



Sentry Power Manager

Operations Manual



Instructions

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Dangerous Voltage

This symbol is intended to alert the user to the presence of un-insulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



Protective Grounding Terminal

This symbol indicates a terminal that must be connected to earth ground prior to making any other connections to the equipment.

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Chapter 1: Introduction

Welcome to Server Technology's Sentry Power Manager!

Sentry Power Manager (SPM) is an appliance that provides real-time enterprise power management of Cabinet Distribution Units (CDUs) in one or more remote data center locations.

SPM communicates with discovered CDUs in the network and allows you to monitor and manage remote CDUs in all locations from a single console. The SPM interface gives a top-level view of your data center with drill-down to operational details for each device SPM discovers in the network. You can quickly determine the overall status of your enterprise while managing the operating status of individual devices.

Features of Sentry Power Manager:

- Real-time CDU status and notification of alarms reported dynamically (using SNMP traps), to allow monitoring and immediate outlet control over CDU operating conditions such as power, temperature, and humidity.
- Server Technology's "clustering" technology that gathers CDUs across individual IP addresses, multiple CDUs, or the entire data center for power monitoring and calculating data center efficiency.
- Generation of several high accuracy POPS and PIPS energy usage reports based on individual outlets, devices, named outlet groups/outlet clusters, and the entire data center.
- The Schedule option lets you define and schedule the frequency of several SPM system actions, including discoveries running on networked devices, performing system backups, maintaining the SPM database, and providing command control over individual outlets and outlets collected in named outlet groups and outlet clusters.
- Availability of custom trend graphs generated with various operating parameters for temperature, humidity, infeed load, and power.
- A custom view of your data center as a hierarchy of several levels: locations, buildings, floors, rooms, and other specific areas you can define. Background location images and colored icons let you graphically view equipment conditions by status, load, power, and capacity and provide drill-down capability from higher information levels to detailed operating parameters.

Technical Support



Experience Server Technology's FREE **SMARTER** Technical Support - [Learn more...](#)

Server Technology understands that there are often questions when installing and/or using a new product. Free Technical Support is provided from 6:00 AM to 7:00 PM, Monday-Friday, Pacific Time.

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Chapter 2: Getting Started

For the administrator: The following list summarizes the step-by-step tasks to help you quickly configure Sentry Power Manager (SPM) to build a graphical data center view, user base, and device connections. The configurations allow connection and communication with your current established network.

NOTE: Before you begin, make sure SNMP is enabled.

For detailed information on each step, go to the page number listed to the right:

Connect and Login

Connect and login to Sentry Power Manager 9.

Upon connection to SPM, a web browser is directed to the local IP address of the SPM server. You can then login as the default administrative user with username/password: **admnm/admnm**.

Create a New Administrative Account

Create a new administrative user account 59.

For security it is recommended that you first use the default **admnm** user account to grant access rights to another administrative user account. Then use the new administrative account to change the default **admnm** account username/password. Note that the **admnm** account cannot be deleted or demoted.

Discover Network Devices

Configure supported devices for discovery 51.

Device management starts with adding Cabinet Distribution Units (CDUs) to the SPM network inventory. The Discovery feature adds devices in bulk (IP range) or individually (exact IP address) by searching for SNMP-enabled CDUs in the network to communicate with SPM.

Configure Device Settings

Locations: Configure locations 48.

Import, configure, and manage default maps and custom images to be displayed on the Views page as the background for location, cabinet, and device icons.

Cabinets: Configure cabinets 53.

Manage cabinets by adding, editing, and deleting; specify cabinet area (in square ft. or meters) for calculation of power density; associate a cabinet with a location (background) image.

CDUs: Configure CDUs 53.

Configure CDUs by naming the CDU, establishing SNMP Get/Set parameters, providing device capacity, deleting CDUs, and associating a CDU with a cabinet/location.

CDUs: (OPTIONAL) Configure Environmental Monitor 55.

If an environmental monitor is connected to a CDU, you can edit the environmental monitor name and sensor name(s) and set the high/low thresholds for temperature and humidity.

CDUs: Configure enclosures 55.

Edit the names of CDU components: enclosures, infeeds, and outlets; also allows configuration of load threshold (in amperes) and low/high power limits (in watts).

Configure User Groups and Grant Device Permissions

Create user groups 60.

Create a new user group and assign the user group to an access rights level (user type), such as administrative, regular user, view-only, or reboot-only.

Assign user group permissions to networked devices 63.

Grant access rights by individual user groups to networked outlet clusters, locations, cabinets, CDUs, and outlets.

Configure New Users

Create a new user and assign to a user group 59.

Create a new user and password. Then assign the new user to a user group which has permissions granted to select network devices.

Build a Graphical Data Center

Select maps and images for Views page 48.

Select default or custom location images as the graphical background to depict customized levels of your data center.

Place a location icon on a location (background) image 48.

Associate a location icon with a location (background) image and position the icon on the image using the Views page.

Place a cabinet icon on a location (background) image 50.

Associate a cabinet with a location image and position the icon on the image using the Views page.

Place a CDU icon on a location (background) image 53.

Associate a CDU with a location image and position the icon on the image using the Views page.

Optional Features

You can configure the following optional features of SPM in any order:

Outlet Groups/Outlet Clusters

Configure outlet groups/outlet clusters 56.

Create outlet groups and/or outlet clusters for remote reboot and power information. Select outlets to associate with the outlet group/outlet cluster.

Light Directory Access Protocol (LDAP)

Configure LDAP parameters 61.

LDAP support with SPM enables authentication with LDAP servers so that user accounts do not need to be added individually to SPM.

Email Notification

Configure email alerts for system activity logs..... 63.

Send emails to four recipients for Discovery, User Login, User Actions, and Alarm Status logs.

Configure Settings

Determine network settings 63.

Configure settings for email, temperature/area units of measure, system hostnames and NTP time zones, system/device ports and DNS, Web SSL and port, FTP, SSH/Telnet, Serial, SNMP trap forwarding, and Syslog server messaging.

Chapter 3: Using Sentry Power Manager

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System Requirements

For the Web Browser

The web browser requirements for Sentry Power Manager are:

- Internet Explorer 8.0, 7.0, and 6.0 (service pack 1) or Mozilla Firefox 3.5, 3.0, and 2.0.
- Recommended screen resolution: 1440 x 900.
- Minimum screen resolution: 1024 x 768.

Connecting to Sentry Power Manager

Connecting to SPM requires directing a web browser to the IP address of the Sentry Power Manager server.

Using the Web Connection

Connect to the Sentry Power Manager default IP address at: <http://192.168.1.254>.

SPM Login Page

Connection to SPM displays the following login page:



The username/password for the default administrative account is **admin/admin**.

NOTE 1: There is no "i" in **admin**.

NOTE 2: For login security, multiple invalid password attempts temporarily lock out SPM.

Working with the Interface

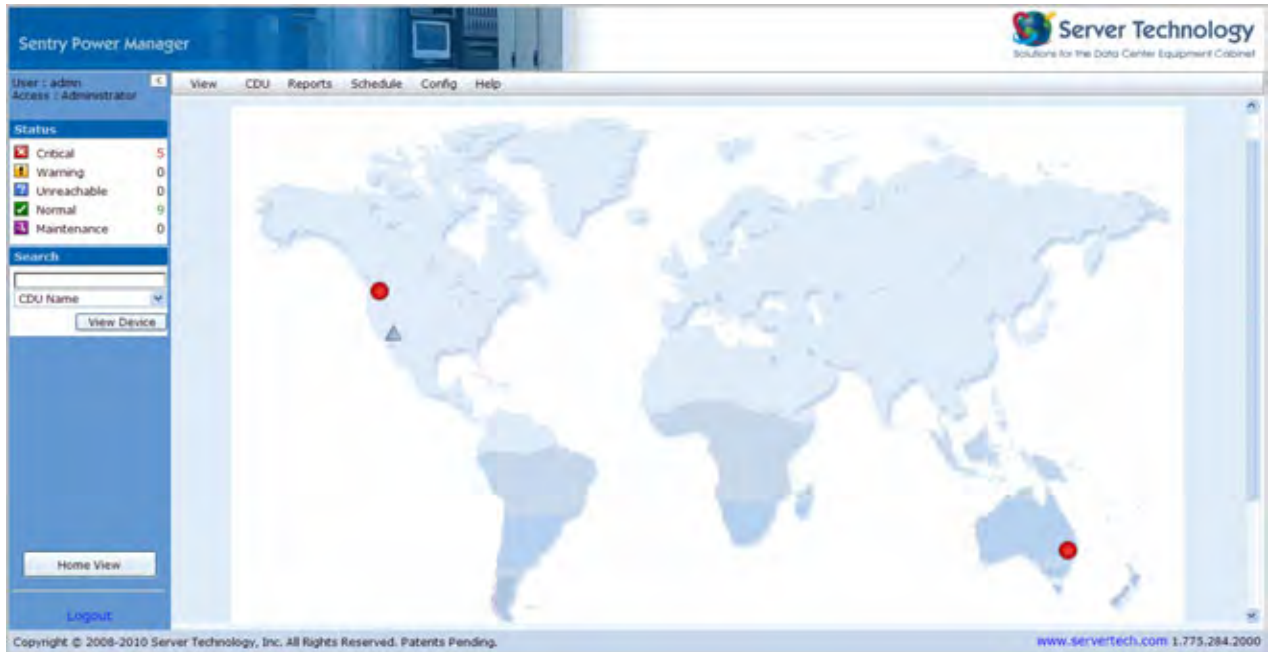
The following sections introduce the pages and features of the Sentry Power Manager (SPM) interface and provide instructions for using enterprise management functions.

Touring the Views Page

Views Menu Option

| Option | Description |
|--------|---|
| Views | Provides at-a-glance monitoring of enterprise locations, cabinets, and CDUs using color-coded icons positioned on background (location) images. The Views page displays networked equipment by the vantage points of operating status, load, power, temperature, humidity, or capacity. |

The Views page is the graphical overview of your data center for monitoring network status and controlling discovered devices.



Using Location Images

Maps and other images are the backgrounds on the Views page where you place icons to depict various locations and devices in your data center. Location images represent the customized levels of your data center, such as buildings, floors, and rooms.






The default global map and other default maps are installed with SPM, however, you can import your own graphics files (JPG, PNG, or GIF formats only) to use as custom location images.

NOTE: Administrative user accounts have full access to the View page, including all default and custom location images. However, non-administrative user accounts have limited access to the Views page until granted permissions by the administrator with **Config > Users & Groups > Users** and **Config > Users & Groups > Permissions**.

Acknowledging Alarms and CDU Status

The Status box is the real-time graphical reporting of alarms and status changes occurring in a discovered CDU.

SPM is an SNMP trap destination for the Sentry Switched and Smart CDUs, which allows the units to distribute alarm notifications and status reporting.

| Status | | |
|---|-------------|---|
|  | Critical | 1 |
|  | Warning | 0 |
|  | Unreachable | 0 |
|  | Normal | 5 |
|  | Maintenance | 0 |

The Status box displays in a fixed size and position in the left pane of the SPM interface. As a CDU communicates its status to SPM, status is reported in one of five categories shown in the Status box. SPM only reports status as received from a discovered CDU. The operating condition of the CDU determines the severity of the status category.

Each status category in the Status box is represented by an icon, the category name, and the total number of CDUs currently reported in the category.

To acknowledge a device reported in the Status box, click the icon for the category. The **CDU > Manage** option opens and displays the operating details of the reported CDU where you can review and manage the current condition of the CDU.

The condition of a CDU is reported in one of five categories:

Status Categories

| Status | Description |
|-------------|--|
| Critical | CDU has developed a service-affecting condition that requires immediate corrective action. |
| Warning | Alerts the operator that a CDU is on-battery with a loss of utility power; the outlet may be scheduled to be turned off if not quickly remedied. |
| Unreachable | SPM cannot communicate with a CDU via the network and the CDU is placed in temporary unreachable status. |
| Normal | CDU does not show any warning or alarm conditions and is operating normally within thresholds. |
| Maintenance | CDU remains for the time period specified or until manually removed. |

Choosing Location Images for the Data Center

The drop-down list in the upper left of the Views page shows the graphic files installed with SPM (and administrator-enabled), as well as any custom graphic files the administrator added and enabled using **Config > Locations**.



Any graphic files (such as maps or custom images) in the drop-down list are the backgrounds that represent different levels of your data center, such as a building, floor, room, or other specific area. The graphics files display in the drop-down list by the name assigned by the administrator.

The file you select from the list provides the working background in the Views page where you place icons representing data center locations, cabinets, and CDUs.

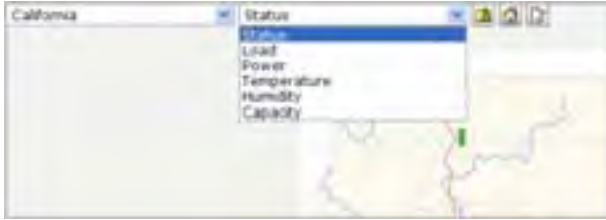
Acceptable formats for the graphics files JPG, PNG, and GIF.

In the example above, “California” was selected as the location image, showing two icons that were placed by the administrator to represent a device in Normal **green** status, and cabinet in Critical **red** status. The images available in the Views list are determined by the administrator.

The levels of the data center in location images can range from global maps to detailed images, depending on how the administrator decides to represent the data center network. By selecting a location image from the drop-down list and viewing the graphical status of device icons, you can quickly monitor and/or manage the data center devices available to you based on the level of your user permissions.

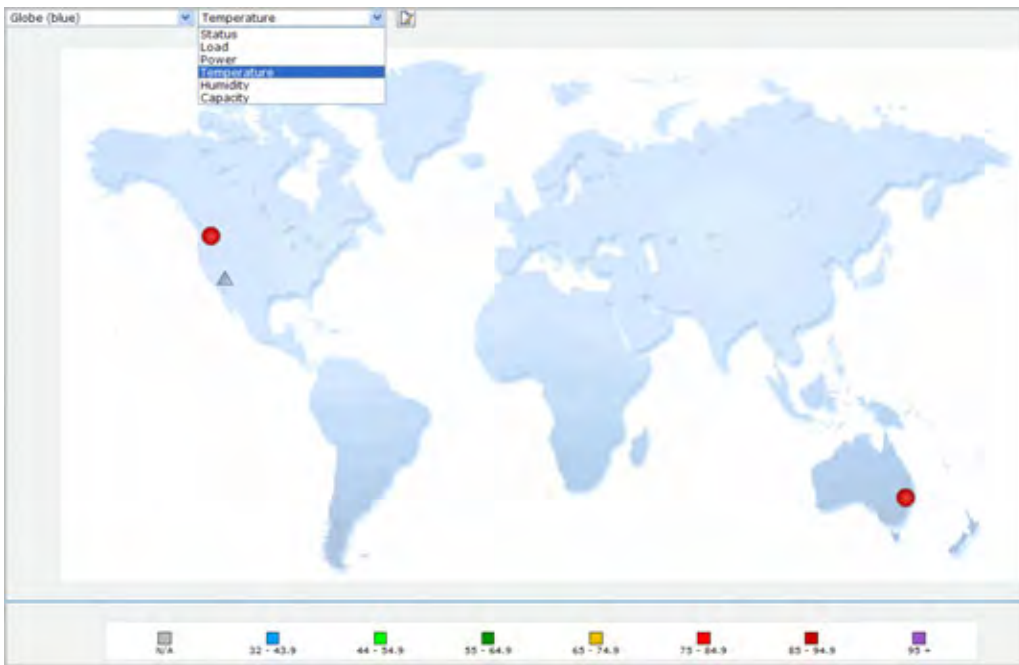
Using Current View to Monitor CDUs

The Current View drop-down list on the Views page provides six different views of a CDU for any location image shown in the list on the left. For example, “California” is the location image and the current view is “Status”:



The six current views are based on data measured and reported by the CDU for current status, load, power, temperature, humidity, and capacity. The views are fixed and they offer a quick way to monitor the operating condition of a CDU.

Each view you select displays its own legend. For example, if you select the “Temperature” view, the temperature value ranges and colors display for each icon on the location image:



Based on the colored location icons and the matching color ranges in the Legend for the Temperature view, you can quickly determine the temperature of a CDU in a specific data center location.

NOTE: Some CDUs do not support all types of data. For example, if temperature data is not available from the CDU to be measured and reported, the icon on the location image will be gray in the legend with the “N/A” label.

The following views provide CDU monitoring:






CDU Current Views

| View | Description |
|-------------|--|
| Status | Status of the CDU: Critical, Warning, Unreachable, Maintenance, or Normal. |
| Load | Load of the CDU (in amperes). |
| Power | Power reporting from the CDU (in watts). |
| Temperature | Temperature of the CDU (in degrees Celsius). |
| Humidity | Relative humidity of the CDU (in percentage). |
| Capacity | Power capacity used by the CDU (in percentage). |

Controlling the Page Layout

For the administrator: The following buttons appear in a row at the top of the Views page to control displaying parent location, establishing home location, and moving icons around the location image:

Views Page – Buttons

| Button | Description |
|--|--|
|  | Go to the parent of this location. From the displayed location image on the Views page, move up one level in the hierarchy of location images you configured for the data center. |
|  | Set this location as home. Set the displayed image as the Home view. To cancel, display another image and click to set as the Home view. |
|  | Edit/move icons. Move location, cabinet, and CDU icons around the displayed location image to position them as desired, and click Save or Cancel . |
|  | Save layout changes. After positioning location, cabinet, and CDU icons on the displayed location image, to save your changes, click Save . |
|  | Cancel layout changes. After positioning location, cabinet, and CDU icons on the displayed location image, to cancel your changes, click Cancel . |

About the Legends

A unique legend displays at the bottom of the Views page in response to the current CDU view you selected. Legend colors and ranges are fixed and cannot be configured on the Views page.

As a CDU reports its current operating status or other measurable conditions, the colors of the location, cabinet, and CDU icons change to match the color value ranges in the corresponding legend.

By comparing an icon color to a color range in the legend, you can visually monitor a specific CDU in the data center.

The Legend remains displayed until you select a different option from the Views drop-down list. Legends and color range values for the current CDU view are shown below.

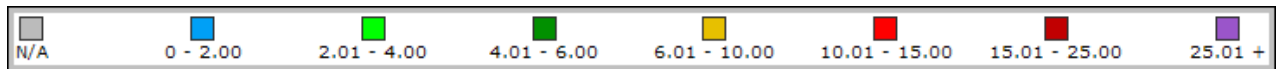
Status

The colors in the Status legend show the current condition (status) of the CDU:



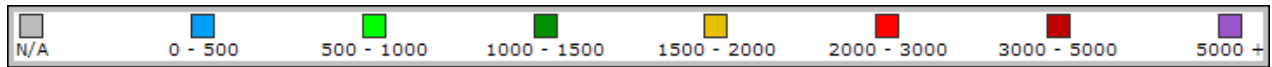
Load

The color range in the Load legend shows the load value used by the CDU (in amperes):



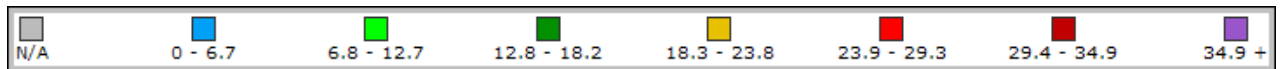
Power

The color range in the Power legend shows the reading of the CDU (in watts):



Temperature

The color range in the Temperature legend shows the temperature of the CDU (in degrees Fahrenheit or Celsius) as configured by the administrative user at **Config > Settings > Units**:



Humidity

The color range in the Humidity legend shows the humidity of the CDU (in percentage):



Capacity

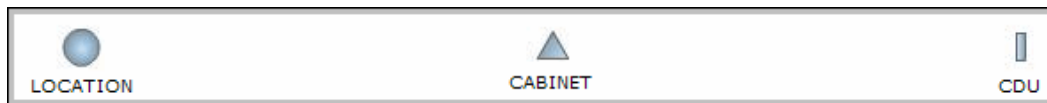
The color range in the Capacity legend shows the power capacity used by the CDU (in percentage):



NOTE: If a current view does not apply to a CDU, for example, humidity, the icon displayed on the Views page will be gray to correspond to the gray "N/A" label on the Humidity legend.

The Icons Legend

The Icons legend at the bottom of the Views page shows the shapes designated for location, cabinet, and CDU icons.

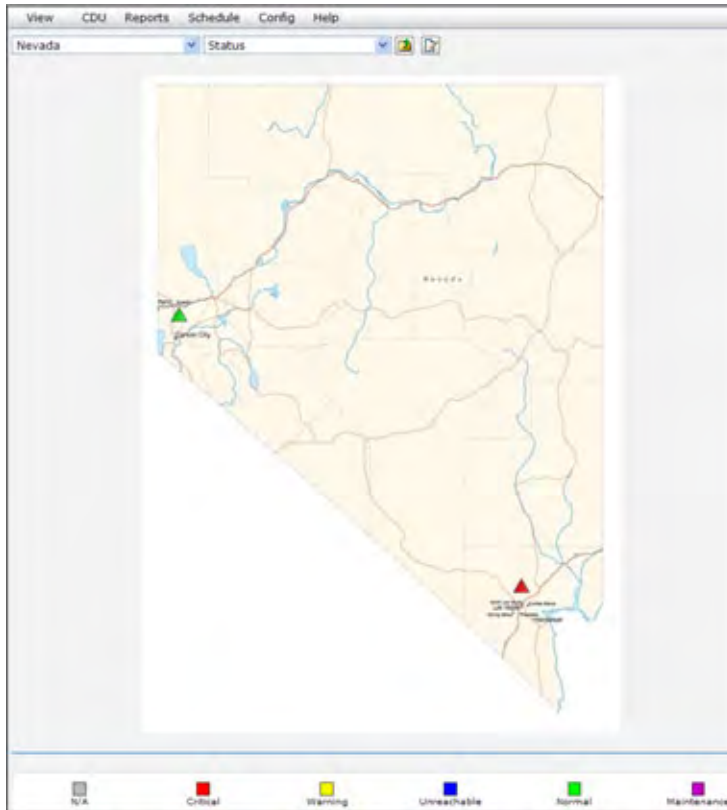


The icon types are fixed and cannot be configured. To place icons on a location image, use the **Configuration** menu options for locations, cabinets, and CDUs.

