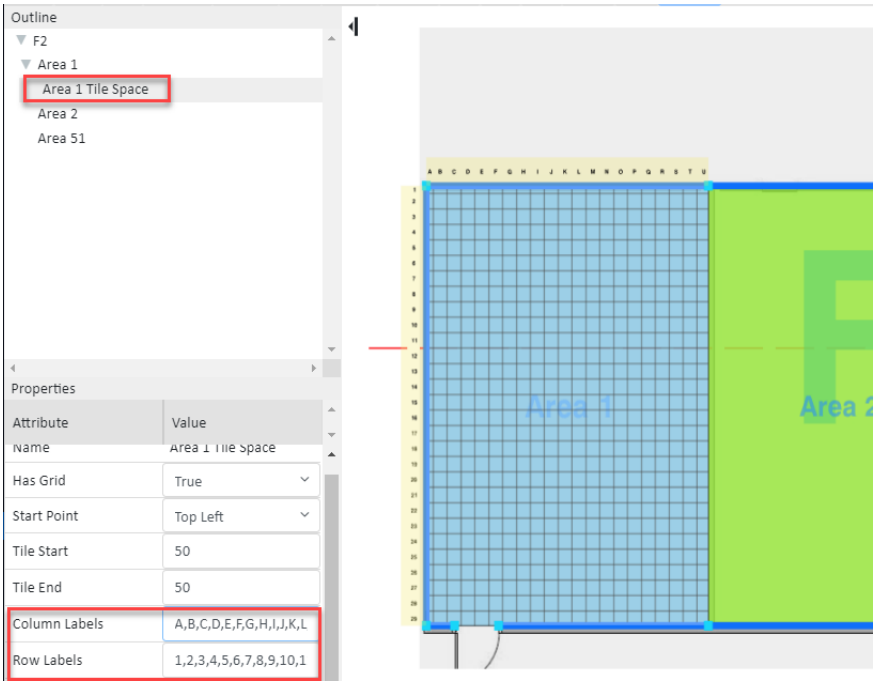


26.4.2.8. Tile Space Icon - Apply Raised Floor, Tiles and Grid

Select the area where you want to apply the raised floor from the outline list. Click on the Tile Space icon and fill out the Add Tile Space form:



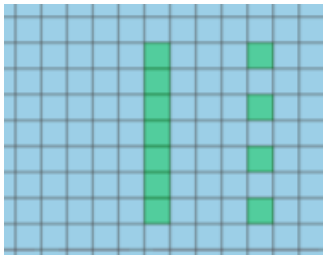
- Start Point identifies the corner where the labels will begin. The default is Top Left Corner but it can be change to Bottom Left Corner, Top Right Corner or Bottom Right Corner.
- Starting Tile Width sets the width of the first tile as a percentage of the full tile's width
- Starting Tile Height sets the height of the first tile as a percentage of the full tile's height.
- Grid checkbox turns the grid on in the selected area.
- Horizontal Labels will by default add letters across the tiles beginning with the letter A and continuing for the number of tiles in the space.
- Vertical Labels will by default add numbers vertically down the tiles beginning with the number 1 and continuing for the number of tiles in the space.
    - To change labels select the Area Tile Space item in the outline and edit the Column and Row labels. The labels are entered with a comma between each entry.



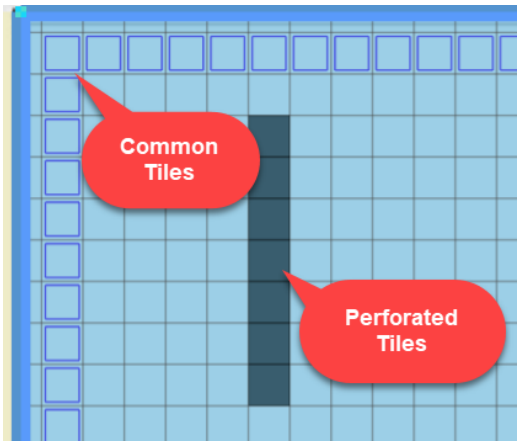
26.4.2.9. Tile Icon - Specify Perforated and Common Tiles

Identifying the location of Perforated and Common tiles helps the system accurately calculate the usable/billable floor space and visually keeps users from placing devices on those tiles.

- Select the tiles to be changed from normal tiles
    - Contiguous tiles - Shift Click to select the first tile then the last tile (tiles turn green)
    - Non-contiguous tiles - Control Click to select tiles one at a time

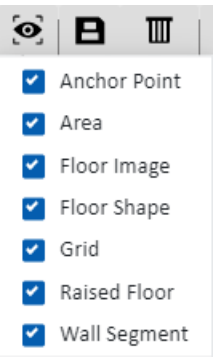


- Click on the Tile icon and select the desired type of tile
    - Normal - the default tile type, displayed in the default area color
    - Perforated - displays as a dark gray tile
    - Turn on Common - displays with an extra border. Common is good for walkways and areas where no devices are to be placed.
    - Turn off Common - used to revert common tiles back to normal



26.4.2.10. View Icon

The View icon allows users to specify which elements will be visible on the floorplan during the design process.



26.4.2.11. Save Icon

The Save icon saves changes to the floor plan.

26.4.2.12. Remove Icon

The Remove icon is used whenever the user wishes to delete selected design elements like anchor points, walls or an element selected in the floorplan Outline. Anchor points and walls turn red when selected. Items in the outline are highlighted gray when selected.

26.4.2.13. Zoom Icon

The Zoom icon allows users to zoom in or out of the floorplan image by fixed percentages.

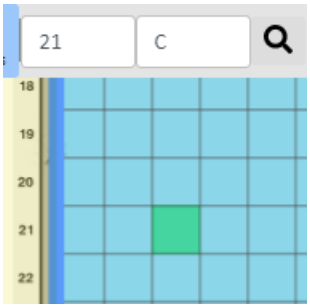
- The roller ball on the mouse zooms in or out of the floorplan image to any desired view.

26.4.2.14. Snap Lines Icon

When the Snap Lines icon is highlighted green guidelines will appear as new anchor points are being placed and the anchor points will snap to align.

26.4.2.15. Row, Column Tile Search Fields

The Row and Column fields allow the user to enter a grid point and then search. The desired tile is highlighted green.



26.4.2.16. Tile Width, Tile Height and Measurement Unit Field

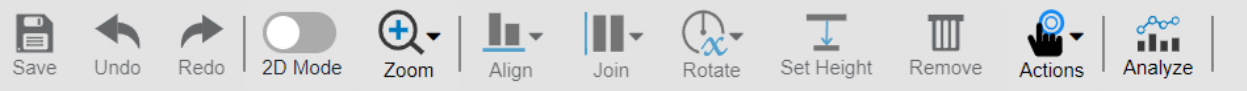
The Tile Width, Tile Height fields and Measurement Unit radio buttons allow users to set the raised floor tile size.

26.4.3. Deploy Function Tile - Placing Devices on the Floorplan

When a floor node is selected, the Deploy function tile displays the workspace where users place devices from the devices list onto floorplans which have been created with the Design function.

The Deploy function tile page has several important features which allow users to easily assign and align devices on the floorplans.

26.4.3.1. Toolbar



26.4.3.1.1. Save Icon

Save icon saves all changes from the floorplan to the navigation tree. Devices placed onto the floor will be assigned the location attributes and will be changed from Available to Operational device status.

26.4.3.1.2. Undo/Redo Icons

These will undo and redo previous actions.

26.4.3.1.3. 2D/3D Toggle

Click this toggle button to switch between 2D and 3D mode.

26.4.3.1.4. Zoom Icon

The Zoom icon allows users to select a percentage from the dropdown list to zoom in or out the floorplan by fixed percentages. The options are 80%, 90%, 100%, 130%, 200%.

Note: The roller ball on the mouse zooms in or out of the floorplan image to any desired view.

26.4.3.1.5. Align Icons

Align icons allow users to align multiple devices by one of its edges or center points. Users select multiple devices using the Ctrl key while clicking devices on the floor. The first device selected will be the reference for the other devices. After multiple devices are selected, click one of the Align icons to align all selected devices based on the selected edge or center point feature.

26.4.3.1.6. Join Icons

Join icons allow users to join multiple devices in a row on the floorplan. Users select multiple devices using the Ctrl key while clicking devices on the floor. The first device selected will be the reference for the other devices. Joining to the Top, Bottom, Left or Right of the last device can be done with single click of the icon.

- If multiple devices are selected the order in which they are selected determines the join order.

- The left, right, top and bottom options are based on the view on the screen view. Top indicates the top of the screen, bottom indicated the bottom of the screen, etc.

26.4.3.1.7. Rotate Icon

Rotate icon will rotate all selected devices the number of degrees entered or selected.

26.4.3.1.8. Set Height Icon

Set Height icon allows users to set the height of a device off the floor. Users can place devices above the floor or under the floor with a radio button selection while running this function. Multiple devices may be selected while performing this function.

26.4.3.1.9. Remove Icon

Remove icon will remove all selected devices from the floorplan.
Note: This will not delete the device from the application device list.

26.4.3.1.10. Actions Icon

The Action icon allows users to reserve devices, decommission devices, plan to decommission devices, cancel decommission devices, cancel reservation, and set devices to operational. The details will be introduced in later section.

26.4.3.1.10.1. Reserve Devices

The “Reserve” button is accessible when users select a device whose lifecycle is “Available” or “Procurement”. After that, the lifecycle status will become “Reserved Available” or “Reserved Procurement”.

26.4.3.1.10.2. Decommission Devices

The “Decommission” button is accessible when users select a device whose lifecycle is “Operational” or “Plan Decommission”. After that, the lifecycle status will become “Decommissioned”.

