Server Technology

Sentry Power Manager

Operations Manual

- Release 4.2.0

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.

Life-Support Policy

As a general policy, Server Technology does not recommend the use of any of its products in the following situations:

- life-support applications where failure or malfunction of the Server Technology product can be reasonably expected to cause failure of the life-support device or to significantly affect its safety or effectiveness.
- direct patient care.

Server Technology will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to Server Technology that:

- the risks of injury or damage have been minimized,
- the customer assumes all such risks, and
- the liability of Server Technology is adequately protected under the circumstances.

The term life-support device includes but is not limited to neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief or other purposes), auto-transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators (for adults or infants), anesthesia ventilators, infusion pumps, and any other devices designated as "critical" by the U.S. FDA.

Notices

Please Recycle

Shipping materials are recyclable. Please save them for later use, or dispose of them appropriately.

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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.

- Generation of several high accuracy POPS energy usage reports based on individual outlets, devices, named outlet groups/clusters, and the entire data center.

- 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.

- 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 configure. Background images and device icons let you view equipment conditions graphically by status, load, power, and capacity, and provide drill-down from higher 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.

Server Technology, Inc.
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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 How to.

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

Connect and Login

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: **admn/admn**.

Create a New Administrative Account

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

Discover Network Devices

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) by searching for SNMP-enabled CDUs in the network to communicate with SPM.

Configure Device Settings

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.

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

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

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.

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 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.

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

Configure New Users

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

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

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

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

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

Light Directory Access Protocol (LDAP)

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

Email Notification

Send emails to designated users for Discovery, User Login, User Actions, and Alarm Status logs.

Configure Settings

Configure settings for email, temperature/area units of measure, system hostnames and NTP time zones, system/device ports, SSL, FTP, SSH/Telnet, Serial, SNMP trap forwarding, SPM database ports, and scheduled system backups.

Database Connectivity (ODBC)

The ODBC is a technology that provides a non-proprietary interface for universal data access. SPM provides one-way external access via ODBC to other systems – data can be retrieved but not updated from an external source. A software key is required for the ODBC feature.

NOTE: To purchase the ODBC option, please contact your Server Technology representative at 1-800-835-1515 (domestic), ++0 (1) 775.284.2000 (international), or sales@servertech.com.

Chapter 3: Using Sentry Power Manager

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) <u>or</u> 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 **admn**/**admn**.

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

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-glace 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 that gives point-and-click monitoring of network status and control of discovered devices.
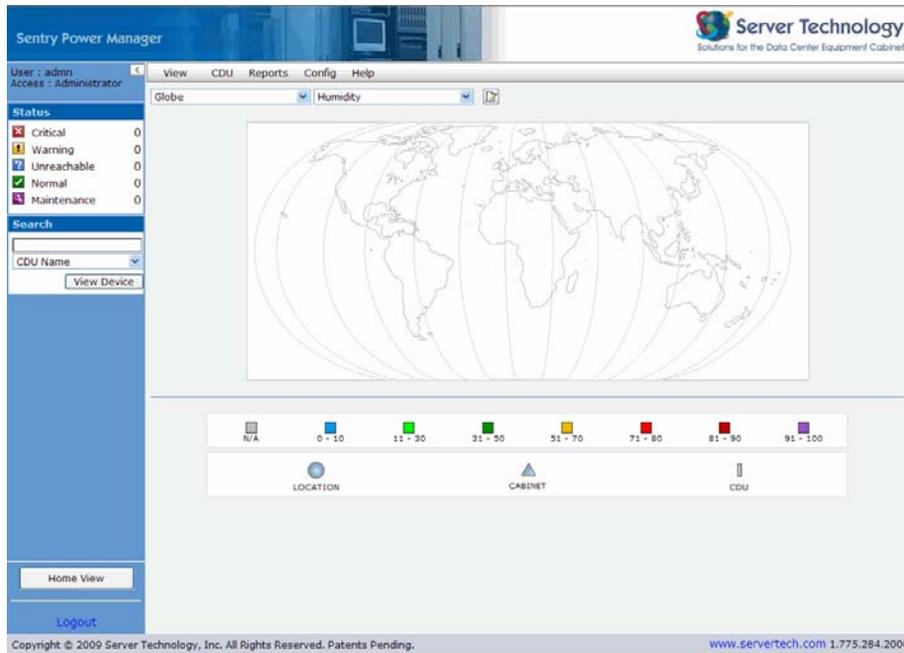
Using Location Images

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**.

Status	
☒ Critical	1
⚠ Warning	0
❓ Unreachable	0
✅ Normal	5
🔧 Maintenance	0

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.

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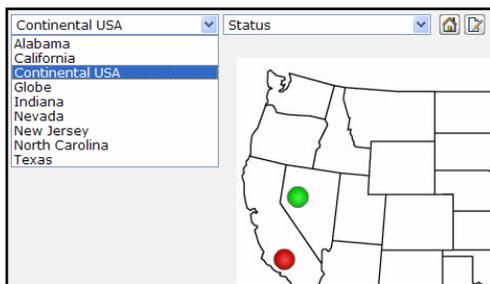
Any graphic files (such as maps or custom images) in the drop-down list are the backgrounds that represent different levels of your data center, such as a building, floor, room, or other specific area.

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, "Continental USA" was selected as the location image, showing two round location icons that were placed by the administrator to represent a data center location in Nevada (containing a device in Normal **green** status) and a location in California (containing a device in Critical **red** status). The images available in the 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, "Continental USA" is the location image and the current view is "Temperature":
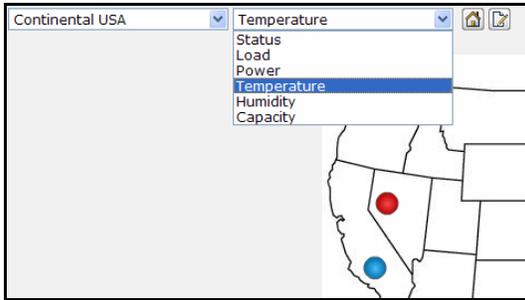
The six current views are based on data measured and reported by the CDU for current status, load, power, temperature, humidity, and capacity. Although the views are fixed and cannot be configured on the Views page, the views offer a quick way to monitor the operating condition of a CDU.

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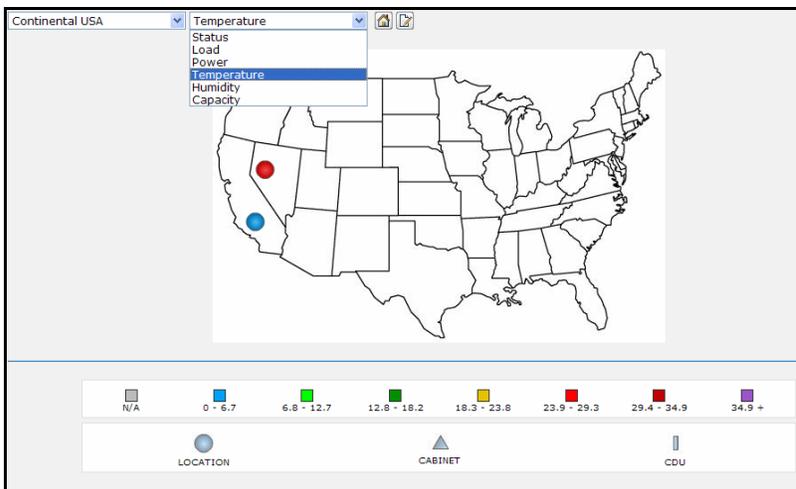
Based on the colored location icons and the matching color ranges in the Legend for the Temperature view, you can quickly determine the temperature of a CDU in a specific data center location.

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.
	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**.

Introducing 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.
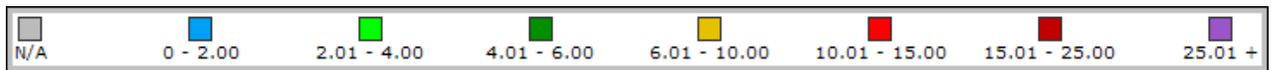
Status

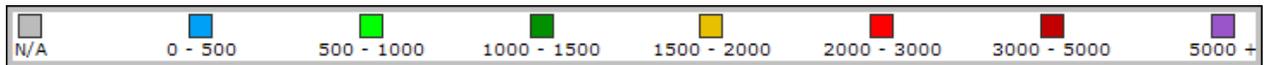The colors in the Status legend show the current condition (status) of the CDU:

N/A	Critical	Warning	Unreachable	Normal	Maintenance

Load

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

N/A	0 - 2.00	2.01 - 4.00	4.01 - 6.00	6.01 - 10.00	10.01 - 15.00	15.01 - 25.00	25.01 +

Power

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

N/A	0 - 500	500 - 1000	1000 - 1500	1500 - 2000	2000 - 3000	3000 - 5000	5000 +

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**:

N/A	0 - 6.7	6.8 - 12.7	12.8 - 18.2	18.3 - 23.8	23.9 - 29.3	29.4 - 34.9	34.9 +
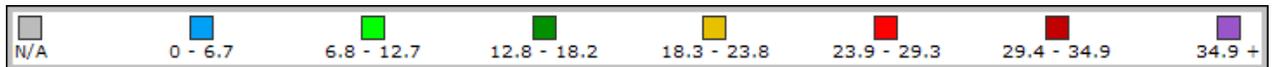
Humidity

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

N/A	0 - 10	11 - 30	31 - 50	51 - 70	71 - 80	81 - 90	91 - 100

Capacity

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

N/A	0 - 40	41 - 50	51 - 60	61 - 70	71 - 80	81 - 90	91 - 100

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.

LOCATION	CABINET	CDU

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 Status view selected from the drop-down menu and the coordinating Status legend displayed at the bottom of the page. The two icons indicate one location in Critical status (**red**) and the other location in Normal status (**green**).
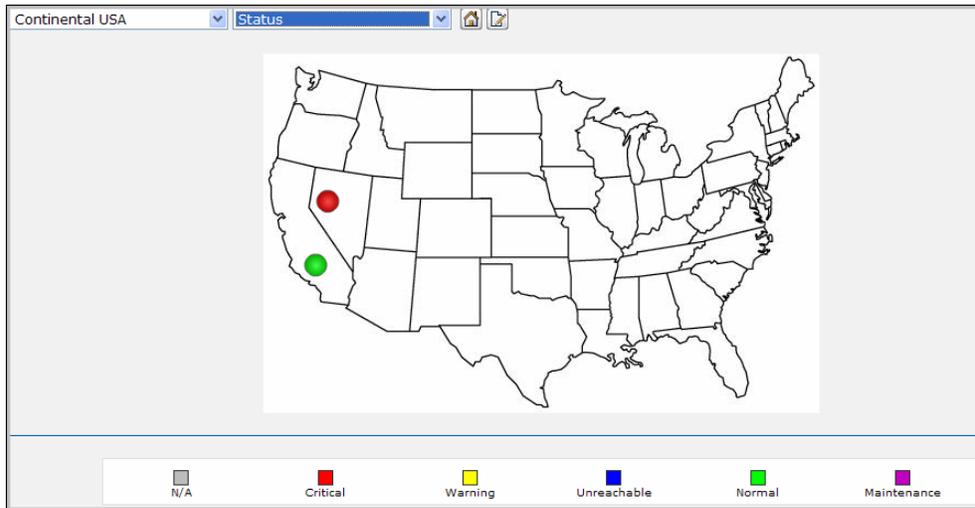
The following example shows the Humidity view selected from the drop-down menu and the coordinating Humidity legend displayed at the bottom of the page.