Example of current views and legends

The following example shows the Nevada location image and the Status view selected from the drop-down menus. Note the coordinating Status legend displayed at the bottom of the window.

Based on the Status legend, the **red** cabinet icon indicates a cabinet is in Critical status; the **green** cabinet icon indicates another cabinet is in Normal status.



Select a different view (other than Status) from the drop-down list, such as Load, Power, Temperature, Humidity, or Capacity, and the legend changes accordingly to reflect the values and ranges for the current view.

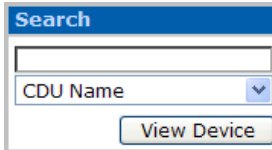
To identify an icon

Hover the mouse over an icon for name, status, and value ranges.



To search for devices

The Search box is available in the left pane to search for a discovered device in the SPM network.

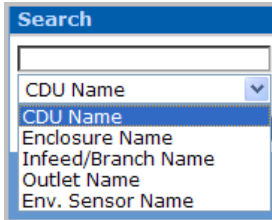


Search

CDU Name

View Device

Click the drop-down arrow for a list of search parameters:

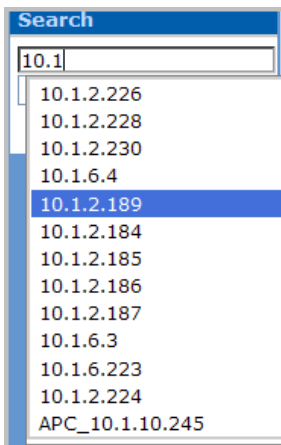


Search

CDU Name

- CDU Name
- Enclosure Name
- Infeed/Branch Name
- Outlet Name
- Env. Sensor Name

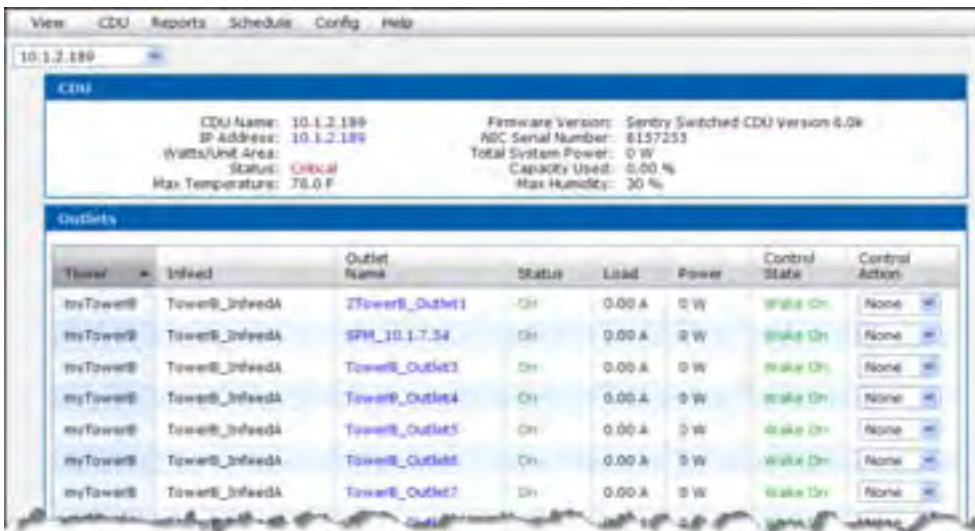
For a specific device, start typing the name to generate a match list:



Search

- 10.1.2.226
- 10.1.2.228
- 10.1.2.230
- 10.1.6.4
- 10.1.2.189
- 10.1.2.184
- 10.1.2.185
- 10.1.2.186
- 10.1.2.187
- 10.1.6.3
- 10.1.6.223
- 10.1.2.224
- APC_10.1.10.245

Select the device and click **View Device**. For all devices, select a parameter from the list and click **View Device**. The detailed search results are displayed on a device details page.



View CDU Reports Schedule Config Help

10.1.2.189

CDU

CDU Name: 10.1.2.189 Firmware Version: Sentry Switched CDU Version 6.0k
IP Address: 10.1.2.189 APC Serial Number: 8157253
(Watts/Unit Area): Total System Power: 0 W
Status: Critical Capacity Used: 0.00 %
Max Temperature: 78.0 F Max Humidity: 30 %

Outlets


| Tower | Infeed | Outlet Name | Status | Load | Power | Control State | Control Action |
|-----------|----------------|------------------|--------|--------|-------|---------------|----------------|
| ItsTowerB | TowerB_InfeedA | ITTowerB_Outlet1 | On | 0.00 A | 0 W | Wake On | None |
| ItsTowerB | TowerB_InfeedA | SPM_10.1.7.34 | On | 0.00 A | 0 W | Wake On | None |
| ItsTowerB | TowerB_InfeedA | TowerB_Outlet3 | On | 0.00 A | 0 W | Wake On | None |
| ItsTowerB | TowerB_InfeedA | TowerB_Outlet4 | On | 0.00 A | 0 W | Wake On | None |
| ItsTowerB | TowerB_InfeedA | TowerB_Outlet5 | On | 0.00 A | 0 W | Wake On | None |
| ItsTowerB | TowerB_InfeedA | TowerB_Outlet6 | On | 0.00 A | 0 W | Wake On | None |
| ItsTowerB | TowerB_InfeedA | TowerB_Outlet7 | On | 0.00 A | 0 W | Wake On | None |

NOTE: The default CDU name is IP address. The administrator can change CDU name by using **Config > CDUs > Configure CDUs**.

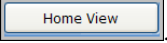
To set the home location

On the Views page, do the following:

1. To set a location image on the Views page as your home location, select the desired location from the Locations drop-down list on the Views page.


2. Click the “Set this location as the home location” button on the Views page .


The displayed image will remain as your home location, even after logging off.

3. To return to the Views page showing the image you set as you home location, click the **Home View** button in the left pane .

To display the left pane

On the Views page, do one of the following:

To collapse and hide the left pane of the SPM interface, click .

To expand and display the left pane, click .

Building a Network Location


For the administrator: SPM offers location, cabinet, and CDU icons to represent the levels of your data center. You can place icons for each level on location (background) images on the Views page. The way you customize these levels determines the hierarchy of your data center displayed on the Views page.

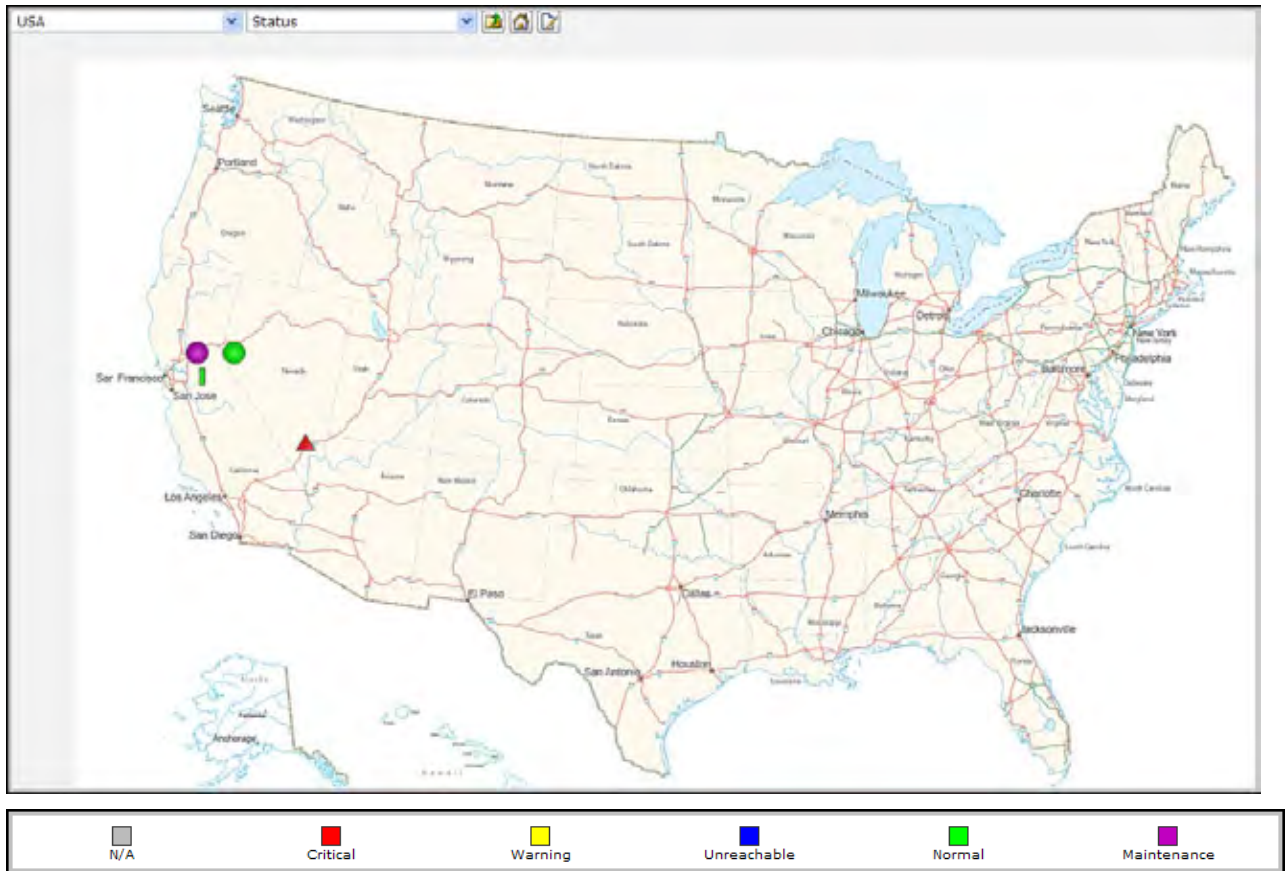
NOTE: The administrator login has full access to all background images and icons that display on the Views page. The administrator must grant each user (or user group) access to individual location, cabinet, and CDU icons using **Config > Users & Groups > Permissions**.

Working with Data Center Levels: Location, Cabinet, CDU

Clicking an icon drills down to a lower data center level to show device operating details.

The Location Level

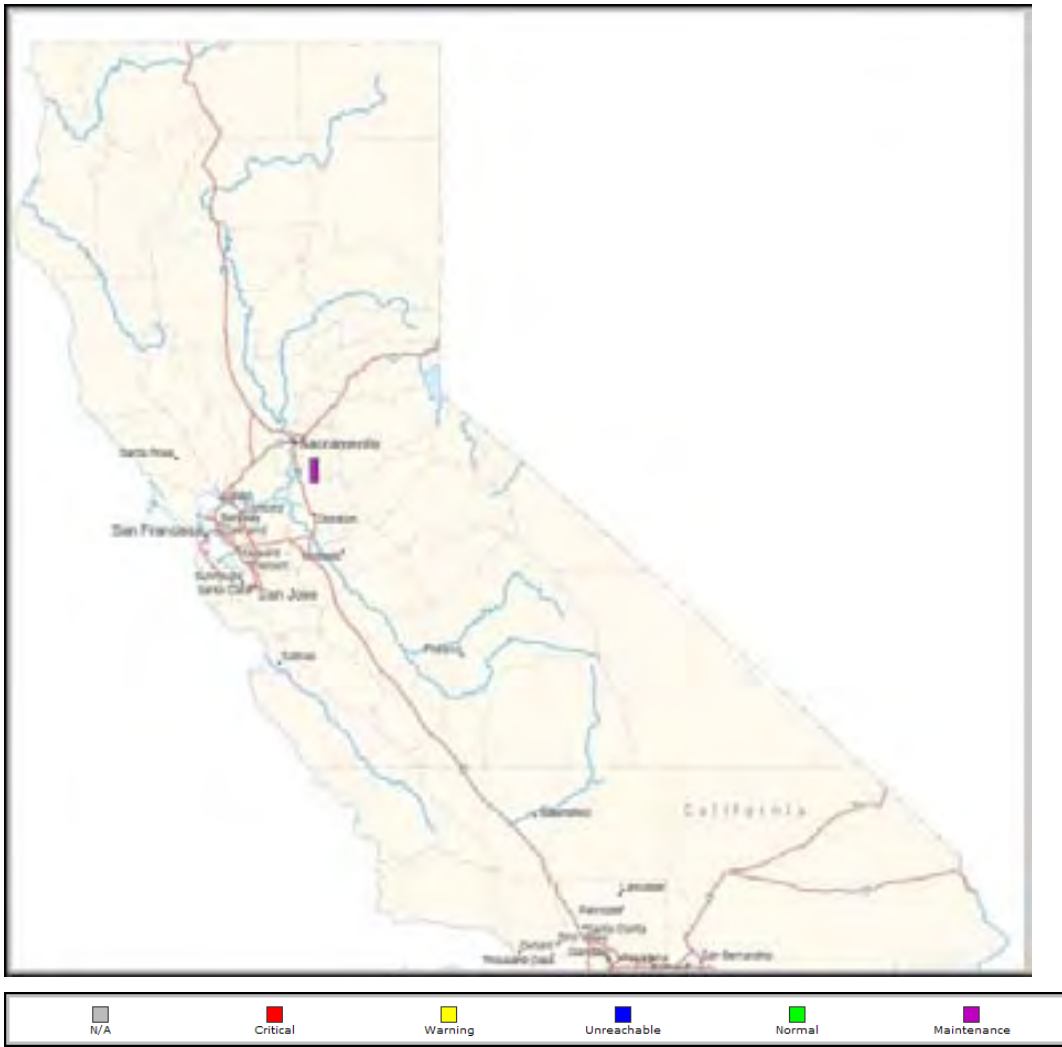
The location icon  on a background image represents a data center location, such as a city, state, place, building, floor, room, or other area specific to your site. The following example shows two location icons, one cabinet icon, and one device icon placed by the administrator on the image named USA.



Based on the Status view selected and the color ranges in the corresponding Status legend at the bottom of the window, the locations, cabinet, and device can be monitored and controlled.

To drill down from the USA background image, click an icon, in this example the “California” location.

Click the “California” location to show the next lower level – in this example, the device (CDU) icon:



The icon color on the Status legend shows the CDU is in Maintenance mode.

Hover over the CDU icon to display device name, status, and values.



Click the device icon to drill down to operational details:


The screenshot displays the Sentry Power Manager interface. On the left, there is a sidebar with a 'Status' section showing 'Critical' (2), 'Warning' (1), 'Unreachable' (1), 'Normal' (3), and 'Maintenance' (2). Below this is a 'Search' section with a 'CDU Name' dropdown and a 'View Device' button. The main area shows 'CDU' details for IP 10.1.2.226, including 'CDU Name: 10.1.2.226', 'IP Address: 10.1.2.226', 'Watts/Unit Area: 0 W/m²', 'Max Temperature: 0.0 F', 'Firmware Version: Sentry Switched CDU Version 6.0k (100707)', 'NIC Serial Number: 0164373', 'Total System Power: 0 W', 'Capacity Used: 0.00 %', and 'Max Humidity: 0 %'. Below this is a table of 'Outlets' with the following columns: Tower, Infeed, Outlet Name, Status, Load, Power, Control State, and Control Action. The table lists 16 outlets, all with a status of 'None' and 'None' for Load and Power. The Control State is 'None' and the Control Action is a dropdown menu with 'None' selected. At the bottom right, there is an 'Apply Outlet Control' button.

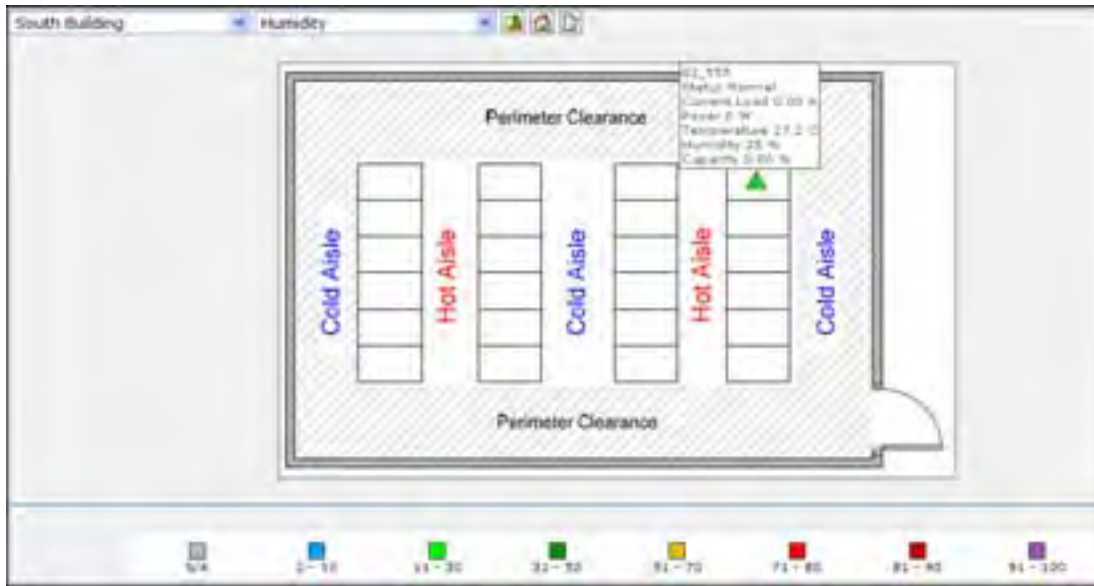
| Tower | Infeed | Outlet Name | Status | Load | Power | Control State | Control Action |
|--------|----------------|------------------------|--------|------|-------|---------------|----------------|
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet1 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet2 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet3 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet4 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet5 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet6 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet7 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet8 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet1 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet2 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet3 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet4 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet5 | None | N/A | N/A | None | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet6 | None | N/A | N/A | None | None |

From this CDU details window you can:

- View basic information about the CDU.
- Access the Sentry firmware interface for the CDU (by clicking the CDU's IP Address link).
- View the current Status, Load, Power, and Control State of the Towers in the CDUs.
- View outlet details in the CDU (by clicking an individual Outlet Name link).
- Issue control actions on individual outlets or on all outlets shown in the CDU (by selecting the On, Off, or Reboot command from the Control Action drop-down list).

The Cabinet Level

The cabinet icon  on a location image represents a specific cabinet in your data center. The following example shows a cabinet icon placed by the administrator on the data center location image named South Building:



The Humidity view shows the cabinet, named "02_555", in Normal (**green**) status.

To drill down to the operational details listed for the cabinet, click the cabinet icon. The Cabinet details page displays:

02_555


Cabinet

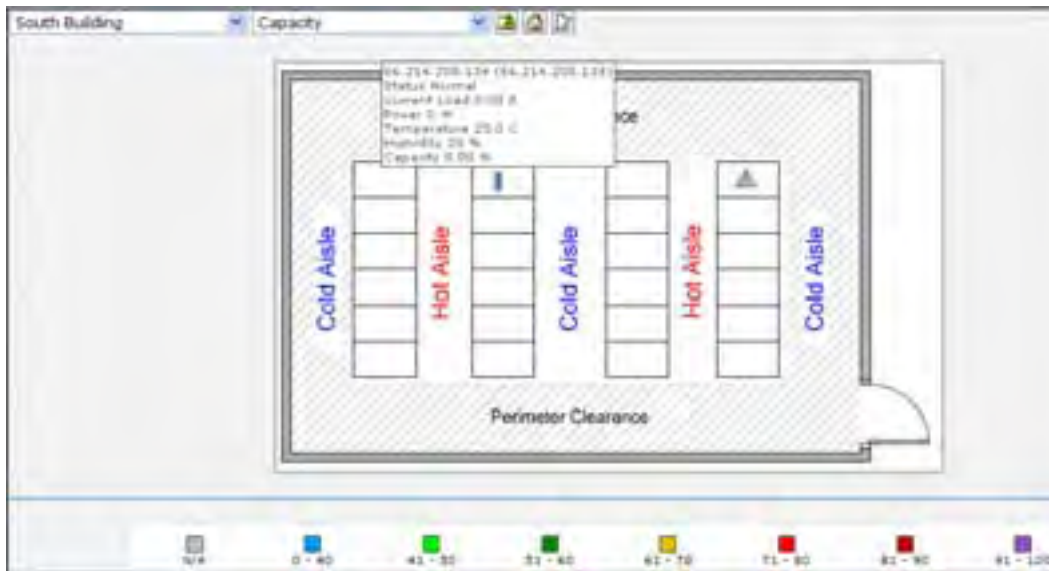
Cabinet Name: 02_555
Status: Normal
Power Density: 0.0 W/ft²
Capacity Used: 0.00 %

CDUs

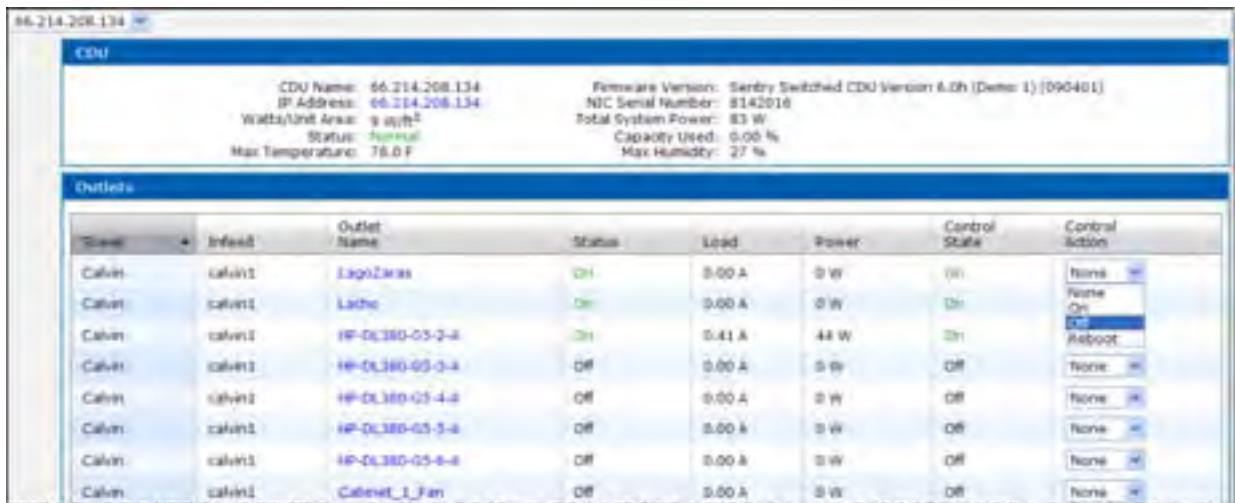
| CDU Name | IP Address | Status | Temperature | Humidity | Power | Capacity Used |
|-------------|-------------|--------|-------------|----------|-------|---------------|
| 10.1.10.245 | 10.1.10.245 | Normal | N/A | N/A | 0 W | 0.00 % |

The CDU Level

The CDU icon  on a background image represents a specific CDU in your data center. The following example shows a CDU named “66.214.208.134” placed by the administrator on the background image named South Building:

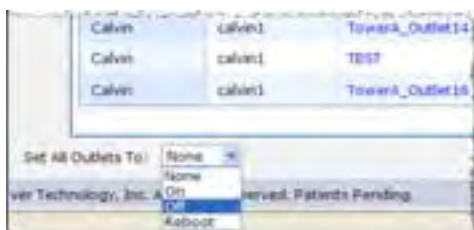


The Capacity view shows the CDU, named 66.214.208.134, in the **blue** 0-40 capacity range. Click the CDU icon to drill down to the CDU details page that allows command control for the related outlets.