26.4.3.1.10.3. Plan to Decommission Devices

The “Plan Decommission” button is accessible when users select a device whose lifecycle is “Operational”. After that, the lifecycle status will become “Plan Decommission”.

Users can keep decommissioning the device or cancel this decommission action.

26.4.3.1.10.4. Cancel Decommission Devices

The “Cancel Decommission” button is accessible when users select a device whose lifecycle is “Plan Decommission”. After that, the lifecycle status will become “Operational”.

26.4.3.1.10.5. Cancel Reservation

The “Cancel Reservation” button is accessible when users select a device whose lifecycle is “Reserved Available” or “Reserved Procurement”. After that, the lifecycle status will become “Available” or “Procurement”.

26.4.3.1.10.6. Set Devices to Operational

The “Set Operational” button is accessible when users select a device whose lifecycle is “Reserved Available” or “Reserved Procurement”. After that, the lifecycle status will become “Operational”.

26.4.3.1.11. Analyze Icon

The Analyze icon allows users to enter the WHAT-IF Analysis function. Please see the following instructions for details.

Analyze button

The Analyze button supports users to drag and drop devices to the floor to simulate device deployment.

7. Select a floor/area and click the Analyze icon.
8. Drag a device from the Devices/Models list and drop it on the floor/area.
9. The device details is displayed at the bottom of the page.
10. Fill all empty fields.
    a. Department - select the department this device belongs to.
    b. Weight – enter the device weight
    c. Power – enter the power consumption of the device
    d. Power Supply A/B, Panel, Breaker – set the power supply source for the device

    The selection order is Power Supply A/B -> Panel -> Breaker. There are certain criteria need to be met:

    Power Supply A
    - The dropdown list will only show the PDU and RPP devices on the current floor which “Power-Side” field is “A Side Power”, and the lifecycle is operational.
    - The PDU or RPP device must has its associated panels and breakers.

    Panel
    - The dropdown list will display all electrical panels of the selected PDU/RPP.

    Breaker
    - The dropdown list will display all available breakers on the selected panel.

    Power Supply B
    - The dropdown list will only show the PDU and RPP devices on the current floor which “Power-Side” field is “B Side Power”, and the lifecycle is operational.
    - The PDU or RPP device must has its associated panels and breakers.
11. Repeat step 1-3 if you’d like to simulate more than one device.
12. After the deployment of all the devices you’d like to simulate, click the Analyze button at the top right corner. A compositive capacity panel will be shown on the right side of the page. The compositive capacity panel shows the trend of capacity change after adding devices.

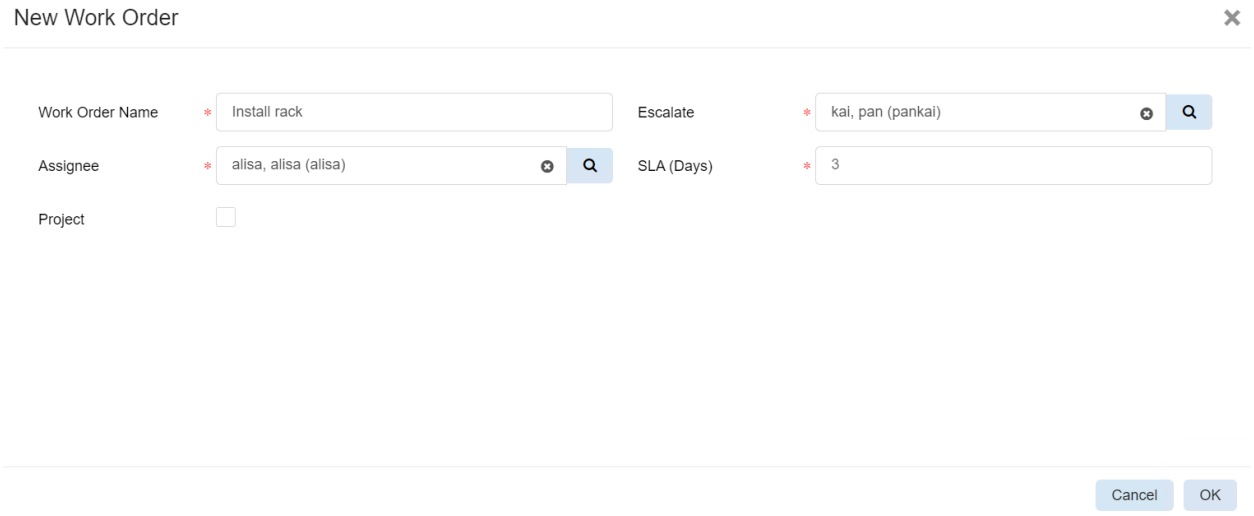
Reserve button

Th Reserve button allows users to reserve the device and all associated resources of the device they plan to deploy. The associated resources include power, weight, position space and the breaker. After users reserve a device, this action shall be logged in the Calendar.

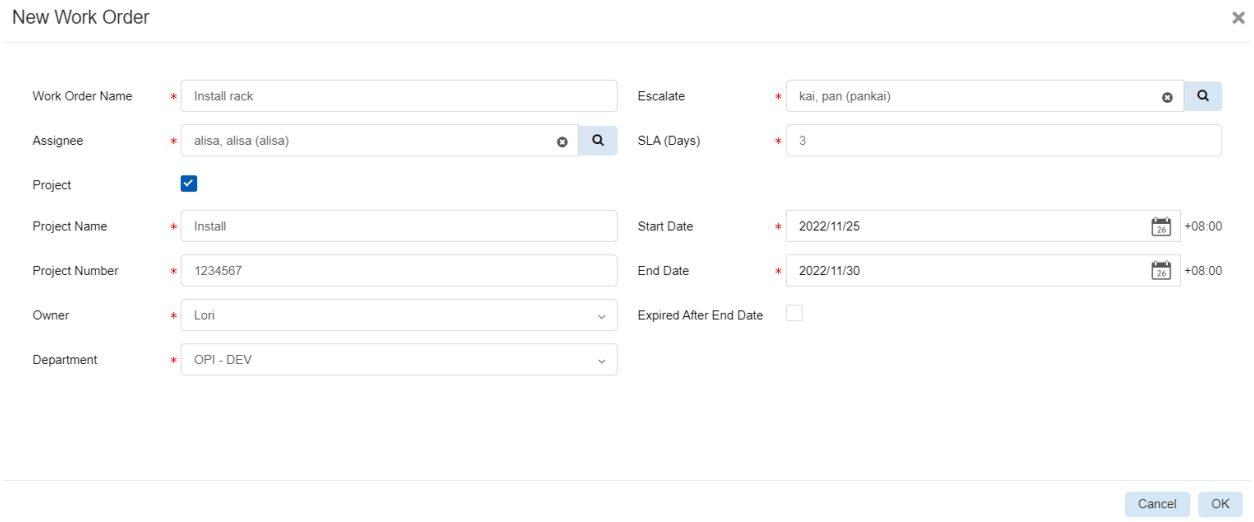
Work Order button

The Work Order button allows users to create a new “Install Equipment” Work Order for the selected devices conveniently.

Click this button, a “New Work Order” page will pop up. Complete the fields with the red asterisks that are the same as the normal Work Order creation process. The Work Order does not necessarily need to link with a Project.



Users can create a new Project at the same time by selecting the Project checkbox. Then complete the fields with the red asterisks that are the same as the normal Project creation process.



Export button

The Export button allows to export the capacity analysis result in PDF and Excel format.

26.4.3.2. Properties Panel

The Properties table is located on the right side of the page. When a device is selected, the properties able will update with relevant asset information for the selected device. Users can show or hide the Properties table using the expand/collapse icon located in the top, left of the table.

It displays the device information such as Name, Alias, Type, Manufacturer, Product Line, Model, Life Cycle, Asset Tag, Serial Number, Power – Side*, and position information such as Area, Row, Column, Rotation, and Height. Among these attribute fields, Name, Alias, Asset Tag, Serial Number, and Power – Side* can be edited.

*Note: The Power-Side field need to be field if users want to specify a more explicit power supply source. Only devices in the following types have this “Power - Side” field:

- PDU
- PDU - Rackmount
- RPP
- UPS
- UPS - Rackmount
- ATS
- ATS - Rackmount
- Rectifier
- Rectifier - Rackmount

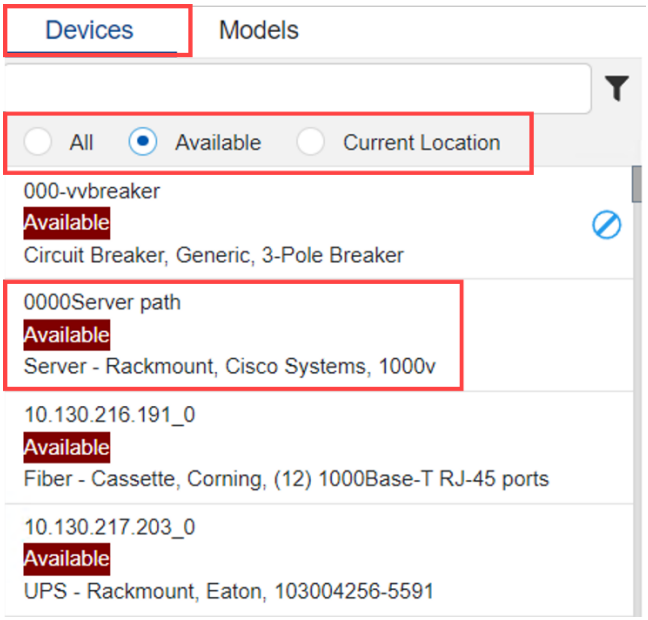
After users save their selection, the info will be displayed on the Basic Information panel of the Device page and the Properties panel of the View page.