The two icons changed color to represent their humidity condition, reflected in the value ranges in the Legend. One icon is within 31-50 % (**green**) and the other icon is within 0-10 % (**blue**).
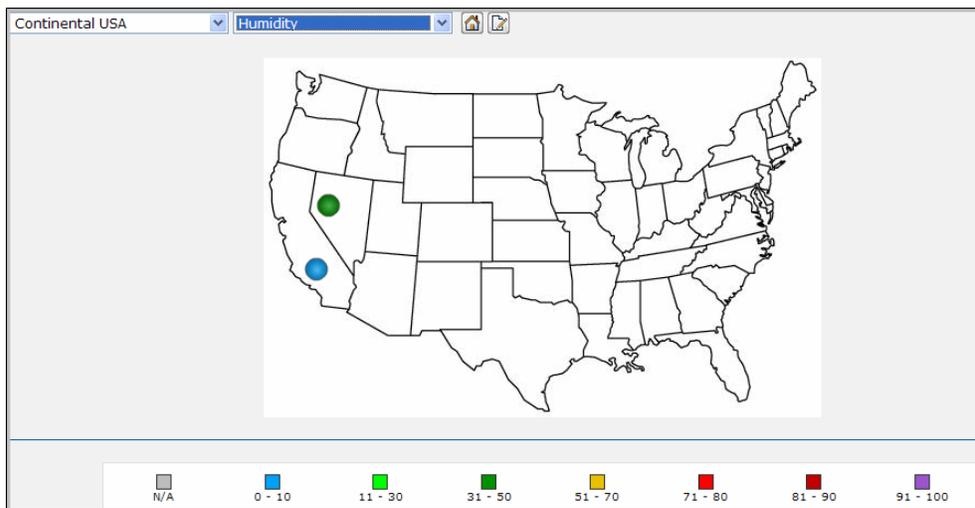
The Legend remains displayed until you select a different CDU view from the drop-down list.

To identify an icon

To quickly view the name and status of an icon, hover the mouse pointer over the icon.

Searching for a CDU

The Search box is available in the left pane to search for a discovered device in the SPM network.
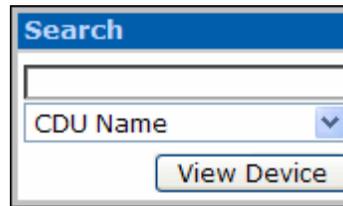
Search is available by IP address, the CDU name (if different than IP address), enclosure, infeed, outlet, or environmental sensor.

To start the search, click the down arrow and select the type of name from the drop-down list, such as CDU Name was selected in this example:
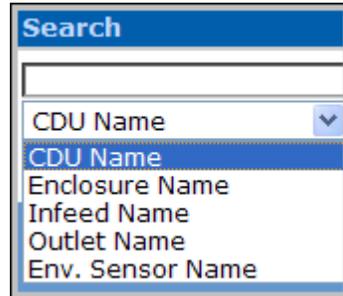
As you start typing the name, a list of matches displays.
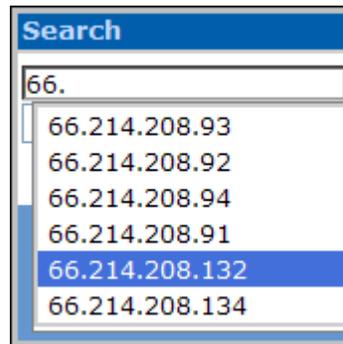
Select a name in the list and click **View Device**. The detailed search results are displayed on a device details page. For example, for the CDU 66.214.208.132, you would see:

CDU

CDU Name: 66.214.208.132	sysLocation: ts_test
IP Address: 66.214.208.132	sysContact: No Contact
Watts/Unit Area: 0 W/m^2	sysDescription: Sentry3_511c14
Total Power: 0 W	Serial Number: 8107188
Status: Critical	Version: Sentry Switched CDU Version 6.0g (090420)
Max Infeed Load: 0.00 A	Max Infeed Power: 0 W
Max Temperature: 25.6 C	Max Humidity: 40 %
Capacity Used: 0.00 %	

Outlets

Tower	Infeed	Outlet Name	Status	Load	Power	Control State	Control Action
TowerA	TowerA_InfeedA	TowerA_Outlet1	On	N/A	N/A	On	None
TowerA	TowerA_InfeedA	TowerA_Outlet2	On	N/A	N/A	On	None
TowerA	TowerA_InfeedA	TowerA_Outlet3	On	N/A	N/A	On	None
TowerA	TowerA_InfeedA	TowerA_Outlet4	On	N/A	N/A	On	None
TowerA	TowerA_InfeedA	TowerA_Outlet5	On	N/A	N/A	On	None
TowerA	TowerA_InfeedA	TowerA_Outlet6	On	N/A	N/A	On	None
TowerA	TowerA_InfeedA	TowerA_Outlet7	On	N/A	N/A	On	None

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

Setting 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 .
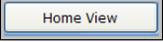
Displaying the Left Pane

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 three location icons placed by the administrator on the image named Continental USA.
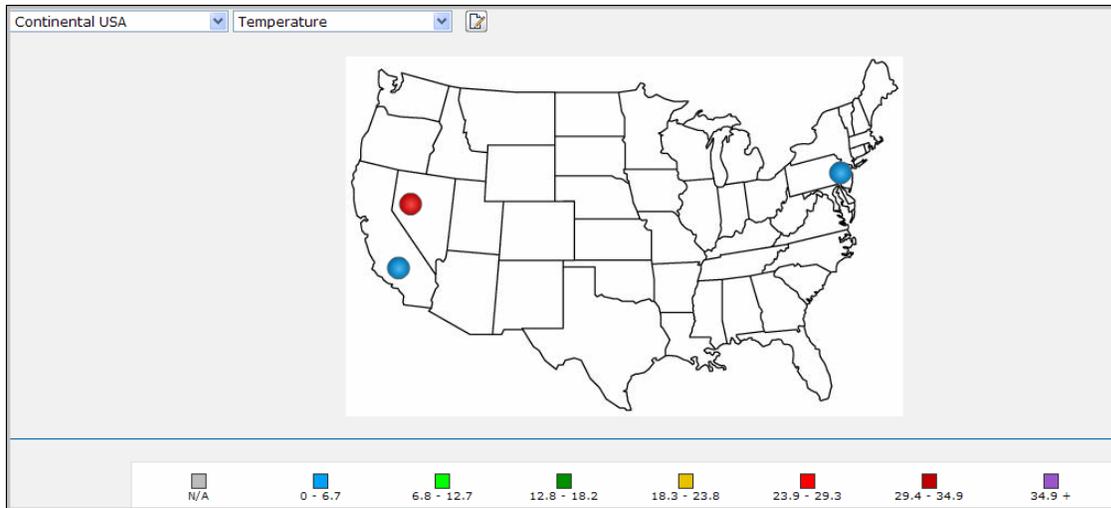
Based on the Temperature view selected and the color ranges in the corresponding Temperature legend, the temperature ranges can be monitored for CDUs in the three locations.

To drill down from the Continental USA background image to the location named "California", click the California icon to display the California background image:
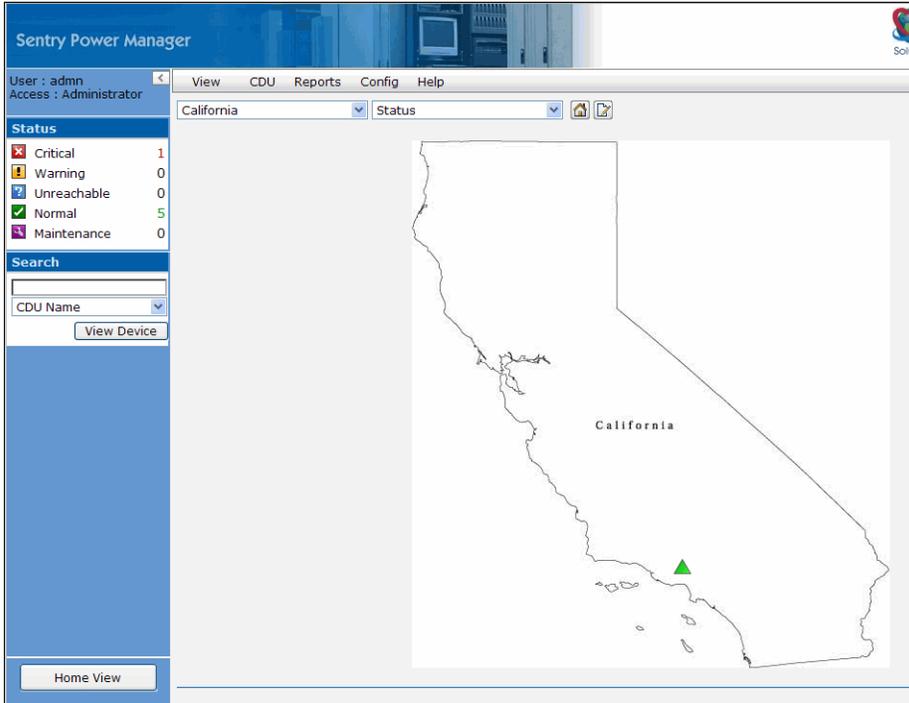
The above example shows the California location has a cabinet in Normal (**green**) status.

Click the cabinet icon to drill down to the cabinet identification and operational details:
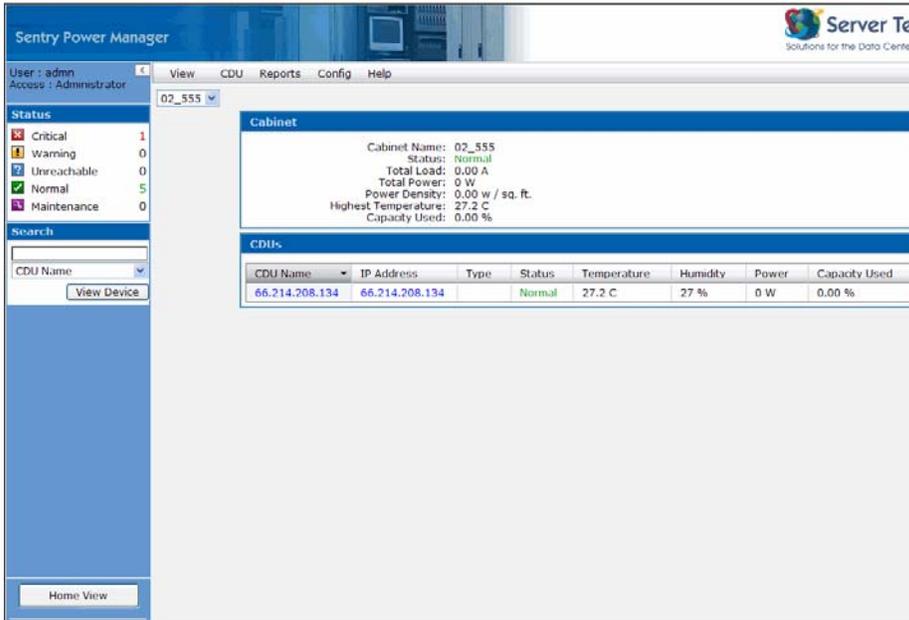
The Cabinet Level

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:
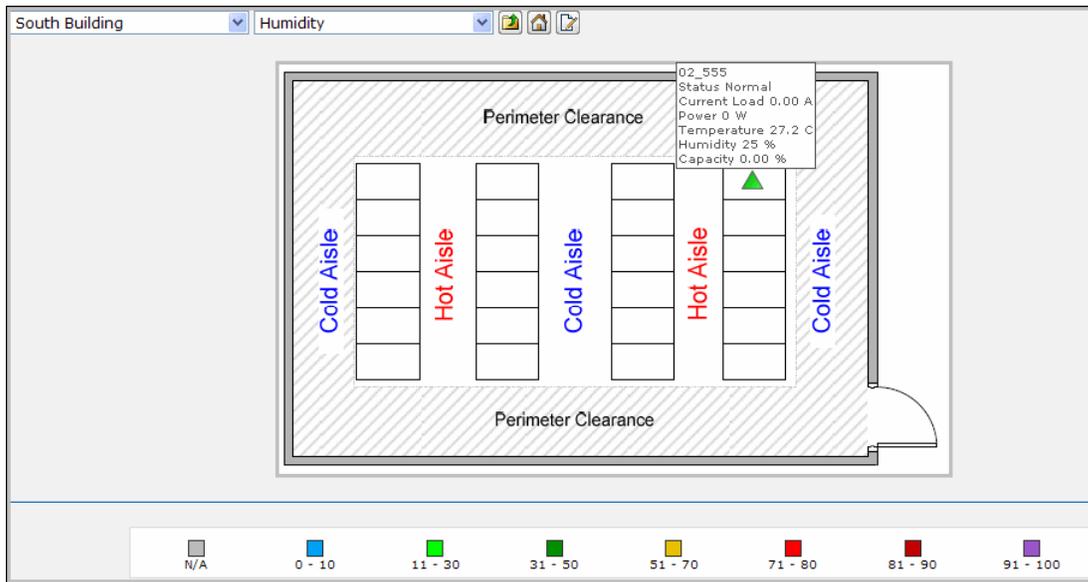
The Humidity view shows the cabinet, named 002_555, in Normal (**green**) status. To drill down to the operational details listed for the cabinet, click the cabinet icon. The Cabinet details page displays:

The CDU Level

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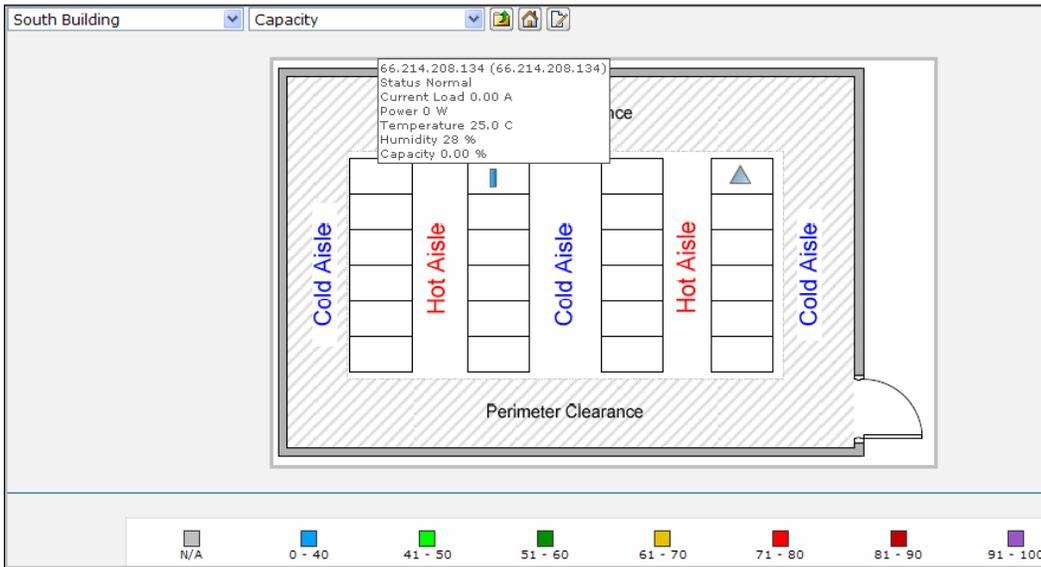
The Capacity view shows the CDU, named 66.214.208.134, in the **blue** 0-40 capacity range. Click the CDU icon to drill down to the CDU details page that allows command control for the related outlets.

The CDU details page displays the latest readings for individual outlet status, load, voltage, power, and control state. The page lets you monitor and control power to individual (or all) outlets.

Outlets are sorted on the page by outlet name under the infeed and enclosure names of the CDU. You can control the outlets by issuing On, Off, and Reboot control commands on specific outlets or globally to all outlets in a CDU. For information about issuing commands, see *CDU > Outlets* on page 23.

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	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 cluster) for a CDU and provides operational details of cluster outlets 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 CDU parameters can be configured.

Each tab represents one of the status categories (also shown in the Status box in the left pane) that contain reported CDUs requiring your attention and management. The number of CDUs in each category shows on the tab. Use the All tab for a quick display of all CDUs in a status category.

Column Descriptions

Column	Description
Date/Time	Date and time the CDU was reported in the status category.
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.
Reason	The *first* 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.
NIC Serial Number	The Network Interface Card (NIC) of the CDU.
(Select checkbox)	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. Select the status category tab containing the CDU you want to move to Maintenance.

3. Check the Select checkbox to the right of one or more CDUs.

4. 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.

5. 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. Select the Maintenance tab.

3. Check the Select checkbox to the right of one or more CDUs in Maintenance.

4. Select the Remove option.

5. 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

The **CDU > Infeeds** 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.

CDU

CDU Name: 66.214.208.91	sysLocation: test5
IP Address: 66.214.208.91	sysContact: No Contact
Watts/Unit Area: 0 W/m^2	sysDescription: Sentry3_511c15
Total Power: 0 W	Serial Number: 8107189
Status: Critical	Version: Sentry Switched CDU Version 6.0g (Demo 1)
Max Infeed Load: 0.00 A	Max Infeed Power: 0 W
Max Temperature: 30.5 C	Max Humidity: 31 %
Capacity Used: 0.00 %	

Infeeds

Tower	Infeed	Infeed Status	Infeed Load	Infeed Voltage	Infeed Power
cdu20046.a	TowerA_InfeedA	On	0.00 A	220.0 V	0 W
cdu20046.b	TowerB_InfeedA	On	0.00 A	120.0 V	0 W

To connect to the Sentry firmware, click the IP Address of the CDU.

For more information about a specific infeed, click the infeed name to display the Infeed Details page:

Infeed Details

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. The page displays the latest status, load, power, and control state for the outlets listed, and also shows detailed operational parameters for the CDU.

CDU

CDU Name: 66.214.208.134	sysLocation:
IP Address: 66.214.208.134	sysContact: No Contact
Watts/Unit Area: W/m^2	sysDescription: Sentry3_51a420
Total Power: 0 W	Serial Number: 8142016
Status: Normal	Version: Sentry Switched CDU Version 6.0h (Demo 1) (090401)
Max Infeed Load: 0.00 A	Max Infeed Power: 0 W
Max Temperature: 21.7 C	Max Humidity: 33 %
Capacity Used: 0.00 %	

Outlets

| Tower	Infeed	Outlet Name	Status	Load	Power	Control State	Control Action
WarpDriveA	InputA	TowerA_Outlet1	On	0.00 A	0 W	On	None
WarpDriveA	InputA	TowerA_Outlet2	On	0.00 A	0 W	On	None
WarpDriveA	InputA	TowerA_Outlet3	On	0.00 A	0 W	On	None
WarpDriveA	InputA	TowerA_Outlet4	On	0.00 A	0 W	On	None
WarpDriveA	InputA	TowerA_Outlet5	On	0.00 A	0 W	On	None
WarpDriveA	InputA	TowerA_Outlet6	On	0.00 A	0 W	On	None

The CDU details page displays the latest readings for individual outlet status, load, voltage, power, and control state. The page lets you monitor and control power to individual (or all) outlets.

Outlets are sorted on the page by outlet name under the infeed and enclosure names of the CDU. You can control the outlets by issuing On, Off, and Reboot control commands on specific outlets or globally to all outlets in a CDU. For information about issuing commands, see *CDU > Outlets* on page 23.

Controlling 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:
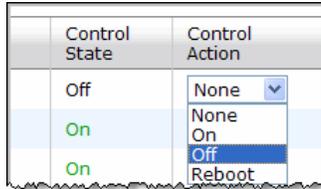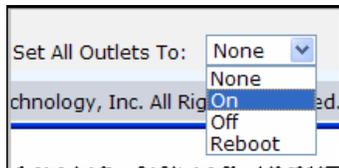

4. Click **Apply Outlet Control**.

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

Controlling 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 a 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.

Outlet Details

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

1. Select **CDU > Outlets**.

2. Click an outlet name.
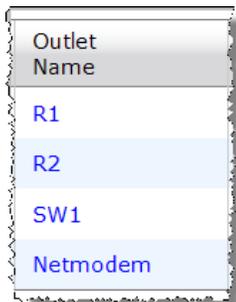
The Outlet Details page displays:


```
Outlet Details

Outlet Id:              AA1
Outlet Name:            TowerA_Outlet1
Outlet Status:          On
Control State:          On
Capacity:               20.00 A
Load:                   0.00 A
Voltage:                218.2 V
Active Power:           0 W
Apparent Power:         0 VA
Crest Factor:           N/A
Power Factor:           N/A
```
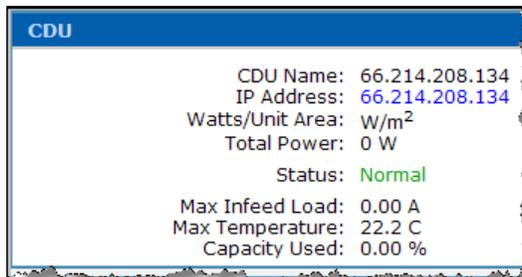
Accessing the Sentry Firmware

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

3. Click the IP Address link of the CDU:


```
CDU

CDU Name:       66.214.208.134
IP Address:     66.214.208.134
Watts/Unit Area: W/m²
Total Power:    0 W

Status:         Normal

Max Infeed Load: 0.00 A
Max Temperature: 22.2 C
Capacity Used:  0.00 %
```

The Login page for the Sentry firmware interface displays:


```
Connect to 66.214.208.94

The server 66.214.208.94 at Sentry Remote Power Manager
requires a username and password.

Warning: This server is requesting that your username and
password be sent in an insecure manner (basic authentication
without a secure connection).

User name:
Password:

☐ Remember my password

         OK      Cancel
```

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.

The names of the environmental monitors and related sensors 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.

To monitor the values of another environmental monitor, select a different CDU from the drop-down list.

CDU > Clusters

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

The page gives links to additional information about outlets and CDU systems:

- To display operational details for an outlet, click **Outlet Name.**

- To display operational details for a CDU, click **System Name**.

- To connect to the Sentry firmware, click **System IP Address**.

- To display a different cluster, select the cluster name from the drop-down list.

About Clusters and Groups

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

An outlet *group* is a collection of outlets in a CDU system (up to two linked enclosures) with a single IP address.

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

On the **CDU > Clusters** page, the name in the drop-down list may be a group or cluster, depending on whether the administrator configures a single IP address (group) or configures multiple IP addresses (cluster).

Controlling All Outlets in Groups/Clusters

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

1. Select **CDU > Clusters**.

2. Select a cluster name from the drop-down list.

3. For all outlets in the cluster, select a command from the Set All Outlets To drop-down list, as shown:
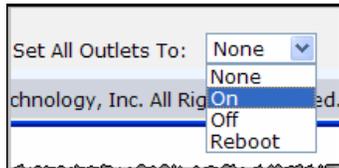
4. Click **Apply Outlet Control**.

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 hardware-based CDU reports for inventory, voltage, power, and environment; reports are produced by location, cabinet, and combined location/cabinet. *For the administrator:*, POPS reports are also available for energy consumption (by timeframe) and energy utilization (by usage parameters).
Trends	Generates a graphic report on specific variables from CDU readings over a specified time frame as applicable data is available to be reported. Trend report choices are temperature, humidity, infeed/outlet load, infeed/outlet power, power density, and system total 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.

General Reports

The **Reports > Reports** option collects data from CDU readings and generates several general reports for inventory, input voltage, input power, total power, power density, environment, and cluster power. Note that only *available* data from CDU readings for the report type, location, and grouping you select will be reported.

To generate a report:

1. Select **Reports > Reports**. The Enter Report Parameters window displays:
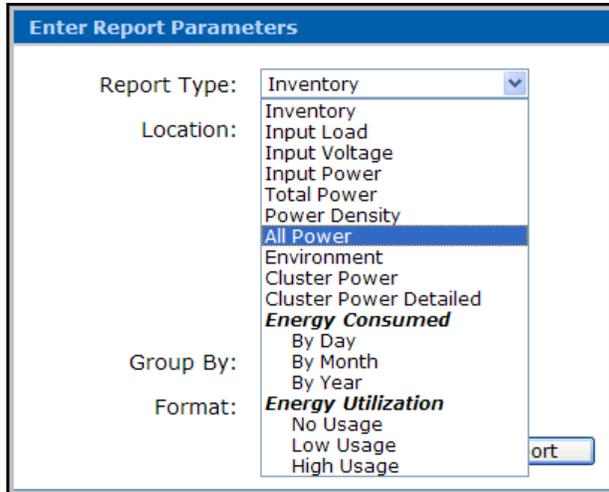
2. From the Report Type drop-down list, select the type of general report you want. For the example above, the All Power report was selected (clicked).

   NOTE: The Energy Consumed and Energy Utilization reports are POPS reports.