The CDU details page displays the latest readings for individual outlet status, load, power, and control state. You control the outlets in the list by issuing On, Off, and Reboot commands on specific outlets (or globally on all outlets) in a CDU. The outlet commands are available in the Control Action drop-down list, as shown in the example above.

Global command action for all outlets is available in the lower left corner of the page with the Set All Outlets To drop-down list:



Managing Networked CDUs

The following options provide access to operational data for managing and controlling networked CDUs:

CDU Menu Options

| Option | Description |
|------------------------|--|
| Manage | Displays information about CDU status (critical, warning, unreachable, normal, and maintenance) as shown in the Status box, provides access to CDU details, and allows login to the Sentry firmware HTML interface where CDU parameters can be configured. |
| Infeeds/Branches | Displays the latest status, load, voltage, and power for the enclosures (towers) in the CDU; also shows detailed operational parameters for the CDU and infeed details for a specific infeed. |
| Outlets | Lets you issue outlet On, Off, and Reboot commands; displays the latest status, load, power, and control state for the outlets listed, and also shows detailed operational parameters for the CDU |
| Environmental Monitors | Lets you view networked environmental monitors by sensor name, temperature/humidity status, and temperature/humidity percentage. |
| Clusters | Reports total power usage (by outlet cluster) for a CDU and provides operational details of outlets in clusters within the CDU. |

CDU > Manage

The CDU > Manage option displays information about CDU status (critical, warning, unreachable, normal, and maintenance) as shown in the Status box, provides access to CDU details, and allows login to the Sentry firmware HTML interface where you can configure CDU parameters.

| Status | Date/Time | CDU Name | IP Address | Status | Location (Cabinet) | Select |
|--------|---------------------|------------|------------|----------------|---------------------------|--------------------------|
| | 2010-08-11 20:00:56 | 10.1.2.287 | 10.1.2.287 | Critical alarm | Australia/AustraliaCAB1 | <input type="checkbox"/> |
| | 2010-08-11 20:01:00 | 10.1.2.288 | 10.1.2.288 | Critical alarm | California/CaliforniaCAB1 | <input type="checkbox"/> |
| | 2010-08-11 20:01:04 | 10.1.2.276 | 10.1.2.276 | Critical alarm | California/CaliforniaCAB1 | <input type="checkbox"/> |
| | 2010-08-11 20:01:04 | 10.1.2.279 | 10.1.2.279 | Critical alarm | California/CaliforniaCAB1 | <input type="checkbox"/> |
| | 2010-08-11 20:00:56 | 10.1.2.3 | 10.1.2.3 | Critical alarm | No location (No cabinet) | <input type="checkbox"/> |
| | 2010-08-11 20:00:51 | 10.1.2.284 | 10.1.2.284 | Normal | Australia/AustraliaCAB1 | <input type="checkbox"/> |
| | 2010-08-11 20:00:51 | 10.1.2.287 | 10.1.2.287 | Normal | Australia/AustraliaCAB1 | <input type="checkbox"/> |
| | 2010-08-11 20:00:51 | 10.1.2.288 | 10.1.2.288 | Normal | Australia/AustraliaCAB1 | <input type="checkbox"/> |
| | 2010-08-11 20:01:01 | 10.1.2.224 | 10.1.2.224 | Normal | California/CaliforniaCAB1 | <input type="checkbox"/> |
| | 2010-08-12 08:27:13 | 10.1.2.270 | 10.1.2.270 | Normal | California(No cabinet) | <input type="checkbox"/> |
| | 2010-08-12 08:34:22 | 10.1.2.223 | 10.1.2.223 | Normal | Australia(No cabinet) | <input type="checkbox"/> |
| | 2010-08-11 20:01:05 | 10.1.2.4 | 10.1.2.4 | Normal | No location(No cabinet) | <input type="checkbox"/> |

Column Descriptions

| Column | Description |
|-------------------|---|
| Status | Displays the current status of the device. Click column heading to sort the device list by status icon. |
| Date/Time | Date and time the CDU was reported in the status category. |
| CDU Name | Name of the CDU (user-configured). Provides a link to the CDU > Outlets option for outlet commands. |
| IP Address | IP address of the CDU. Provides a link to the Sentry firmware interface to configure CDU parameters. |
| Status | The <i>first</i> reported reason for the CDU status. For status details, click . |
| Location(Cabinet) | The parent location of the cabinet or CDU and the cabinet containing the CDU. |
| Select | When checked, allows you to set/remove a CDU from Maintenance Mode. |

Using Maintenance Mode

The **CDU > Manage** option controls CDUs in and out of Maintenance Mode.



To move CDUs to Maintenance

1. Select **CDU > Manage**.
2. Check the Select checkbox to the right of one or more CDUs.
3. From the drop-down list, select the time period for the CDU(s) to remain in Maintenance Mode from the drop-down list, for example “5 Minutes” as shown above. To keep the CDU in the Maintenance for an unspecified time, select the Indefinitely option.
4. Click **Set/Remove Maintenance Mode**. The CDU(s) move to the Maintenance tab for the time period specified or until manually removed.

To remove CDUs from Maintenance

1. Select **CDU > Manage**.
2. Check the Select checkbox to the right of one or more CDUs in Maintenance.
3. Select the Remove option.
4. Click **Set/Remove Maintenance Mode**. The CDU is removed from the Maintenance tab.

NOTE: When a device is in Maintenance, all SPM communication to and from the device is stopped, notification to the user is stopped, and CDU readings are zero. After Maintenance status is finished, the device moves to Normal status, data for the device is retrieved again, and the actual status of the device will be determined.

CDU > Infeeds/Branches

The **CDU > Infeeds/Branches** option displays the latest status, load, voltage, and power for the enclosures (towers) in the CDU. Detailed operational parameters for the CDU also display on this page.

The screenshot shows the 'CDU > Infeeds/Branches' page. At the top, there is a navigation menu with 'View', 'CDU', 'Reports', 'Schedule', 'Config', and 'Help'. Below the menu is a dropdown menu showing '10.1.2.133'. The main content area is divided into two sections. The first section, titled 'CDU', displays the following details:

- CDU Name: 10.1.2.133
- IP Address: 10.1.2.133
- Watts/Unit Area: Status: **Critical**
- Max Temperature: N/A
- Firmware Version: Sentry Version 5.3s (Beta 2)
- NIC Serial Number: 1620001
- Total System Power: 0 W
- Capacity Used: 0.00 %
- Max Humidity: N/A

The second section, titled 'Infeeds/Branches', contains a table with the following columns: Enclosure Name, Infeed/Branch Name, Status, Capacity, Load, Voltage, and Power.

| Enclosure Name | Infeed/Branch Name | Status | Capacity | Load | Voltage | Power |
|----------------|--------------------|--------|----------|------|---------|-------|
| TowerA | TowerA_InfeedA | On | N/A | N/A | N/A | N/A |
| TowerA | TowerA_InfeedB | On | N/A | N/A | N/A | N/A |

To connect to the Sentry firmware, click the IP Address link. For specific infeed details, click the infeed/branch name link:

The screenshot shows the 'Infeed Details' page for TowerA_InfeedA. The details are as follows:

- Infeed Id: AA
- Infeed Name: TowerA_InfeedA
- Infeed Status: **On**
- Load: 0.00 A
- Voltage: 220.0 V
- Active Power: 0 W
- Apparent Power: N/A
- Crest Factor: N/A
- Power Factor: N/A

CDU > Outlets

The **CDU > Outlets** option lets you issue outlet On, Off, and Reboot commands on specific outlets or globally on all outlets. The page displays the current device data and operational parameters.

The screenshot shows the 'CDU > Outlets' page. At the top, there is a navigation menu with 'View', 'CDU', 'Reports', 'Schedule', 'Config', and 'Help'. Below the menu is a dropdown menu showing '10.1.2.133'. The main content area is divided into two sections. The first section, titled 'CDU', displays the same details as the previous screenshot. The second section, titled 'Outlets', contains a table with the following columns: Tower, Infeed, Outlet Name, Status, Load, Power, Control State, and Control Action.

| Tower | Infeed | Outlet Name | Status | Load | Power | Control State | Control Action |
|--------|----------------|------------------------|-----------|--------|-------|---------------|----------------|
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet1 | Off | 0.00 A | N/A | Off | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet2 | Off | 0.00 A | N/A | Off | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet3 | On | 0.00 A | N/A | On | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet4 | Off Error | 0.00 A | N/A | Off | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet5 | On | 0.00 A | N/A | On | None |
| TowerA | TowerA_InfeedA | TowerA_InfeedA_Outlet6 | Off Error | 0.00 A | N/A | Off | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet1 | On | 0.00 A | N/A | On | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet2 | On | 0.00 A | N/A | On | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet3 | On | 0.00 A | N/A | On | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet4 | Off Error | 0.00 A | N/A | Off | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet5 | On | 0.00 A | N/A | On | None |
| TowerA | TowerA_InfeedB | TowerA_InfeedB_Outlet6 | Off Error | 0.00 A | N/A | Off | None |

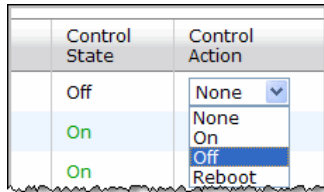
At the bottom of the page, there is a 'Set All Outlets To:' dropdown menu set to 'None' and an 'Apply Outlet Control' button.

The CDU details page displays the latest readings for individual outlet status, load, power, and control state. The page lets you monitor and control power to individual (or all) outlets in a CDU by issuing On, Off, and Reboot commands.

To control individual outlets

The **CDU > Outlets** option allows you to control specific outlets for a CDU by issuing On, Off, and Reboot commands.

1. Select **CDU > Outlets**.
2. Select a CDU from the drop-down list.
3. For a single outlet (or multiple outlets) in the CDU, select a command from the Control Action drop-down list, as shown:



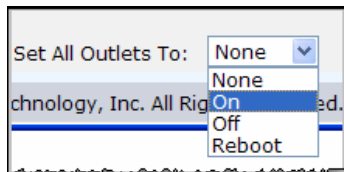
4. Click **Apply Outlet Control**.

NOTE: The level of your user access rights determines the available outlet commands.

To control all outlets

The **CDU > Outlets** option allows you to control all outlets for a CDU by issuing On, Off, and Reboot commands.

1. Select **CDU > Outlets**.
2. Select a CDU from the drop-down list.
3. For all outlets in the CDU, select a command from the Set All Outlets To drop-down list, as shown:



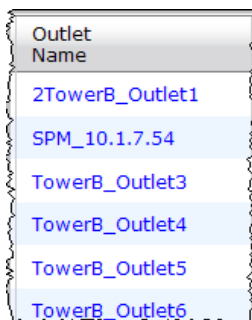
4. Click **Apply Outlet Control**.

NOTE: The level of your user access rights determines the available outlet commands.

To access outlet details

The **CDU > Outlets** option gives access to details about each outlet displayed.

1. Select **CDU > Outlets**.
2. Click an outlet name from the list.



The Outlet Details page displays:

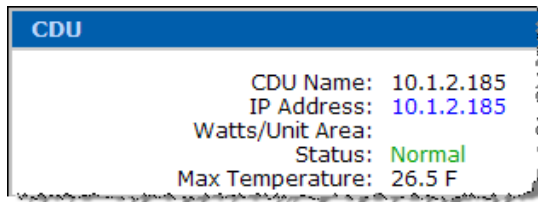
| Outlet Details | |
|-----------------|---------------|
| Outlet Id: | BA2 |
| Outlet Name: | SPM_10.1.7.54 |
| Outlet Status: | On |
| Control State: | Wake On |
| Capacity: | 15.00 A |
| Load: | 0.00 A |
| Voltage: | 205.2 V |
| Active Power: | 0 W |
| Apparent Power: | 0 VA |
| Crest Factor: | N/A |
| Power Factor: | N/A |

To access the Sentry firmware

The **CDU > Outlets** option gives access to the Sentry firmware interface where you can configure CDU parameters.

NOTE: You must know the local user account login to access the Sentry firmware.

1. Select **CDU > Outlets**.
2. Select a CDU from the drop-down list in the upper left corner.
3. Click the IP Address link of the CDU:



The Login page for the Sentry firmware interface displays:



4. Log in using your local user account.
5. Configure CDU parameters as necessary. For more information about the firmware interface, refer to the *Installation and Operations* manual for your Sentry product located at www.servertech.com/support.

CDU > Environmental Monitors

The **CDU > Environmental Monitors** option shows the latest reported temperature, humidity, and sensor data about environmental monitors and sensors associated with a specific CDU. The page also shows detailed operational parameters for the CDU.

| Monitor Name | Water Sensor Status | ADC Count | ADC Status | Contact 1 | Contact 2 | Contact 3 | Contact 4 |
|-------------------------|---------------------|-----------|------------|-----------|-----------|-----------|-----------|
| Environmental_Monitor_B | Normal | 27 | Normal | Alarm | Normal | Normal | Normal |

The names of the environmental monitors and related sensors (if any) display on the page in a list sorted by sensor name under monitor name. Current values for the sensor status, temperature, and relative humidity are reported from the devices.

CDU > Outlet Clusters

The **CDU > Outlet Clusters** option shows the latest status, outlet load, outlet power, capacity, and control state for the outlets the administrator has associated with a specific outlet cluster. The page also provides the On, Off, and Reboot commands that you can issue on **all** outlets within the outlet cluster.

| Outlet Group Name | CDU Name | CDU IP Address | Outlet Name | Status | Outlet Load | Outlet Power | Capacity | Control State |
|-------------------|----------------|----------------|-------------------|--------|-------------|--------------|----------|---------------|
| 1 | new_10.1.2.189 | 10.1.2.189 | notSPM_10.1.1.106 | On | 0.00 A | 0 W | 15 A | On |
| 1 | new_10.1.2.189 | 10.1.2.189 | TowerA_Outlet1 | On | 0.00 A | 0 W | 20 A | On |

The page gives links to additional information about outlets and CDUs:

- To display operational details for an outlet, click **Outlet Name**.
- To connect to the Sentry firmware, click **CDU IP Address**
- To display operational details for a CDU, click **CDU Name**.
- To display a different outlet cluster, select the outlet cluster name from the drop-down list in the upper left corner.

About outlet clusters and outlet groups

The administrator selects outlets to be collected under a specific outlet group or under a specific outlet cluster at **Config > Outlet Groups** or **Config > Outlet Clusters**.

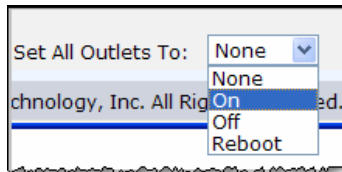
An **outlet group** is a collection of outlets in a CDU (up to two linked enclosures) with a single IP address. An outlet group can be in more than one outlet cluster.

An **outlet cluster** is a collection of outlets across multiple CDU systems with multiple IP addresses.

To control all outlets in outlet groups/outlet clusters

The **CDU > Outlet Clusters** option allows you to control all outlets in an outlet group (within an outlet cluster) by issuing On, Off, and Reboot commands on those outlets.

1. Select **CDU > Outlet Clusters**.
2. Select an outlet cluster name from the drop-down list.
3. For all outlets in the outlet cluster, select a command from the Set All Outlets To drop-down list, as shown:



4. Click **Apply Outlet Control**.

NOTE: The level of your user access rights determines the available outlet commands.

Generating Reports and System Logs

The Reports menu provides a variety of general data reports, graphical trend reports, and system activity logs. Report formats are HTML, XML, Microsoft Word, or Microsoft Excel. You can view reports and logs online or in print and most logs can be configured for Email alert.

The following options are available on the Reports menu:

Reports Menu Options

| Option | Description |
|-----------------|---|
| General Reports | Generates several CDU-based reports for inventory, power summary, circuits, green data center PIPS efficiency metrics: PUE/DCiE, power for outlet groups/outlet clusters, and energy reports; <i>For the administrator:</i> POPS and reports are also available for energy consumption (by timeframe) and energy utilization (by usage parameters). |
| Trends | Generates a graphical report on specific variables from CDU readings over a specified time frame as applicable data for the CDU is available for reporting. Trend graphs are available for circuits, infeed/branch (PIPS), outlets, sensors, and location total load/power. |
| System Logs | Branches to options for detailed system activity logs: Discovery, User Login, Use Actions, Alarm Status, and Combined (combines all system activity into one report). The logs (with the exception of the Combined log), can be configured for Email alert. |

NOTE: To print a report, use the Print function of your browser.

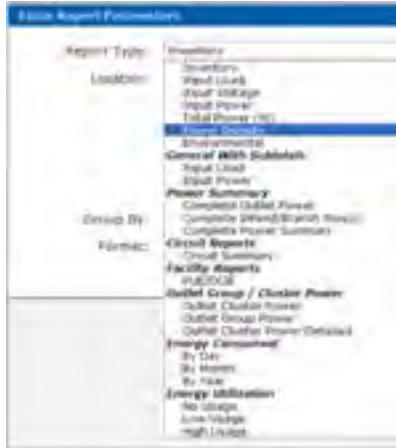
Reports

The **Reports > Reports** option reports on data collected from CDU readings for a variety of reports: inventory, input load/voltage/power, environmental, power summary, infeed circuits, PUE/DCiE green data center efficiency metrics, power for outlet groups/outlet clusters, POPS energy consumed/utilization, and PIPS infeed/branch power. Note that only available data from CDU readings for the report type, location, and grouping you select can be reported.

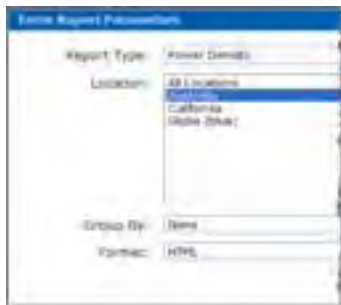
NOTE: Your user permission level determines the reports available to you.

To generate a report

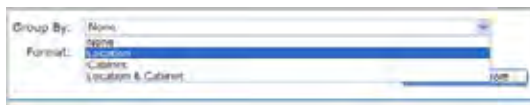
1. Select **Reports > Reports**. The Enter Report Parameters window opens:



2. From the Report Type drop-down list, select the desired report, such as Power Density shown above.
3. Select the desired location for the report.



4. From the Group By drop-down list, select how the report will be grouped.




Most reports can be grouped by location, cabinet, or both.

NOTE: Depending on the report type you select, you may specify additional reporting parameters, such as start/end date, report subtype, report level, outlet group/outlet cluster name, and more.

5. Choose the format for the report file.



Reports output files can be displayed in HTML, XML, or Microsoft Word/Excel formats.

- Click  to generate and display the report.

| Power Density | |
|---|------------------|
| Run by admin at Fri, 13 Aug 10 09:41:50 -0700 | |
| CDU | W/m ² |
| 10.1.2.184 | 105.0 |
| 10.1.2.185 | N/A |
| 10.1.2.186 | N/A |
| 10.1.2.187 | 120.0 |
| 10.1.6.223 | 0 |

- Reports are displayed by the parameters and the output format you selected. Only available measured readings in networked CDUs within parameters can be reported. To print, save, or email the report, right-click the report or use the options in your web browser.