Users can click the  icon in the Name field to jump to the Rack Manager page when selecting a rack. Users can click the  icon in the Name field to jump to the Devices Menu Group – Devices Menu Item - Device details page when selecting any devices.

26.4.3.3. Adding Devices to Floor

26.4.3.3.1. Device List

Users can add existing devices to the floorplan with an easy drag and drop action from the Devices tab list on the left part of the page. By default, the list shows Available devices, but the user can elect to show All devices or just the devices in the Current Location. Using the filter tool users can further refine the list.



Multiple devices can be selected from the navigation tree using either the Ctrl or Shift keys. After selecting devices, drag and drop the devices onto the floorplan.

The background color of the lifecycle is exactly matched with the Life Cycle attribute's color. The icons at the right indicate several device statuses:

- Alarm severity icon: indicates the device is in abnormal status.
- : indicates the device cannot be move.
- : indicates the device is in a project.

Note: Device must be highlighted before dragging. Click left mouse button to select (item turns blue), then click left mouse button again and hold to drag to position on the floor.

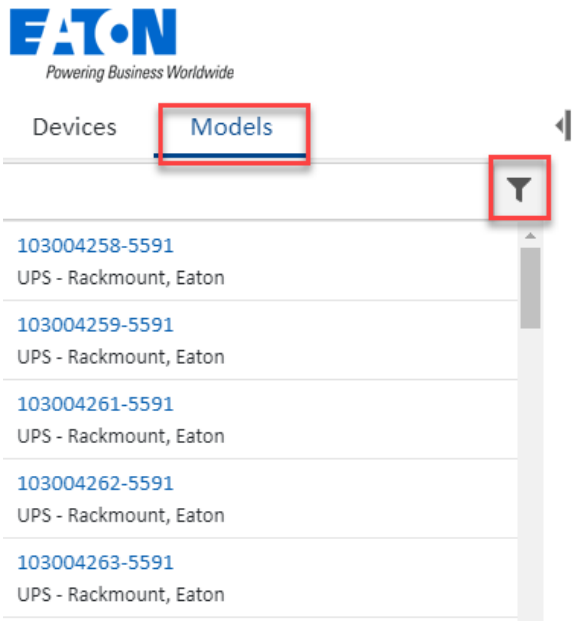
By default, the selected devices will be added to the floor in a joined row in the order they were selected. Once on the floorplan, the user can move the devices manually or use the icons at the top to help update alignment or join order in the layout.

Information

If there is a Server - Blade Enclosure device deployed on the floor, only the blades or models that can be deployed into this Blade Enclosure server will be listed in the Devices list or the Models list.

26.4.3.3.2. Models List

Users can add new devices to the floorplan with an easy drag and drop action from the Models tab list on the left part of the page. By default, the list shows the entire model library. Using the filter tool users can further refine the list.

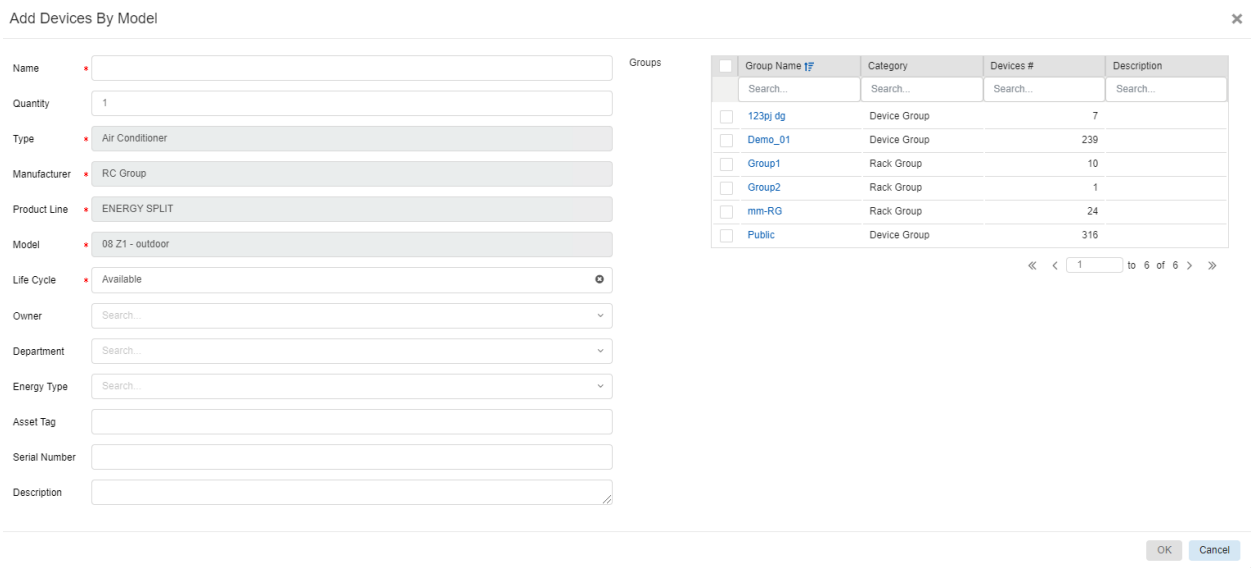


When the model is released on the floorplan, the “Add Devices By Model” form opens. Enter the new device's name and select a device group. Enter a new quantity if more than one of the devices is desired, and the additional device names will be appended with parenthesis and a number.

If the device quantity of the new devices that are to be deployed on the floor is larger than 1, users can enter multiple “Asset Tag” and “Serial Number” by commas.

If the device quantity is greater than the “Asset Tag” and/or the “Serial Number” the user entered, a confirmation message will pop up when submitting.

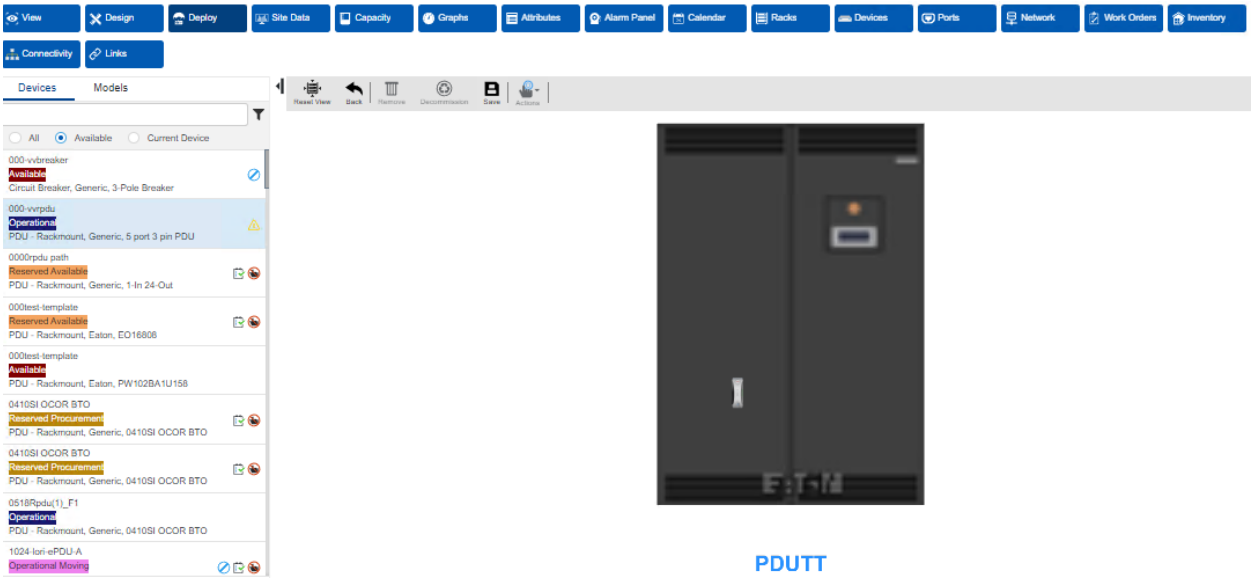
If the device quantity is less than the “Asset Tag” and/or the “Serial Number” the user entered, all devices will be created, and the extra Asset Tag/Serial Number will be ignored.



26.4.3.3.3. Manage the associate devices

In the data center, some types of devices cannot be deployed alone, and they need to be deployed to container devices. Right-click the container device that has already been deployed on the floor and selects the “Manage” button to deploy, remove, and decommission the sub devices. Click the “Back” button to back to the main deploy page after finishing.

> **Information**
>
> The Circuit Breaker/Relay/Sensor/Gateway type devices can be deployed on non-PDU/Electrical Panel device.



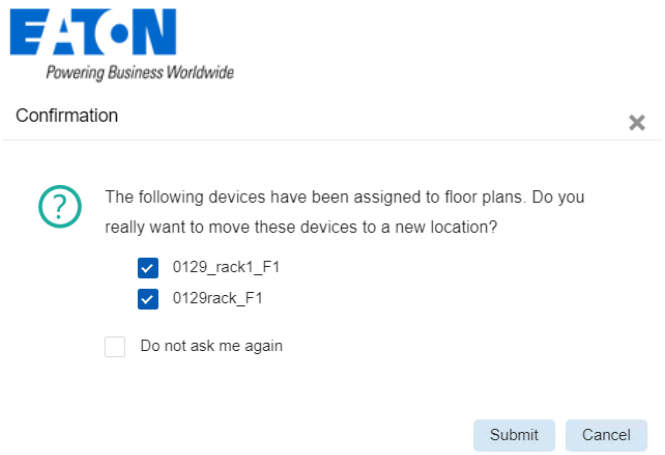
PDUTT

26.4.3.4. Moving Devices to another location

Users can drag and drop devices that already deployed from the Devices List to another floor/area node if needed. By doing this, a confirmation message will pop up.

