Server Technology

Sentry : Solutions for the Data Center Equipment Cabinet

Sentry Power Manager (SPM)

Quick Start Guide

- SPM Release 5.1

Instructions

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

Dangerous Voltage

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

Protective Grounding Terminal

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

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- direct patient care.

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- the customer assumes all such risks, and
- the liability of Server Technology is adequately protected under the circumstances.

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Chapter 1: Introducing Sentry Power Manager (SPM)

Sentry Power Manager (SPM) is a 1U appliance and software package that continually measures, monitors, and trends an enterprise-wide network of Sentry Cabinet Power Distribution Units (CDUs) in your data center. From a single user interface, SPM offers global device control along with detailed, rack-level control of your entire IP network of Switched and Smart CDUs, as well as other devices.

SPM discovers all CDUs in your IP network and offers both a global view of these networked units as well as a detailed view with the capability of managing units based on temperature, humidity, load, and operational status. Units in multiple physical locations can be accessed from a single SPM interface, including quick access to device alarm management.

How SPM Benefits Your Data Center

SPM provides many significant benefits for a single data center, as well as for multiple remote facilities:

- Gives a global view of all Sentry CDUs in your network and lets you drill down quickly from the global view to the background images and maps of your data center to see further into the operational details of the CDU.
- Monitors and manages user-defined alarm conditions throughout your network.
- Calculates your Power Usage Effectiveness (PUE) for data center efficiency metrics and green initiatives.
- Monitors the power of Per Outlet Power Sensing (POPS) units.
- Clusters outlets together for remote reboot and power measurement information across a single CDU, a linked CDU, or across your entire network of CDUs.
- Measures power consumption for capacity planning.
- Provides multiple user levels (and user groups) with multiple capabilities, including LDAP support.
- Allows full On, Off, and Reboot control actions over individual outlets on Switched CDUs in your network.

System Defaults

Upon connection to SPM, note the following SPM system-wide defaults and how to change them.

Telnet

Telnet is turned **OFF**.
Enable Telnet at **System Setup > Configuration tab > Settings > Telnet**.

Secure Shell (SSH)

SSH is turned **ON**.
Disable SSH at **System Setup > Configuration tab > Settings > SSH**.

Temperature Readings

Temperature Readings are in **CELSIUS**.
Change temperature readings to Fahrenheit at **System Setup > Configuration tab > Settings > Temperature**.

Area Units

Area Units are in **METERS**.
Change Area Units to square feet at **System Setup > Configuration tab > Settings > Area Units**.

The SPM API

The Application Program Interface (API) is a 3rd-party interface integration tool that allows SPM to communicate power and environmental data to your existing Building Management System (BMS), or other monitoring and measurement systems.

Using the SPM API allows SPM to stream information to existing systems while still keeping SPM available as designed for the configuration, management, and control of your network of Sentry CDUs. SPM manages a large number of CDUs by saving you the time and effort of working on the IP addresses of individual CDUs.

The SPM API is based on the SOAP and REST industry standard for web service interfaces. A detailed Developer's API Manual is available.

SPM and Virtualization

SPM offers an option for a virtualized infrastructure.

Resource Requirements

NOTE: The following brackets [ ] indicate VMware Server options that are not present in the VMPlayer options.

The VMPlayer and/or Server must be configured to allow for 64-bit Operating Systems. For Player. This could mean turning on a BIOS setting to allow for 64-bit virtualization.

- 2 network ports
- [connect at power on]
- [automatic MAC address]
- [Adaptor = E1000]
- 250 GB disk space – may be set to grow as needed, especially for smaller installations
- 2 or more processors (2 or more total processor cores\virtual processors)
- Virtualization Mode = Automatic
- [running 2.3 GHz or better]
- Recommended 2GB or more RAM
- Absolute Minimum 768 MB
- 1 USB Controller present (a suggestion, not a requirement)
- Default video settings are acceptable as is
- CD ROM is not needed
- No other special resources rules specified for CPU, Memory, Disk, or Advanced CPU\Memory

About 64-Bit Support

If a customer gets the message "Processor not supported or not enabled in BIOS", they will need to reboot their computer and enter the BIOS settings. This configuration layout is different for every computer, so they will just need to search for it, probably in the “CPU” section of their BIOS settings. They must look for and turn on EM64T, VT, and/or Virtualization support. If it is not there, and their OS is not 64-bits, it is not likely they can run SPM on a VMserver.

They may be able to run SPM on a VMserver without this setting only if they have a 64-bit OS running; it seems the option was implemented for Windows. Some laptops apparently require a total power discharge to enable VT extensions (remove the battery and turn on the computer to drain capacitors). Some systems require a BIOS update.

See this link:

http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1003944

vSphere 5 has additional info about “nested” 64-bit virtualization. See how to enable at:

http://www.virtuallyghetto.com/2011/07/how-to-enable-support-for-nested-64bit.html

Supported Formats

SPM supports these VM formats:

- VMWare Server 7 format: Runs on VMWare Server 2, vSphere 4, (5?) and VMWare ESXi 4, (5?)
- Player 3.X format: Runs on VMWare Player 3.x (and I think VMWare Workstation 7)
- Server 7 is deployed as and OVA or OVF file format.
- OVA is a single file (ova)
- OVF is a directory of 3 files (mf, ovf, vmdk).
- Player is deployed as a directory of 2 files (vmdk and vmx file)
- VMWare Converter 4 can convert these to other formats.

What is OVF?

Open Virtualization Format (OVF), is a platform independent, efficient, extensible, and open packaging and distribution format for virtual machines. OVF enables efficient, flexible, and secure distribution of enterprise software, facilitating the mobility of virtual machines and giving customers vendor and platform independence. Customers can deploy an OVF formatted virtual machine on the virtualization platform of their choice.

How Does VMDK Compare to OVF?

VMDK (Virtual Machine Disk) is a file format that only encodes a single virtual disk from a virtual machine. A VMDK does not contain information about the virtual hardware of a machine, such as the CPU, memory, disk, and network information.

A virtual machine may include multiple virtual disks or VMDKs. An administrator who wishes to deploy a virtual disk must then configure all of this information, often manually, using incomplete documentation. The OVF format, on the other hand, provides a complete specification of the virtual machine. This includes the full list of required virtual disks plus the required virtual hardware configuration, including CPU, memory, networking, and storage. An administrator can quickly provision this virtual machine into virtual infrastructure with little or no manual intervention. In addition, the OVF is a standards-based, portable format that allows the user to deploy this virtual machine in any hypervisor that supports OVF.

It is possible to convert OVF to VMDK using two different methods. (to perform this download it is necessary have a VMWARE account, which is available for free).