Report Samples

Report Type: Circuit Summary

For all locations, reporting period last month, by location and cabinet

| Circuit Summary Last Month by Location & Cabinet | | | | | | | | | |
|--|---------------|------------|-------------------|--------------------|------------------|---------------------|----------------------|--------------|--------------|
| Run by admin at Fri, 13 Aug 10 10:37:00 -0700 | | | | | | | | | |
| Location | Cabinet | CDU | Circuit Name (VA) | Power Capacity (W) | Active Power (W) | Apparent Power (VA) | VA Capacity Used (%) | Energy (kWh) | Power Factor |
| California | CaliforniaCAB | | | | | | | | |
| | | 10.1.2.224 | TowerA | 10800 | 0 | 0 | 0.0 | | |
| | | 10.1.2.224 | TowerB | 10800 | 0 | 0 | 0.0 | | |

Report Type: Input Load

For all locations, grouped by cabinet

| Input Load by Cabinet | | | | | |
|---|------------|----------------|---------------------|---------------------|---------------------|
| Run by admin at Fri, 13 Aug 10 09:37:00 -0700 | | | | | |
| Cabinet | CDU | Enclosure Name | Infeed/Branch 1 (A) | Infeed/Branch 2 (A) | Infeed/Branch 3 (A) |
| CaliforniaCAB | | | | | |
| | 10.1.2.184 | TowerA | 08 | 59 | 00 |
| | 10.1.2.184 | TowerB | 00 | 72 | 00 |
| | 10.1.2.185 | TowerA | 00 | 00 | 00 |
| | 10.1.2.185 | TowerB | 00 | 00 | 00 |
| | 10.1.2.186 | TowerA | 00 | 00 | 77 |
| | 10.1.2.186 | TowerB | 00 | 00 | 00 |
| | 10.1.2.187 | TowerA_MAIN | 44 | 36 | 00 |
| | 10.1.2.187 | TowerB_BACK | 45 | 00 | 32 |
| CaliforniaCAB | | | | | |
| | 10.1.2.189 | myTowerB | 00 | | |
| | 10.1.2.189 | TowerA | 00 | | |
| | 10.1.2.224 | TowerA | 00 | 00 | 00 |
| | 10.1.2.224 | TowerB | 00 | 00 | 00 |
| | 10.1.2.226 | TowerA | 3.04 | 1.78 | 1.75 |
| | 10.1.2.226 | TowerB | 00 | | |
| | 10.1.2.228 | TowerB | 1.84 | | |
| None | | | | | |
| | 10.1.2.220 | TowerA | | | |
| | 10.1.6.223 | TowerA | | | |
| | 10.1.6.223 | TowerB | | | |
| | 10.1.6.3 | TowerA | 75 | | |

Report Type: Inventory

For all locations, without grouping

| Inventory | | | | | | | | | |
|---|------------------|-------------|------------|------------------|--------------------------------------|---------------|------------------|--------------|-------------------|
| Run by admin at Fri, 13 Aug 10 10:00:00 -0700 | | | | | | | | | |
| CDU | Device | Enclosure | IP Address | MC Serial Number | Powerware Version | Serial Number | Model Number | Type | Watt Capacity (W) |
| 10.1.2.184 | ST-188 version 3 | TowerA | 10.1.2.184 | 004282 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 4100 |
| 10.1.2.184 | ST-188 version 3 | TowerB | 10.1.2.184 | 004283 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 4100 |
| 10.1.2.185 | ST-188 version 3 | TowerA | 10.1.2.185 | 004287 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | Single Phase | 0 |
| 10.1.2.185 | ST-188 version 3 | TowerB | 10.1.2.185 | 004287 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | Single Phase | 0 |
| 10.1.2.186 | ST-188 version 3 | TowerA | 10.1.2.186 | 004288 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 0 |
| 10.1.2.186 | ST-188 version 3 | TowerB | 10.1.2.186 | 004288 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 0 |
| 10.1.2.187 | ST-188 version 3 | TowerA_MAIN | 10.1.2.187 | 004289 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | Single Phase | 140 |
| 10.1.2.187 | ST-188 version 3 | TowerB_BACK | 10.1.2.187 | 004289 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | Single Phase | 140 |
| 10.1.2.189 | ST-188 version 3 | TowerA | 10.1.2.189 | 004295 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 0 |
| 10.1.2.189 | ST-188 version 3 | myTowerB | 10.1.2.189 | 004295 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | Single Phase | 0 |
| 10.1.2.224 | ST-188 version 3 | TowerA | 10.1.2.224 | 004298 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 0 |
| 10.1.2.224 | ST-188 version 3 | TowerB | 10.1.2.224 | 004298 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 0 |
| 10.1.2.226 | ST-188 version 3 | TowerA | 10.1.2.226 | 004297 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 1800 |
| 10.1.2.226 | ST-188 version 3 | TowerB | 10.1.2.226 | 004297 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | 1 Phase | 1800 |
| 10.1.2.228 | ST-188 version 3 | TowerA | 10.1.2.228 | 004301 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | Single Phase | 0 |
| 10.1.2.228 | ST-188 version 3 | TowerB | 10.1.2.228 | 004301 | Sentry Smart CDU Version 6.0 (10/05) | A00000007 | CD-30-MC00000000 | Single Phase | 0 |

Report Type: PUE/DCiE – reporting green data center metrics

For all locations

| PUE/DCiE of CDUs vs. Total Facility Power | | | |
|--|----------------------|--------------------|-------------|
| Run by admn at Fri, 13 Aug 10 10:02:55 -0700 | | | |
| Location | Total Facility Power | IT Equipment Power | Current PUE |
| Australia | 0 | 915 | 0.00 |
| California | 0 | 1062 | 0.00 |
| Globe (blue) | 0 | 1977 | 0.00 |

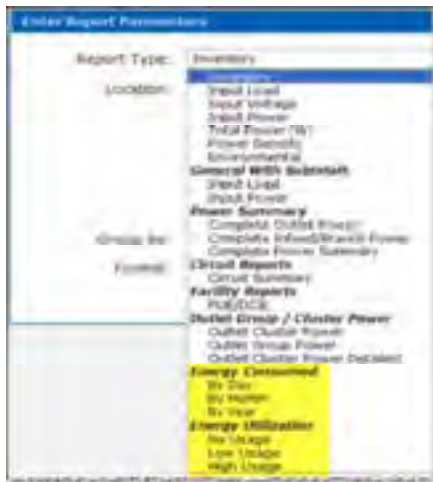
POPS Reports

For the administrator: For networks with Per Outlet Power Sensing (POPS) units, reports are available at the **Reports > Reports** option to show energy value readings for electrical consumption and usage, based on individual outlets, devices, outlet groups/outlet clusters, or the entire data center.

For more information about the POPS feature, see www.servertech.com

To generate a POPS report

1. *For the administrator:* From the **Reports > Reports** option, POPS reports are available in the Report Type drop-down list as **Energy Consumed** (day, month, year) and **Energy Utilization** (no usage, low, and high).



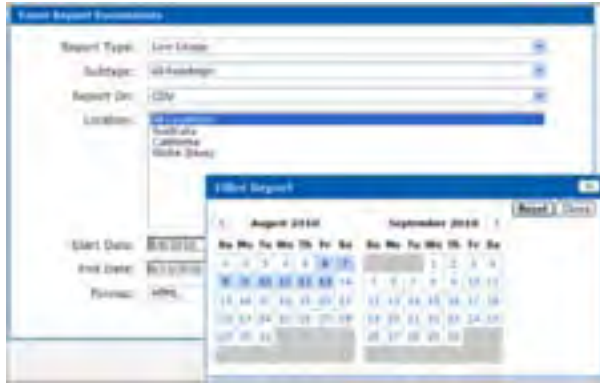
NOTE: The POPS report options are displayed for administrative login accounts only.

Your choices for POPS reports are:

Energy Consumed: Produces total energy consumption reports for outlet or infeed billing levels. Reports are available by location, cabinet, CDU, and outlet group/outlet cluster based on a specified timeframe.

Energy Utilization: Produces reports from energy value readings to measure and evaluate CDU and outlet group/outlet cluster outlet energy usage and efficiency. Reports are available by location, reading, CDU, and outlet group/cluster based on a specified timeframe.

- Select the desired parameters for the requested POPS report. If you prefer a timeframe other than the default displayed for the last week, click in the Start/End date fields to specify the reporting timeframe.



NOTE: To select multiple items in a parameter list, press and hold down the CTRL key.

- Click to generate and display the POPS report.

Energy For CDUs On Outlets With Low Power For All Readings
 Run by admin @ Fri, 12 Aug 10:10:00 AM EDT

| CDU | Outlet | Energy Used (kWh) |
|----------------------|-------------------------|-------------------|
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet2 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet3 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet4 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet5 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet6 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet7 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet8 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet9 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet10 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet11 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet12 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet13 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet14 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet15 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet16 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet17 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet18 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet19 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet20 | 0.000 |

- Reports are displayed by the parameters and the output format you selected. Only available measured readings in networked CDUs within parameters can be reported. To print, save, or email the report, right-click the report or use the options in your web browser.

Samples of POPS reports

Report Type: POPS Energy Consumed

Monthly, infeed/branch level, reported on cabinet for all cabinets:

Energy For Cabinets On Infeed/Branch Readings By Month
 Run by admin @ Fri, 12 Aug 10:11:00 AM EDT for the time period of 8/1/2016 to 8/31/2016

| Time | Cabinet | Energy (kWh) |
|---------|---------------|--------------|
| 2016-08 | Infeed/branch | 0.000 |
| | Cabinet | 0.000 |

Report Type: POPS Energy Utilization

Low usage on all readings for CDUs in all locations:

Energy For CDUs On Outlets With Low Power For All Readings
 Run by admin @ Fri, 12 Aug 10:11:00 AM EDT

| CDU | Outlet | Energy Used (kWh) |
|----------------------|-------------------------|-------------------|
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet2 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet3 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet4 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet5 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet6 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet7 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet8 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet9 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet10 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet11 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet12 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet13 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet14 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet15 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet16 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet17 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet18 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet19 | 0.000 |
| 101.2.187.12.1.2.187 | TowerA_Infeed_Cabinet20 | 0.000 |

PIPS Report

For networks with Per Infeed Power Sensing (PIPS) units, a PIPS report is available at the **Reports > Reports** option to show power, capacity, voltage, load, and other power factors for infeed/branch electrical power only. The PIPS report is available by location and can be grouped by location, cabinet, or both.

To generate the PIPS report

1. From the **Reports > Reports** option, the PIPS report is available in the Report Type drop-down list as the “Complete Infeed/Power Summary” option.



2. Select the desired parameters for location, grouping, and output file format.

NOTE: To select multiple items in a parameter list, press and hold down the CTRL key.

3. Click to generate and display the PIPS report.

| Complete Infeed/Branch Power | | | | | | | | | |
|---|----------------|--------------------|--------------|-------------|----------|------------------|---------------------|--------------|--------------|
| Run by admin at Thu, 19 Aug 10 13:24:07 -0700 | | | | | | | | | |
| CDU | Enclosure Name | Infeed/Branch Name | Capacity (A) | Voltage (V) | Load (A) | Active Power (W) | Apparent Power (VA) | Crest Factor | Power Factor |
| 10 1 10 245 | | T | NA | NA | 00 | NA | NA | NA | NA |
| 10 1 2 184 | TowerA | TowerA_infeedA | 32.0 | 408.1 | 00 | 0 | 0 | NA | NA |
| 10 1 2 184 | TowerA | TowerA_infeedB | 32.0 | 411.7 | 00 | 0 | 0 | NA | NA |
| 10 1 2 184 | TowerA | TowerA_infeedC | 32.0 | 413.7 | 00 | 0 | 0 | NA | NA |
| 10 1 2 184 | TowerA | TowerA_infeedD | 32.0 | NA | 00 | NA | NA | NA | NA |
| 10 1 2 184 | TowerB | TowerB_infeedA | 32.0 | 410.7 | 00 | 0 | 0 | NA | NA |
| 10 1 2 184 | TowerB | TowerB_infeedB | 32.0 | 414.4 | 00 | 0 | 0 | NA | NA |
| 10 1 2 184 | TowerB | TowerB_infeedC | 32.0 | 413.9 | 00 | 0 | 0 | NA | NA |
| 10 1 2 184 | TowerB | TowerB_infeedD | 32.0 | NA | 00 | NA | NA | NA | NA |
| 10 1 2 187 | TowerA_MAIN | TowerA_infeedA0 | 20.0 | 230.0 | 44 | 101 | NA | NA | NA |
| 10 1 2 187 | TowerA_MAIN | TowerA_infeedB0 | 20.0 | 230.0 | 36 | 63 | NA | NA | NA |
| 10 1 2 187 | TowerA_MAIN | TowerA_infeedC0 | 20.0 | 230.0 | 00 | 0 | NA | NA | NA |
| 10 1 2 187 | TowerB_BACK | TowerB_infeedA | 20.0 | 230.0 | 00 | 0 | NA | NA | NA |
| 10 1 2 187 | TowerB_BACK | TowerB_infeedB | 20.0 | 230.0 | 00 | 0 | NA | NA | NA |
| 10 1 2 187 | TowerB_BACK | TowerB_infeedC | 20.0 | 230.0 | 1.03 | 237 | NA | NA | NA |
| 10 1 2 224 | TowerA | TowerA_infeedA | 30.0 | 197.0 | 00 | 0 | 0 | NA | NA |
| 10 1 2 224 | TowerA | TowerA_infeedB | 30.0 | 200.0 | 00 | 0 | 0 | NA | NA |
| 10 1 2 224 | TowerA | TowerA_infeedC | 30.0 | 197.0 | 00 | 0 | 0 | NA | NA |
| 10 1 2 224 | TowerB | TowerB_infeedA | NA | NA | NA | NA | NA | NA | NA |
| 10 1 2 224 | TowerB | TowerB_infeedB | NA | NA | NA | NA | NA | NA | NA |

Trend Reports

The **Reports > Trends** option collects data from CDU readings and generates graphical charts based on the requested timeframe. Minimum and maximum values are reported in the lines shown in the Trend report.

Power/load on locations, cabinets, outlet groups, outlet clusters, circuits, and infeeds can be reported in a trend report, but only available data from a CDU for the parameters and timeframe you select can be reported.

To generate a trend report

1. Select **Reports > Trends**. The Enter Trends Parameters window opens:



2. From the Trend Type drop-down list, select the trend report you want to generate.



3. Select the desired parameters for the specific trend report, such as systems, outlets, infeeds/branches, locations, outlet group/outlet cluster name, PNG output file size, and other parameters – depending on the type of trend report.
4. If you prefer a timeframe other than the default displayed for the last week, click in the Start/End date fields to specify the reporting timeframe.

NOTE: To select multiple items in a parameter list, press and hold down the CTRL key.

5. Click to generate and display the trend report.

To read a Trend report

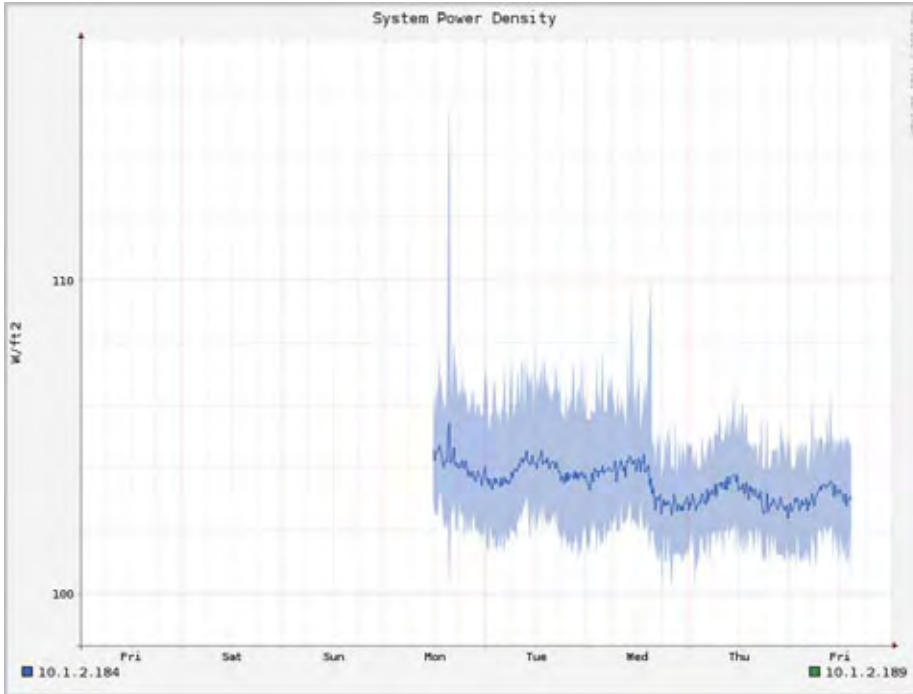
The Trend reports option collects and stores CDU readings (data points) in the following time interval buckets for reporting:

- For the last 2 minutes, intervals are 2-minutes long.
- The intervals are then expanded to 4-hours for the last 60-days.
- For the last 3-years, intervals are expanded to 1-day.
- The maximum, minimum, and average values of each bucket are tallied.
- When a CDU reading (a data point) is reported, you are viewing the trended data point of minimum, maximum, and average (rather than every reading stored in the interval bucket and reported.)
- A gap in a Trend report is an interval with no CDU reading.
- The lines on the Trend report are the average values.

- The shading on the Trend report is the minimum/maximum value within a trend.
- The longer the timeframe requested for the trend report, the less detail will be available for reporting.
- Some parameters you select for the trend report may not have available data as measured by the CDU for the specified timeframe; therefore, those parameters will not be displayed on the trend report.

Samples of trend reports

System Power Density:



NOTE: Lines are average values; shading is the minimum/maximum value within a trend.

Circuit Apparent Power:



Infeed/Branch Line Voltage



Location Total Power

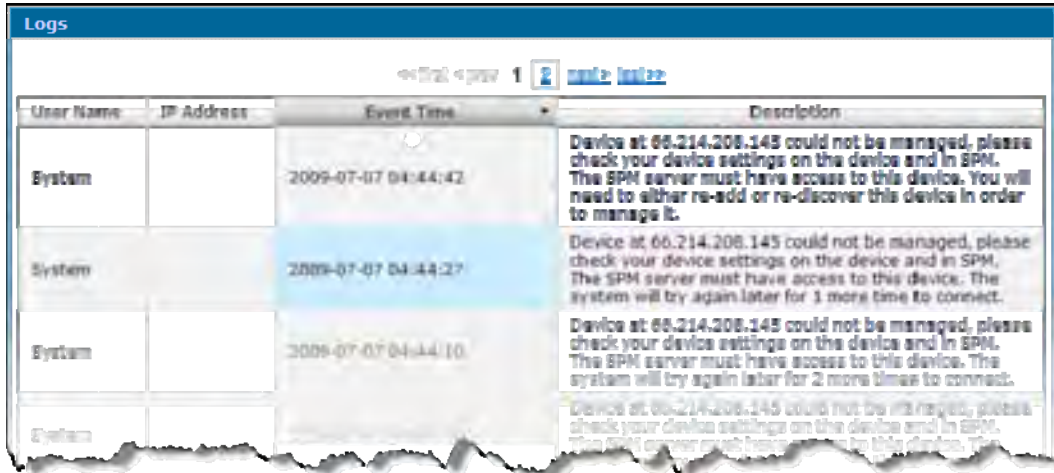


System Logs

The **Reports > Logs** option provides access to specific system activity logs (Discovery, User Login, User Actions, Alarm Status, and Combined). The Combined log shows all SPM system activity combined into a single report. Log data is stored for up to three years at: `/usr/share/spm/rrd/<deviceid>/<filename>.rrd`.

Discovery Log

The **Reports > Logs > Discovery** option lists the events that occur during the discovery of CDUs in the network by Sentry Power Manager. The most current discovery activity displays first.



| User Name | IP Address | Event Time | Description |
|-----------|------------|---------------------|---|
| System | | 2009-07-07 04:44:42 | Device at 66.214.208.145 could not be managed, please check your device settings on the device and in SPM. The SPM server must have access to this device. You will need to either re-add or re-discover this device in order to manage it. |
| System | | 2009-07-07 04:44:27 | Device at 66.214.208.145 could not be managed, please check your device settings on the device and in SPM. The SPM server must have access to this device. The system will try again later for 1 more time to connect. |
| System | | 2009-07-07 04:44:10 | Device at 66.214.208.145 could not be managed, please check your device settings on the device and in SPM. The SPM server must have access to this device. The system will try again later for 2 more times to connect. |
| System | | | Device at 66.214.208.145 could not be managed, please check your device settings on the device and in SPM. The SPM server must have access to this device. The system will try again later for 3 more times to connect. |

The Discovery log shows the default “System” User Name, IP Address (blank for discovery), Event Time, and a detailed description of the discovery event, such as “Discovery process completed for IP 10.1.2.137 though IP 10.1.2.137”.

Working with the Discovery Log

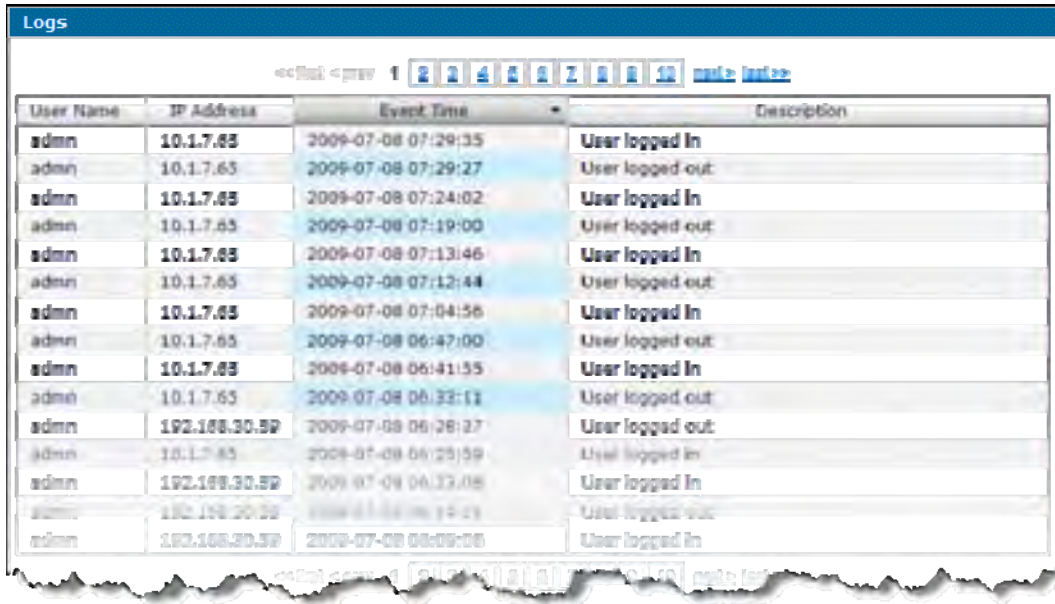
- To change the date range, click Start Date and End Date for a popup calendar.
- To sort the log data by a column heading, click the desired column heading (arranges data in ascending order by the heading), or click again (arranges data in descending order by the heading).
- The Discovery Log is available for delivery by Email alert.
- To print a report, use the Print function on your browser.

Clearing the Log

For the administrator: To delete log data permanently, click **Clear Log**.

User Login

The **Reports > Logs > User Login** option shows all login attempts to SPM. The log is generated by the date range specified, and the most current user login activity displays first.



The screenshot shows a web interface titled "Logs" with a table of user login attempts. The table has four columns: "User Name", "IP Address", "Event Time", and "Description". The data is as follows:

| User Name | IP Address | Event Time | Description |
|-----------|---------------|---------------------|-----------------|
| admin | 10.1.7.65 | 2009-07-08 07:29:35 | User logged In |
| admin | 10.1.7.65 | 2009-07-08 07:29:27 | User logged out |
| admin | 10.1.7.65 | 2009-07-08 07:24:02 | User logged In |
| admin | 10.1.7.65 | 2009-07-08 07:19:00 | User logged out |
| admin | 10.1.7.65 | 2009-07-08 07:13:46 | User logged In |
| admin | 10.1.7.65 | 2009-07-08 07:12:44 | User logged out |
| admin | 10.1.7.65 | 2009-07-08 07:04:56 | User logged In |
| admin | 10.1.7.65 | 2009-07-08 06:47:00 | User logged out |
| admin | 10.1.7.65 | 2009-07-08 06:41:55 | User logged In |
| admin | 10.1.7.65 | 2009-07-08 06:32:11 | User logged out |
| admin | 192.168.30.52 | 2009-07-08 06:26:27 | User logged out |
| admin | 10.1.7.65 | 2009-07-08 06:25:59 | User logged in |
| admin | 192.168.30.52 | 2009-07-08 06:13:08 | User logged In |
| admin | 192.168.30.52 | 2009-07-08 06:14:21 | User logged out |
| admin | 192.168.30.52 | 2009-07-08 06:09:06 | User logged in |

The User Login displays the user name, user's IP address, time of login attempt, and a Description of user login or logout.