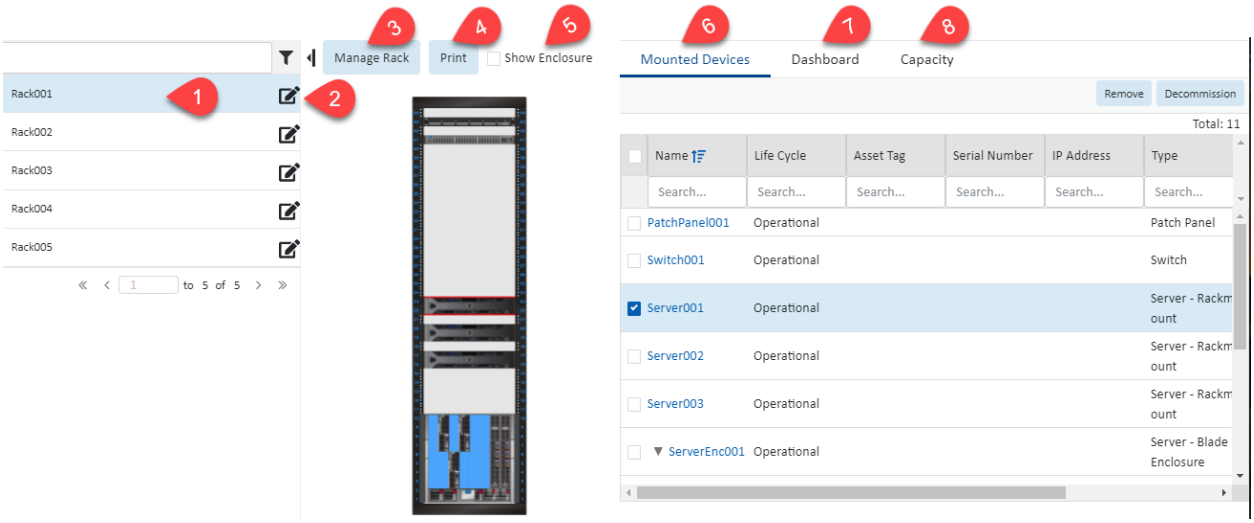
If users select the checkbox “Do not ask again”, the pop-up message won’t pop up again until users leave the current floor.

If users want to move multiple devices to a new location, the devices’ names will be listed on the pop-up message separately, and users can select if they want to move none, one or multiple.



26.4.4. Racks Function Tile

Displays a list of the racks deployed on the current floor and when selected a rack page is displayed with rack details and access to rack management functions.



1. The selected rack is highlighted in the rack list causing the rack to be displayed and its detail to be loaded on the page.
2. Edit Icon - goes to the device central page for the rack.
3. Manage Rack button - opens the rack manager page with the rack loaded.
4. Print button - generates a PDF file rack report containing the following:
    a. Images of the rack front, rear, left, right and outer left and right sides of the rack.
    b. The list of devices mounted on the rack.
    c. The rack's dashboard information which includes the power and capacity statistics.
5. Show Enclosure checkbox - toggle to show rack enclosure.
6. Mounted Devices tab
    a. Displays the list of devices mounted in the rack.
    b. Select the device on the rack and the row is highlighted in the list or vice versa.
    c. The Remove and Decommission button will act on the devices with the boxes checked.
7. Dashboard tab - displays the rack power dashboard elements in the content area.
8. Capacity tab - displays the rack capacity dashboard elements in the content area.

27. Creating and Configuring Traps

SNMP Traps are an important part of device monitoring and management and can be configured in the application. The SNMP Trap listener will receive traps from monitored devices and process the traps based on the rules and configurations. Many vendor trap objects are predefined in the Monitoring Template section of the application. Creating new trap objects is a multi-step process documented in the sections below.

27.1. Create Attributes for Traps

The application generates all alarms, notifications and actions based on Attributes. So, the first step to creating support for a new trap is to ensure there is an attribute created in the application. This step is completed on the Attribute Manager page which is in the Settings group menu.

- Name – Define the name of the trap attribute. This is typically a unique name which is easy to find and manage when reported in the Alarms and Calendar features of the application.
- Define the Category where this attribute will be visible when reviewing the full attributes list.
- Choose the Value Type of the trap to be delivered from the device. In most cases, this type will be set to String.
- Usage – Choose the Device checkbox. Only device traps are supported in the application.

This attribute will be used in other sections below to fully configure the trap object in the application.

27.2. Create Trap Data Elements

Once the trap attribute is defined in the application, the user can go to the Monitoring – Monitoring Templates page to create support for the actual trap object from the device. Examples of predefined traps can be found in the monitoring templates that start with the string “Trap”. Create a new monitoring template which will contain the list of traps to be created for your device. There are two ways to define the individual trap attributes in the monitoring template as documented below.

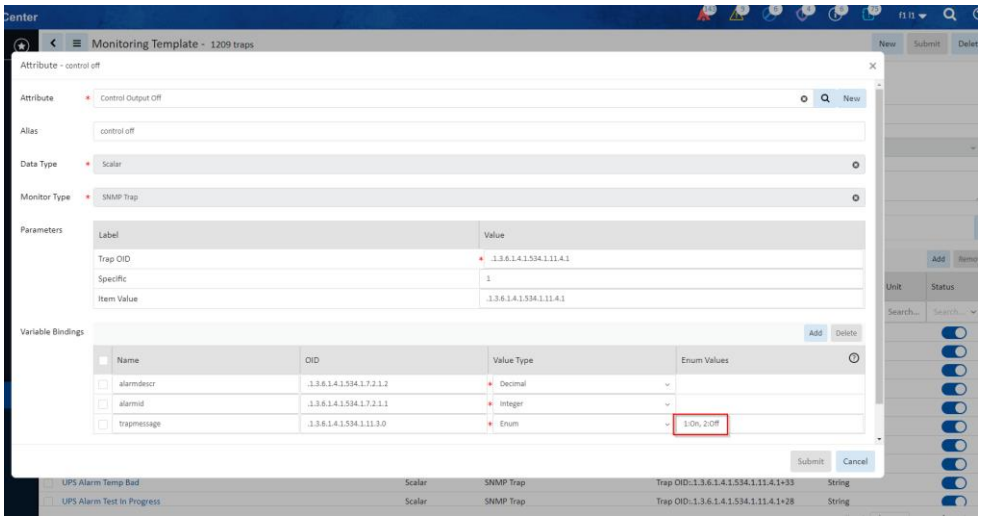
27.2.1. Traps Defined Manually

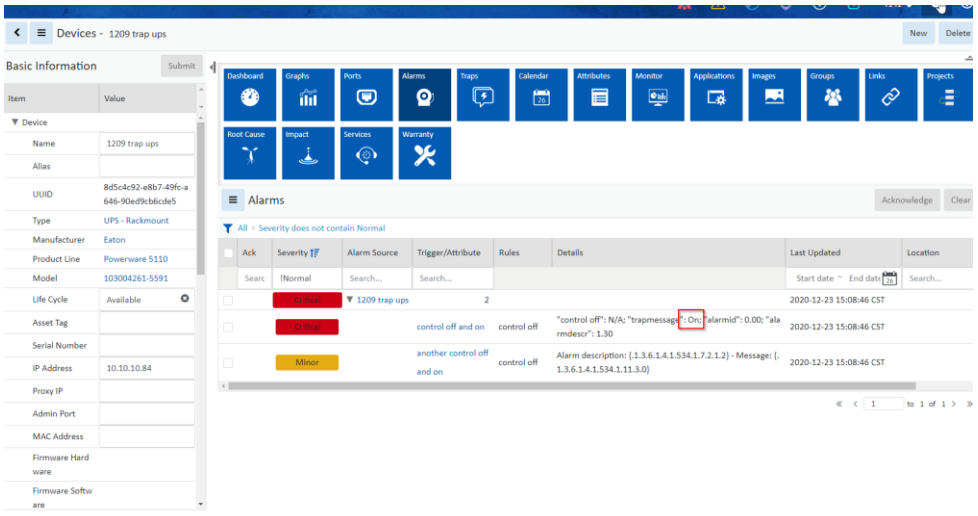
Users can manually define a trap attribute in the monitoring template by following these steps. Please refer to working examples of traps in the preconfigured Monitoring Templates if more information is needed on how to manually create a trap attribute:

- Choose the Attribute from the application Attribute Manager which will be used for tracking the trap object sent from the device.
- Define an alias for this attribute. This is not required but may be a way to provide a user-friendly name to a more complex attribute name. The Alias name will be used for reporting in alarms and calendar events.
- Data Type should be set to Scalar.
- Monitor Type should be set to SNMP Trap.
- Parameters – Trap OID should be the OID from the device MIB which represents the trap alarm sent by the device. Specific is a configuration setting which is defined in the manufacturer MIB

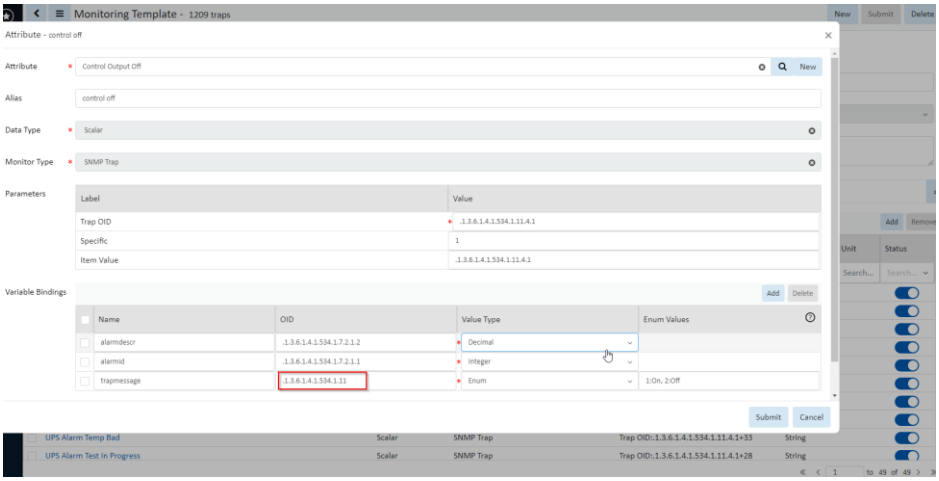
for each trap object being sent to the application as an alarm. Item Value is used in some cases to match the value assigned in the trap to a configuration with the attribute defined in the application.