3. Based on the general report or POPS report you clicked on the list, the related parameters display. For example, the general report "All Power" displays the Location list:
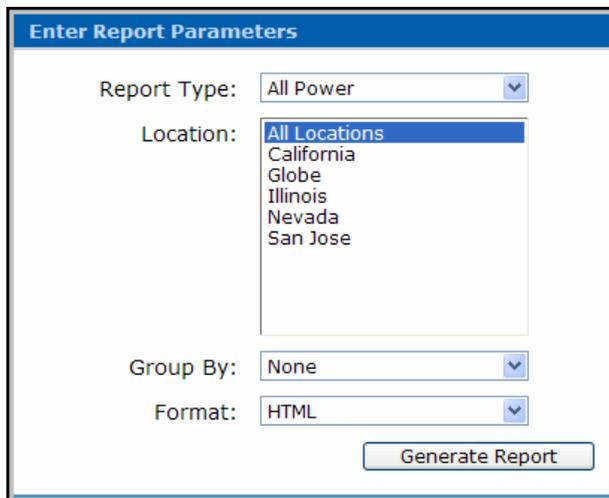
4. For the All Power report in this example, select a Location name.

5. Select a Group By layout for the report, such as location in this example.

6. Select the desired report file type from the Format drop-down list. The output file choices are HTML, XML, Microsoft Word, and Microsoft Excel.

7. Click **Generate Report**. The report (All Power in HTML format for this example) displays:

8. Only networked CDUs with measured readings are reported. Reports are displayed by the parameters and the output format you selected. You can print, save, or email a report. Right-click the report or select your browser's File menu for options.

Samples of general reports:

Input Load (for all locations, grouped by cabinet within location)

Input Load by Location & Cabinet

Run by admn at Thu, 29 Oct 09 15:08:43 -0700

Location	Cabinet	CDU	Enclosure	A1 (A)	A2 (A)	A3 (A)
Illinois						
	None					
		66.214.208.134	TowerA	.96		
None						
	None					
		66.214.208.132	TowerA1	.00		
		66.214.208.137	TowerAz	.00		
		66.214.208.90	LiebeA	.00		
		66.214.208.90	Mir!B	.00		
		66.214.208.92	TowerAz	1.50		

Inventory (for all locations, no grouping)

Inventory

Run by admn at Wed, 08 Jul 09 03:06:52 -0700

CDU Name	IP Address	Serial Number	Firmware Version	Capacity (W)
66.214.208.132	66.214.208.132	8107188	Sentry Switched CDU Version 6.0g (090420)	0
66.214.208.134	66.214.208.134	8142016	Sentry Switched CDU Version 6.0h (Demo 1) (090401)	0
66.214.208.91	66.214.208.91	8107189	Sentry Switched CDU Version 6.0g (Demo 1)	0
66.214.208.92	66.214.208.92	8010873	Sentry Smart CDU Version 6.0g (Demo 1)	0
66.214.208.93	66.214.208.93	1627382	Sentry Version 5.3q (Demo 1)	0
66.214.208.94	66.214.208.94	1608113	Sentry Version 5.3q (Demo 1)	0

Cluster Power Detailed (for all groups and clusters)

Detailed Power by Cluster

Run by admn at Wed, 08 Jul 09 03:11:46 -0700

Cluster	CDU Name	Outlet Name	Total Power (W)
Outlet Cluster 1			
	66.214.208.132(66.214.208.132)	TowerA_Outlet1	N/A
	66.214.208.132(66.214.208.132)	TowerA_Outlet5	N/A
	66.214.208.132(66.214.208.132)	TowerB_Outlet1	N/A
		TowerA_Outlet3	

Input Voltage (all locations, grouped by cabinet):

Input Voltage by Cabinet

Run by admn at Wed, 08 Jul 09 03:14:29 -0700

Cabinet	CDU Name	Enclosure Name	V1 (V)	V2 (V)	V3 (V)
02_555					
	66.214.208.134	WarpDriveA	208.0	N/A	N/A
None					
	66.214.208.132	TowerB	120.0	N/A	N/A
	66.214.208.132	TowerA	120.0	N/A	N/A
	66.214.208.91	cdu20046.a	220.0	N/A	N/A
	66.214.208.91	cdu20046.b	120.0	N/A	N/A
	66.214.208.92	TowerB	210.0	N/A	N/A
	66.214.208.92	TowerA	208.0	N/A	N/A
	66.214.208.93	TowerA	N/A	N/A	N/A

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 consumption and usage, based on individual outlets, devices, groups/clusters, or the entire data center.

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

Two types of POPS reports are available with SPM:

- **Energy Consumed**: Produces total energy consumption reports for outlet and infeed billing levels. Reports are available by location, cabinet, CDU, and outlet group/cluster. You can generate a total energy billing report by day, month, or year based on infeed or outlet data for the reporting period.

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

Generating a POPS Report

For the administrator: From the **Reports > Reports** option, POPS reports are available in the Report Type drop-down list as *Energy Consumed* (By Day, By Month, and By Year) and *Energy Utilization* (No Usage, Low Usage, and High Usage). Options for POPS reports are highlighted below:
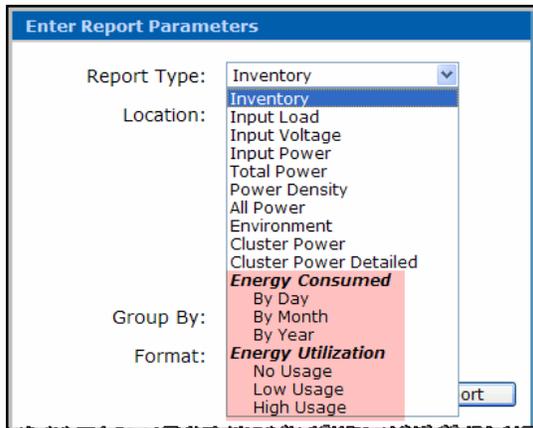
NOTE: POPS report options are displayed for administrative login accounts only.

To generate a POPS report:

1. Select **Reports > Reports.** The Enter Report Parameters window displays:
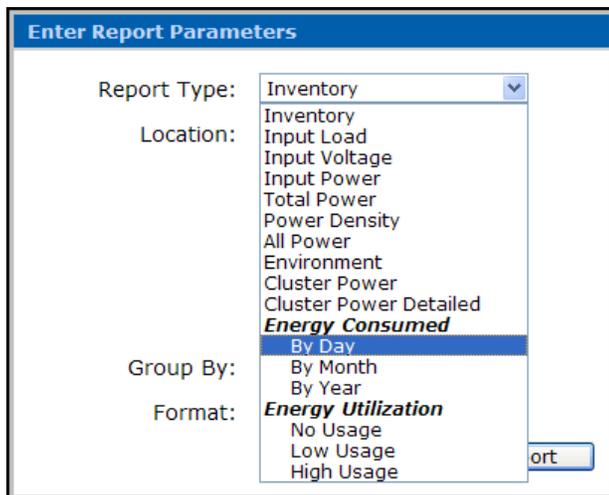
2. Select the type of POPS report (***Energy Consumed*** – by day, month, or year) or ***Energy Utilization*** (high, low, or no usage) from the Report Type drop-down list. The Report Parameters box displays with parameters specific to the type of POPS report you requested:

3. Select the desired options from the drop-down lists presented for the POPS report you requested – in this example, Billing Level, Report On, and Location. Multiple locations can be selected from the Location drop-down list.

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

4. To run the trend report for dates other than the default date range shown, click in the Start Date or End Date fields. The Filter Trend calendar displays (as shown moved to vertical position in the example above.) The date range on the calendar in blue highlights assists in choosing a start and end time span for the POPS report. To select a different date range, click in the Start Date or End Date fields and then click a calendar date.

5. Select the desired output file type for the POPS report from the Format drop-down list:

6. Click in the Start Date and End Date fields to select the trend report timeframe from the pop-up calendar.

7. Select how the report will be formatted (HTML, XML, Microsoft Word, or Microsoft Excel) from the Format drop-down list.

8. Click **Generate Report** to display the report.

9. To print a report, right-click the displayed report or use the File menu on your browser.

Sample of POPS energy consumed report:

Daily energy consumed on outlet billing level for detailed CDUs at all locations:

Energy For CDUs Detailed On Outlet Readings By Day

Run by admn at Wed, 08 Jul 09 03:51:06 -0700

time	Name	Detail	Energy (kWh)
2009 - 06 - 25			
	66.214.208.134(66.214.208.134)	TowerA_Outlet1	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet10	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet11	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet12	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet13	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet14	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet15	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet16	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet2	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet3	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet4	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet5	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet6	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet7	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet8	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet9	0.000
2009 - 06 - 26			
	66.214.208.134(66.214.208.134)	TowerA_Outlet1	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet10	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet11	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet12	0.000
	66.214.208.134(66.214.208.134)	TowerA_Outlet13	0.000
	208.___(66.__.__.__)	TowerA_Outlet14	

NOTE: The detailed CDU report includes the Detail column of individual outlet names.

Sample of POPS energy utilization report:

Low outlet energy usage for all readings on a CDU in all locations:

Energy For CDUs On Outlets With Low Power For All Readings

Run by admn at Wed, 08 Jul 09 03:58:25 -0700

CDU	Outlet	Energy Used (kWh)
66.214.208.134(66.214.208.134)	TowerA_Outlet1	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet10	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet11	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet12	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet13	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet14	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet15	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet16	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet2	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet3	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet4	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet5	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet6	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet7	0.000
66.214.208.134(66.214.208.134)	TowerA_Outlet8	0.000

Trend Reports

The **Reports > Trends** option uses data collected from CDU readings and converts the data into graphic charts based on the requested time frame. You can generate one trend graph for multiple parameters during a specified time period.

Note that only available data from a CDU for a designated parameter and time frame you select can be reported, and minimum and maximum values are reported in the trend lines shown in the graph.

Trend graph values

The Trend feature collects and stores CDU readings 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.

Intervals with no CDU readings are shown as a gap on the trend report. 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.)

To generate a trend report:

1. Select **Reports > Trends**. The Enter Trends Parameters window displays:
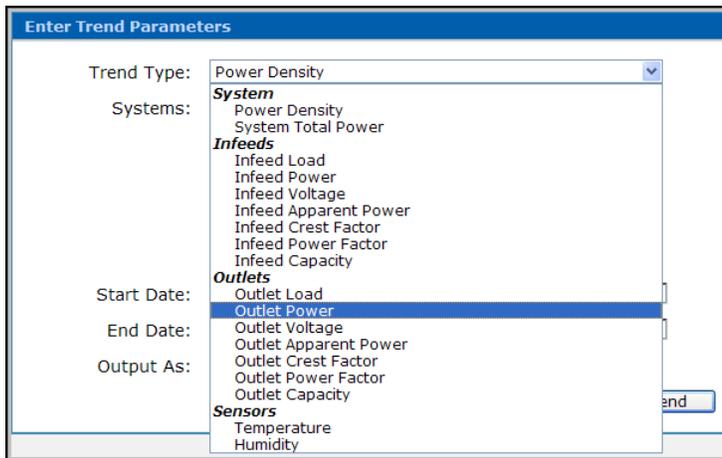
2. From the Trend Type drop-down list, select the type of trend report you want for the System, Infeeds, Outlets, and Sensor categories. For the example above, the Outlet Power trend type was selected (clicked).

   Based on the Trend Type you clicked on the list, the related parameters display. For example, the Trend Type "Outlet Power" displays choices for System names.
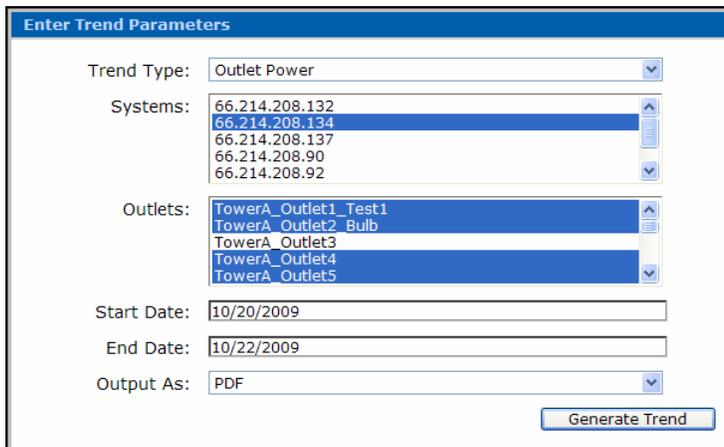
3. For the Outlet Power trend type in this example, select one System name and the related outlets for the system display in the Outlets list.