Working with the User Login

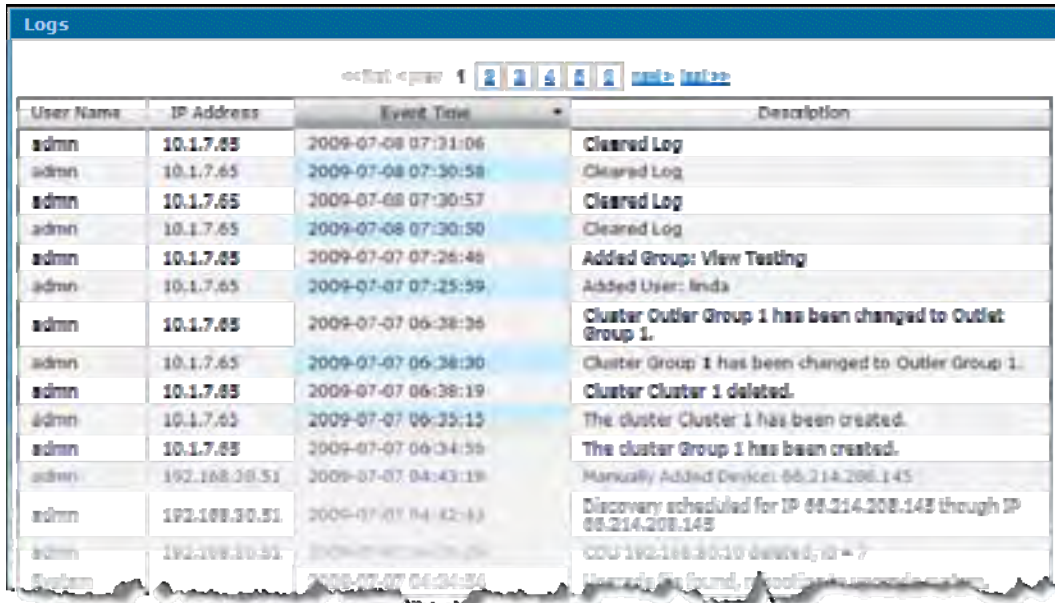
- To change the date range, click Start Date and End Date for a popup calendar.
- To sort the log data by a column heading, click the desired column heading (arranges data in ascending order by the heading), or click again (arranges data in descending order by the heading).
- The User Login is available for delivery by Email alert.
- To print a report, use the Print function on your browser.

Clearing the Log

- *For the administrator:* To delete log data permanently, click **Clear Log**.

User Actions

The **Reports > Logs > User Actions** option displays system activity details by specific username.



The screenshot shows a web interface titled "Logs" with a table of system activity. The table has four columns: "User Name", "IP Address", "Event Time", and "Description". The data is as follows:

| User Name | IP Address | Event Time | Description |
|-----------|---------------|---------------------|---|
| admin | 10.1.7.65 | 2009-07-08 07:31:06 | Cleared Log |
| admin | 10.1.7.65 | 2009-07-08 07:30:58 | Cleared Log |
| admin | 10.1.7.65 | 2009-07-08 07:30:57 | Cleared Log |
| admin | 10.1.7.65 | 2009-07-08 07:30:50 | Cleared Log |
| admin | 10.1.7.65 | 2009-07-07 07:26:46 | Added Group: View Testing |
| admin | 10.1.7.65 | 2009-07-07 07:25:59 | Added User: linda |
| admin | 10.1.7.65 | 2009-07-07 06:38:36 | Cluster Outlier Group 1 has been changed to Outlet Group 1. |
| admin | 10.1.7.65 | 2009-07-07 06:38:30 | Cluster Group 1 has been changed to Outlier Group 1. |
| admin | 10.1.7.65 | 2009-07-07 06:38:19 | Cluster Cluster 1 deleted. |
| admin | 10.1.7.65 | 2009-07-07 06:35:15 | The cluster Cluster 1 has been created. |
| admin | 10.1.7.65 | 2009-07-07 06:34:56 | The cluster Group 1 has been created. |
| admin | 192.168.20.51 | 2009-07-07 04:43:19 | Manually Added Device: 66.214.208.145 |
| admin | 192.168.20.51 | 2009-07-07 04:42:43 | Discovery scheduled for IP 66.214.208.145 through IP 66.214.208.145 |
| admin | 192.168.20.51 | 2009-07-07 04:42:34 | CDU 192.168.20.10 device ID = 7 |
| System | | 2009-07-07 04:34:34 | Upgrade in found, no policies associated. |

The most current activity displays first, showing chronological system activity. The User Actions log shows user name, IP address, time of system activity, and a description of the activity.

Working with the User Actions Log

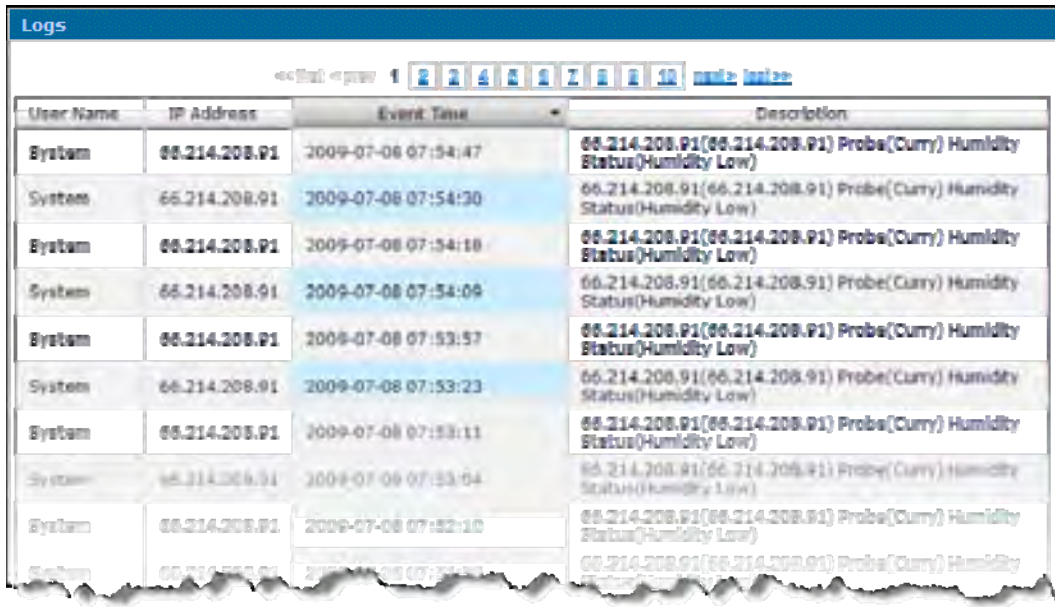
- To change the date range, click Start Date and End Date for a popup calendar.
- To sort the log data by a column heading, click the desired column heading (arranges data in ascending order by the heading), or click again (arranges data in descending order by the heading).
- The User Actions Log is available for delivery by Email alert.
- To print a report, use the Print function on your browser.

Clearing the Log

- *For the administrator:* To delete log data permanently, click **Clear Log**.

Alarm Status

The **Reports > Logs > Alarm Status** option provides system polling details about the changes in operational status of a CDU. The status of a CDU is one of the predetermined categories: Critical, Warning, Unreachable, Normal, and Maintenance. The most current reporting activity displays first.



The screenshot shows a web-based interface for viewing logs. At the top, there is a navigation bar with the word "Logs" and a set of controls including "« Back", "« Prev", "1", "2", "3", "4", "5", "6", "7", "8", "9", "10", "Next", and "»". Below this is a table with the following columns: "User Name", "IP Address", "Event Time", and "Description". The table contains ten rows of data, all with "System" as the user name and "66.214.208.91" as the IP address. The event times range from 2009-07-08 07:54:47 down to 07:52:10. The descriptions are all "66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low)".

| User Name | IP Address | Event Time | Description |
|-----------|---------------|---------------------|---|
| System | 66.214.208.91 | 2009-07-08 07:54:47 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:54:30 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:54:18 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:54:09 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:53:57 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:53:23 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:53:11 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:53:04 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:52:10 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:52:01 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |

The Alarm Status log shows user name, IP address of the affected CDU, time of system event, and a description of the status activity.

Working with the Alarm Status Log

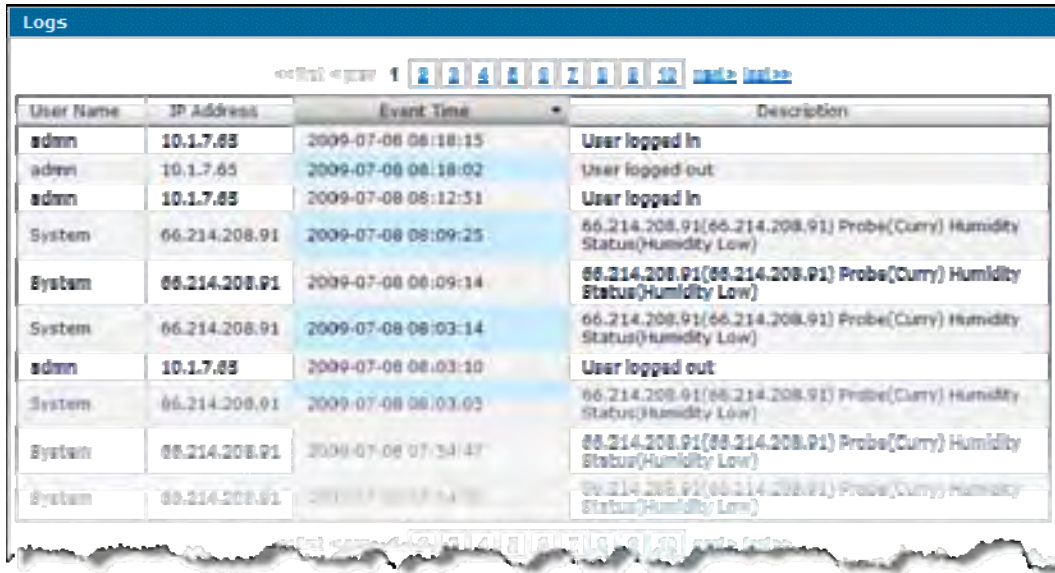
- To change the date range, click Start Date and End Date for a popup calendar.
- To sort the log data by a column heading, click the desired column heading (arranges data in ascending order by the heading), or click again (arranges data in descending order by the heading).
- The Alarm Status Log is available for delivery by Email alert.
- To print a report, use the Print function on your browser.

Clearing the Log

- *For the administrator:* To delete log data permanently, click **Clear Log**.

Combined

The **Reports > Logs > Combined** option is a combination of all system activities as reported by the individual Discovery, User Login, User Actions, and Alarm Status logs.



The screenshot shows a web interface titled "Logs" with a navigation bar at the top containing "Home", "Reports", "Logs", "Users", "Groups", "Probes", "Alarms", "Settings", and "Help". Below the navigation bar is a table with the following columns: "User Name", "IP Address", "Event Time", and "Description". The table contains several rows of log entries, including user logins and system events related to humidity probes. The most recent entry is "User logged in" for user "admin" at IP "10.1.7.65" on 2009-07-08 at 08:18:15.

| User Name | IP Address | Event Time | Description |
|-----------|---------------|---------------------|---|
| admin | 10.1.7.65 | 2009-07-08 08:18:15 | User logged in |
| admin | 10.1.7.65 | 2009-07-08 08:18:02 | User logged out |
| admin | 10.1.7.65 | 2009-07-08 08:12:51 | User logged in |
| System | 66.214.208.91 | 2009-07-08 08:09:25 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 08:09:14 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 08:03:14 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| admin | 10.1.7.65 | 2009-07-08 08:03:10 | User logged out |
| System | 66.214.208.91 | 2009-07-08 08:03:03 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:54:47 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |
| System | 66.214.208.91 | 2009-07-08 07:54:47 | 66.214.208.91(66.214.208.91) Probe(Curry) Humidity Status(Humidity Low) |

The Combined log shows User Name, IP address, the time of the recorded system event, and a detailed description of the event. The most current activity displays first.

Working with the Combined Log

- To change the date range, click Start Date and End Date for a popup calendar.
- To sort the log data by a column heading, click the desired column heading (arranges data in ascending order by the heading), or click again (arranges data in descending order by the heading).
- To print a report, use the Print function on your browser

Clearing the Log

- *For the administrator:* To delete log data permanently, click **Clear Log**.

Schedule

The **Schedule** option lets you define and schedule the frequency of several SPM system actions: discoveries running on networked devices, system backups, database maintenance, and outlet command control (in outlet groups and outlet clusters). Use the Schedule option to customize, schedule, and monitor these system actions.

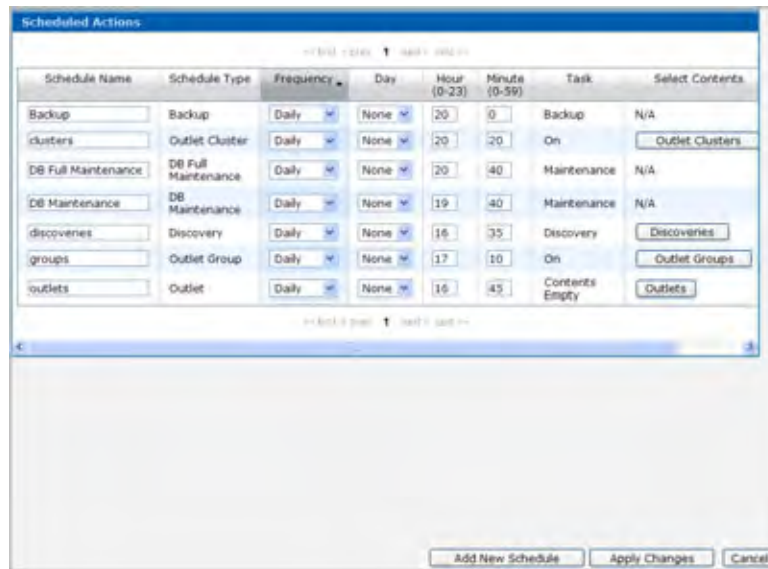
Schedule Types

| Type | Description |
|---------------------|--|
| Backup | Backs up SPM database information: user permissions, device data, outlet clusters, outlet groups, locations, trends, cabinets, graphics/maps, SPM executables, and locations. |
| Outlet Cluster | Lets you issue On, Off, and Reboot commands for named (and enabled) outlet clusters. |
| DB Full Maintenance | Extensive SPM database maintenance; longer run time than DB Maintenance; to be run infrequently due to noticeable system slowdown, similar to running a full virus scan on your computer. Recommended to run once a month. |
| DB Maintenance | General SPM database maintenance activities; runs faster than DB Full Maintenance. Recommended to run once a week. |
| Discovery | Starts the discovery of devices in your data center network to establish communication between the devices and SPM. |
| Outlet Group | Allows you to issue the On, Off, and Reboot commands for named (and enabled) outlet groups. |
| Outlets | Provides On, Off, and Reboot commands to issue on all outlets or outlets you filter by location, cabinet, or CDU |

NOTE: The schedules are run using the server's time, which may differ from your logged-in time. Refer to the time zone setup in the NTP configuration at [Config > Settings > System](#) to determine the server time relative to your logged-in time.

To work with the Scheduled Actions window

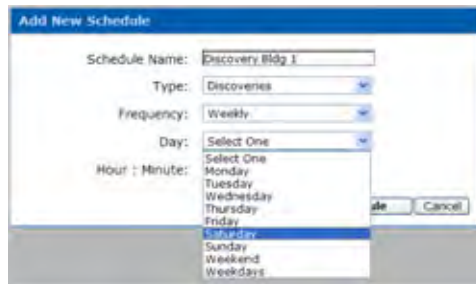
1. Select **Schedule** from the SPM menu bar to open the Scheduled Actions window:



NOTE: The Task column shows “Contents Empty” until you select the actual contents of the scheduled task. For example, for an Outlet Schedule Type, you select specific outlets for a command action on the outlet(s). Another example is for the Discovery Schedule Type where you select specific CDUs. When you make these contents selections for the schedule type, the Task column then updates from “Contents Empty” to the task name, such as “On” or “Discovery”, as shown above.

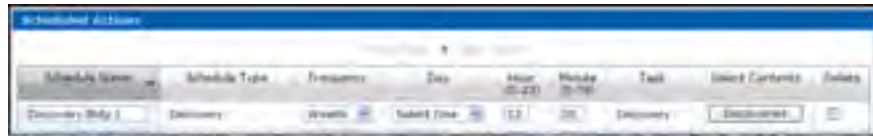
To add a new scheduled action

1. In the Scheduled Actions window, click **Add New Schedule** to open the following Add box:



2. Type the desired name for the new schedule.
3. Select a Type, Frequency, Day (as necessary), and Hour:Minute (24-hour clock).
4. Click **Add New Schedule** on the Add box.

The new schedule name and the parameters you specified display as a new row in the Scheduled Actions window:



NOTE: The button in the Select Contents column shows the new schedule type you selected; in the above example, Discoveries. A button will not display for system backup and database maintenance.

5. Click the Select Contents button (Discoveries in this example) to specify the details for the new schedule. See the *Selecting Scheduled Contents* section below for examples.

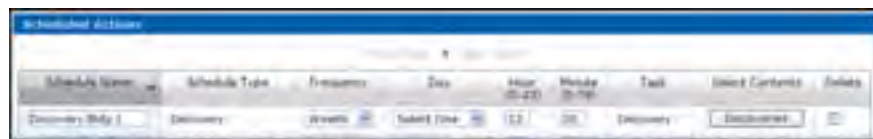
Selecting Scheduled Contents

To select networked devices for discoveries

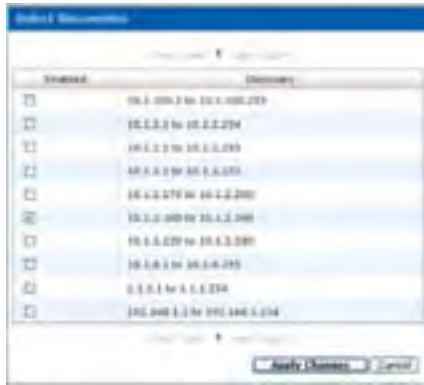
1. Run a manual discovery described in [Discover CDUs](#).

NOTE: If you have already run at least one manual discovery in the past, you don't need to run this manual discovery in step 1, so you may proceed with step 2.

2. Select Schedule from the SPM menu bar to display the Scheduled Actions window, as follows. Locate the desired Discovery in the Schedule Name column, and click the related **Discoveries** button in the Select Contents column:



The Select Discoveries box displays, showing the stored IP address range from the manual discovery you ran in step 1 above. If a manual discovery is **never** run, the following box would be blank.



3. Check the checkbox(es) to enable the devices for the scheduled discovery process.
4. Click **Apply Changes** to return to the Scheduled Actions window with the discovery process confirmed and scheduled.

How a Scheduled Discovery Works

You may wonder why it is necessary to run a manual discovery for the range of IP addresses you want to schedule for an automatic discovery before actually scheduling the automatic discovery.

You run at least one manual discovery to make sure all IP addresses in the desired range are first added to the SPM database, allowing those same IP addresses to be picked up later by the scheduled automatic discovery.

For example, if your IP address range is 192.168.1.1 through 192.168.1.254, and you are adding devices to that range – maybe daily – run a manual discovery on the full range, then schedule the automatic discovery every night to pick up devices that were added daily to the range, such as 192.168.1.25 through 192.168.1.35 for this example.

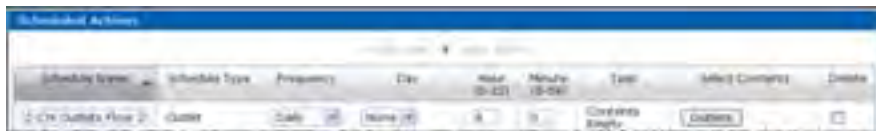
Running the manual discovery first (before the scheduled discovery) ensures that all IP addresses in the range get into the SPM database so they are later recognized by the scheduled discovery.

The Select Discoveries box shown above displays the IP address range you just ran from the manual discovery. If you attempted a scheduled discovery without running at least one manual discovery first, the Select Discoveries box would be blank – no IP addresses would be listed for the scheduled discovery.

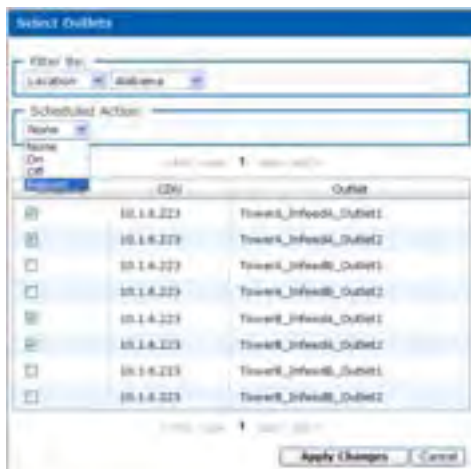
NOTE: Many network policies may prohibit network scans (such as the SPM discovery), so the Scheduled Discovery may be flagged by internal security software on your network. If this happens, contact your network administrator for your company's network scanning rules.