- Variable Bindings – In some cases traps will be dependent on other objects in the SNMP MIB. If the trap object being defined has a variable binding then click the Add button and define the Name, OID, Value type and Enum Values fields.
    - The system will translate ENUM values into user-accessible readable format for traps in the alarm details and email.





- For Variable Bindings support for fuzzy matching at the end of some of the bindings (such as OID .1.3.6.1.4.1.534.1.11 could match all the OID start with it.) This means that variable binding OIDs no longer require an exact match to be recognized by the system.



- Status – Determines if the application will process this trap definition for the assigned devices.

27.2.2. Traps Imported from MIB

An alternative to the manual creation of the trap object in the application is to use the Import from MIB option when creating attributes. This method is much easier to use and is recommended for trap configuration activity. To use this method of creating support for traps, follow these steps below:

- Create a new Monitoring Template or open an existing template which will contain the trap definitions.
- On the Attributes Tab, click the Add button.
- At the top of the Add Attribute page turn on the Add Attribute from MIB checkbox.
- Browse to the file which is the MIB file which contains the trap definitions to support.
- Select the checkbox next to the trap objects which will be imported.
- Assign the application Attribute which will be used to map to the Trap object. A list of available Attributes is in the dropdown list in the Attribute column of the table.
- Click the Submit button.

The selected traps will be created in the monitoring template and can be assigned to devices.

27.2.3. Traps Imported via Excel

- Below is the screenshot for the trap import template

	A	B	C	D	E	F	G	H	I	J	K
1	Template			Attributes					Trap		
2	ID	Name	Description	Item ID	Name	Alias	Enum Value	Status	Trap OID	Specific	Item Value
3		Trap XUPS M2 V3			Control Output Off			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.1		
4		Trap XUPS M2 V3			Control Output On			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.2		
5		Trap XUPS M2 V3			UPS Agent Down			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.50		
6		Trap XUPS M2 V3			UPS Alarm Battery Bad			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.23		
7		Trap XUPS M2 V3			UPS Alarm Charger Failed			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.34		
8		Trap XUPS M2 V3			UPS Alarm Entry Added			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.21		
9		Trap XUPS M2 V3			UPS Alarm Entry Removed			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.22		
10		Trap XUPS M2 V3			UPS Alarm Fan Failure			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.35		
11		Trap XUPS M2 V3			UPS Alarm Temp Bad			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.33		
12		Trap XUPS M2 V3			UPS Alarm Test In Progress			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.28		
13		Trap XUPS M2 V3			UPS AlarmFuse Failure			Enable	.1.3.6.1.4.1.534.1.11.4.1.0.36		

- You will fill out the template with the columns below
  - Column B: Name
    - This is the name of the trap template to be created
  - Column E: Name
    - This is the name of the attribute to be used. Note, the attribute must already be created in the system.
  - Column H: Enable
    - This is to enable the trap in the template
  - Column I: Trap OID
    - Should be the OID from the device MIB which represents the trap alarm sent by the device. Specific is a configuration setting which is defined in the manufacturer MIB for each trap object being sent to the application as an alarm.
  - Column J: Specific
  - Column K: Item Value
    - is used in some cases to match the value assigned in the trap to a configuration with the attribute defined in the application.
- After filling out the spreadsheet follow normal import procedure and select Monitoring Template as the dropdown option.

27.3. Define Trigger for Trap

27.3.1. Define Trap Triggers Manually

The nature of an SNMP Trap is to report a condition with the device and report the alarm condition to the monitoring application. The steps in the sections above will configure the application to receive the trap from the source device, but for the trap to be reported to users you need to define the Trigger for the trap event.

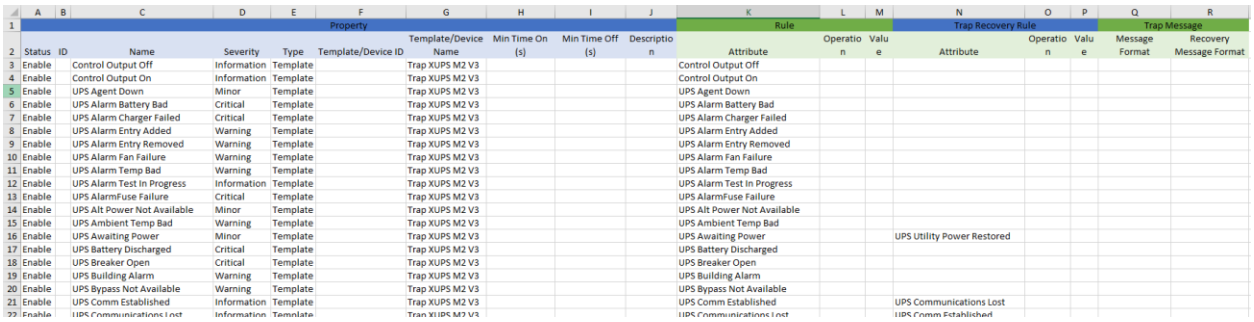
Defining a Trigger for a trap attribute is the same as defining a Trigger for a standard polled data element from a device. On the Monitoring Template where the Traps are defined, select the Triggers tab and click the New button to define a new Trigger. Key elements of the SNMP Trap Trigger are as follows:

- Name – Name of the Trigger. This trigger name will appear in the Alarms and Calendar when the trap event is detected.
- Severity – Alarm severity to assign to the event when the trap is received for the device.
- Rules – Select the Trap attribute or combination of trap attributes which will cause this Trigger to be enabled.

Click Submit to save the Trigger definition. When this trigger event is enabled, the device will be set to the defined alarm severity in the trigger rule.

27.3.2. Define Trap Triggers via Import

Below is a screenshot of an example trap import



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Property										Rule			Trap Recovery Rule			Trap Message	
2	Status	ID	Name	Severity	Type	Template/Device ID	Template/Device Name	Min Time On (s)	Min Time Off (s)	Description	Attribute	Operation	Value	Attribute	Operation	Value	Message Format	Recovery Message Format
3	Enable		Control Output Off	Information	Template		Trap XUPS M2 V3				Control Output Off							
4	Enable		Control Output On	Information	Template		Trap XUPS M2 V3				Control Output On							
5	Enable		UPS Agent Down	Minor	Template		Trap XUPS M2 V3				UPS Agent Down							
6	Enable		UPS Alarm Battery Bad	Critical	Template		Trap XUPS M2 V3				UPS Alarm Battery Bad							
7	Enable		UPS Alarm Charger Failed	Critical	Template		Trap XUPS M2 V3				UPS Alarm Charger Failed							
8	Enable		UPS Alarm Entry Added	Warning	Template		Trap XUPS M2 V3				UPS Alarm Entry Added							
9	Enable		UPS Alarm Entry Removed	Warning	Template		Trap XUPS M2 V3				UPS Alarm Entry Removed							
10	Enable		UPS Alarm Fan Failure	Warning	Template		Trap XUPS M2 V3				UPS Alarm Fan Failure							
11	Enable		UPS Alarm Temp Bad	Warning	Template		Trap XUPS M2 V3				UPS Alarm Temp Bad							
12	Enable		UPS Alarm Test In Progress	Information	Template		Trap XUPS M2 V3				UPS Alarm Test In Progress							
13	Enable		UPS AlarmFuse Failure	Critical	Template		Trap XUPS M2 V3				UPS AlarmFuse Failure							
14	Enable		UPS Alt Power Not Available	Minor	Template		Trap XUPS M2 V3				UPS Alt Power Not Available							
15	Enable		UPS Ambient Temp Bad	Warning	Template		Trap XUPS M2 V3				UPS Ambient Temp Bad							
16	Enable		UPS Awaiting Power	Minor	Template		Trap XUPS M2 V3				UPS Awaiting Power			UPS Utility Power Restored				
17	Enable		UPS Battery Discharged	Critical	Template		Trap XUPS M2 V3				UPS Battery Discharged							
18	Enable		UPS Breaker Open	Critical	Template		Trap XUPS M2 V3				UPS Breaker Open							
19	Enable		UPS Building Alarm	Warning	Template		Trap XUPS M2 V3				UPS Building Alarm							
20	Enable		UPS Bypass Not Available	Warning	Template		Trap XUPS M2 V3				UPS Bypass Not Available							
21	Enable		UPS Comm Established	Information	Template		Trap XUPS M2 V3				UPS Comm Established			UPS Communications Lost				
22	Enable		UPS Communications Lost	Information	Template		Trap XUPS M2 V3				UPS Comm Established							

- You will fill out the template with the columns below
  - Column C: Name
    - Name of the trigger
  - Column D: Severity
    - This is the alarm severity category the trigger will display once active
  - Column E: Type
    - The type of trigger and where it will be created ie either under a template or a specific device
  - Column G: Name
    - The name of the type or device the trigger will be applied to
  - Column K: Attribute
    - The name of the trap attribute that will activate the trigger if received.
- After filling out the spreadsheet follow normal import procedure and select Triggers as the dropdown option.