Useful Links to Servers and Converters

NOTE: You will need a "free" account on VMWare's site to access the actual downloads.

Servers

VMWare ESXi (free):

https://www.vmware.com/tryvmware/p/download.php?p=free-esxi&lp=1&a=DOWNLOAD_FILE&baseurl=http://download2.vmware.com/software/vi/&filename=VMware-VMvisor-Installer-4.0.0.Update01-208167.x86_64.iso

VMWare Player 3 (free):

https://www.vmware.com/tryvmware/p/activate.php?p=player&lp=1&a=DOWNLOAD_FILE&baseurl=http://download2.vmware.com/software/player/&filename=VMware-player-3.0.1-227600.exe

Converters

Command Line OVF Tool (free):

http://www.vmware.com/downloads/download.do?downloadGroup=OVF-TOOL-1-0

GUI converter (free):

http://downloads.vmware.com/d/info/datacenter_downloads/vmware_vcenter_converter_standalone/4_0

GUI converter (free) - newer version released 9/1/2011:

http://downloads.vmware.com/d/info/infrastructure_operations_management/vmware_vcenter_converter_standalone/5_0

About This Guide

Your Sentry Power Manager (SPM) 5.1 Quick Start Guide is a shortened version of the online Help system available from within the SPM 5.1 user interface.

This guide provides brief explanations and overviews of the most important parts of the SPM 5.1 process in a traditional PDF format for quick reference when you're not logged in to SPM to use the Online Help system.

For step-by-step instructions and functional details not found in this guide, please access the online Help system directly from the SPM 5.1 user interface. When logged in to SPM, click **Application Help > On-Line Help System**. Navigation within the Help system is available through hot-linked topics in the Table of Contents, a word search feature, and a glossary of SPM terms.

In addition, right-clicking certain window areas of the SPM 5.1 user interface provides direct access to the online Help system called "context-sensitive" access – this means the online Help system opens with the information topic that relates specifically to the current SPM function you're working with. For example, **right-click** in the Trends list, select the **Trend Help** option, and the online Help system opens with the Trends topic so you have the right information at the right time.

More SPM Resources

In addition to this Quick Start Guide, Server Technology has provided a number of useful resources to get you up to speed fast with SPM:

On the Server Technology website: www.servertech.com

- SPM Product Data Sheet
- Brief SPM Videos
- SPM Product Page
- SPM Technology White Paper

Integrated with the SPM 5.1 Interface:

- Online Help System (search by Help topic or right-click SPM interface for "context-sensitive" help)
- SPM Hyper***fast*** Setup (for basic SPM appliance setup – APP), available as a PDF in the Help system.
- SPM Hyper***fast*** Setup (for redundant SPM appliance setup – Part #SPM-APPR), available as a PDF in the Help system.
- SPM Hyper***fast*** Setup: (for the SPM Virtual Solution – APPV), requirements and information about the SPM virtual environment, available as a topic in the Help system.

Technical Support

Experience Server Technology's FREE SMARTER Technical Support

Server Technology understands that there are often questions when installing and using a new product. Free Technical Support is provided from 8:00 a.m. to 5:00 p.m. PST, Monday through Friday. After-hours service is provided to ensure your requests are handled quickly no matter what time zone or country you are located in.

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Chapter 2: Touring the SPM Workspace

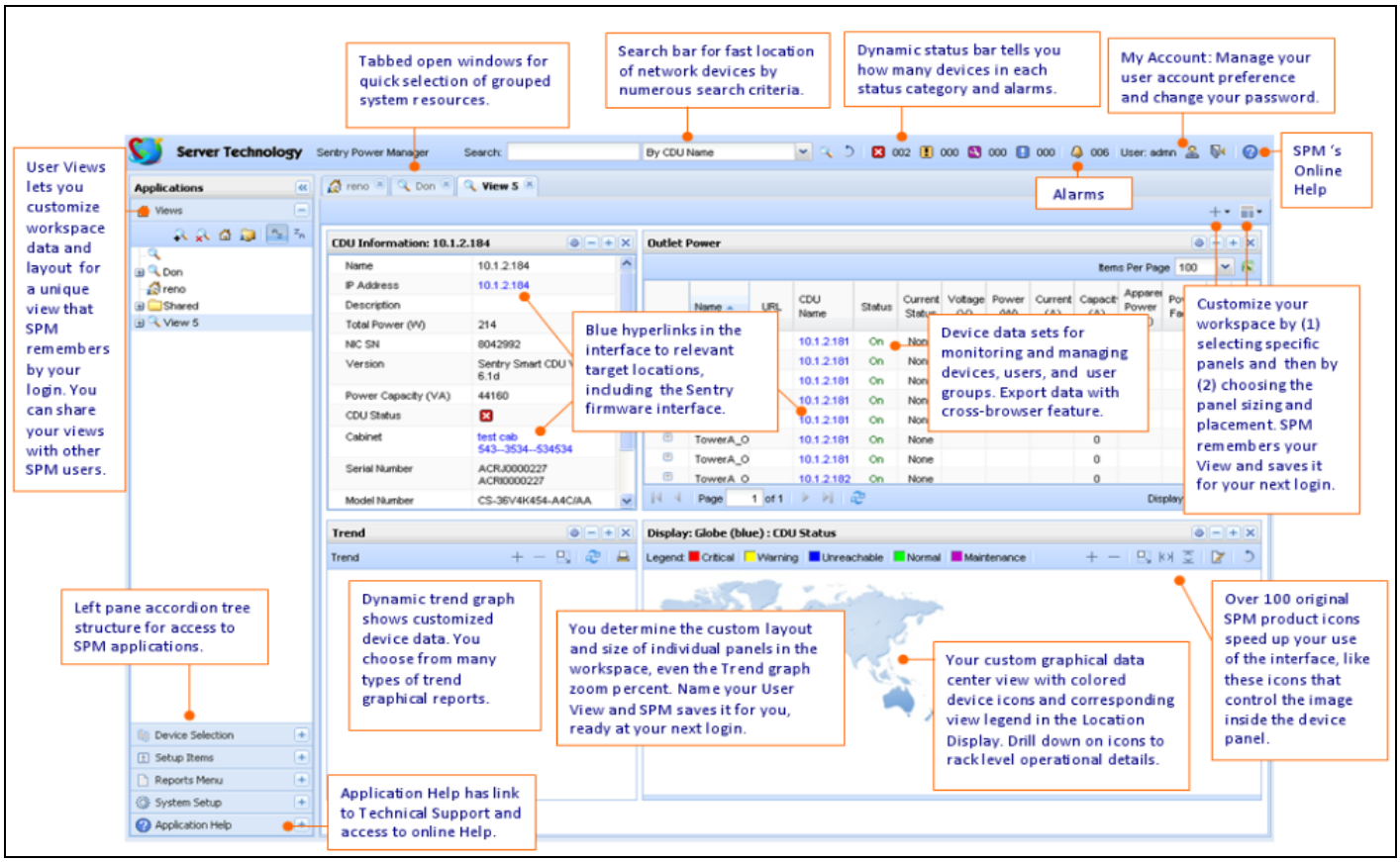
This chapter introduces the SPM interface and the major features of the SPM window design and Views workspace.