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

4. To run the trend report for dates other than the default date range shown, click in the Start Date or End Date fields. The Filter Trend calendar displays:
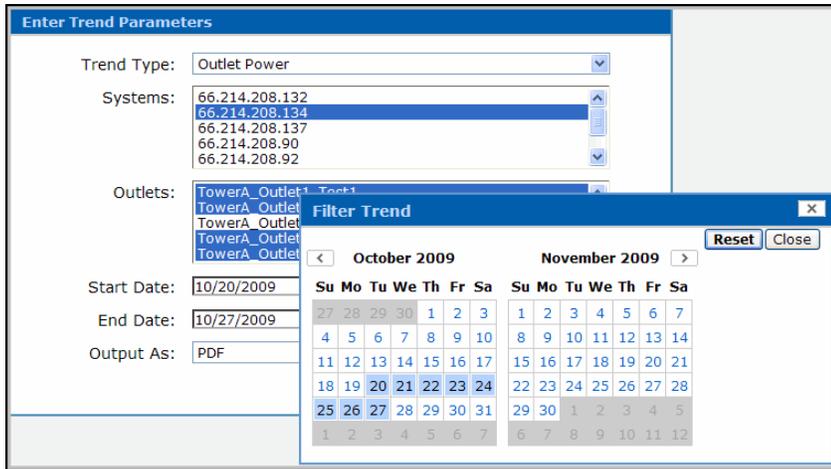
5. The date range on the calendar in blue highlights assists in choosing a start and end time span for the trend report. To select a different date range, click in the Start Date or End Date fields and then click a calendar date.

6. Select the desired output file format for the trend report from the Output As drop-down list:
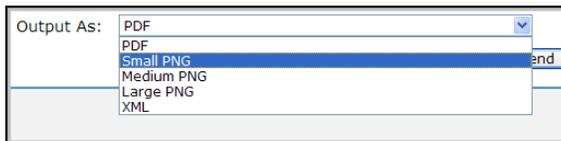
The output file choices are PDF, PNG (small, medium, large), and XML.

7. Click **Generate Trend**. The trend graph (Outlet Power in this example) displays:
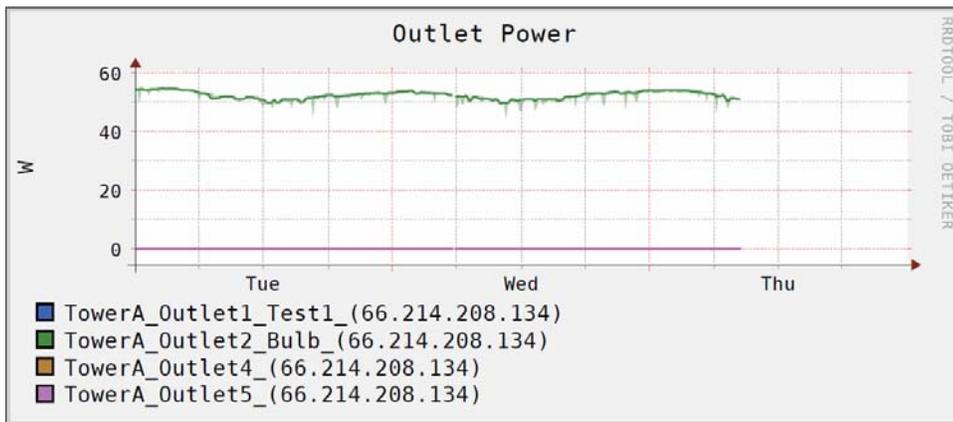
The graph displays in the output format you selected (PDF, PNG, or XML) to be printed, saved, or emailed. Right-click the graph or select your browser's File menu for options.

NOTE: The longer the timeframe requested for the trend report, the less detail will be available for reporting. In addition, some parameters you select for the trend report may not have available data as measured by the CDU for the specified time frame, and those parameters will not be displayed on the trend report.

Samples of trend graphs:

Power Density (Small PNG output format)
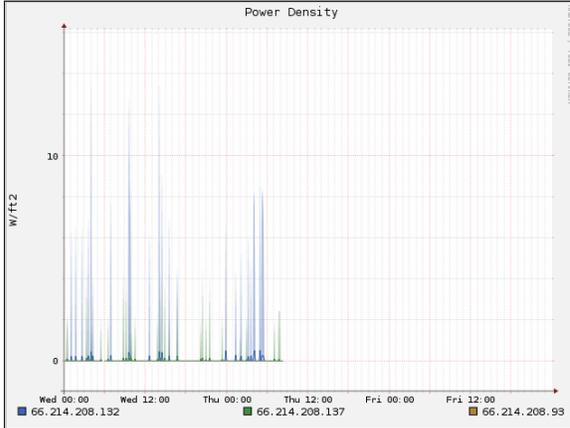
Infeed Voltage (XML output format)

```
<?xml version="1.0" ?>
- <trends type="Infeed Voltage">
  - <average system="TowerA_InfeedA1_\(66.214.208.132\)">
      <value date="Wed Oct 21 00:02:00 2009">0</value>
      <value date="Wed Oct 21 00:04:00 2009">0</value>
      <value date="Wed Oct 21 00:06:00 2009">0</value>
      <value date="Wed Oct 21 00:08:00 2009">0</value>
      <value date="Wed Oct 21 00:10:00 2009">0</value>
      <value date="Wed Oct 21 00:12:00 2009">0</value>
      <value date="Wed Oct 21 00:14:00 2009">0</value>
      <value date="Wed Oct 21 00:16:00 2009">0</value>
      <value date="Wed Oct 21 00:18:00 2009">0</value>
      <value date="Wed Oct 21 00:20:00 2009">0</value>
      <value date="Wed Oct 21 00:22:00 2009">0</value>
      <value date="Wed Oct 21 00:24:00 2009">0</value>
      <value date="Wed Oct 21 00:26:00 2009">0</value>
      <value date="Wed Oct 21 00:28:00 2009">0</value>
      <value date="Wed Oct 21 00:30:00 2009">0</value>
      <value date="Wed Oct 21 00:32:00 2009">0</value>
      <value date="Wed Oct 21 00:34:00 2009">0</value>
```

Temperature (PDF output format)
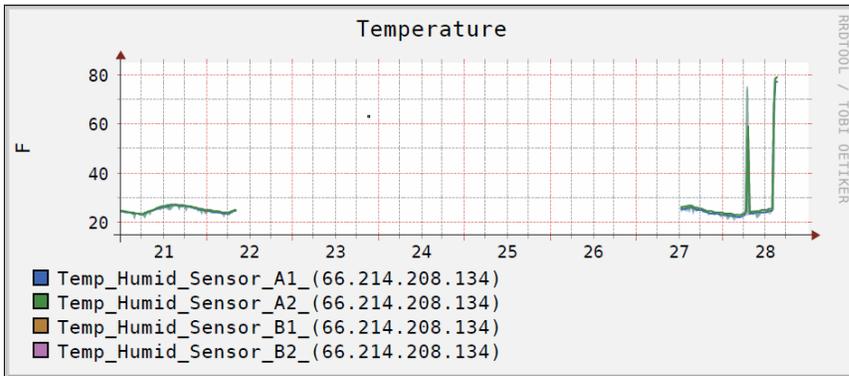
NOTE: The gap in this trend graph shows a time interval with no CDU reading.

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.

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".
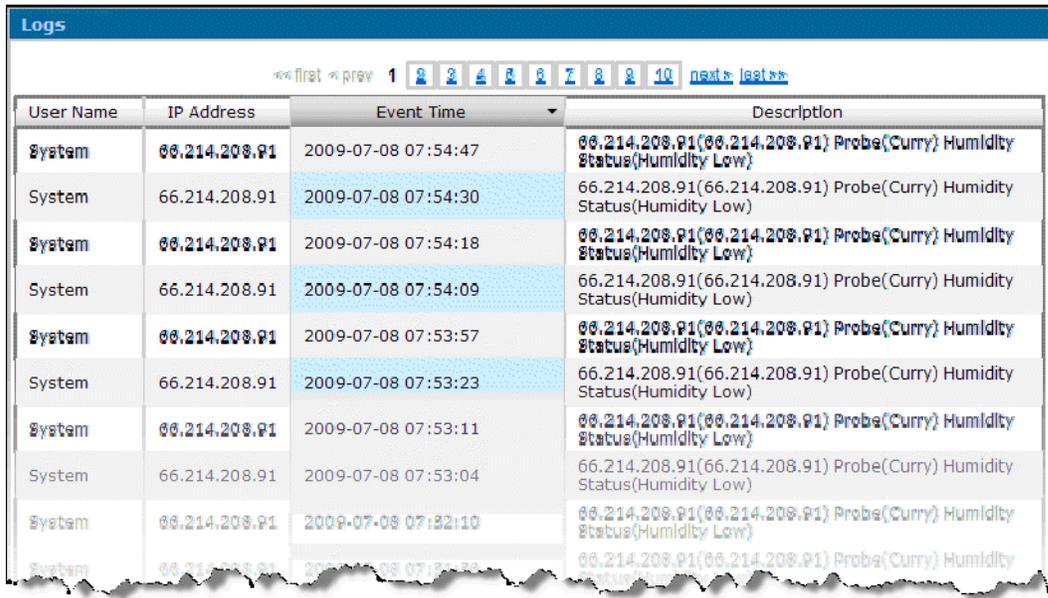
Working with the Discovery Log

- 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 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 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.

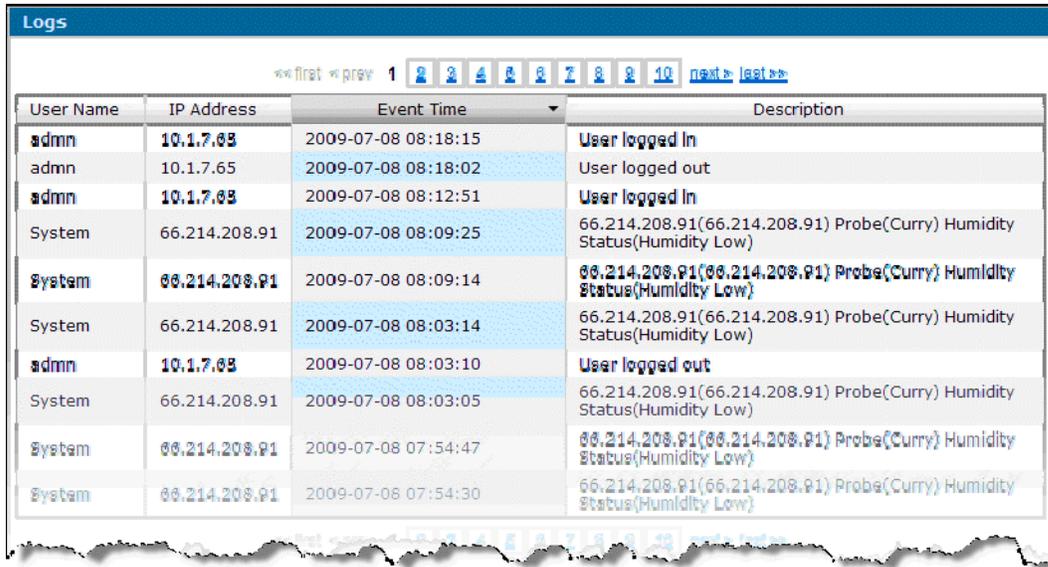*Working with the User Actions Log*

- 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 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 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**.

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.