27.4. Define Recovery Rules for Trap

When traps are received by the application and a trigger is enabled to set an alarm for a device, there needs to be an automated way for the trap alarms to be cleared from the alarm panel when the device reports the original trap condition no longer exists. Users can configure these recovery rules within the Triggers page for the trap alarm.

On the New Trigger definition page, there is a Recovery Rules section which is used to define the Trap events which will clear the alarm condition. Essentially, when the recovery rules events are received for the device, the original trap event will be cleared for the device. This clearing of the trap event will reset the trap to Normal condition for the device which eliminates an entry in the alarm panel for the device.

Note: When defining the recovery rules, there are options to use compound logic the AND|OR buttons to require multiple trap events to clear the original trap alarm.

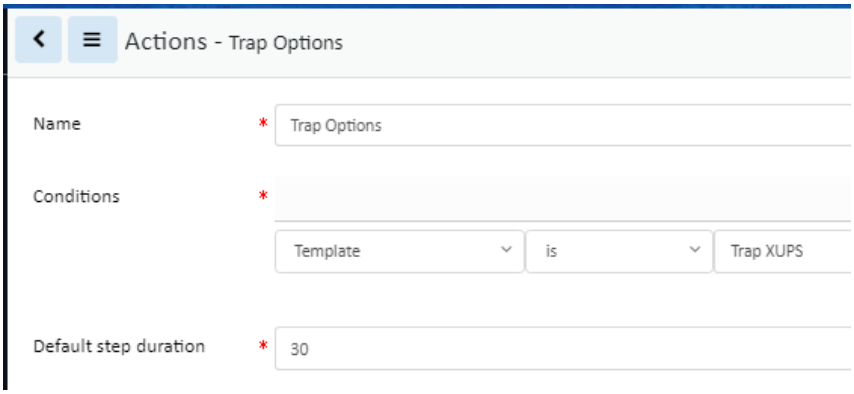
27.5. Define Custom Messages for Trap

On the New Trigger definition page there is an option to deliver a text string along with the trap alarm. Using the Message Format field on the new trigger page, users define the text string which will be sent with the trap alarm when it is generated. This text string will appear in the Alarm panel and the Calendar entry for the alarm generated for the device.

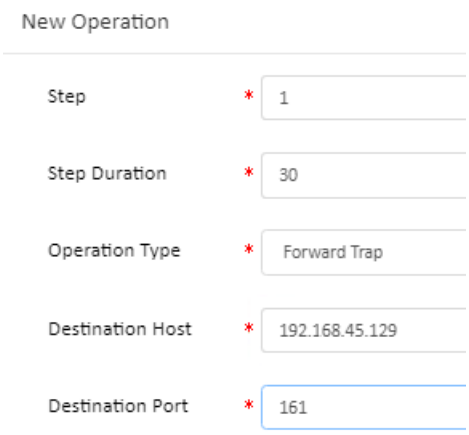
27.6. Configure Trap Forwarding

Users may want for the application to collect SNMP Traps from devices and then forward these traps to a third-party application for further processing. For these use cases, the Actions feature is used to define Trap Forward rules.

Create a New Action by selecting the Template, Trigger or Alarm which contains the SNNP Trap you want to forward to a third-party application.



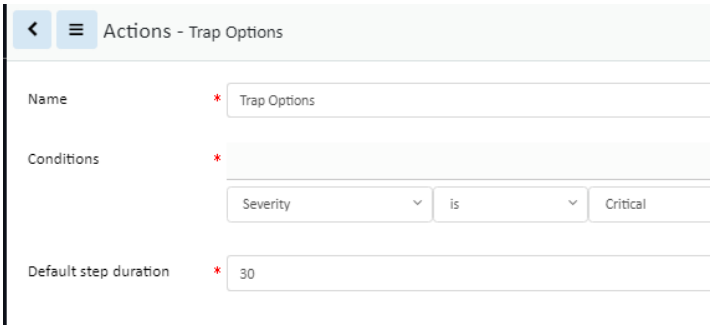
Define an Operation Rule where Operation Type is set to Forward Trap and the Destination Host|Ports are for the server which should receive the trap.



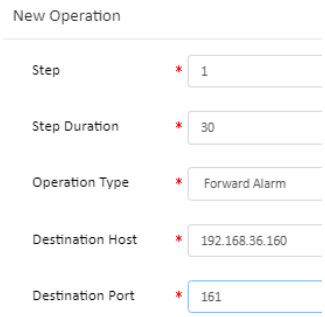
27.7. Generate Trap to 3rd Party Application

The Visual Data Center application is capable of delivering SNMP Traps for any alarm detected within the application. Alarms are generated using the Trigger feature so they may be simple threshold alarms, complex triggers involving multiple conditions or traps received from devices managed within the application. In any of these cases, the Visual Data Center application can notify a third-party application with an alarm which is in the format of an SNMP Trap.

In the example below, an Action is created for any alarm generated in Visual Data Center which has a severity of Critical.



To forward this alarm condition to a third-party system users will create a new Operation with this Action where Operation Type is set to Forward Alarm and the Destination Host|Port are set for the server which should receive the Alarm trap generated by Visual Data Center.



27.7.1. Forward Alarm Trap OIDs

Device Host: {device ip address/host} .1.3.6.1.4.1.34510.2.1.1.3.2.1.9

Device Description: .1.3.6.1.4.1.34510.2.1.1.3.2.1.10

Device Owner: {device owner} .1.3.6.1.4.1.34510.2.1.1.3.2.1.11

Device Department: {device department} .1.3.6.1.4.1.34510.2.1.1.3.2.1.12

Device Location: {Rack RU, Row, Column, area, floor, building, city, state, country} .1.3.6.1.4.1.34510.2.1.1.3.2.1.13

Examples:
Cases: Rack 001, 42.0U, AZ, 98, room, floor1, New York, New York, United States
Cases: Rack 001, 42.0U, Enclosure X, Slot ID:[1,2], AZ, 98, room, floor1, New York, New York, United States

27.8. Trap Troubleshooting

For traps to be delivered by an end device, received by Visual Data Center and processed correctly requires proper configurations for traps across devices. Please reference these important notes for configuring traps to work properly with the application.

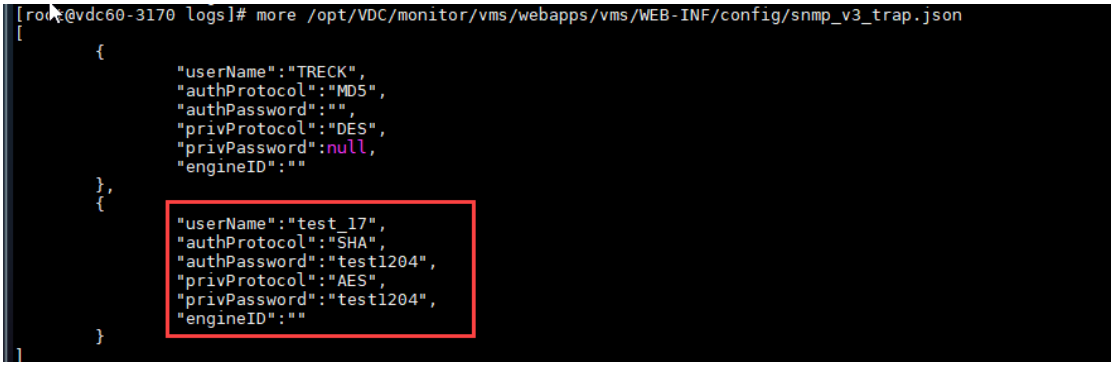
27.8.1. Device Configurations

- Ensure the end device is configured to deliver traps to the Visual Data Center Probe server. Many devices refer to this as the Trap Receiver configuration and setup. By default, the Visual Data Center trap listener is configured to listen on port 162.
- For SNMP version 1 traps, ensure the Community strings are defined for the end device.
- For SNMP version 3 traps, more configuration elements are required:
    - The definition of the Trap Receiver (Visual Data Center Probe) will require a user name to be included in the setup.
    - The version 3 user name has different Security options for authentication and privacy. A single setting must be used for all devices using SNMP version 3 communication to Visual Data Center:
        - No Auth, No Priv
        - Auth, No Priv
        - Auth, Priv

27.8.2. Probe Server Configuration – SNMP Version 3 Only

If SNMP Version 3 traps are being sent from devices, the Visual Data Center probe server must have the following configuration file updated to align with the settings defined on the end device. All devices at the customer site must communicate with the same SNMP version 3 communication settings. The following file is used to define the communication settings for version 3 traps:

/opt/VDC/monitor/vms/webapps/vms/WEB-INF/config/snmp_v3_trap.json



"userName":"",
"authProtocol":"",
"authPassword":"",
"privProtocol":"",
"privPassword":null,
"engineID":""

All values entered to this configuration file should be entered between the “” after the colon.