SPM User Interface

The SPM user interface allows multiple views of data or several configuration tools to be opened and managed at the same time. The interfaces make use of a left-pane accordion tree, tabbed panels in the right-pane, header/footer areas, and a user-defined custom workspace.

SPM Interface at a Glance

The following sample of the interface introduces you to the major window areas and functions of SPM

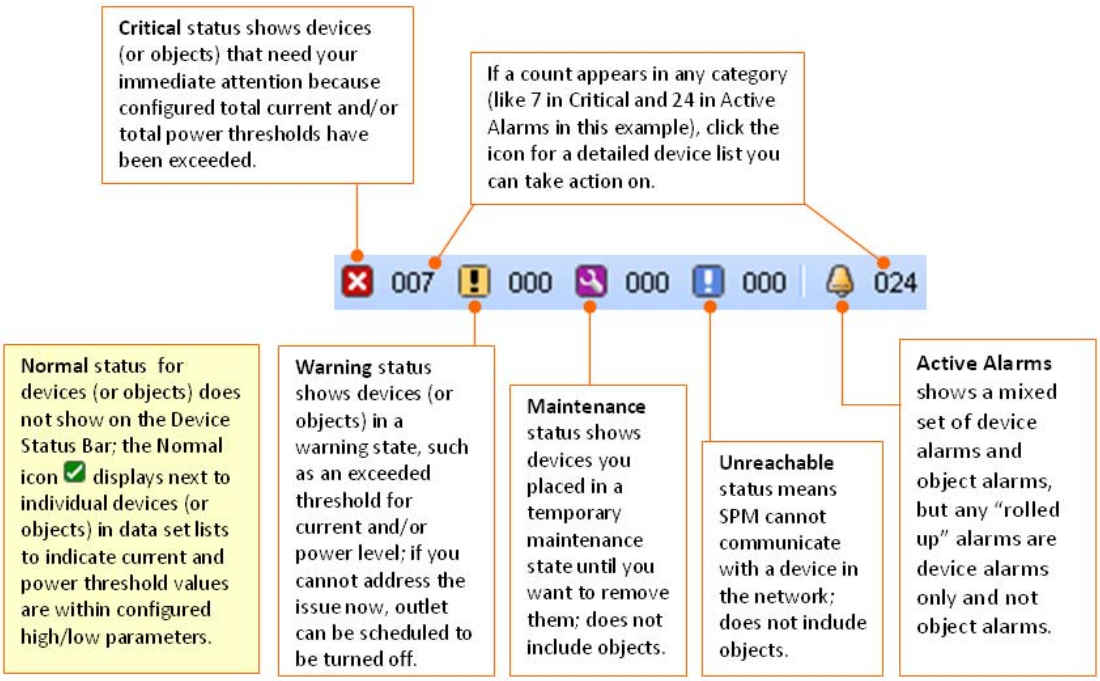


Device Status Bar

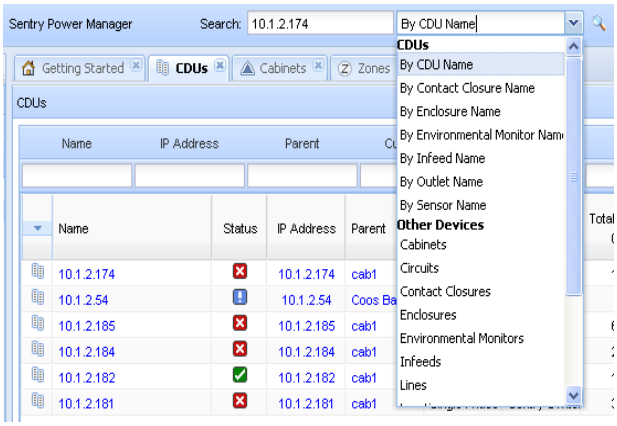
The Device Status Bar at the top of the SPM main window provides at-a-glance monitoring of the combined results of operational status and alarms for devices.

If the administrator configures operating thresholds, SPM monitors the amount of total current and/or total power that each device or object has and shows dynamic results in the status/alarm categories on the Device Status Bar, as illustrated below.

NOTE: The icons in the Device Status Bar are hot-linked. Click an icon in the bar (if it contains at least one device), to display the affected device in a status list for fast monitoring and management.



The Search Bar



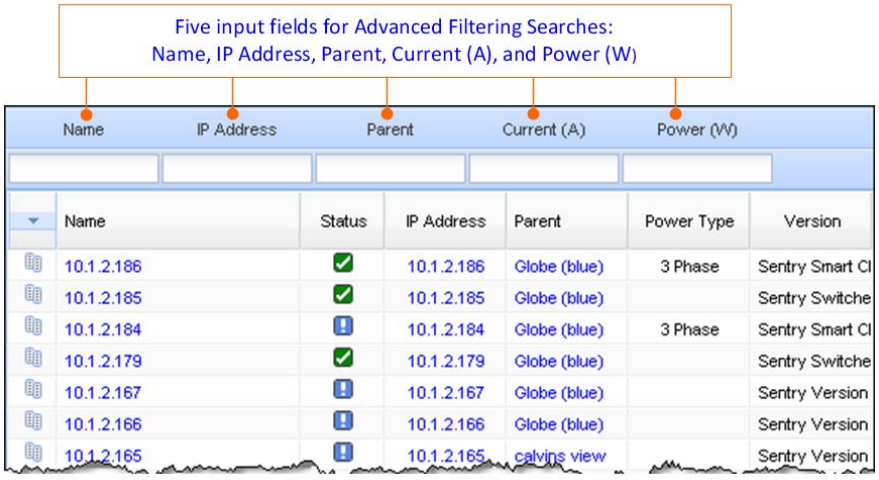
The Search Bar provides a quick way to locate a device or system object.

The Search Bar displays at the top of the main SPM window and allows you to search CDUs by several parameters and to find system objects (grouped under Other Devices in the Search Bar drop-down list).

NOTE: The SPM 5.1 Search Bar includes search capability for all system objects: cabinets, circuits, contact closures, enclosures, environmental monitors, infeeds, lines, locations, outlet groups, outlet clusters, outlets, sensors, and zones.