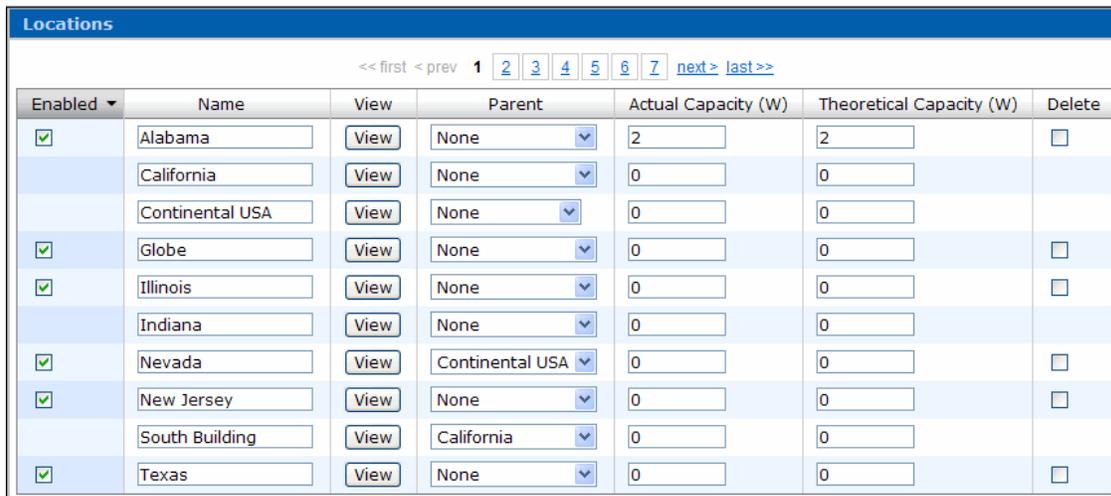The following options are available for the administrator on the Config menu:

Config Menu Options

Option	Description
Locations	Configures and manages default and custom location images (used as the background on the Views page) where the administrator places icons for data center locations, cabinets, and CDUs.
Cabinets	Adds, edits, and deletes cabinets; specifies cabinet area (in square ft.) for optional calculation of power density; includes entry of optional actual/theoretical capacities, and associates a cabinet with a location.
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; associates a CDU with a cabinet/location.
Clusters	Structures the data center by allowing the administrator to select CDU power outlets and place them into a collection of named "groups" or "clusters" for faster administration.
Users & Groups	Allows administration of individual user names and passwords, associates user with a specific user group, and determines user access rights to clusters, locations, cabinets, CDUs, and outlets; and configures LDAP parameters.
Settings	Allows configuration of SPM network access parameters for email, temperature/area units of measure, system hostnames and NTP time zones, system/device ports, SSL, FTP, SSH/Telnet, Serial, SNMP trap forwarding, SPM database ports, and scheduled system backups

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 default and custom (location) images which are displayed on the Views page as the background for location, cabinet, and CDU icons.


Location images include default maps installed with SPM and any custom images the administrator uploads to SPM.

The administrator configures default and custom images (to provide the working backgrounds displayed on the Views page) and places icons on the images to represent actual data center locations, cabinets, and CDUs.

Acceptable graphic file formats for location images are JPG, PNG, and GIF. The recommended width of the image is less than 800 pixels wide.

Adding a New Location Image

1. Select **Config > Locations**.

2. Click **Add New Location** to display the following box:
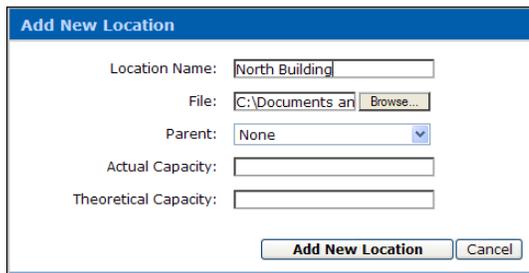
3. (Required) Type a **Location Name** for the location image.

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 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 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. 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:

Disabling 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.

Enabling 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.

Editing 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.

Viewing a Location Image Thumbnail

1. Select **Config > Locations**.

2. Click the **View** button to the right of an image name to see a thumbnail version.

Deleting 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.
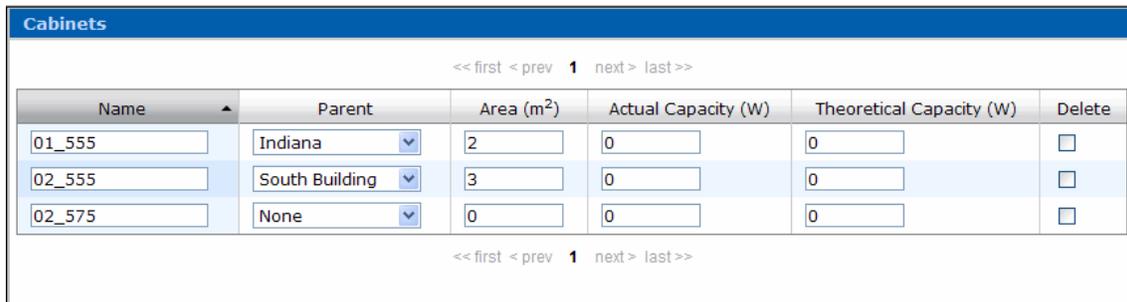

NOTE: Only *empty* background images can be deleted. If a background image contains at least one location, cabinet, or CDU, the Delete checkbox will not display on the **Config > Locations** page.

Changing 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 configure and manage data center cabinets.
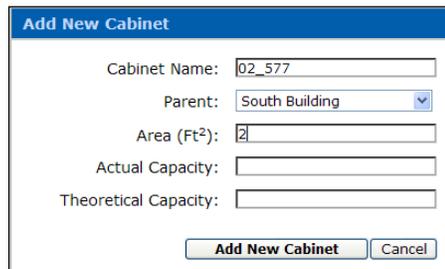

The **Config > Cabinets** option allows the adding, editing, and deleting of cabinets. In addition, cabinets can be associated with parent location images. When a cabinet is added and associated with a location, the cabinet appears as a cabinet icon on the Views page.

The area of the cabinet (for the calculation of total system watts) and capacity planning data for the cabinet (actual capacity/theoretical capacity) are optional values for cabinet configuration.

Adding a New Cabinet

1. Select **Config > Cabinets**.

2. Click **Add New Cabinet** to display the following box:

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.). Use whole numbers only – no fractions.

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; for example, 2 x   L630P – 208V * 30A*2 = 12,480W.

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, 20% in this example: 2 x L630P – 208V*30A*2*.8 = 9,984W.

8. 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:

Editing 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.

Deleting 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 CDU manual discovery as SPM searches by IP address for SNMP-enabled CDUs. The Discover option also allows editing of SNMP GET/SET community string and FTP login.
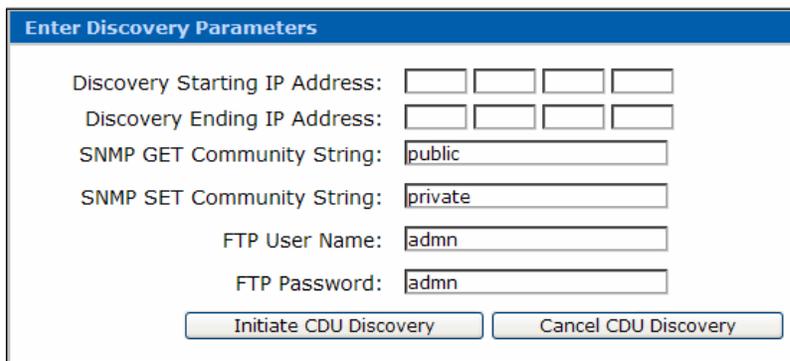
Use the Discovery feature for the initial discovery of CDUs when SPM is installed, and then to discover new CDUs as they are installed in the network.

Discovered CDUs communicate with SPM to report alarms and CDU status changes to assist in the global management of your data center network.

The Discovery feature can discover a single CDU by exact IP address or multiple CDUs in a range of IP addresses.

NOTE: The CDU Discovery is executed immediately upon request and cannot be scheduled.

About the FTP Fields

SPM uses the FTP configuration of the CDU to obtain CDU group information for discovery. Therefore, the FTP User Name and FTP Password fields – which are the valid administrative user name/password for direct access of the CDU through the Sentry firmware interface – are also required fields for SPM discovery.

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. Be sure to 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.
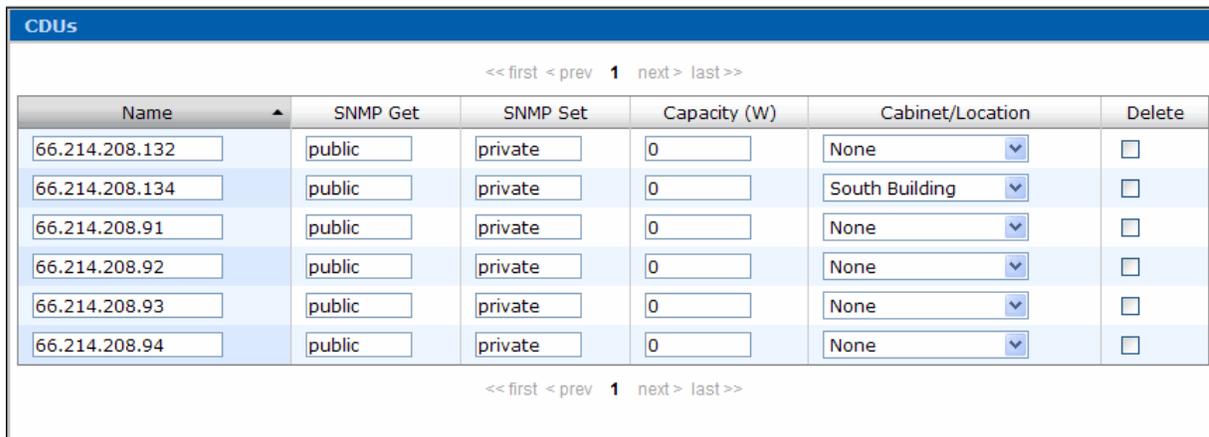
Discovering Multiple Server Technology or OEM CDUs

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.


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:
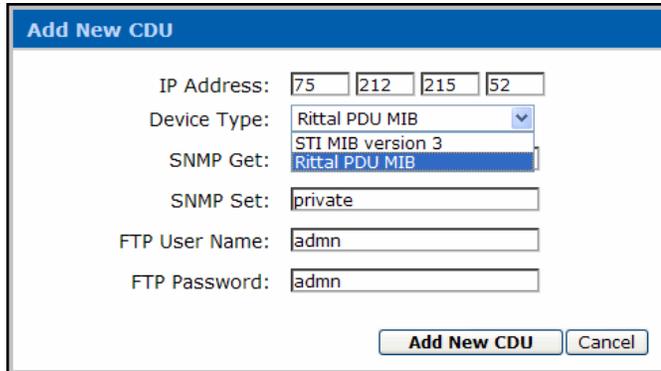
3. Provide the IP address of the Server Technology CDU, OEM device, or competitor device to be added to SPM.

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. Note that Server Technology CDUs are the system default.

5. Provide the SNMP Get/Set parameters.

6. For the FTP User Name and FTP Password fields, provide 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.

7. 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
- 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 (numeric watts value), 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 CDUs are 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.

Environmental Monitors					
Env. Monitor	Sensor Name	Temp Low (C)	Temp High (C)	Humidity Low (%)	Humidity High (%)
Environmental_Monit	Temp_Humid_Sensor	10	30	0	100
Environmental_Monitor_A	Temp_Humid_Sensor	10	30	0	100

High/low sensor *temperature* thresholds are measured in degrees Celsius. 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 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).

Enclosure Name	Infeed Name	Infeed Load (A)	Outlet Index	Outlet Name	Outlet Load (A)	Low Power Limit (W)	High Power Limit (W)
cdu20046.a	TowerA_InfeedA	12	1	Exchange_Server1	N/A	N/A	N/A
		12	2	Jeffs_server	N/A	N/A	N/A
		12	3	StripA_Outlet3	N/A	N/A	N/A
		12	4	Outlet4	N/A	N/A	N/A
		12	5	TowerA_Outlet5	N/A	N/A	N/A
		12	6	TowerA_Outlet6	N/A	N/A	N/A
		12	7	TowerA_Outlet7	N/A	N/A	N/A
		12	8	TowerA_Outlet8	N/A	N/A	N/A
cdu20046.b	TowerB_InfeedA	12	1	TowerB_Outlet1	N/A	N/A	N/A
		12	2	TowerB_Outlet2	N/A	N/A	N/A
		12	3	TowerB_Outlet3	N/A	N/A	N/A
		12	4	TowerB_Outlet4	N/A	N/A	N/A

An enclosure is a Sentry unit (made up of infeeds and outlets) that is part of an overall Sentry CDU. In the example above, the Sentry Switched 66.214.208.91 is made up of the following units:

- A Switched master unit named cdu20046.a, which is the first enclosure with an infeed named TowerA_InfeedA. TowerA_InfeedA has eight related outlets, starting with Exchange_Server1 and so on.