To select outlets to control

1. In the Scheduled Actions window, locate the desired Outlet by Schedule Name and click the related **Outlets** button in the Select Contents column:



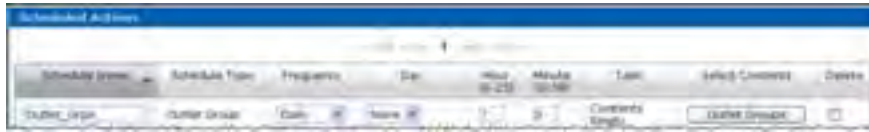
The Select Outlets box displays showing available outlets in your network:



2. Select a Filter By option. For the Location, Cabinet, or CDU options, a drop-down list appears to the right to allow specific selections by filter, shown above. The Filter By option also provides an “All Outlets” option.
3. From the Scheduled Action drop-down list, select a command to issue on the outlets: On, Off, or Reboot.
4. Check the outlet(s) to enable them for the scheduled action.
5. Click **Apply Changes** to return to the Scheduled Actions window with the Outlet process confirmed and scheduled.

To select outlet groups to control

1. In the Scheduled Actions window, locate the desired Outlet Group by Schedule Name and click the related **Outlet Groups** button in the Select Contents column:



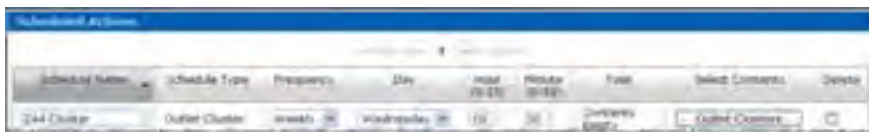
The Select Outlet Groups box displays showing available outlet groups in your network:



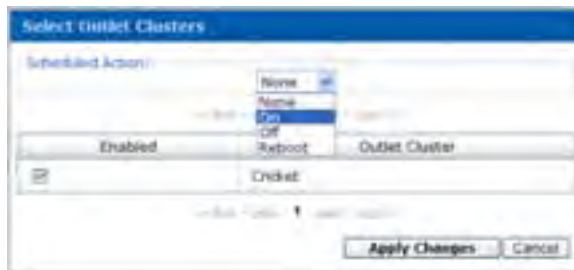
2. Select the scheduled action from the drop-down list, the Off command in this example.
3. Check the outlet group(s) to enable them for the scheduled action.
4. Click **Apply Changes** to return to the Scheduled Actions window with the Outlet Group process confirmed and scheduled.

To select outlet clusters to control

1. In the Scheduled Actions window, locate the desired Outlet Cluster by Schedule Name and click the related **Outlet Clusters** button in the Select Contents column:



The Select Outlet Clusters box displays showing available outlet clusters in your network:



2. Select the scheduled action from the drop-down list, the On command in this example.
3. Check the outlet group(s) to enable them for the scheduled action.
4. Click **Apply Changes** to return to the Scheduled Actions window with the Outlet Clusters process confirmed and scheduled.



To change a schedule name

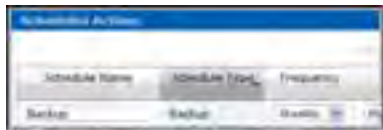
1. In the Scheduled Actions window, type over the Schedule Name you want to change and click **Apply Changes**. The Schedule Name is updated in the list.

To delete a schedule name

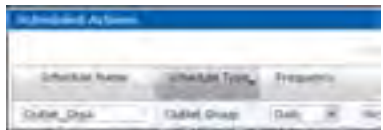
1. In the Scheduled Actions window, select the checkbox in the Delete column for the Schedule Name you want to delete and click **Apply Changes**. The Schedule Name is deleted from the list.

To sort the Scheduled Actions list

1. You can sort the rows of the Scheduled Actions list (in ascending or descending order) by Schedule Name, Schedule Type, or Frequency simply by clicking one of these column headings.
2. The up  (ascending) or down  (descending) arrow displays in the heading to show the current sort order of the rows. Notice the up arrow in the Schedule Type heading in the following examples:



3. Click the column heading again to reverse the sort order of the rows.



Configuring Sentry Power Manager

For the administrator: The Configuration menu provides the options necessary for configuring the control settings of the SPM network. The network settings you configure in are downloaded (“pushed”) from SPM directly to the device.

The following options are available for the administrator on the Config menu:

Config Menu Options

| Option | Description |
|-----------------|--|
| Locations | Configures and manages parameters for default and custom location images (used as the background on the Views page) upon which the administrator builds a graphic representation of the data center with icons for locations, cabinets, and CDUs. |
| Cabinets | Adds, edits, and deletes cabinets; associates a cabinet with a parent location; defines cabinet area (in square ft.) for optional calculation of power density; and allows entry of optional actual/theoretical capacities. |
| CDUs | Branches to options for specific CDU administrative tasks: CDU discovery; configuration of CDU parameters; and the editing of environmental monitors, sensors, temperature/humidity thresholds, enclosures, infeeds, and outlets; and associates a CDU with a cabinet/location. |
| Outlet Groups | Allows the administrator to select various CDU power outlets and place them into a collection of named “outlet groups” for convenient and faster administration of outlet control. An outlet group is a collection of outlets in a CDU (up to two linked enclosures) with a single IP address. An outlet group can be in more than one outlet cluster. |
| Outlet Clusters | Allows the administrator to select various CDU power outlets (as part of an outlet group) and place them into a collection of named “outlet clusters” for convenient and faster administration of outlet control. An outlet cluster is a collection of outlets across multiple CDU systems with multiple IP addresses. |
| Users & Groups | Provides additional options for configuring individual user names and passwords; associates a user with a specific user group; configures LDAP parameters; and determines user permissions for locations, outlet clusters, cabinets, CDUs, and outlets. |
| Settings | Provides options for configuring SPM system parameters for email, units, network, web, FTP, SSH/Telnet, Serial, SNMP Trap Forwarding, and Syslog. |

NOTE: The administrator login has full access to all background images and icons that display on the Views page. The administrator must grant each user (or user group) access to individual location, cabinet, and CDU icons using **Config > Users & Groups > Permissions**.

Config > Locations

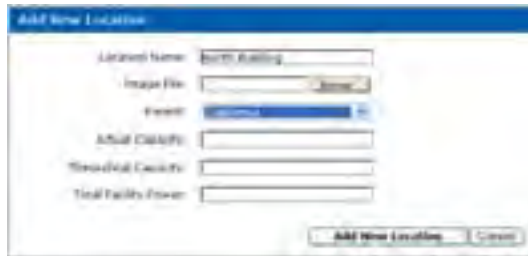
The **Config > Locations** option allows the administrator to configure and manage parameters for default and custom location images (used as the background on the Views page) upon which the administrator builds a graphic representation of the data center with icons for locations, cabinets, and CDUs.



Location images include default maps installed with SPM and any custom images the administrator uploads to SPM. Acceptable graphic file formats for location images are JPG, PNG, and GIF. The recommended image width is less than 800 pixels wide.

To add a new location image

1. Select **Config > Locations**.
2. Click **Add New Location** to display the following box:



3. (Required) Type a **Location Name** for the new location image.
4. (Required) Click **Browse** to locate the graphics file for the location image.
5. (Optional) Select a **Parent** location image. Default is None.
6. (Optional) Type a numeric value (in watts) in the **Actual Capacity** field. Actual Capacity is a user-defined value to show the maximum capacity of the sum of the infeed circuits; for example, 2 x L630P – 208V * 30A*2 = 12,480W.
7. (Optional) Type a numeric value (in watts) in the **Theoretical Capacity** field. Theoretical Capacity is a user-defined value to show the desired “safety rating” of the sum of the infeed circuits, 20% in this example: 2 x L630P – 208V*30A*2*.8 = 9,984W.
8. (Optional) Type a numeric value in the Total Facility Power field. Total Facility Power is
9. Click **Add New Location**. The message *Operation Succeeded* displays and the new image is added by name to the drop-down location list on the Views page.

The image is also added to the **Config > Locations** option and shows a checkmark in the Enabled checkbox:



To disable a location image

1. Select **Config > Locations**.
2. Uncheck the Enabled checkbox next to the image name(s) you want to disable and click **Apply Changes**. The disabled image remains in SPM (to be enabled later, if desired) but the image does not appear in the location drop-down list on the Views Page.

To enable a location image

1. Select **Config > Locations**.
2. Check the Enabled checkbox next to the image name(s) you want to enable, and click **Apply Changes**. The enabled image appears in the location drop-down list on the Views Page.

To edit a location image name

1. Select **Config > Locations**.
2. Type over the name of the image(s) in the Name field and click **Apply Changes**. The edited image name appears in the drop-down list on the Views Page.

To view a location image thumbnail

1. Select **Config > Locations**.
2. Click the **View** button to the right of an image name to see a thumbnail picture.

To delete a location image

1. Select **Config > Locations**.
2. Check the Delete checkbox to the far right of the image name you want to delete and click **Apply Changes**. The image is permanently removed from SPM.

NOTE: Only *empty* background images can be deleted. If a background image contains at least one location, cabinet, or CDU, the Delete checkbox will not display on the **Config > Locations** page.

To change a parent location image

1. Select **Config > Locations**.
2. For the desired image name, select a different parent location image from the Parent drop-down list.
3. Click **Apply Changes**. The image name is associated with the new parent location image.

Config > Cabinets

The **Config > Cabinets** option allows the administrator to manage data center cabinets by adding, configuring, changing, and deleting cabinets. This option also allows cabinets to be associated with parent location images. When a cabinet is added and associated with a location, the cabinet appears as a cabinet icon on the Views page.




| Name | Parent | Area (sq ft) | Actual Capacity (VA) | Theoretical Capacity (VA) | Delete |
|---------------|------------|--------------|----------------------|---------------------------|--------------------------|
| ArcadeCab | Australia | 10 | 99 | 99 | <input type="checkbox"/> |
| CaliforniaCab | California | 10 | 999 | 999 | <input type="checkbox"/> |
| EmptyCab | None | 10 | 99 | 99 | <input type="checkbox"/> |
| MassachCab | Massach | 10 | 99 | 99 | <input type="checkbox"/> |
| NevadaCab | Nevada | 10 | 99 | 99 | <input type="checkbox"/> |

The area of the cabinet (shown in square ft. in the above sample) is an optional value (for the calculation of total system watts). The area of the cabinet can be configured to square ft. or square meters at **Config > Settings > Units**.

The capacity planning data for the cabinet (actual capacity/theoretical capacity) are also optional values (shown in VA) for cabinet configuration.

To add a new cabinet

1. Select **Config > Cabinets**.
2. Click **Add New Cabinet** to display the following box:



Add New Cabinet

Cabinet Name:

Parent:

Area (sq ft):

Actual Capacity:

Theoretical Capacity:

Total Facility Power:

3. (Required) In the Cabinet Name field, type a name for the new cabinet.
4. From the Parent drop-down list, select a parent location image to be associated with the cabinet. Default is None.

NOTE: The None option in the Parent drop-down list disassociates the cabinet from all location images (the cabinet does not appear on the Views page) but keeps the cabinet available in SPM.

5. (Optional) In the Area field, type a numeric value (in square ft. or square meters, as configured). Use whole numbers only, no fractions. The area of the cabinet can be configured to square ft. or square meters at **Config > Settings > Units**.
6. (Optional). Type a numeric value in the Actual Capacity field. The Actual Capacity field is a user-defined value to show the maximum capacity of the sum of the infeed circuits.

7. (Optional). Type a numeric value in the Theoretical Capacity field. The Theoretical Capacity field is a user-defined value to show the desired “safety rating” of the sum of the infeed circuits.
8. (Optional). Type a numeric value in the Total Facility Power field.
9. Click **Add New Cabinet**. The message *Operation Succeeded* displays and the new cabinet is added by name to the parent location image on the Views page.

The image is also added to the **Config > Cabinets** page:

To edit a cabinet

1. Select **Config > Cabinets**.
2. For one or more cabinets, type over the Name, Area, Actual Capacity, and Theoretical Capacity fields, and select a different parent location image from the Parent drop-down list, as desired.

NOTE: The Area field is sq. ft. and must be a whole number.

3. Click **Apply Changes**. The edits to the cabinet(s) are applied throughout SPM.

To delete a cabinet

1. Select **Config > Cabinets**.
2. For one or more cabinets shown on the list, check the Delete checkbox.
3. Click **Apply Changes**. The cabinets are removed from SPM.

NOTE: Only *empty* cabinets can be deleted. If a cabinet contains one or more CDUs, the Delete checkbox will not display on the **Config > Cabinets** page.

Config > CDUs

The **Config > CDUs** option branches to additional options for CDU administrative tasks: discovery of CDUs, adding and configuring CDUs, and configuring environmental monitors, sensors, enclosures, and outlets.

Discover CDUs

The **Config > CDUs > Discover CDUs** option allows the administrator to define parameters for a **manual** discovery of devices in the network as SPM searches by IP address for SNMP-enabled CDUs and other devices. The Discovery option also allows editing of SNMP GET/SET community string.

The Discovery feature locates a networked device by IP address and establishes communication between the device and SPM. Discovery can be used for the initial network discovery when SPM is installed and then later as needed for new devices added to the network.

Discovered CDUs (and other devices) communicate with SPM to report alarms and device status changes that assist in global management of the data center network. The Discovery feature can discover a single device by exact IP address or multiple devices in a range of IP addresses.

NOTE: The CDU Discovery feature can be executed immediately upon **manual** request (as described in the following instructions) or you can schedule an **automatic** discovery using the [Schedule](#) feature on the SPM menu bar. However, you must first run a **manual** discovery so that SPM recognizes a range of devices before you can schedule an **automatic** discovery on those devices.

Discovering a single Server Technology or OEM CDU

1. Select **Config > CDUs > Discover CDUs**.
2. Type the Discovery Starting IP Address in the field provided. Make sure you type an IP address, not a hostname.
3. In the Discovery Ending IP Address field, type the last node of the starting IP address. For example, if the starting IP address typed was 10.1.1.74, then type “74” in the Discovery Ending IP Address field. The previous nodes are auto-filled. The Discovery feature will search, discover, and connect only the one CDU specifically named 10.1.1.74.
4. Type the SNMP community string from the SNMP settings on the CDU in the network. The community string is used during the discovery process.
5. In the FTP User Name and FTP Password fields, type the valid administrative user name and password used for direct access of the CDU through the Sentry firmware interface. The FTP fields must be different than your administrative login user name/password for SPM.
6. Click **Initiate CDU Discovery** to perform an immediate discovery on the single CDU requested.

NOTE: Competitor devices cannot be discovered but can be added to SPM. To add competitor devices to SPM, see [To Add a Single CDU](#).

Discovering multiple Server Technology or OEM CDUs

1. Select **Config > CDUs > Discover CDUs**.
2. Type the Discovery Starting IP Address in the box provided. Be sure to type an IP address, not a hostname.
3. In the Discovery Ending IP Address field, type the IP address of the last CDU you want discovered. For example, if the starting IP address typed was 10.1.1.74, and the Discovery Ending IP Address field is 10.1.1.125, the Discovery feature will search, discover, and connect to all valid CDUs in the range between the IP addresses 10.1.1.74 and 10.1.125.
4. Type the SNMP community string from the SNMP settings on the CDU in the network. The community string is used during the discovery process.
5. In the FTP User Name and FTP Password fields, type the valid administrative user name and password you use for direct access of the CDU through the Sentry firmware interface. The FTP fields must be different than your administrative login user name/password for SPM.
6. Click **Initiate CDU Discovery** to perform an immediate discovery on the range of CDUs requested.

NOTE: Competitor devices cannot be discovered but can be added to SPM. To add competitor devices to SPM, see [To Add a Single CDU](#).

Configure CDUs

The **Config > CDUs > Configure CDUs** option allows the administrator to manage individual CDUs in the SPM network and configure detailed operational parameters for the CDU.



| CDU Name | SNMP Get | SNMP Set | Capacity (VA) | Cabinet/Location | Delete |
|------------|----------|----------|---------------|------------------|--------------------------|
| 10.1.1.101 | public | private | 0 | None | <input type="checkbox"/> |
| 10.1.1.74 | public | private | 0 | None | <input type="checkbox"/> |
| 10.1.2.131 | public | private | 0 | CaliforniaCab | <input type="checkbox"/> |
| 10.1.2.133 | public | private | 0 | CaliforniaCab | <input type="checkbox"/> |
| 10.1.2.134 | public | private | 0 | CaliforniaCab | <input type="checkbox"/> |
| 10.1.2.184 | public | private | 14400 | CaliforniaCab | <input type="checkbox"/> |
| 10.1.2.185 | public | private | 0 | CaliforniaCab | <input type="checkbox"/> |
| 10.1.2.186 | public | private | 0 | CaliforniaCab | <input type="checkbox"/> |
| 10.1.2.187 | get | set | 0 | None | <input type="checkbox"/> |
| 10.1.2.188 | get | set | 0 | CaliforniaCab | <input type="checkbox"/> |

The Configure CDUs page lists the current settings of discovered CDUs and shows the associated cabinet or location image. The settings on this page are downloaded directly (“pushed down”) from SPM to the CDU.

To add a single CDU

The Add New CDU function allows the administration to add one Server Technology, OEM, or competitor device at a time (by exact IP address) to the SPM device network.

NOTE: Any competitor device **must be** added manually to SPM using the Add New CDU box as shown below. A competitor device **cannot be** discovered by SPM using **Config > CDUs > Discover CDUs**.

1. Select **Config > CDUs > Configure CDUs**.
2. Click **Add New CDU** to display the following box:



3. Provide the IP address of the Server Technology CDU, OEM device, or competitor device to be added to SPM.
4. From the Device Type drop-down list, select either the Server Technology (STI MIB version 3) option, the OEM name option (shown as Rittal PDU MIB in the example above), or the competitor name option. Server Technology CDUs are the system default.
5. Provide the SNMP Get/Set parameters.
6. Click **Add New CDU**.

NOTE: To support your OEM or competitor devices with SPM, an upgrade file is required to add support for the device in the SPM system. Once the update file is integrated with SPM, the OEM or competitor device name displays on the Device Type drop-down list so you can select the name to add the device manually to SPM. For information about the update file, please contact your Server Technology representative at 1-800-835-1515 (domestic), ++0 (1) 775.284.2000 (international), or sales@servertech.com.

About OEM Devices

OEM devices can be discovered by SPM in a range of IP addresses as well as added individually by exact IP address to the SPM network. Once discovered or added, an OEM device is fully supported with device updating, general reports, trend graphs, outlet control, and sensors.

To discover OEM devices, see [Discover CDUs](#).

To add individual OEM devices, see [To Add a Single CDU](#).

About Competitor Devices

Competitor devices cannot be discovered by SPM in a range of IP addresses. Competitor devices can only be added individually by exact IP address to the SPM network.

To add individual competitor devices, see [To Add a Single CDU](#).

Once added, competitor devices are managed by SPM as follows:

SPM supports:

- View page icon display
- View page search
- CDU manage lists
- Report data limited to outlets/infeed branches/power
- Reported in trend graphs (if data is turned on for device)
- Displayed in system logs
- Permissions can be set to the device itself
- Simple status tracking
- Can be placed in locations and cabinets

SPM does not support:

- Sensors
- Outlet cluster reporting
- Changes to the device
- Outlet level permission support
- Configuration of enclosure or environmental monitor
- Full device data reporting

To configure CDU parameters

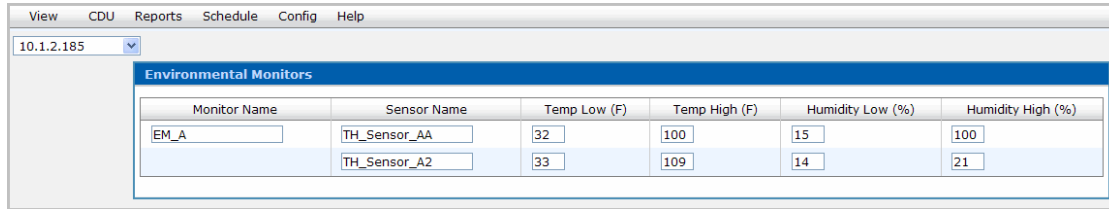
1. Select **Config > CDUs > Configure CDUs**.
2. For one or more CDUs, edit the CDU Name, SNMP Get/Set parameters, CDU capacity (VA), and the cabinet/location associated with the CDU.
3. Click **Apply Changes**.

To delete a CDU

1. Select **Config > CDUs > Configure CDUs**.
2. For one or more CDUs shown in the list, check the Delete checkbox.
3. Click **Apply Changes**. The CDU is removed from SPM.

Environmental Monitors

The **Config > CDUs > Environmental Monitors** option lets the administrator edit the names of environmental monitors and sensors, and set the sensor high/low thresholds for temperature/humidity.



| Monitor Name | Sensor Name | Temp Low (F) | Temp High (F) | Humidity Low (%) | Humidity High (%) |
|--------------|--------------|--------------|---------------|------------------|-------------------|
| EM_A | TH_Sensor_AA | 32 | 100 | 15 | 100 |
| | TH_Sensor_A2 | 33 | 109 | 14 | 21 |

High/low sensor *temperature* thresholds are measured in degrees Fahrenheit or Celsius (depending on which unit of measure was configured system-wide at **Config > Settings > Units**). High/low sensor *humidity* thresholds are measured in percentage.

To configure environmental monitor name, sensor name, and sensor values

1. Select **Config > CDUs > Environment Monitors**.
2. For one or more Environmental Monitors shown on the list, edit the environmental monitor name, sensor name, temperature values, and humidity values as necessary.
3. Click **Apply Changes**.