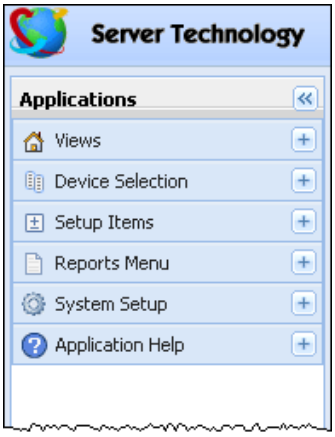
Advanced Filtered Searches

The Advanced Filtered Search tool provides a fast and highly flexible search for devices in large data sets. The five input fields you use to activate the search feature are displayed at the top of SPM data sets (lists), like the CDU data set in the following example:



NOTE: If you use the filtered searches and then export the data set to Excel, the filtered data set will be exported, not the original data set.

Left-Pane Navigation



The SPM interface is designed with a left pane navigation panel so you can easily locate and access product applications and resources.

Each application is shown collapsed in the left pane:

- Views
- Device Selection
- Setup Items
- Reports Menu
- System Setup
- Application Help

SPM applications in the left pane

Views

The View is the SPM application that lets you customize the type of device data you see within a customized workspace layout. You get to determine exactly how a view looks: you select the device information panels you want to monitor and you choose preferences for the graphical layout where those panels are displayed. SPM also provides the option of making user views public (shared) so other SPM users can see the operational data in your user view.

Device Selection

Device Selection is an SPM application designed for viewing and accessing only the system objects that can be configured into a hierarchy, like CDU within cabinet, cabinet within location, etc.

Device Selection shows metered polling results and provides the Device Hierarchy option to show system objects in their pre-established hierarchy. Other options include showing these system objects by Type of Item, IP Subnet, and Status. The Type of Item option shows lists that you can work with much like the Setup Items application.

Setup Items

Setup Items is an SPM application designed for quickly viewing and accessing ALL SPM system objects, with or without a pre-established hierarchy - Setup Items is just a sequential list of items. Polling is not used with Setup Items, so the benefits are filtered lists for quick configuration, as well as being able to view default configuration data for all system objects. Device Discovery and Schedule Task are also items in this list.

Reports Menu

The Reports Menu gives you access to many customized user reports and graphical trend reports. You also have access to dynamic system logs, a history of device alarms, and a list of active alarms. SPM provides the option of sharing your generated user reports and trend graphs with other logged-in SPM users.

System Setup

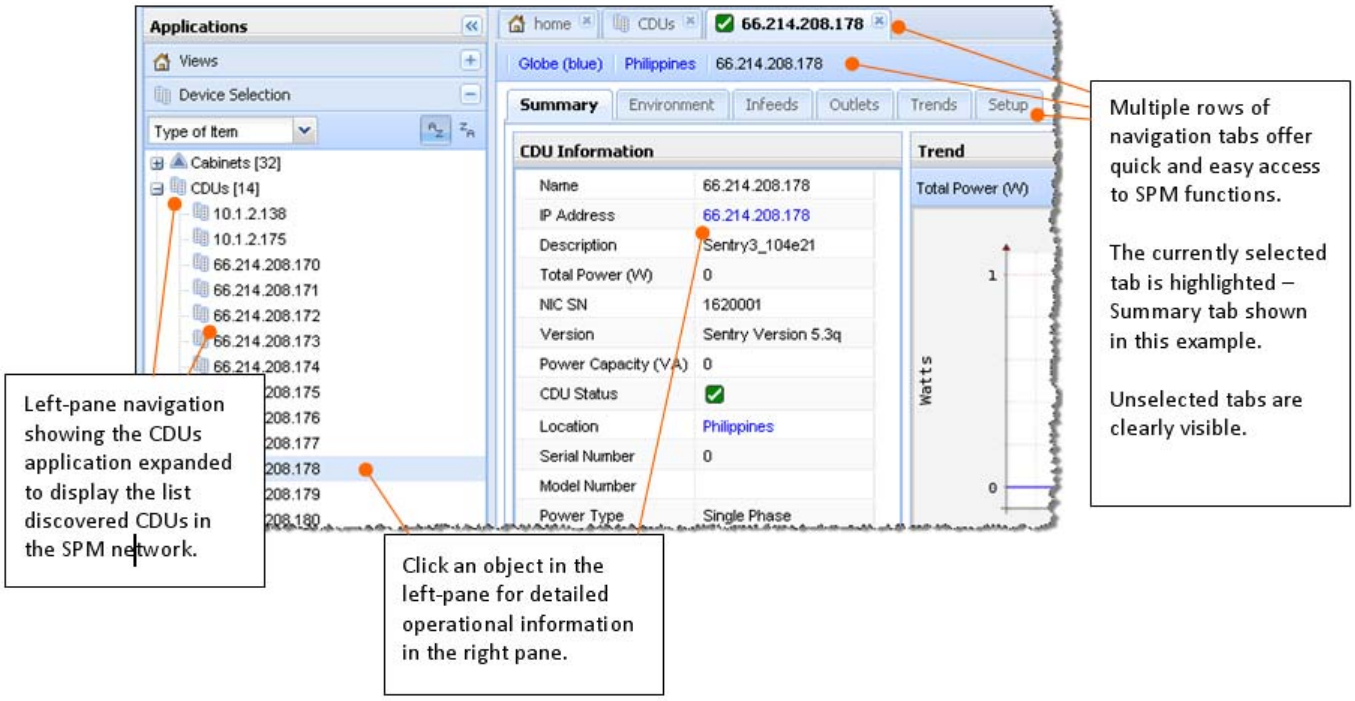
The overall System Setup application provides access to major configuration settings (SPM system, SNMP, Server, and Syslog), and access to the parameters for setting up new (and configuring existing) users, user groups, user group capabilities, and user permissions. System Setup also allows configuration of LDAP and TACACS+ servers, and allows the administrator to add a new SPM software license key.

Application Help

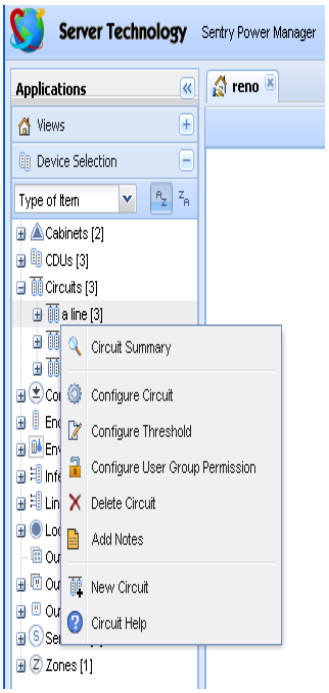
Provides quick access to Technical Support contact information, your current SPM product license, the End User License Agreement (EULA), the third-party license disclosure, and access to the starting page of the SPM online Help system.