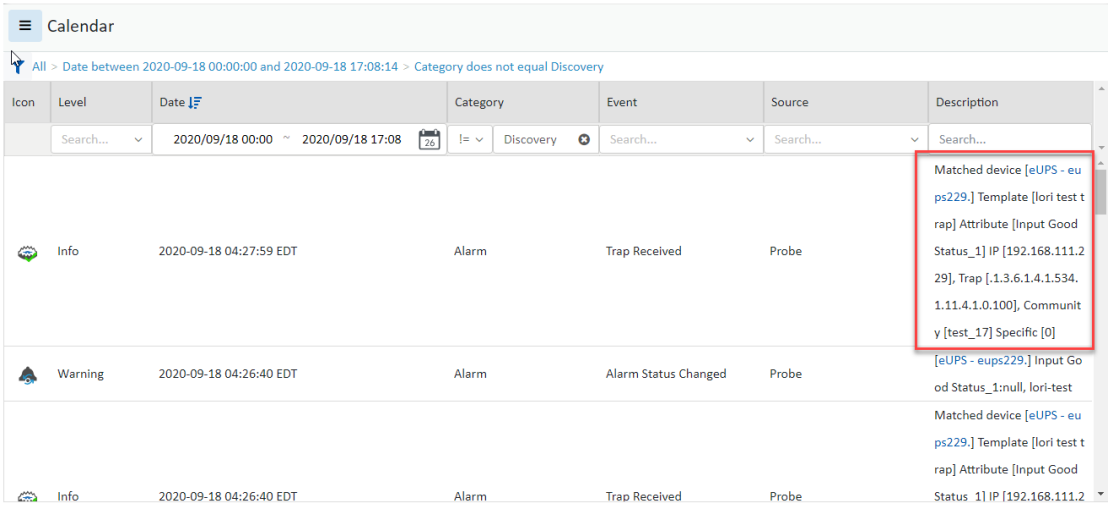
- userName – Insert the SNMP version 3 user configured on the end device which is delivering the trap.
- authProtocol – Enter either MD5 or SHA.

- authPassword – If a password is required for the authentication, then enter here.
- privProtocol – Enter either AES or DES here.
- privPassword – If a password is required for the privilege setting then enter here.
- engineID - Engine ID of the authoritive snmp entity (trap sender). If trap sender's engineID can be ignored, null value can be used

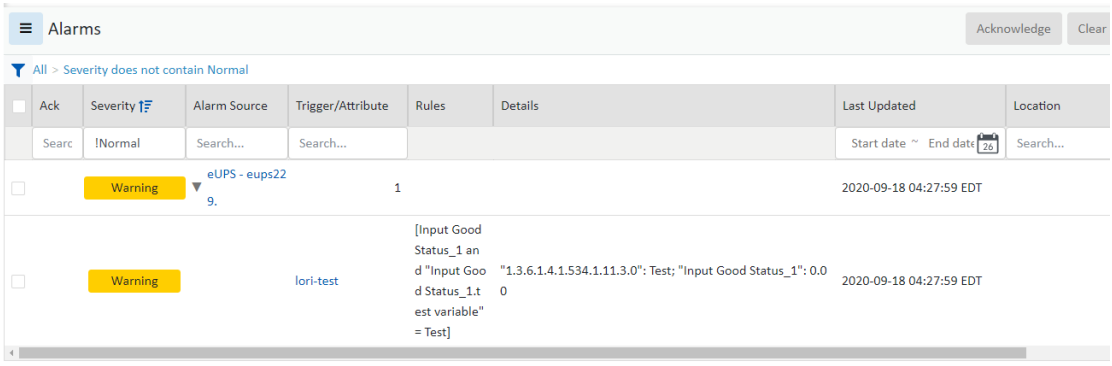
If this configuration file is updated, the vms process (on the probe server) MUST be restarted.

1. Login to the server as root
2. ps -ef | grep vms
3. kill -9 the process ID assigned to the vms process in the output of the first command
4. su - vdc -c "cd /opt/VDC/monitor/vms/bin;./vms start >/dev/null 2>&1"

If there is not an existing monitoring template it needs to be created. Once a monitoring template exists, users must enable the template and monitoring for the device and then the v3 traps can be received.



Triggers created by the traps are generated when traps received.



27.8.3. Get Number of Traps Coming into Server

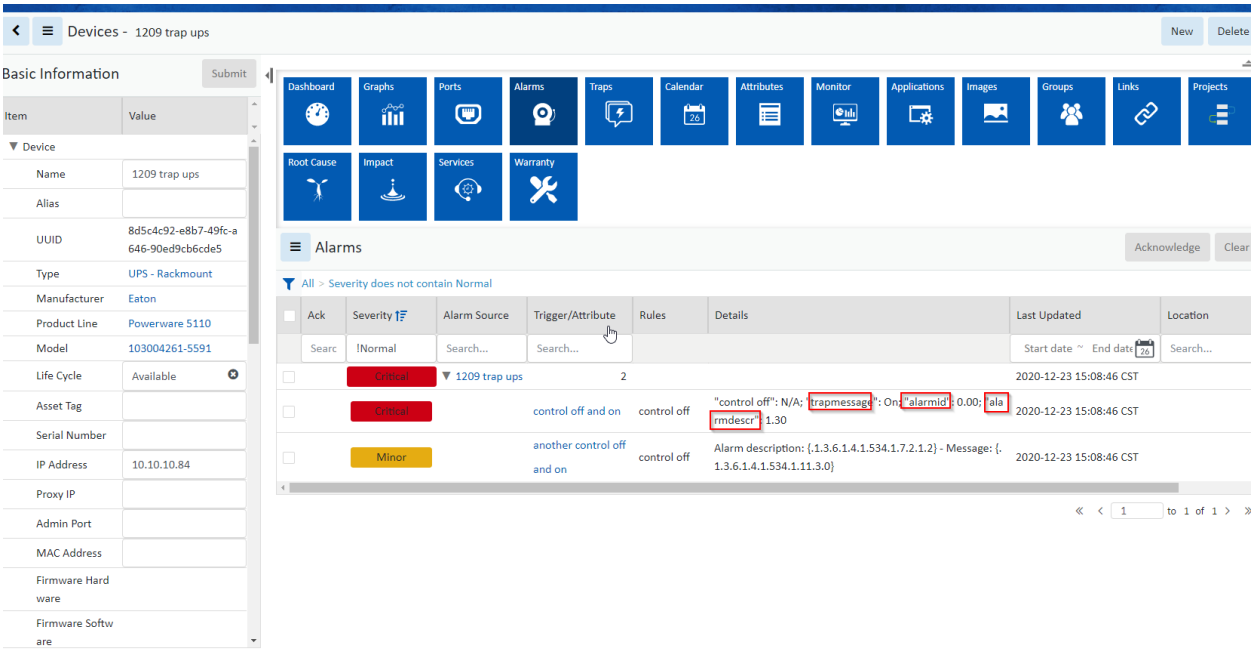
To get the number of traps coming into the server from a specific IP and port run the following command as root:

tcpdump -i ens32 -w /tmp/troubleshoot.pcap -vv -A -T snmp -s 0 "(src 192.168.111.229 and dst port 162)"