Enclosures

The **Config > CDUs > Enclosures** option allows the administrator to: (1) edit the names of CDU components, such as enclosure names, infeed/branch names, and outlet names; and (2) configure infeed/branch load threshold (in amperes), low/high load limits (in amperes), and low/high power limits (in watts).



| Enclosure Name | Infeed/Branch Name | Infeed/Branch Load (A) | Outlet Index | Outlet Name | Outlet Load Low (A) | Outlet Load High (A) | Low Power Limit (W) | High Power Limit (W) |
|----------------|--------------------|------------------------|--------------|-----------------|---------------------|----------------------|---------------------|----------------------|
| TowerA | TowerA_InfeedA | 2 | 1 | TowerA_Outlet1 | 9A | 9A | 9A | 9A |
| | | | 2 | TowerA_Outlet2 | 9A | 9A | 9A | 9A |
| | | | 3 | TowerA_Outlet3 | 9A | 9A | 9A | 9A |
| | | | 4 | TowerA_Outlet4 | 9A | 9A | 9A | 9A |
| | | | 5 | TowerA_Outlet5 | 9A | 9A | 9A | 9A |
| | | | 6 | TowerA_Outlet6 | 9A | 9A | 9A | 9A |
| | | | 7 | TowerA_Outlet7 | 9A | 9A | 9A | 9A |
| | | | 8 | TowerA_Outlet8 | 9A | 9A | 9A | 9A |
| | | | 9 | TowerA_Outlet9 | 9A | 9A | 9A | 9A |
| | | | 10 | TowerA_Outlet10 | 9A | 9A | 9A | 9A |
| | | | 11 | TowerA_Outlet11 | 9A | 9A | 9A | 9A |
| | | | 12 | TowerA_Outlet12 | 9A | 9A | 9A | 9A |
| | | | 13 | TowerA_Outlet13 | 9A | 9A | 9A | 9A |
| | | | 14 | TowerA_Outlet14 | 9A | 9A | 9A | 9A |
| | | | 15 | TowerA_Outlet15 | 9A | 9A | 9A | 9A |
| | | | 16 | TowerA_Outlet16 | 9A | 9A | 9A | 9A |
| TowerB | TowerB_InfeedA | 2 | 1 | TowerB_Outlet1 | 9A | 9A | 9A | 9A |
| | | | 2 | TowerB_Outlet2 | 9A | 9A | 9A | 9A |
| | | | 3 | TowerB_Outlet3 | 9A | 9A | 9A | 9A |
| | | | 4 | TowerB_Outlet4 | 9A | 9A | 9A | 9A |
| | | | 5 | TowerB_Outlet5 | 9A | 9A | 9A | 9A |
| | | | 6 | TowerB_Outlet6 | 9A | 9A | 9A | 9A |

An enclosure is a Sentry unit (made up of infeed/branch and outlets) that is part of an overall Sentry CDU. In the example above, the Sentry Switched 10.1.6.3 is made up of the following units:

- A Switched master unit named TowerA, which is the first enclosure with an infeed named TowerA_InfeedA. TowerA_InfeedA has 16 related outlets, starting with TowerA_Outlet1 and so on.
- A Switched extension unit named TowerB, which is the second enclosure with an infeed named TowerB_InfeedA. TowerB_InfeedA has several related outlets, starting with TowerB_Outlet1 and so on.

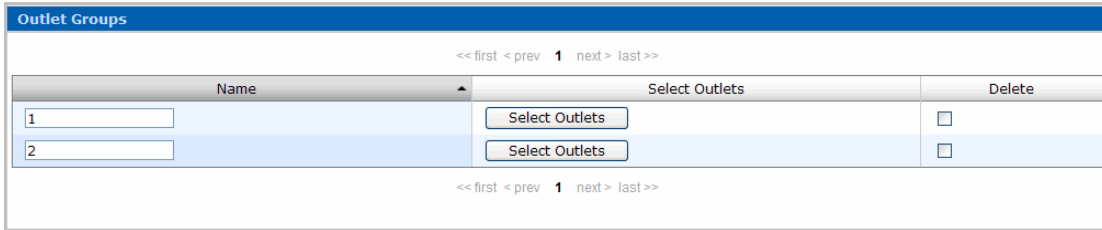
Both the master and extension units (TowerA and TowerB) are two separate enclosures in the single Sentry CDU system named 10.1.6.3.

To configure enclosure settings

1. Select a CDU from the drop-down list.
2. Edit the names of one or more enclosures, infeed/branches, and outlets, as desired.
3. Edit the infeed/branch load thresholds (in amperes), low/high load limits (in amperes), and low/high power limits (in watts), as desired.
4. Click **Apply Changes**.

Config > Outlet Groups

The **Config > Outlet Groups** option allows the administrator to select various CDU power outlets and place them into a collection of named “outlet groups” for convenient and faster administration of outlet control.

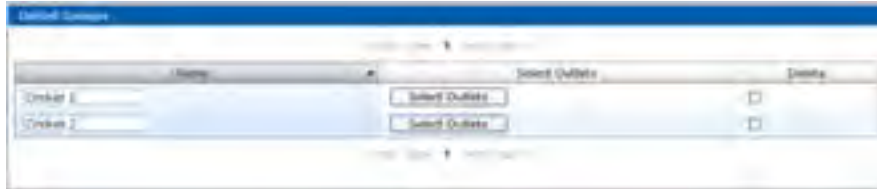


An **outlet group** is a collection of outlets in a CDU (up to two linked enclosures) with a single IP address. An outlet group can be in more than one outlet cluster.

An **outlet cluster** is a collection of outlets across multiple CDU systems with multiple IP addresses.

To add an outlet group

1. Select **Config > Outlet Groups**:



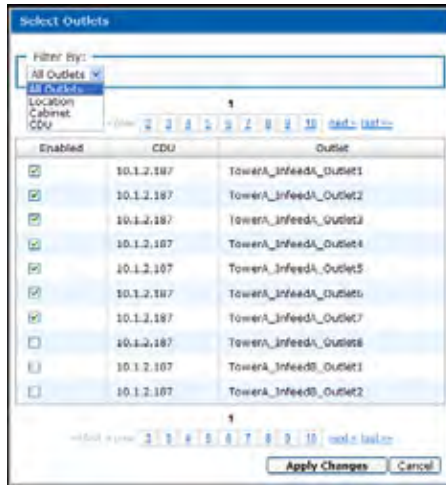
2. Click the **Add New Outlet Group** button at the bottom of the screen:



3. Type the new outlet cluster name (“Cricket 3” in this example) and click **Add New Outlet Group**. The Outlet Groups page redisplayes showing the new name:



4. For the new outlet group name, click **Select Outlets**:



5. Select a Filter By option. For the Location, Cabinet, or CDU options, a drop-down list appears to the right to allow specific selections by filter, shown above. The Filter By option also provides an “All Outlets” option.
6. Check the desired outlet(s) to select them for the new outlet group.
7. Click **Apply Changes** to return to the Outlet Groups window with the selected outlets confirmed in a collection (outlet group) named “Cricket 3” in this example.

To edit an outlet group

1. Select **Config > Outlet Groups**.
2. Type over the outlet group name in the Name column and click **Apply Changes**. The edited name appears on the Outlet Groups window.

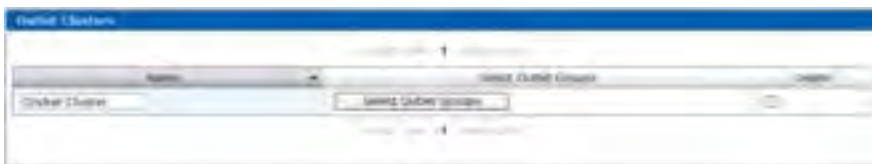
NOTE: All outlets associated with the original outlet group name will be associated with the edited group name.

To delete an outlet group

1. Select **Config > Outlet Groups**.
2. Check the Delete checkbox to the right of one or more outlet groups.
3. Click **Apply Changes**.

Config > Outlet Clusters

The **Config > Outlet Clusters** option allows the administrator to select various CDU power outlets (as part of an outlet group) and place them into a collection of named “outlet clusters” for convenient and faster administration of outlet control.

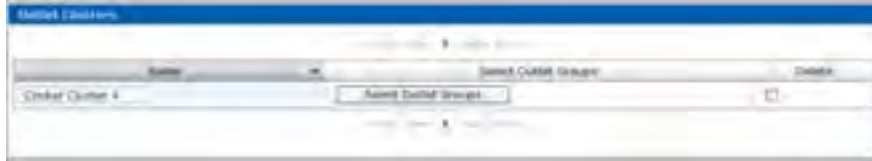


An **outlet group** is a collection of outlets in a CDU (up to two linked enclosures) with a single IP address. An outlet group can be in more than one outlet cluster.

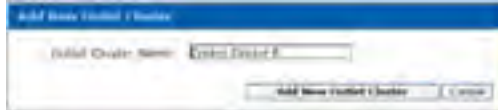
An **outlet cluster** is a collection of outlets across multiple CDU systems with multiple IP addresses.

To add an outlet cluster

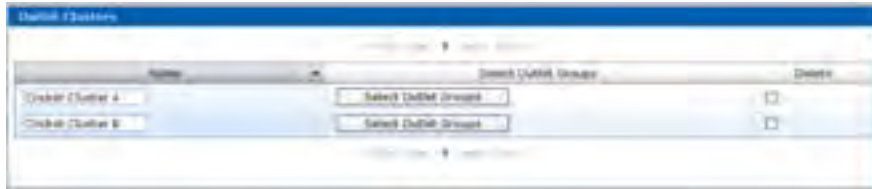
1. Select **Config > Outlet Clusters**:



2. Click the **Add New Outlet Cluster** button at the bottom of the screen:



3. Type the new outlet cluster name (“Cricket Cluster B” in this example) and click **Add New Outlet Cluster**. The Outlet Clusters page redisplay showing the new name:



4. For the new outlet cluster name, click **Select Outlet Groups**:



5. Check the desired outlet group(s) to select them as part of the new outlet cluster.
6. Click **Apply Changes** to return to the Outlet Clusters window with the selected outlet group confirmed in a collection (outlet cluster) named “Cricket Cluster B” in this example.

To edit an outlet cluster

1. Select **Config > Outlet Clusters**.
2. Type over the outlet cluster name in the Name column and click **Apply Changes**. The edited name appears on the Outlet Groups window.

To delete an outlet cluster

1. Select **Config > Outlet Clusters**.
2. Check the Delete checkbox to the right of one or more outlet clusters.
3. Click **Apply Changes**.

Config > Users & Groups

The **Config > Users & Groups** option allows the administrator to configure and maintain the parameters of SPM users, user groups, and LDAP users.

User types are the predefined levels of access rights to SPM as granted by the administrator to individual users in named user groups. The following user types are recognized by SPM:

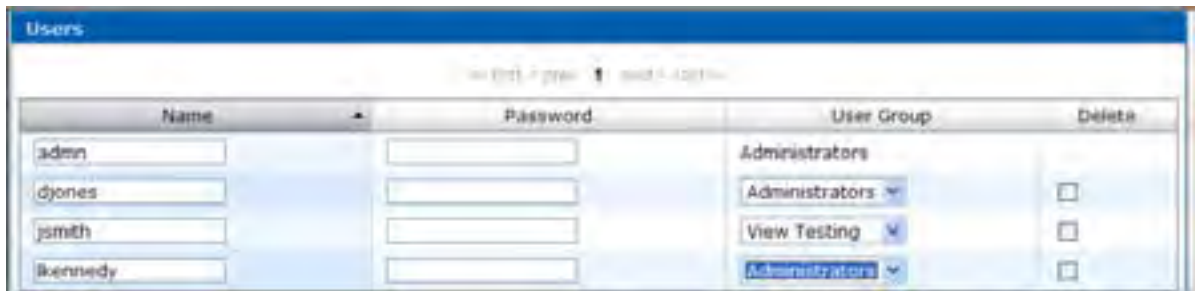
User Types

| Type | Description |
|--------------|---|
| Admin | Administrative. Full access for all configuration, control (On, Off, Reboot), status, and serial/pass-thru ports. The SPM default administrative user is the adm n user account. (Note there is no "i" in the adm n name/password.) The adm n user may grant full administrative access level rights to other users. See Note below. |
| Regular User | Partial access for control (On, Off, Reboot), status, and pass-thru of assigned outlets, outlet groups, outlet clusters, and serial/pass-thru ports. |
| View Only | Partial access for status and pass-thru of assigned outlets, outlet groups, outlet clusters, and serial/pass-thru ports. |
| Reboot Only | Partial access for control (Reboot), status, and pass-thru of assigned outlets, outlet groups, outlet clusters, and serial/pass-thru ports. |

NOTE: For security it is recommended that you first use the default **adm**n user account to grant access rights to another administrative user account. Use the new administrative account to then change the default **adm**n account username/password. Note that the **adm**n account cannot be deleted or demoted.

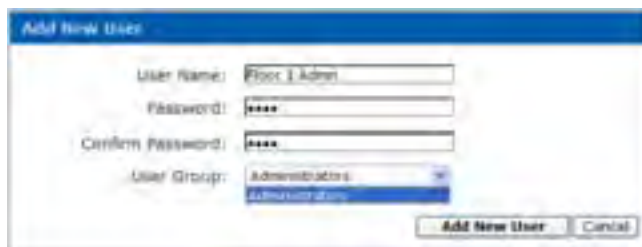
Configuring Users

The **Config > Users & Groups > Users** option allows maintenance of users, user passwords, and user group assignments.



To add a new user

1. Select **Config > Users & Groups > Users**
2. Click **Add New User** to open the following:



3. Type the new user name, password, password confirmation, and select a user group from the drop-down menu. Password is case-sensitive; strong passwords are supported by SPM but are not required.
4. Click **Add New User**. The new user is added to the Users window.

To change a user's name

1. Select **Config > Users & Groups > Users**.
2. Type over the user's name in the Name field.
3. Click **Apply Changes**. The user's name is updated in the Users window.

To change a user's password

1. Select **Config > Users & Groups > Users**
2. Type the new password in the Password column next to the name of the user. Password is case-sensitive.
3. Click **Apply Changes**. The user's password is changed.

To change a user's group

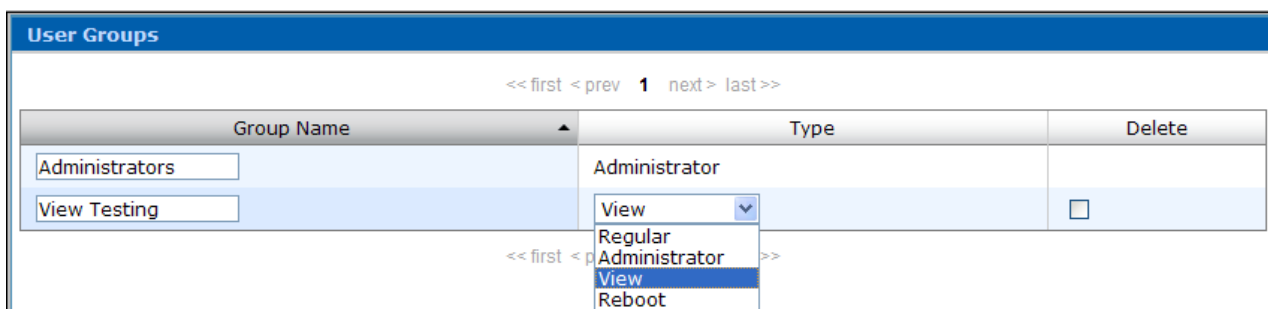
1. Select **Config > Users & Groups > Users**.
2. From the drop-down list next to the user's name, select a different user group.
3. Click **Apply Changes**. The user group association is changed.

To delete a user

1. Select **Config > Users & Groups > Users**.
2. Check the Delete checkbox next to the user's name you want to delete.
3. Click **Apply Changes**. The user is deleted from SPM.

Configuring User Groups

The **Config > Users & Groups > User Groups** option allows the administrator to assign a user type (Regular, Administrator, View, and Reboot) to named user groups that contain individual SPM users.



The User Groups window allows maintenance of user group names and the association of user groups to a specific user type. User types are the levels of access rights to SPM. User types are predefined and cannot be changed.

To add a new user group

1. Select **Config > Users & Groups > User Groups**.
2. Click **Add New User Group** to open the following:



3. Type the new user Group Name (alphanumeric characters only) and select the user Type from the drop-down list.
4. Click **Add New User Group**. The new user group name (with the associated user type) is added to the User Group window.

To change a user group name

1. Select **Config > Users & Groups > User Groups**.
2. Edit the name in the Group Name field.
3. Click **Apply Changes**. The user group name is changed. Note that user *type* is not affected.

To change a user type

1. Select **Config > Users & Groups > User Groups**.
2. From the Type drop-down list next to the user group name, select a different user type.
3. Click **Apply Changes**. The user group is associated with the new user type.

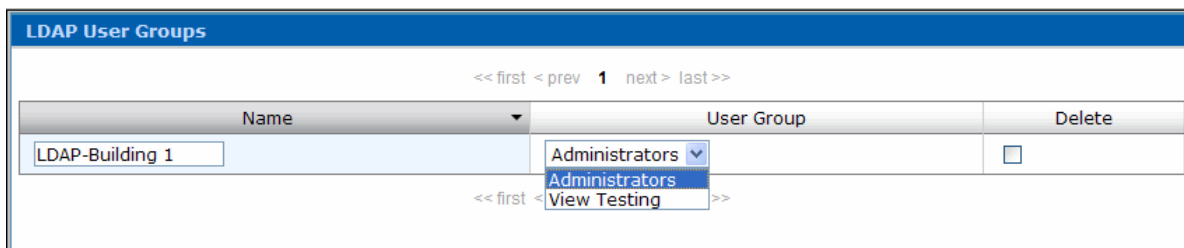
To delete a user group

1. Select **Config > Users & Groups > User Groups**.
2. Check the Delete checkbox next to the user group you want to delete.
3. Click **Apply Changes**. The user group is removed from SPM.

NOTE: Only *empty* user groups can be deleted. If a user group contains one or more users, the group cannot be deleted until the users are deleted or moved to another user group.

Configuring LDAP

The **Config > Users & Groups > LDAP** option allows the administrator to assign a user type (Regular, Administrator, View, and Reboot) to named LDAP user groups that contain individual SPM LDAP users.



The LDAP support enables authentication with LDAP servers so that user accounts do not need to be individually created locally on each Sentry CDU.

SPM administrators can pre-define and configure – in each Sentry product and in the LDAP server – a set of necessary LDAP groups, and access rights for each group.

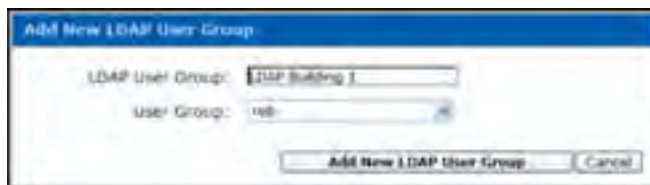
The user's access rights can then be granted or denied simply by making the user a member of one or more pre-defined Sentry LDAP Groups. User accounts can be added, deleted, or changed in the LDAP server without any changes needed on individual Sentry CDUs.

Sentry CDU support for LDAP has been tested in the following environments:

- Microsoft Active Directory (MSAD)
- Novell eDirectory (eDir)

To add a new LDAP user group

1. Select **Config > Users & Groups > LDAP**.
2. Click **Add New LDAP User Group** to display the following box:



3. Type the new LDAP user group name (alphanumeric characters only) and select a user group association from the drop-down menu.
4. Click **Add New LDAP User Groups**.

To change an LDAP user group name

1. Select **Config > Users & Groups > LDAP**.
2. Type over the LDAP user group name in the Name field.
3. Click **Apply Changes**.

To delete an LDAP user group

1. Select **Config > Users & Groups > LDAP**.
2. Check the Delete checkbox next to the LDAP user group name you want to delete.
3. Click **Apply Changes**.

To change an LDAP user group association

1. Select **Config > Users & Groups > LDAP**.
2. From the User Group drop-down list next to the LDAP name, select a different user group.
3. Click **Apply Changes**.

To change LDAP settings

1. Select **Config > Users & Groups > LDAP**.
2. Click **Configure LDAP** to display the following box:



3. Select Enabled or Disabled from the LDAP drop-down list.
4. Type the IP addresses (or hostnames) in the Primary and/or Secondary Host fields.
5. Type the server port number in the Port field.
6. Select Yes or No from the Use TLS/SSL drop-down list.

NOTE: If LDAP over TLS/SSL is enabled, MD5 binding is disabled.

7. Select **Simple** or **MD5** from the Bind Type drop-down list.

NOTE: If MD5 binding is enabled, LDAP over TLS/SSL is disabled.

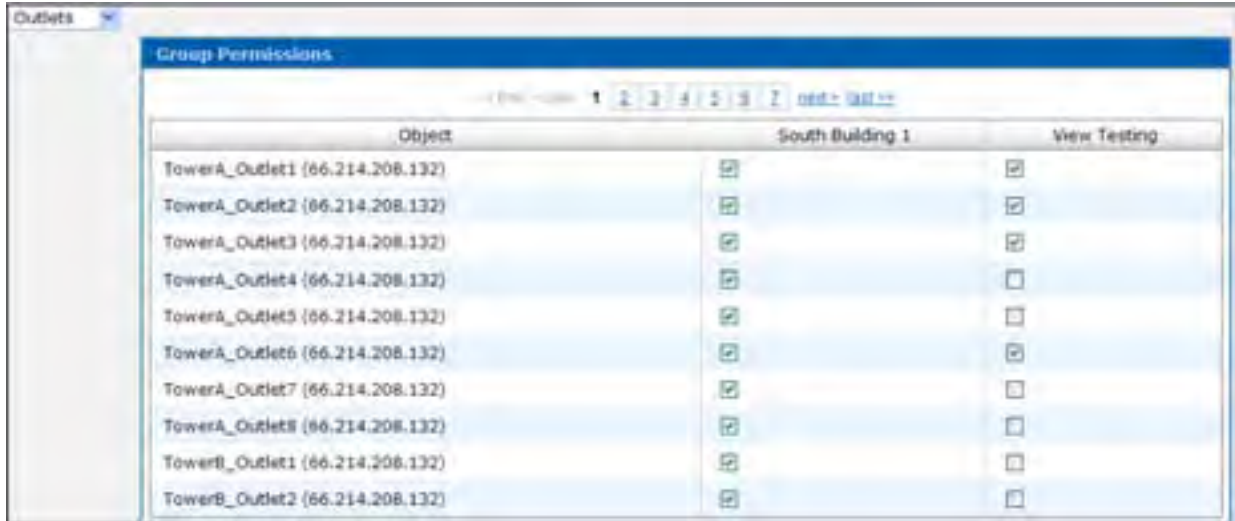
8. Type the fully-qualified distinguished name (FQDN) in the Search Bind DN field.
9. Type the Search Bind Password in the Search Bind Password field.
10. Type the User Search Base DN in the User Search Base DN field.
11. Type the User Search Filter in the User Search Filter field.
12. Type the group membership attribute in the Group Membership Attribute field.
13. Select **DN** or **Name** from the Group Membership Attribute drop-down list.
14. Select **Remote->Local** or **Remote Only** from the drop-down list.

NOTE: Server Technology recommends NOT setting the authentication order to Remote Only until the LDAP has been fully configured and tested.

15. Click **Apply Changes**.

Configuring Permissions

The **Config > Users & Groups > Permissions** option allows the administrator to grant or deny user group permission to locations, outlet clusters, cabinets, CDUs and outlets.