Navigation Tabs

The left-pane navigation section of the SPM interface coordinates with the navigation tabs in the right pane for rapid access and selection. The example below shows a CDU selected in the left pane and the resulting CDU Summary tab displays with the CDU's operational details.

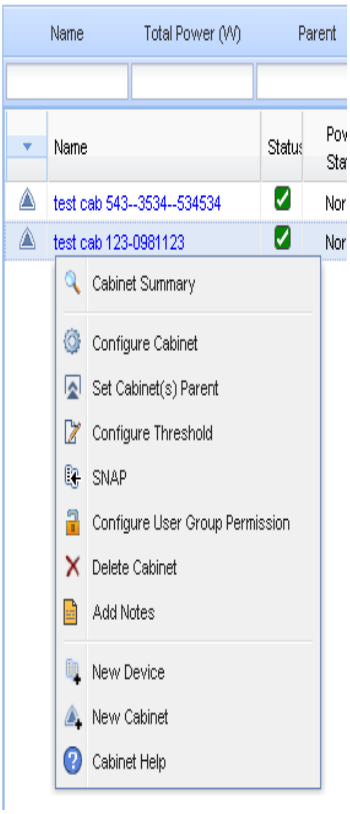


Right-Click Menus and Icons



Right-click menu options for SPM system objects offer fast access to key functions (available based on user capabilities), including device configuration, user group permissions, and SNAP CDU parameter templates.

Right-click menus are available on item types selected in the left navigation pane, for example, a right-click on a specific drop-down item type (like the Circuit named "a line" shown to the left) displays the same drop-down menu options that are available as icons in the upper right corner of the Circuits list.



Right-click menus are also available from an object list, such as the Cabinet list shown to the left.

The example shows the menu options available when right-clicking on the cabinet named "test cab 123-0981123".

Manage Users

The Manage Users feature allows the administrator account to configure the parameters of SPM users, user groups, and LDAP settings. SPM allows individual user logins to manage their account parameters and preferences, and to change their password.

User Group Capabilities

Capabilities are the predefined levels of user group access to SPM system objects as granted by the SPM administrator (or power user) to individual user groups. SPM recognizes the following user group capabilities:

User Group Capabilities

Level	Capability
Administrator	The Administrative user group has full access for all configuration, control (On, Off, Reboot), status, and serial/pass-thru ports. **NOTE:** The SPM default administrative user is the **admn** user account. (There is no "i" in the **admn** name/password.) The **admn** user may grant full administrative access level rights to other Administrator user groups. For security it is recommended that you first use the default **admn** user account to grant capabilities to another administrative user group, and then associate a new user with the new administrative user group. Use the new administrative user account to then change the default **admn** user account password. The **admn** user account cannot be deleted or demoted.
Power	The Power user group has the same capabilities as Administrator but with no user setup capabilities.
Regular	The Regular user group has partial access for outlet action control (On, Off, Reboot), outlet status, and pass-thru of assigned outlets, outlet groups, outlet clusters, and serial/pass-thru ports. The Administrator has options for the Regular user's default access: No Access, Off, On, Outlet Control, Reboot, Setup, and View Only.

Default Permissions (Regular User Group)

Default permissions are the predefined levels of access rights a user (in a Regular user group only) has to specific system objects as granted by the SPM administrator (or power user). SPM recognizes the following default permissions:

Default Permissions

Permission	Capability
No Access	User has no access to any of the SPM system objects.
Off	User has partial access for control (Off), status and pass-thru of assigned outlets. Off is available only to SPM system objects that contain outlets.
On	User has partial access for control (On), status and pass-thru of assigned outlets. On is available only to SPM system objects that contain outlets.
Outlet Control	User has full outlet control access. Outlet Control is available only to SPM system objects that contain outlets.
Reboot	User has partial access for control (Reboot) status and pass-thru of assigned outlets, groups, and serial/pass-thru ports. Reboot is available only to SPM system objects that contain outlets.
Setup	User has full Administrator access to the CDU.
View Only	User has data view access only. User cannot save changes or perform actions on SPM system objects.

Notes About User Group Permissions

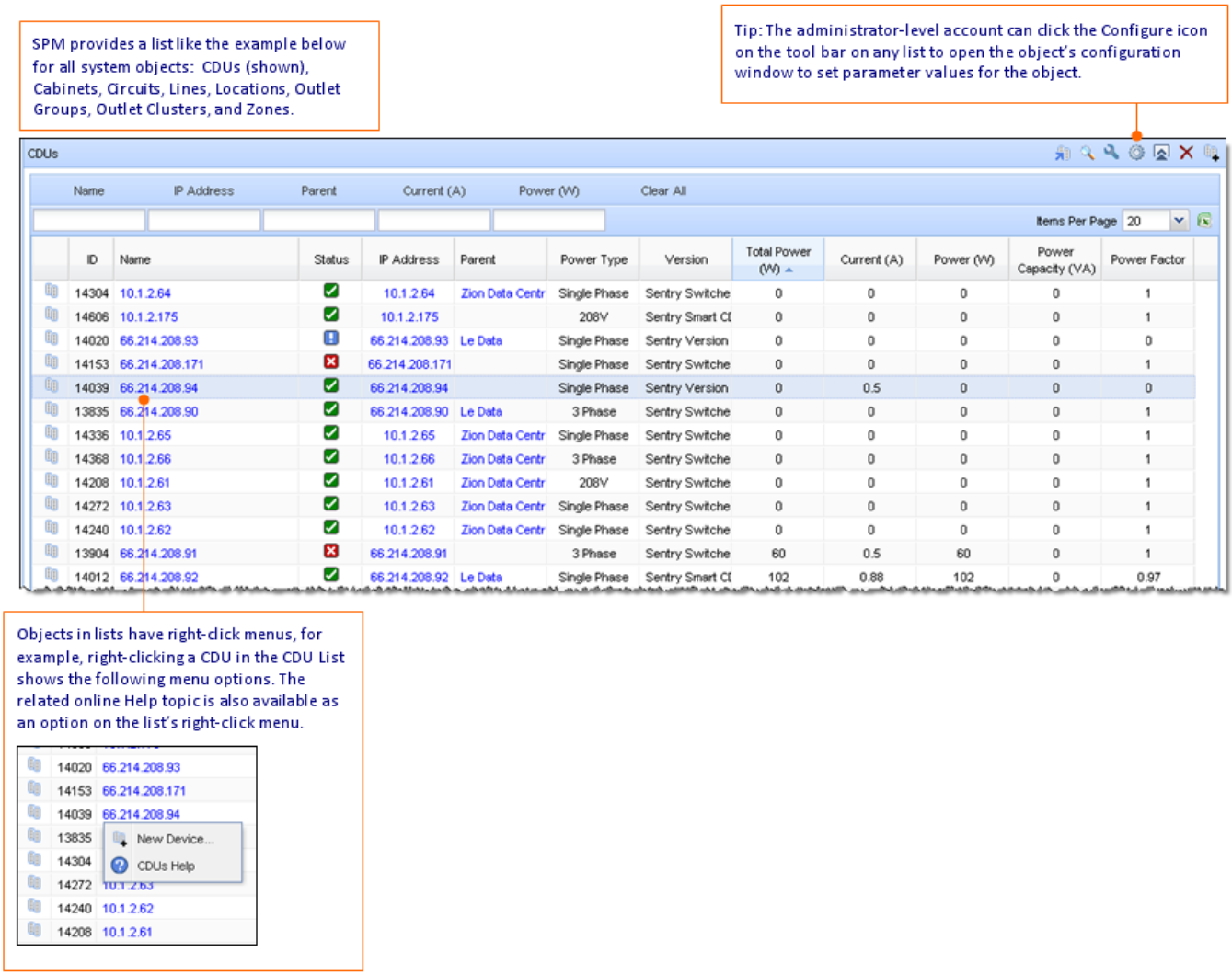
The SPM Administrator can now work with user group permissions as follows:

- Mixed permissions are allowed.
- Settings can be defaulted to On.
- Permissions can be set on CDUs, Outlets, Locations, Cabinets, Zones, Circuits, Outlet Groups, and Outlet Clusters.
- Permissions can be set using the right-click menu.
- Permission hierarchy is not supported; for example, changing the top-level location will not change permissions in the lower locations of the hierarchy.
- Permissions can be set using the multi-select function in the object lists.

Working with Lists (Data Sets)

The Intelligent Data Grid Management feature designed into SPM lists provides an efficient method for managing large blocks of data. Features of the SPM lists include methods for sorting and grouping data, the ability to show or hide columns, and provisions for exporting data in the selected list to an external format, such as an Excel worksheet.

Advanced filtering techniques let you quickly manage simple or complex searches, especially useful to keep you from scrolling through long lists.

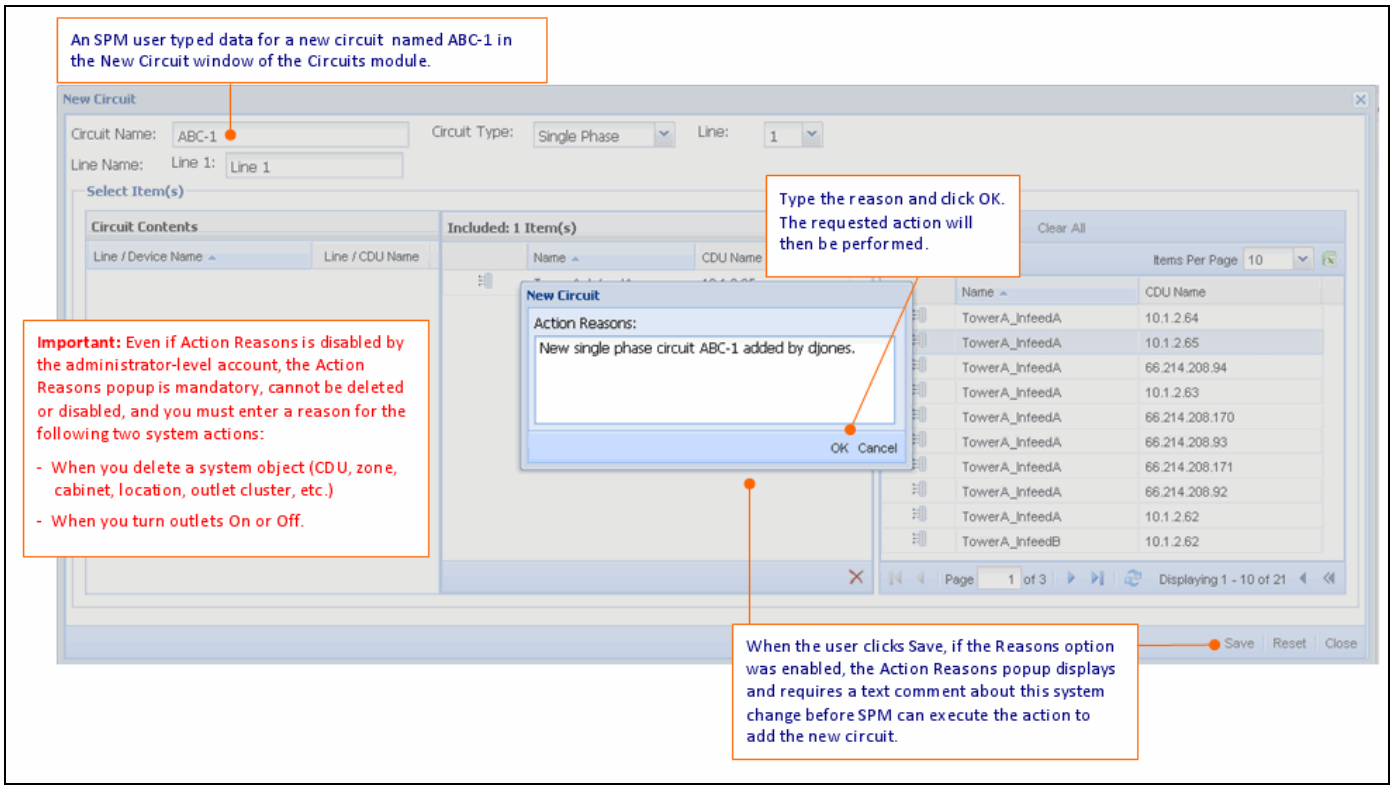


In the lower left corner of the SPM lists, you can use the Paging functions and the Refresh button to locate records fast in a lengthy data set.