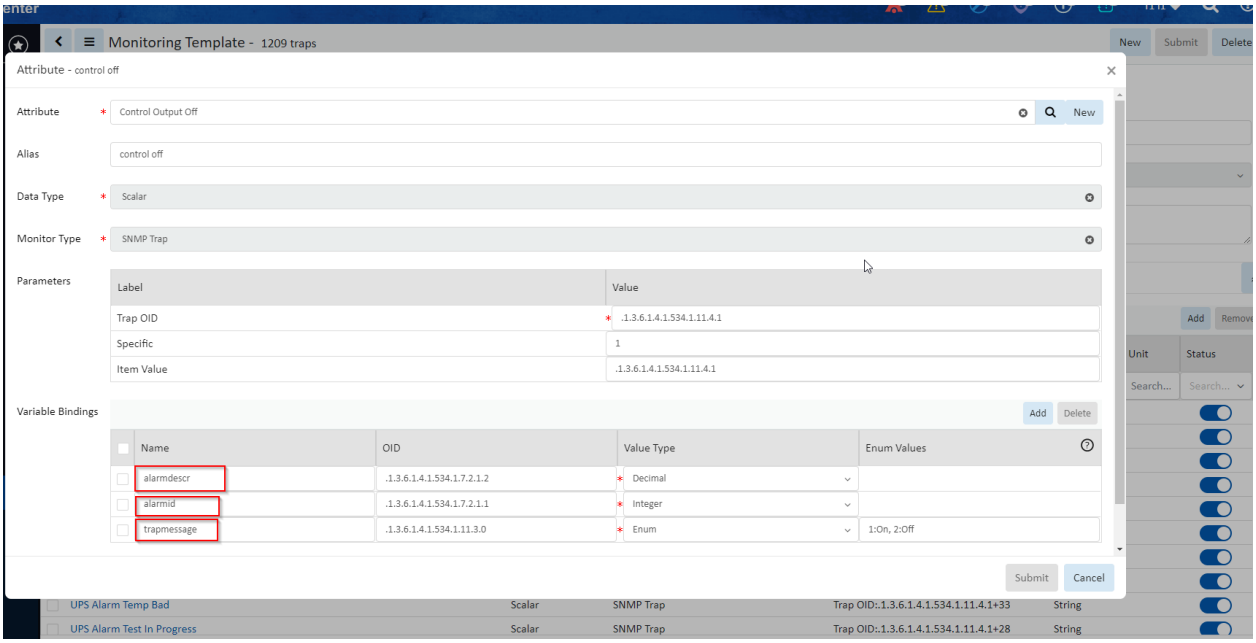
Where ens32 is the name of the NIC port in use on the application server.

```
[root@vdc60-3170 ~]# ifconfig -a
ens32: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.111.170  netmask 255.255.255.0  broadcast 192.168.111.255
        inet6 fe80::1112:8124:a8fa:339b  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:ad:a2:3b  txqueuelen 1000  (Ethernet)
        RX packets 5144251  bytes 1207793975 (1.1 GiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 4403023  bytes 435232033 (415.0 MiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

27.8.4. Trap Events in the Device Alarm Tile

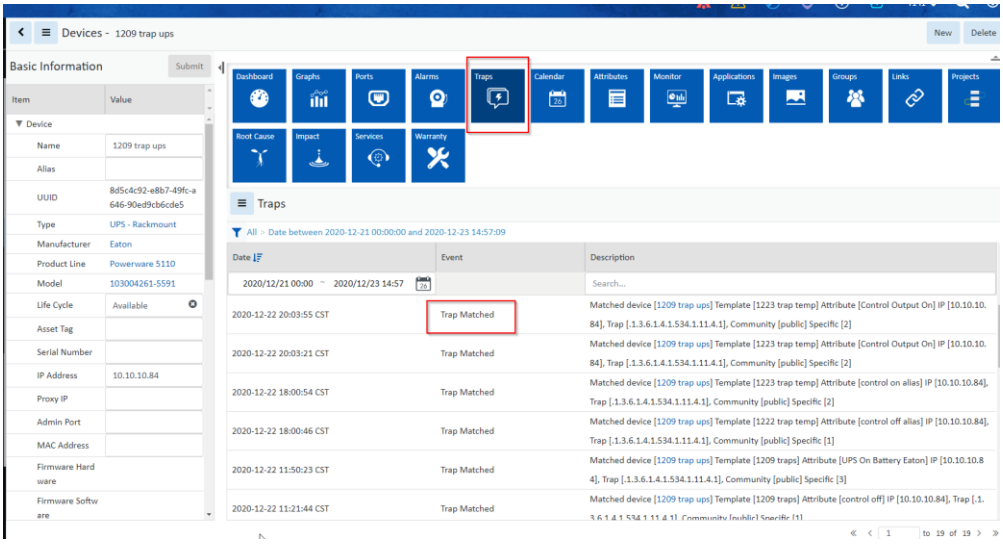


The system will display the "Name" of each trap binding and NOT the OID in the alarm detail and email.



27.8.5. Traps Function Tile

A new Traps function tile has been added to device central and it displays a calendar with all the trap events related to the current device.



Only Traps that match the configuration (device ip and trap oid) for a device will be shown under this tiles information.

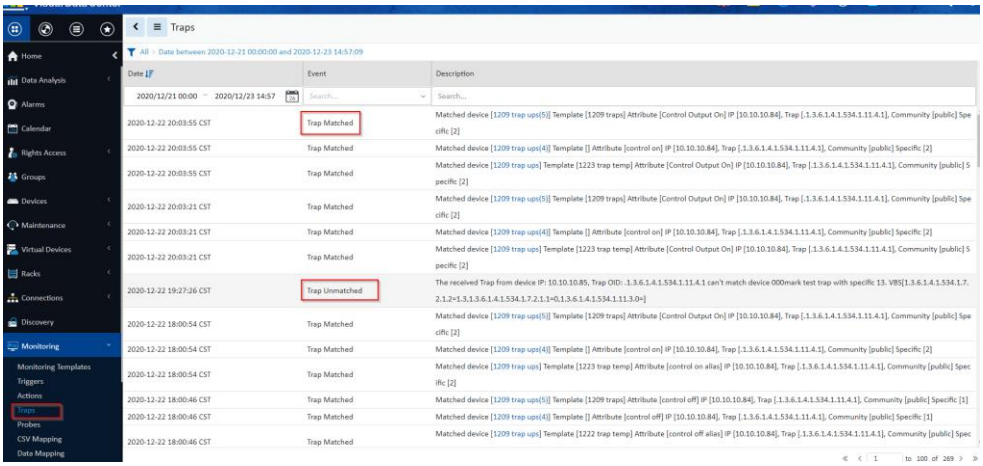
27.8.6. Monitoring Menu Group > Traps Menu Item

Displays all the Trap Matched and Trap Unmatched events for all devices in the specified date range.

A Matched Trap must meet the following

- If the device IP in the trap matches a device IP in the application.
- If the trap OID matches an ACTIVE trap attribute set for the device. Please note this requires the monitoring template is activated for the device AND the actual trap within the monitoring template is enabled.

If the conditions above are not met the trap will be considered unmatched and the details contains trap OID, IP and reason not received will be seen.



27.8.7. Calendar

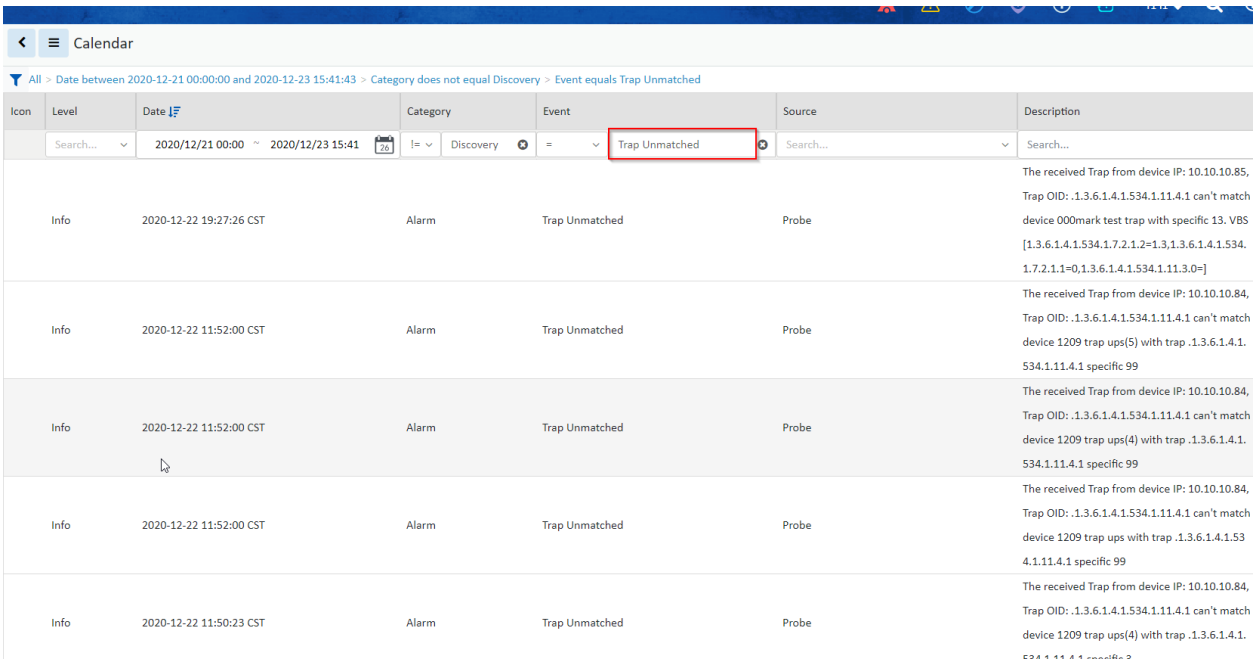
The events calendar includes Trap Matched and Trap Unmatched events for all devices in the specified date range.

Added a new calendar event named Trap Unmatched. The details contains the trap OID, IP and reason not received.

A Matched Trap must meet the following

- If the device IP in the trap matches a device IP in the application.
- If the trap OID matches an ACTIVE trap attribute set for the device. Please note this requires the monitoring template is activated for the device AND the actual trap within the monitoring template is enabled.

If the conditions above are not met the trap will be considered unmatched and the details contains trap OID, IP and reason not received will be seen.


Calendar
All > Date between 2020-12-21 00:00:00 and 2020-12-23 15:41:43 > Category does not equal Discovery > Event equals Trap Unmatched
Icon
Level
Date
Category
Event
Source
Description
Search...
2020/12/21 00:00 ~ 2020/12/23 15:41
!=
Discovery
=
Trap Unmatched
Search...
Search...
Info
2020-12-22 19:27:26 CST
Alarm
Trap Unmatched
Probe
The received Trap from device IP: 10.10.10.85, Trap OID: .1.3.6.1.4.1.534.1.11.4.1 can't match device 000mark test trap with specific 13. VBS [1.3.6.1.4.1.534.1.7.2.1.2=1.3,1.3.6.1.4.1.534.1.7.2.1.1=0,1.3.6.1.4.1.534.1.11.3.0=]
Info
2020-12-22 11:52:00 CST
Alarm
Trap Unmatched
Probe
The received Trap from device IP: 10.10.10.84, Trap OID: .1.3.6.1.4.1.534.1.11.4.1 can't match device 1209 trap ups(5) with trap .1.3.6.1.4.1.534.1.11.4.1 specific 99
Info
2020-12-22 11:52:00 CST
Alarm
Trap Unmatched
Probe
The received Trap from device IP: 10.10.10.84, Trap OID: .1.3.6.1.4.1.534.1.11.4.1 can't match device 1209 trap ups(4) with trap .1.3.6.1.4.1.534.1.11.4.1 specific 99
Info
2020-12-22 11:52:00 CST
Alarm
Trap Unmatched
Probe
The received Trap from device IP: 10.10.10.84, Trap OID: .1.3.6.1.4.1.534.1.11.4.1 can't match device 1209 trap ups with trap .1.3.6.1.4.1.534.1.11.4.1 specific 99
Info
2020-12-22 11:50:23 CST
Alarm
Trap Unmatched
Probe
The received Trap from device IP: 10.10.10.84, Trap OID: .1.3.6.1.4.1.534.1.11.4.1 can't match device 1209 trap ups(4) with trap .1.3.6.1.4.1.