- A Switched extension unit named cdu20046.b, 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 (cdu20046.a and cdu20046.b) are two separate enclosures in the single Sentry CDU system named 66.214.208.93.

To Configure Enclosure Settings:

1. Select a CDU from the drop-down list.

2. Edit the names of one or more enclosures, infeeds, and outlets, and change outlet load values (in amperes) and high/low power limits (in watts), as necessary.

3. Click **Apply Changes**.

Config > Clusters

The **Config > Clusters** option allows the administrator to structure the data center for fast control of outlets by configuring collections of CDU power outlets into named clusters (or groups) for remote reboot and power information. Outlets are selected and associated with an outlet cluster (or group).
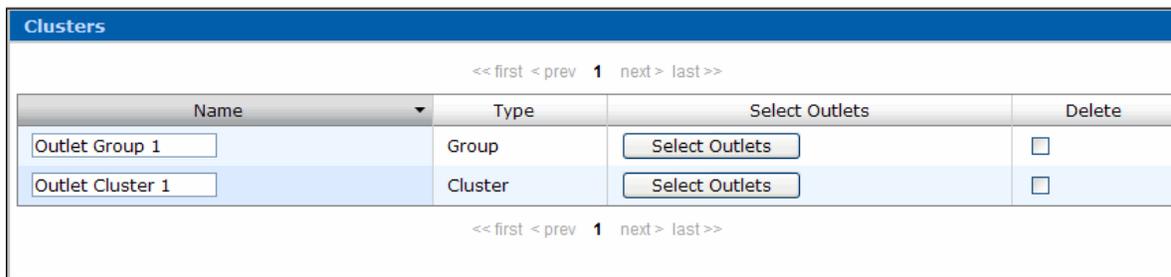
An outlet **group** is a collection of outlets on a CDU system (up to two linked enclosures) with a single IP address.

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

NOTE: The Type field is determined by the outlet configuration of the CDU, either "Group" or "Cluster" depending on the configuration of physical outlets in the CDU – either a single IP address (Group), or multiple IP addresses (Cluster).

To add a cluster:

1. Select **Config > Clusters**.

2. Click **Add New Cluster** to display the following box:

3. Type the new cluster name and click **Add New Cluster**. The Clusters page displays showing the new name:
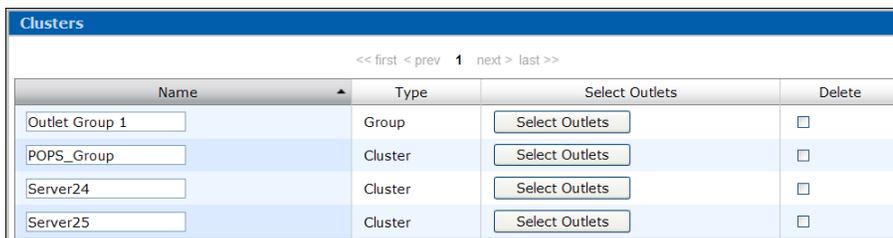
NOTE: The Type field on the Clusters page is determined by the outlet configuration of the CDU, either "Group" or "Cluster" depending on the configuration of physical outlets in the CDU – either a single IP address (Group), or multiple IP addresses (Cluster).

4. For the new name, click **Select Outlets** to display the following box:

5. Determine the filter by selecting an option from the Filter By drop-down list in the upper left corner of the box, for example, "CDU", which provides an additional drop-down list for selecting the desired CDU.

6. For the "CDU" option, all outlets in the selected CDU display in the Select Outlets box. Check the Enabled checkbox for each outlet you want to be within the new cluster:

7. Click **Apply Changes**. The selected outlets are associated with the new cluster name.

8. Select the **CDU > Clusters** option, and from the displayed window, select the new cluster name from the drop-down list in the upper left corner:

The selected outlets for the new cluster are listed, and the window provides the following links:

- To issue On, Off, and Reboot commands for an outlet, click the System Name.

- To access the Sentry firmware login, click the System IP Address.

- To display operating details for an outlet, click the Outlet Name.

To edit a cluster:

1. Select **Config > Clusters**.

2. Type over the group or cluster name in the Name field and click **Apply Changes**. The edited name appears on the drop-down list on the **CDU > Clusters** page, and all outlets are associated with the edited name.

To delete a cluster:

1. Select **Config > Clusters**.

2. Check the Delete checkbox to the right of one or more groups or clusters listed.

3. Click **Apply Changes**. All outlets remain in SPM but are deleted from the cluster name.

The **Config > Users & Groups** option allows the administrator to configure and maintain the parameters of SPM users and user groups. Multiple SPM users can be logged in concurrently.

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 **admn** user account. (Note there is no "i" in the **admn** name/password.) The **admn** 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, groups, clusters, and serial/pass-thru ports.
View Only	Partial access for status and pass-thru of assigned outlets, groups, clusters, and serial/pass-thru ports.
Reboot Only	Partial access for control (Reboot), status, and pass-thru of assigned outlets, groups, clusters, and serial/pass-thru ports.

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

Configuring Users

The **Config > Users & Groups > Users** option allows maintenance of users, user passwords, and user group assignments.
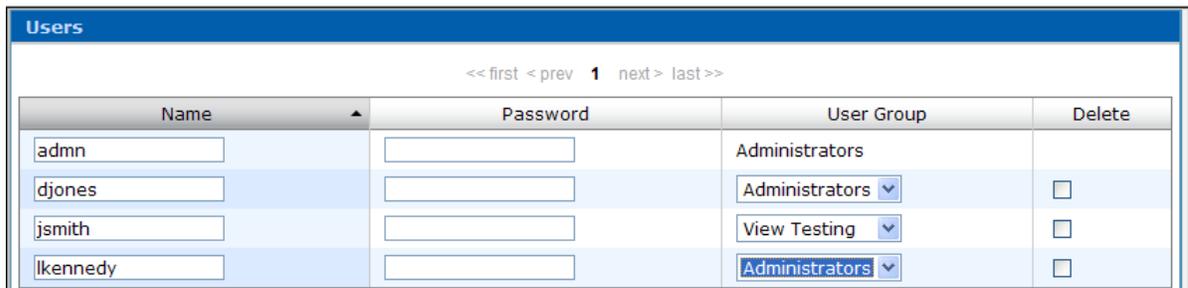
Users			
<< first < prev **1** next > last >>			
Name ▲	**Password**	**User Group**	**Delete**
admn		Administrators	
djones		Administrators ˅	☐
jsmith		View Testing ˅	☐
lkennedy		Administrators ˅	☐

To add a new user:

1. Select **Config > Users & Groups > Users**
2. Click **Add New User.**
3. Type the new username, 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/Change**. The new user is added...

To change a username:

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

To change a user's password:

1. Select **Config > Users & Groups > Users**

2. Enter 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 page 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 display the following box:

3. Type the new user Group Name and select the user Type from the drop-down list.

4. Click **Add New User Group**. The new user group (with the associated user type) is added.

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 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.

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.

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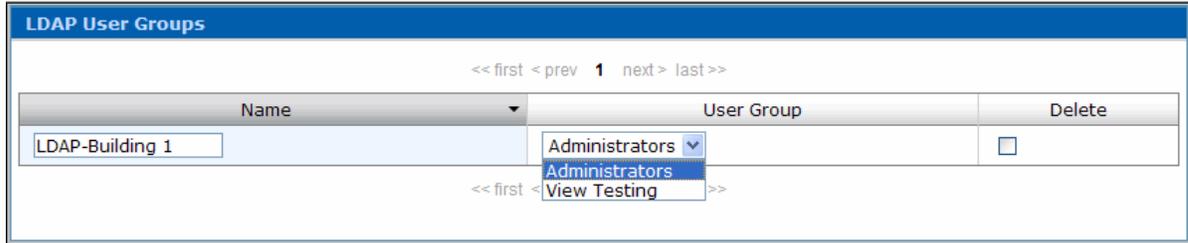
The LDAP support enables authentication with LDAP servers so that user accounts do not need to be individually created locally on each Sentry CDU.

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:
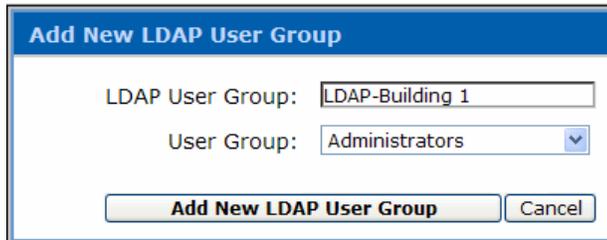
3. Type the new LDAP user group name and select a user group association from the drop-down menu.

4. Click **Add New LDAP User Groups**. The new LDAP user group is added.

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**. The LDAP user group name is changed.

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**. The user group associated with the LDAP group is changed.

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, 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 these 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 email delivery of requested system activity logs to a primary and/or secondary email address.
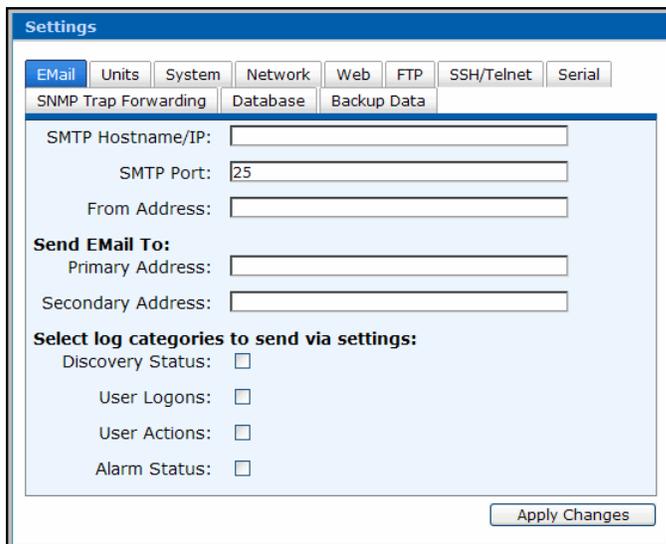
As system activity occurs, requested logs can be emailed to the configured email addresses. You can provide primary, secondary, or both recipient addresses. The primary and secondary addresses receive the same activity log alerts at the same time.

To configure email delivery:

1. Select **Config > Settings**.

2. Select the Email tab.

3. Provide the hostname/IP, port number, and from email address

4. In the Send Email To fields, type the primary and/or secondary email address.

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

5. Check the logs to be delivered. Both primary and secondary email recipients receive the same logs.

6. Click **Apply Changes**.

Units

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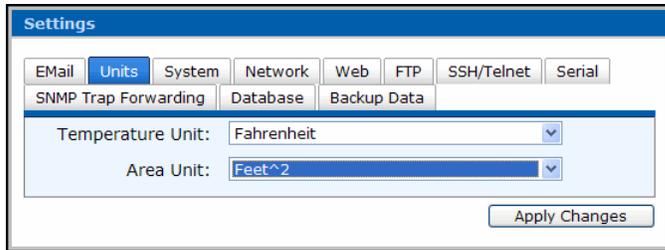
The SPM system default is Celsius for the temperature unit and square meters for the cabinet area. The Units tab allows the administrator to change the default system-wide settings to Fahrenheit and square feet, if preferred.

To configure units:

1. Select **Config > Settings**.

2. Select the Units tab.

3. From the Temperature Unit drop-down list, select Fahrenheit or Celsius.

4. From the Area Unit drop-down list, select square Feet or square Meters.

5. Click **Apply Changes**.

NOTE: It is NOT recommended that you change the temperature unit and area unit settings often. Frequent changes to these measurement units may interrupt system polling.