The Group Permissions page shows a column for each user group and a row for each object currently selected. The administrator grants or denies permission by user group only, not by individual user.

To grant or deny user group permissions to SPM devices

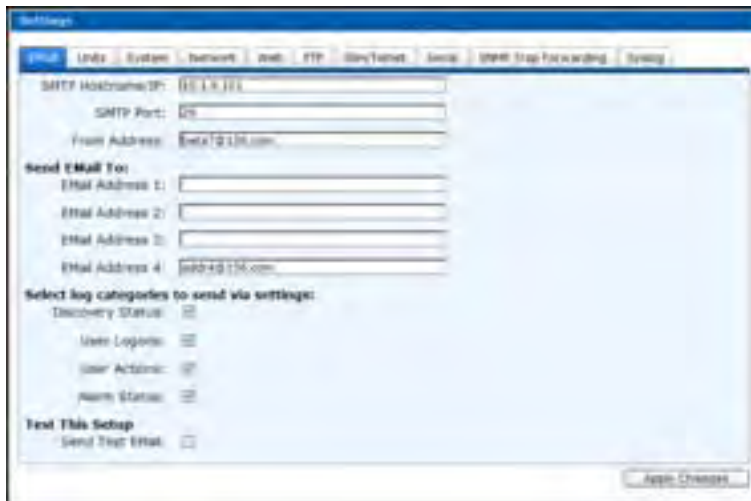
1. Select **Config > Users & Groups > Permissions**.
2. Select an item in the SPM network from the drop-down list, such as Outlets. SPM outlet names display in the Object field.
3. Check (to grant) or uncheck (to deny) the checkboxes under specific user group names for each object listed.
4. Click **Apply Changes**. User group permissions are updated.

Config > Settings

The **Config > Settings** option sets up SPM as an appliance, eliminating the need to configure system and network settings through the operating system. Standard default port numbers are provided or you can designate port numbers within your network firewall.

Email

The Email tab configures delivery of system activity logs to four email recipients.



Any combination of the four system activity logs: Discovery Status, User Logons, User Actions, and Alarm Status can be emailed to a maximum of four specified email addresses.

To configure email delivery

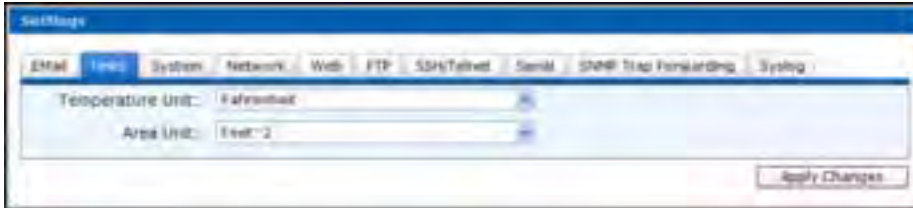
1. Select **Config > Settings > Email**.
2. Provide the hostname/IP, port number, and from email address.
3. In the Send Email To fields, type 1-4 receiving email addresses.

NOTE: The maximum length of the Email To fields is 250 characters.

4. Select the system activity logs to be delivered. All recipients will receive the same logs you selected.
5. (Optional) Select the Send Test Email checkbox to test your email setup and delivery.
6. Click **Apply Changes**.

Units

The Units tab configures system-wide unit of measure settings for temperature and cabinet area.



The SPM system default is Celsius for the temperature unit and square meters for the cabinet area. The Units tab allows changing the default system-wide settings to Fahrenheit and square feet, if preferred.

To configure units

1. Select **Config > Settings > Units**.
2. From the Temperature Unit drop-down list, select Fahrenheit or Celsius.
3. From the Area Unit drop-down list, select square Feet or square Meters.
4. Click **Apply Changes**.

About the temperature unit setting

If you change the Temperature Unit field, your change is reflected in SPM – for example, the change (to Celsius or to Fahrenheit) appears on the Views page temperature legend. Your change also converts the temperature unit on the actual device.

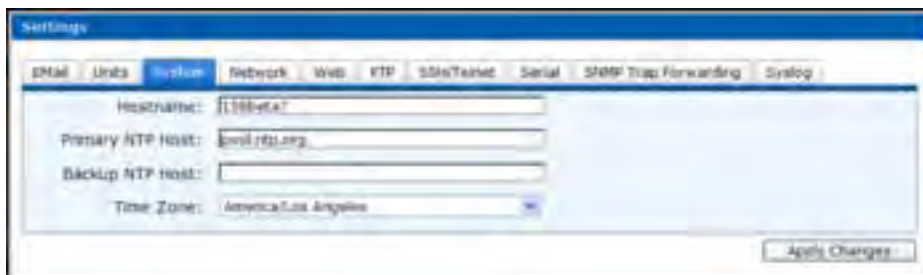
About the cabinet area unit setting

If you have Sentry firmware release 6.0e or higher, and you change the Area Unit field, your change is reflected in SPM – for example, the Area heading at **Config > Cabinets** changes accordingly to “Area f2” or “Meters f2”. In addition, with Sentry firmware release 6.0e and higher, SPM will convert the existing cabinet area based on your Area Unit selection.

If you have a Sentry firmware release prior to 6.0e, and you change the Area Unit field, your change is reflected in SPM. However, SPM will not convert the existing cabinet area. For example, if you set the cabinet area as “10” at **Config > Cabinets**, and change the Area Unit field, the value of the cabinet area will remain “10” throughout SPM.

System

The System tab configures the SPM hostname and uses the internet protocol Network Time Protocol (NTP) to synchronize computer clocks to the same time reference.



To configure system settings and NTP

1. Select **Config > Settings > System**.
2. Provide the NTP primary hostname.
3. Specify an NTP backup hostname.
4. From the drop-down list, select the Time Zone for using NTP.
5. Click **Apply Changes**.

Network

The Network tab specifies the primary and secondary ports for SPM remote access. Each port can be configured automatically using Dynamic Host Configuration Protocol (DHCP) or each port can be configured manually.

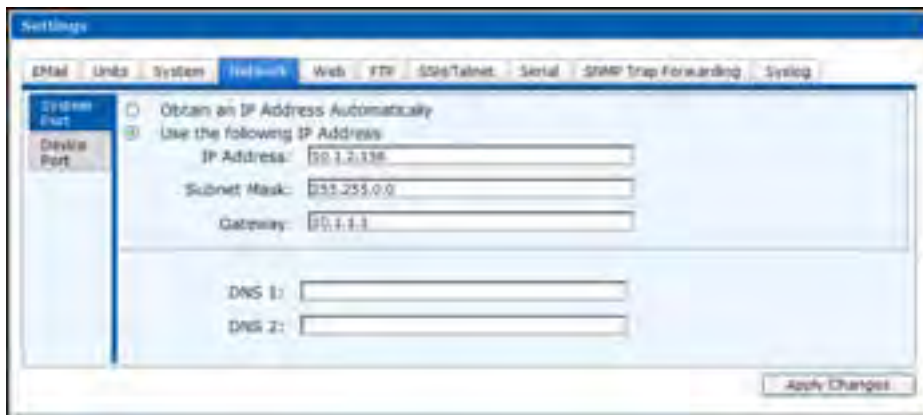
NOTE: The IP address you choose for SPM should be constant and not be changed. If you use DHCP, the DHCP setting will need to keep the IP address permanently. If this is not done, a DHCP server may assign a different IP address to SPM at some point in the future and all CDUs configured to send traps will send the traps to incorrect destinations.

To configure the SPM network (system and device) ports

1. Select **Config > Settings > Network**.
2. Select the System Port tab or Device Port tab and configure the fields, as described below.
3. Click **Apply Changes**.

System Port

The System Port tab is the primary port for the SPM web interface and for communicating with devices.

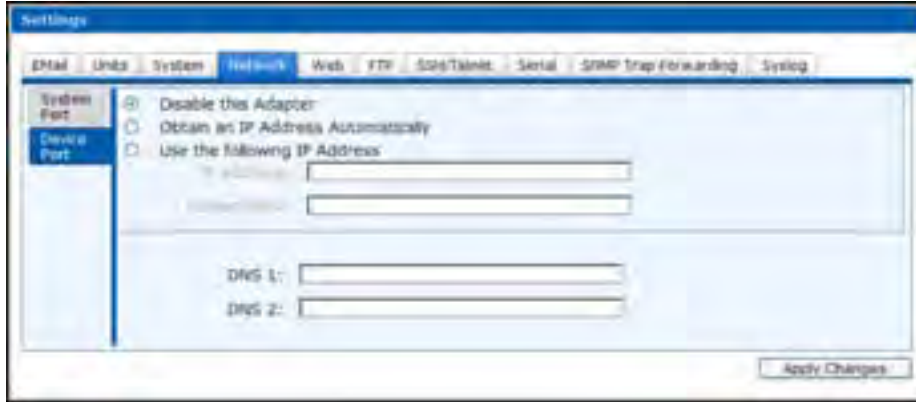


It is recommended that you select the “use” default option that provides the specific IP address, subnet mask, and gateway instead of selecting the “obtain” option for automatic IP address used for DHCP. If you do use DHCP, see the Note above.

If you want a domain name association for IP addresses, specify the Domain Name System DNS 1 and/or DNS 2. Values in the DNS1 and DNS2 fields on the Device Port tab will be the DNS for the entire SPM, overriding any values in the DNS1 and DNS2 fields of the System Port tab.

Device Port

The Device Port tab is the secondary port for SPM to keep CDUs on a separate network for security. If the Device Port is used, SPM will become an access point to the network, and the Device Port tab will give SPM network access.

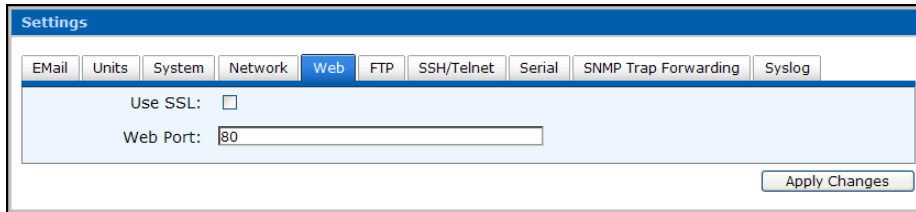


To bypass using the Device Port options, check **Disable this Adapter**.

If you want a domain name association for IP addresses, specify the Domain Name System DNS 1 and/or DNS 2.

Web

The Web tab specifies the web port for SPM and enables the communications protocol Secure Sockets Layer (SSL) to provide security between two hosts.

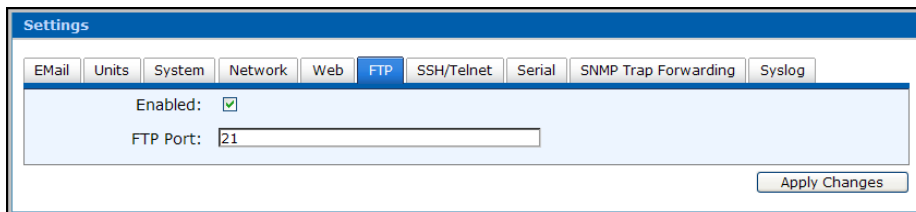


To configure SSL and the SPM web port

1. Select **Config > Settings**.
2. Select the Web tab.
3. Change the standard web port “80” to a port number within your network firewall.
4. For SSL, check the Use SSL checkbox. Note that the web port automatically changes to 443.
5. Click **Apply Changes**.

FTP

The FTP tab enables or disables the internet file exchange protocol File Transfer Protocol (FTP).



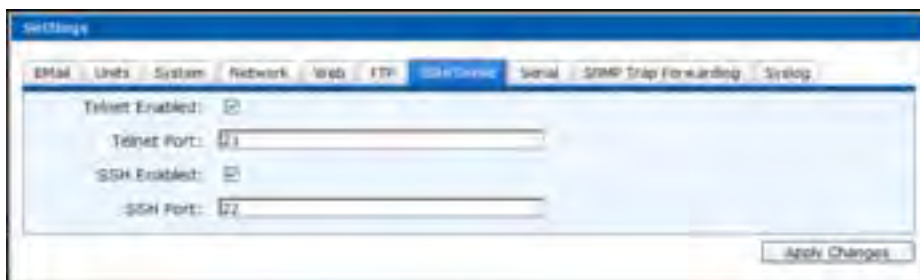
To configure FTP

1. Select **Config > Settings > FTP**.
2. Check the Enabled check box.
3. Type an FTP port number within your network firewall.
4. Click **Apply Changes**.

NOTE: FTP must be enabled for SPM upgrades, backups, and restores.

SSH/Telnet

This option enables or disables Secure Shell (SSH) and Telnet and configures the related ports.



To configure the SSH and/or Telnet web port

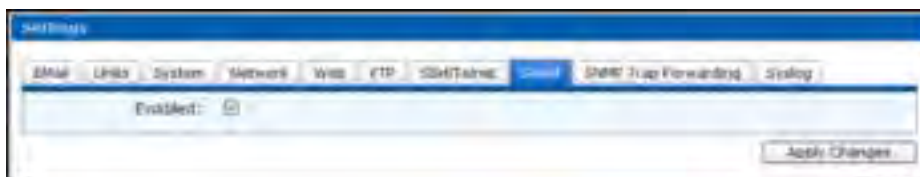
1. Select **Config > Settings > SSH/Telnet**.
2. Check or clear the Telnet Enabled and/or SSH Enabled checkboxes to enable or disable support.
3. Change the standard Telnet web port “23” and/or the standard SSH Port “22” to a port number within your network firewall.
4. Click **Apply Changes**.

About the Telnet connection

- The Telnet connection allows for a Reboot command and displays the serial number of the machine.
- The default login name and password for Telnet is the same as the Sentry Power Manager web default (username/password = **adm**n/**adm**n). Any administrative user created also has a username and password.
- Changing the password of the **adm**n login is strongly suggested and can only be done through the web interface. You can change the **adm**n username and password but you cannot delete the **adm**n account.
- All SPM administrative user accounts created can login through the Telnet connection.

Serial

The Serial tab enables or disables the serial connection to SPM through the serial port on the back of the SPM appliance.



To configure the serial connection

2. Select **Config > Settings > Serial**.
3. Check the Enabled checkbox.
4. Click **Apply Changes**.

About the serial connection

- The serial connection allows for a Reboot command and displays the serial number of the machine.
- The serial connection network parameters are:
 - Standard NULL modem cable
 - 115200 bits per second
 - Data Bits = 8
 - Parity Bits = none
 - Stop Bit = 1
- For Windows the flow control value is the Windows default.
- The default login name and password for serial access is the same as the Sentry Power Manager web default (username/password = **adm**n/**adm**n). Any administrative user created also has a username and password.

- Changing the password of the **adm**n login is strongly suggested and can only be done through the web interface. You can change the **adm**n username and password but you cannot delete the **adm**n account.
- All SPM administrative user accounts created can login through the serial connections.

SNMP Trap Forwarding

This option enables or disables the forwarding of SNMP traps to the destination IP address you specify.



To configure SNMP trap forwarding

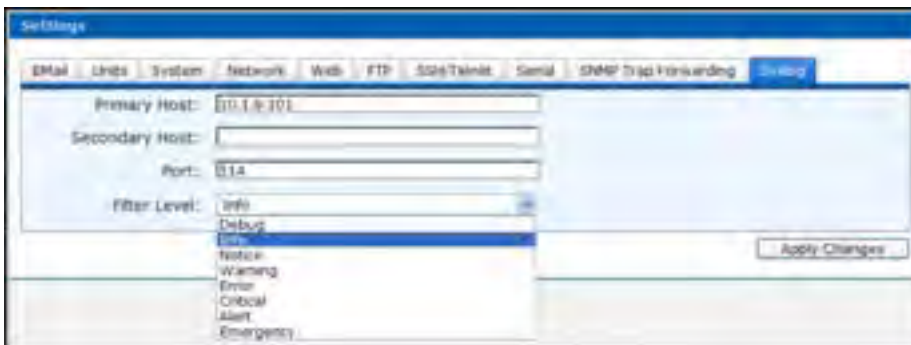
1. Select **Config > Settings > SNMP Trap Forwarding**.
2. Check (or uncheck) the Enabled checkbox.
3. Supply the Destination IP address for the centralizing of SNMP traps.
4. Click **Apply Changes**.

To configure SNMP trap forwarding

5. Select **Config > Settings**.
6. Select the SNMP Trap Forwarding tab.
7. Check (or uncheck) the Enabled checkbox.
8. Supply the Destination IP address for the centralizing of SNMP traps.
9. Click **Apply Changes**.

Syslog

The Syslog tab enables parameters for a Syslog server configuration. Once configured, the Syslog server is the central location for viewing SPM system activity information.



To configure a syslog server:

1. Select **Config > Settings > Syslog**.
2. Provide the IP addresses for Primary/Secondary Hosts.
3. Type the Port number for the Syslog server.
4. From the Filter Level drop-down list, select the level of SPM system activity you want to collect on the Syslog server for later review. Your single selection is the starting point for the range of information you receive.

Examples:

- If you select Debug, you will receive messages from Debug-level through Emergency.
- If you select Warning, you will receive messages from Warning-level through Emergency.
- If you select Info, you will receive messages from Info-level through Emergency.
- If you select Emergency, you will receive Emergency-level messages only.

5. Click **Apply Changes**.

NOTE: For more information about Syslog message reporting, consult your Syslog server product documentation.

Help

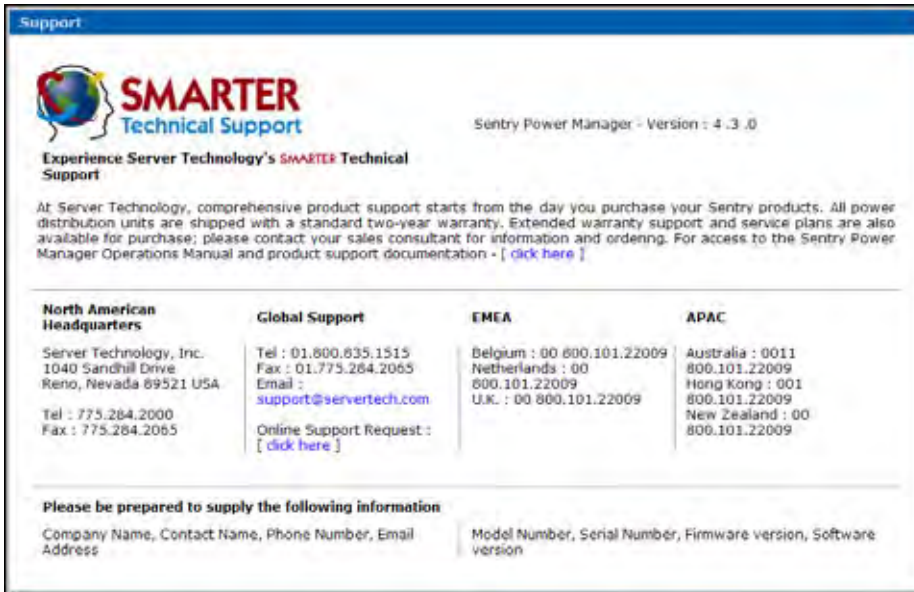
The following Help menu options are available for technical information and SPM product support:

Help Menu

| Option | Description |
|----------|--|
| Support | Global contact information for SMARTER Technical Support; also provides the link to the SPM user operations manual and other product documentation at Server Technology's website. |
| Licenses | (Administrator only) Allows update for an additional SPM license key; displays the current number of supported CDUs in your SPM system; lists supported competitor devices by model name; and shows other enabled SPM features in your current system, such as POPS and the SPM API. |

Help > Support

The **Help > Support** option shows global contact information for Server Technology's **SMARTER** Technical Support and provides the link to the Server Technology website for the *Sentry Power Manager – Operations Manual* and other product documentation.



Help > Licenses

For the administrator: The **Help > Licenses** option shows the number of CDUs supported in the current SPM environment and the enabled status of additional SPM features, such as POPS and the SPM API.

In addition, **all** devices supported by SPM (Server Technology, OEM, and competitor devices) are listed by model name.

This option also allows the administrator to obtain an additional license key needed to increase the number of CDUs supported in the network.

NOTE: To purchase additional Sentry Power Manager SPM Licenses, please contact your Server Technology representative at 1-800-835-1515 (domestic), ++0 (1) 775.284.2000 (international), or sales@servertech.com.



To apply a new SPM license key:

1. Obtain the new license key from your Server Technology Account Representative at 800.835.1515 (domestic) or ++00 (1) 775.284.2000 (international), or email sales@servertech.com. An alpha-numeric key will be generated for you based on the serial number of the appliance that contains SPM.
2. Select **Help > Licenses**.
3. From the Licenses window, click **Enter Additional License Key(s)**.

4. Type the new key you received from Server Technology in the License Key field and click **Add**.

Chapter 4: Appendices

Appendix A: Technical Specifications

Regulatory Compliance



Products with the following mark comply with the RoHS Directive (2002/95/EC) issued by the Commission of the European Community.

Recycling



Server Technology Inc. encourages the recycling of its products. Disposal facilities, environmental conditions and regulations vary across local, state and country jurisdictions, so Server Technology encourages consultation with qualified professional and applicable regulations and authorities within your region to ensure proper disposal.

Waste Electrical and Electronic Equipment (WEEE)



In the European Union, this label indicates that this product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling.

For information on how to recycle this product responsibly in your country, please visit: www.servertech.com/support/recycling.

Appendix B: Warranty, Product Registration, and Technical Support

Warranty

For [Server Technology Warranty](#) information, please see our website.

Product Registration

Registration is your key to special offers and services reserved for Registered Users.

- Excellent Technical Support Services
- Special Update and Upgrade Programs
- Warranty Protection
- Extended Warranty Service
- New Product Information

[Register your products online today!](#)

Technical Support



Experience Server Technology's FREE **SMARTER** Technical Support - [Learn more...](#)

Server Technology understands that there are often questions when installing and/or using a new product. Free Technical Support is provided from 6:00 AM to 7:00 PM, Monday-Friday, Pacific Time.

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Fax: 775.284.2065

Web: www.servertech.com

Email: support@servertech.com

Return Merchandise Authorization

If you have a unit that is not functioning properly and is in need of technical assistance or repair:

Please review Server Technology's [Return Merchandise Authorization](#) process on our website.



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