Action Reasons

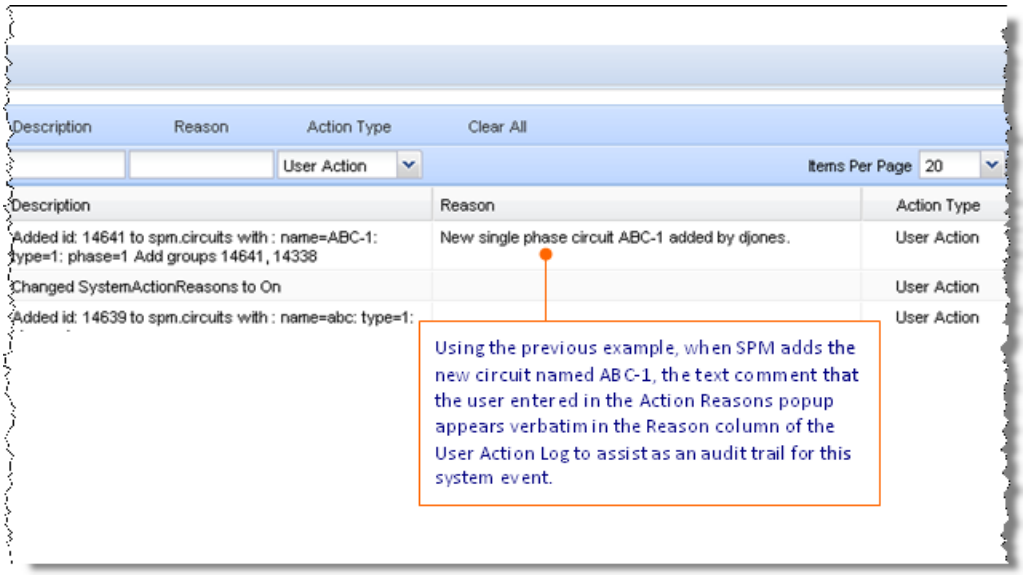
The Action Reasons feature is an SPM system-wide option that requires a text comment (a reason) about changes made to SPM. Action Reasons appear in the system logs as an audit trail to describe why system actions occurred.

How the Action Reasons feature works



Action Reasons – as an audit trail

If enabled, the text you type in Action Reasons displays on the User Action Log as follows:



Add Notes

SPM allows you to make text notes for networked CDUs displayed in the CDUs List. The Add Notes function is useful for managing the details of a specific CDU with a dedicated place to add comments, descriptions, and other text notes.

- Add Notes can be accessed in several ways to open a dialog box for entering your text notes:
- From the CDUs list, select a CDU, right-click, and from the menu options select Add Notes.
- In the CDU Summary information panel, click the Notes link.

For security, Add Notes does not allow certain ASCII special characters. Typing these characters displays "Invalid Char" and your text notes cannot be saved. The following table shows the acceptable characters for Add Notes.

Acceptable Characters for Add Notes

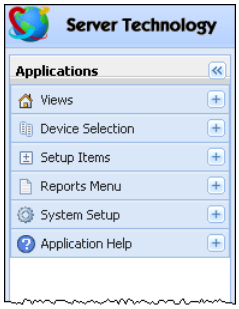
You can use these characters:			
a-z lower case	, comma	+ plus sign	‘ apostrophe
A-Z upper case	; semicolon	* asterisk	$ dollar sign
0-9 numeric	. period	! exclamation mark	- dash
\r carriage return	? question mark	= equal sign	_ underscore
\n new line	: colon	() parenthesis	spaces are OK

Chapter 3: Getting Started with SPM

This chapter guides you through the SPM interface to accomplish frequent device management tasks.

Quick Task Reference

To get started with SPM, click an SPM **application** (Views, Device Selection, Setup Items, Reports Menu, System Setup, or Application Help) listed in the left navigation pane of the SPM interface:



The following list shows you how to access functional tasks within the SPM interface:

Getting Started with SPM

If you want to do this...	*go here in SPM...*
Contact Technical Support	Left-Pane > Application Help > Technical Support.
Change your password	SPM Main window > Click My Account User: admin icon > Select Password tab.
Create a new user view	Left-Pane > Views > Add New View icon > Customize as described next.
Customize the Views page workspace	Left-Pane > Views > Select a view > Click Add Panel icon (choose device panels) > click Set Layout icon (choose workspace layout percentages).
Arrange device icons on a Location	Left-Pane > Locations > CDU Status tab > Click Arrange Icons icon > Set icons on layout using edit panel fields > click Save icon.
Work with system objects (CDUs, Cabinets, etc.)	Left-Pane > Device Selection > Choose a list arrangement from Device Selection drop-down > Click a system object. OR Left-Pane > Setup Items > Click a system object (this will not show device hierarchy, just a device list).
Create a new user report	Left-Pane > Reports > Click New User Report icon.
Create a new trend graph	Left-Pane > Trends > Click New Trend icon.
Control outlet power (On, Off, Reboot)	Left-Pane > Device Selection > Choose a list arrangement from Device Selection drop-down > Select CDUs > Select specific CDU in the list > Click Outlets tab > Click Outlet Control tab > Select Control Action. OR Left-Pane > Setup Items > Select a CDU > Select Outlets tab > Click Outlet Control tab > Select Control Action.
View List of devices with alarms	From SPM Main Window > Click a status category showing a number, such as: 004
Configure thresholds	From an SPM system object list (such as the CDUS List) > Select object in list > Click Configure Thresholds icon.
For the SPM Administrator (or SPM Power User)	
Discover devices in your network	Left-Pane > Setup Items > Device Discovery > Click New Device Discovery icon or right-click a discovery in the list.
Configure SPM (Settings, SNMP, Server, Syslog)	Left-Pane > System Setup > System Setup > Select Configuration, Network, or Email Notification tabs.
Set up users and user groups	Left-Pane > System Setup > Manage Users > Click Users tab or User Groups tab.
Configure default user permissions	Left-Pane > System Setup > Regular User Groups (not Admin or Power) > Configure Default Permission.
Configure system object permissions (by user group)	Left-Pane > System Setup > User Group > Select Regular User Group in the list (not Admin or Power) > Click Configure User Group Permissions icon > Select system object > Select User Group Permissions.
Schedule an SPM task	Left-Pane > Setup Items > Scheduled Tasks > Click the New Task. icon.
Add an SPM license	Left-Pane > System Setup > Add License.

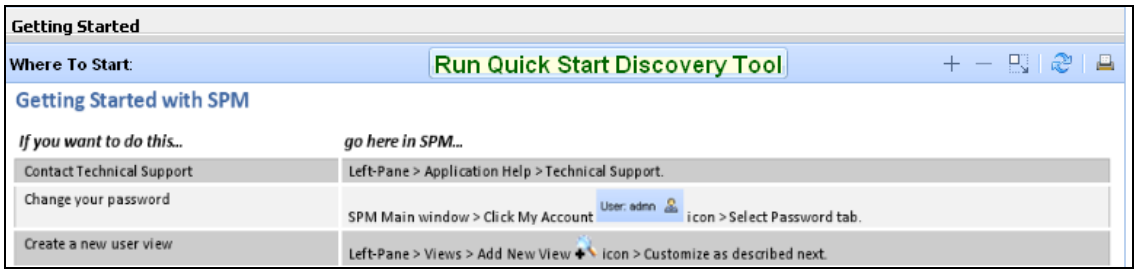
Quick Start Discovery Tool

The Quick Start Discovery Tool is a fast way to get you up and running with SPM to discover devices and automatically populate a user view with device information.