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.
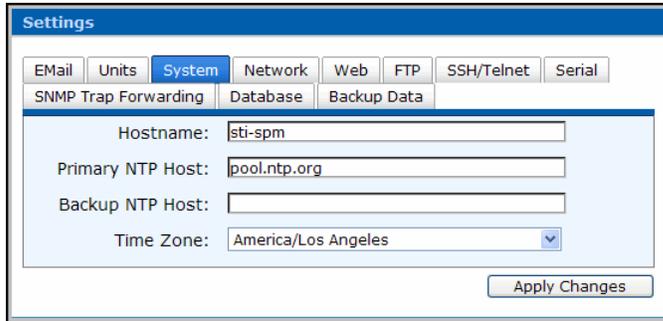
About the cabinet area unit setting:

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**.

2. Select the System tab.

3. Provide the NTP primary hostname.

4. Specify an NTP backup hostname.

5. From the drop-down list, select the Time Zone for using NTP.

6. Click **Apply Changes**.

Network

The Network tab specifies the primary and secondary ports for accessing SPM remotely. 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**.

2. Select the Network tab.

3. Select the System Port tab or Device Port tab and complete the fields, as described below.

4. Click **Apply Changes**.

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.

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.

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.
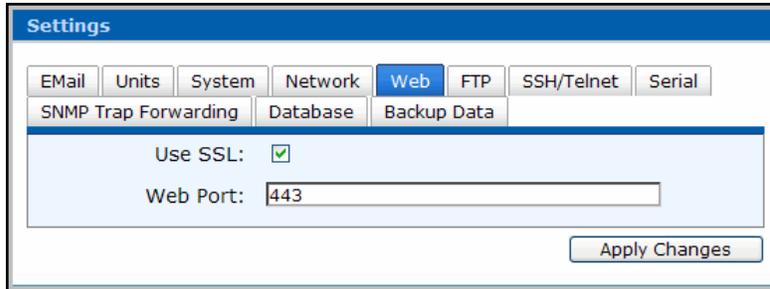

To configure SSL and the SPM web port:

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).
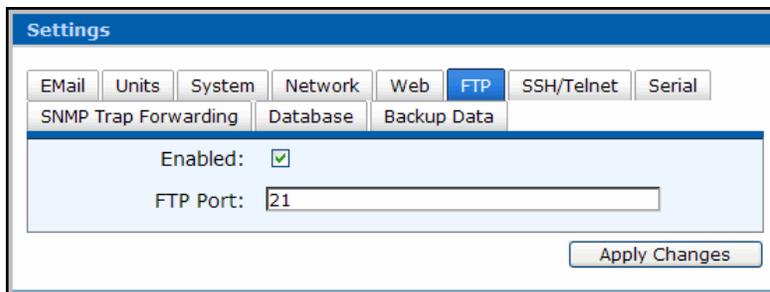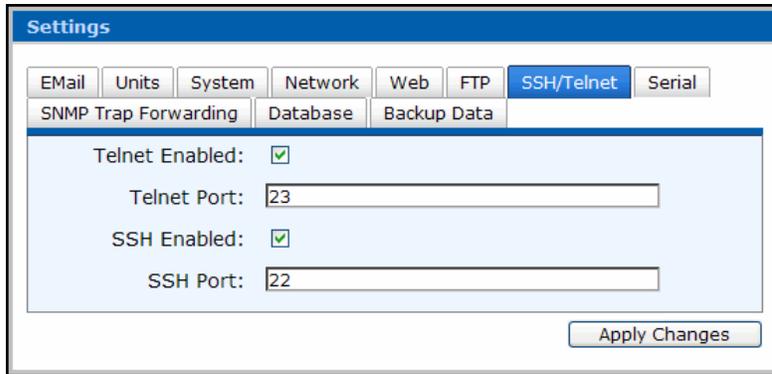

To configure FTP:

1. Select **Config > Settings**.

2. Select the FTP tab.

3. Check the Enabled check box.

4. Type an FTP port number within your network firewall

5. Click **Apply Changes**.

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

SSH/Telnet

This tab 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**.

2. Select the SSH/Telnet tab.

3. Check or clear the Telnet Enabled and/or SSH Enabled checkboxes to enable or disable support.

4. Change the standard Telnet web port "23" and/or the standard SSH Port "22" to a port number within your network firewall.

5. 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 = **admn/admn**). Any administrative user created also has a username and password.

*   Changing the password of the **admn** login is strongly suggested and can only be done through the web interface. You can change the **admn** username and password but you cannot delete the **admn** 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.
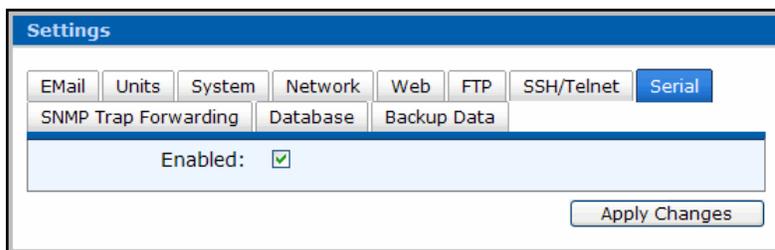
*To configure the serial connection:*

1. Select **Config > Settings**.

2. Select the Serial tab.

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 = **admn/admn**). Any administrative user created also has a username and password.

- Changing the password of the **admn** login is strongly suggested and can only be done through the web interface. You can change the **admn** username and password but you cannot delete the **admn** 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.
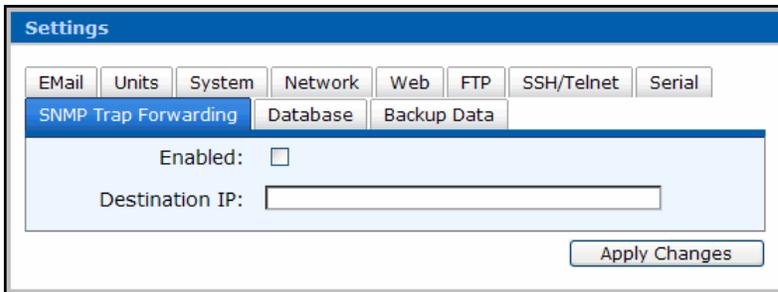
To configure SNMP trap forwarding:

1. Select **Config > Settings**.

2. Select the SNMP Trap Forwarding tab.

3. Check (or uncheck) the Enabled checkbox.

4. Supply the Destination IP address for the centralizing of SNMP traps.

5. Click **Apply Changes**.

Backup Data

The Backup Data tab allows the administrator to schedule automated SPM system backups.

**Before You Begin**

About the Backup Data Feature:

- Daily scheduled backups are run at 6:00 a.m.

- Weekly scheduled backups are run Saturdays at 6:00 a.m.

- Monthly scheduled backups are run the first day of the month at 6:00 a.m.

- SPM stops during the backup and restarts when the backup is finished.

- It is recommended to run backups weekly or monthly, not daily unless the SPM system is small.

- Only one backup is stored on the SPM server at a time. If you run a daily backup for the last week, only the last day's backup will be available; previous daily backups will be deleted.

- The backup includes all database information (user settings/permissions, and data for devices, clusters, locations, and cabinets), trend data, and location images.

- The backup file name is **SPMDBBackup.sti_[date]**. For example, the backup file for 11/5/09 would be **SPMDBBackup.sti_[20091105]**.

- Use FTP to retrieve the backup file.

How Browsers Work with the Backup Data Feature:

- Internet Explorer (IE) – works, but you need to change the internet option to open in passive mode. From the open IE page, select **Tools > Internet Options > Advanced** and check the Use Passive FTP checkbox.

- Windows Command Line FTP – cannot be used because the client does not have options to support passive mode.

- Firefox – Works by default.

- Filezilla – Works by default.

- Ubuntu Linux FTP – requires manual entry of bin and passive mode for correct configuration of the FTP client.

To Backup SPM:

1. Select **Config > Settings > Backup Data** to display the backup window:
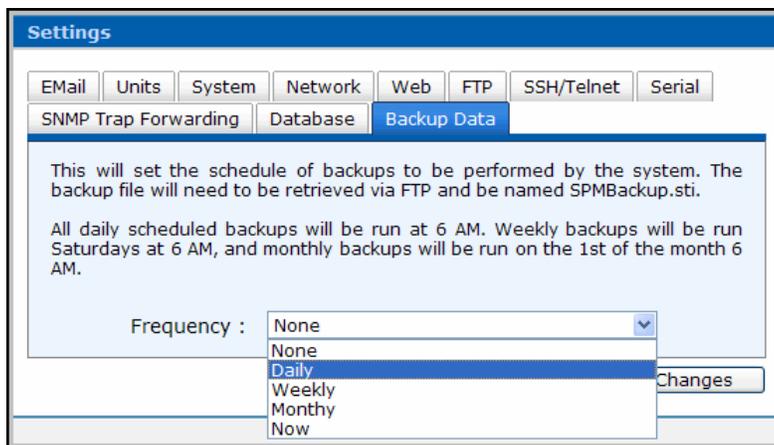
2. From the Frequency drop-down list, select an option to set the schedule of backups SPM will perform. For the Now option, see the following section, "To Backup SPM Now".

3. Click **Apply Changes**.

4. Select **Logs > User Actions** for the start and end of the backup process and to display the backup file name:

To Backup SPM Now:

1. Select **Config > Settings > Backup Data**.

2. From the Frequency drop-down list, select the Now option. Selecting Now does not affect the None or Monthly options.

3. Click **Apply Changes**.

4. Review **Reports > Logs > User Actions** for the backup completion time.

5. Use FTP to the server with your admin login credentials.

6. You need to be in binary and passive modes using the following commands:

   bin <Enter>

   passive <Enter>

7. You can now see the contents of the backup directory. Enter the following:

   ls <Enter>

8. Retrieve the backup file with the following:

   get SPMDBBackup.sti_[date] <Enter>

9. To exit FTP:

   quit <Enter>

To Restore the SPM Database:

1. Rename the backup file **SPMDBBackup.sti_[date]** to **SPMDBBackup.sti**. To restore the file, the "date" portion of the backup file name must be removed.

2. Use FTP to the server and run these commands:

   bin <Enter>

   passive <Enter>

   put SPMDBBackup.sti <Enter>

   quit <Enter>

NOTE: The Restore function causes the SPM server to reboot.

IMPORTANT: The Restore function destroys previous data first. The database is dropped, trend data is removed, and location images are removed. This data is then replaced by the data in the Restore file.

Getting Help

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

Help Menu Options

Option	Description
Support	Contact information for SMARTER Technical Support and links to this user operations manual at Server Technology's website.
Licenses	(Administrator only) Allows update for an additional SPM license key; also displays the current number of supported CDUs, and other enabled features, such as Billing and ODBC.

Help > Support

The **Help > Support** option shows contact information for Server Technology's SMARTER Technical Support. In addition, links are provided to the Server Technology website and to the *Sentry Power Manager – Operations Manual*.

Help > License

For the administrator: The **Help > Licenses** option allows the administrator to update to an additional SPM license key that supports more CDUs in the network.
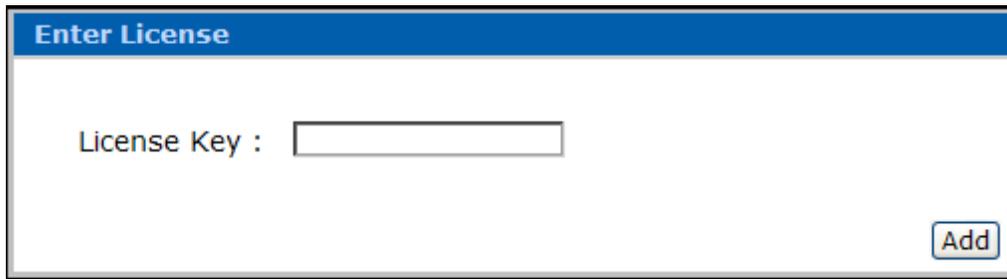
The page shows the number of CDUs supported under the current license key. The page also shows if the Billing reports feature and the ODBC feature are enabled.

Click the **Enter Additional License Key(s)** button to display the following page:

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). An alpha-numeric key will be generated for you based on the serial number of the appliance that contains SPM.

2. Type the new key you receive in the License Key field (shown above) and click **Add**.

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.

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.

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.

Server Technology, Inc.
1040 Sandhill Drive   Tel: 775.284.2000   Web: www.servertech.com
Reno, Nevada 89521 USA   Fax: 775.284.2065   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.

Server Technology