NOTE: To use the Quick Start Discovery Tool, you will need user capabilities that allow running a device discovery.

When you login to SPM, the Getting Started page displays by default, as shown below. The Getting Started page introduces the areas of the User Views that show you how to set up your own custom view for working with SPM. You can close the Getting Started page and move freely around the SPM interface to choose the functions you want to do in the order you want to do them.

However, if you want to use the SPM assistant that discovers devices, automatically creates a user view, and then populates that user view with information, click **Run Quick Start Discovery Tool** at the top of the Getting Started page:



Creating an Administrative Account

This task shows you how to grant administrative capabilities to a new user account while protecting the SPM default administrative account **admn**.

What are the SPM User Group Capabilities?

Capabilities are the predefined levels of user group access to SPM system objects as granted by the SPM administrator (or power user) to individual user groups. SPM recognizes the following user group capabilities:

SPM User Group Capabilities

Level	Capability
Administrator	The Administrative user group has full access for all configuration, control (On, Off, Reboot), status, and serial/pass-thru ports. **Note:** The SPM default administrative user is the **admn** user account. (There is no "i" in the **admn** name/password.) The **admn** user may grant full administrative access level rights to other Administrator user groups. For security it is recommended that you first use the default **admn** user account to grant capabilities to another administrative user group, and then associate a new user with the new administrative user group. Use the new administrative user account to then change the default **admn** user account password. The **admn** user account cannot be deleted or demoted.
Power	The Power user group has the same capabilities as Administrator but with no user setup capabilities.
Regular	The Regular user group has partial access for outlet action control (On, Off, Reboot), outlet status, and pass-thru of assigned outlets, outlet groups, outlet clusters, and serial/pass-thru ports. The Administrator has options for the Regular user's default access: No Access, Off, On, Outlet Control, Reboot, Setup, and View Only.

Use the Default Admn Account to Create a New Administrative Account

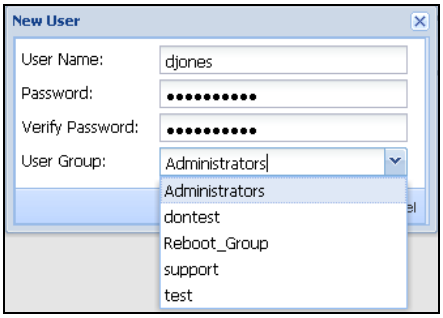
NOTE: Before you begin, remember that the default **admn** account cannot be deleted and its capabilities cannot be demoted from the administrative level. Also, there is no "i" in **admn**.

1. Login to SPM using the default administrative account:

   Username = **admn**

   Password = **admn**

2. Select **System Setup** > **Manage Users**.
3. From the Users List, click the New User icon.
4. In the New User box, provide username and password.
5. From the User Group drop-down list, select the Administrators option, as shown:



6. Click **OK**. The new user displays in the Users List as a member of the Administrators User Group with Administrator capabilities.
7. Login to SPM using the new administrative account/password you just created with administrative capabilities.
8. Select **System Setup > Manage Users**.
9. From the Users List, select the admn account and click the Configure User icon.
10. In the Configure User box, change the username **admn** to another name.
11. Provide a password for the new username.
12. Click **Save**. The administrative capabilities of the default **admn** user account are now protected under the new username.

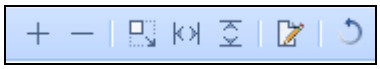
Building a Graphical Data Center

The Locations module gives you the tools necessary for the review and management of networked devices. Locations, in the form of graphic images — such as a state map or a data center floor layout — are the background on the Views page upon which the administrator builds a graphic representation of the data center with icons for sublocations, cabinets, and CDUs. Location images represent the customized levels of your data center, such as buildings, floors, and rooms.

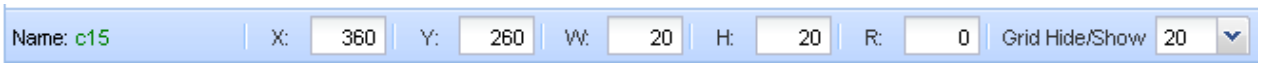
Go to **Device Selection > Locations** to display the Locations list.

From the list, create a new location or select an existing location from the list.

Select the CDU Status tab for a close-up of the layout and the device icons. Notice the toolbar for graphics functions:

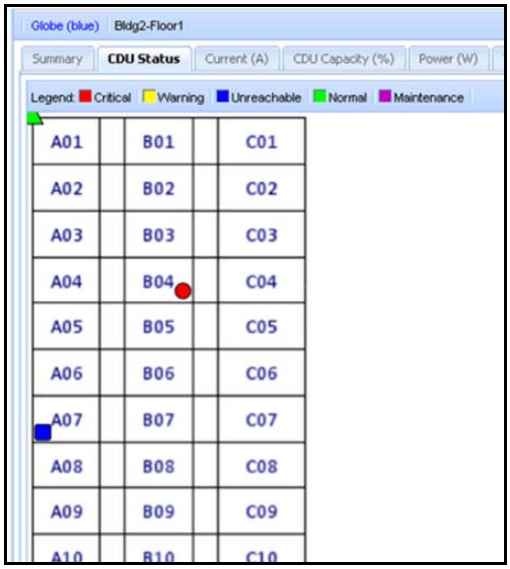


Click the Arrange Icons icon. The graphic redisplays in a grid and the location edit panel displays at the bottom showing the device name in the far left Name field, a cabinet "c15" in this example:



The cabinet icon for "c15" is positioned in the graphic with the X-Y coordinate values. The icon size is obtained with the H-W (width-height) values. You can rotate the cabinet's position with a value in the R (rotation) field. Select a value from the drop-down to hide/show the grid.

Click the Save icon (which changes back to the Arrange Icons icon). Once you save your changes, the icons on the location graphic return to the color of their status condition shown on the legend above the graphic. In this example based on the legend shown, the cabinet is normal (**green**), the location is critical (**red**), and the CDU is unreachable (**blue**).



Controlling Outlet Power

This task shows you how to use the SPM Outlets page to issue outlet On, Off, and Reboot (or None) commands on specific outlets or globally on all outlets in a CDU.

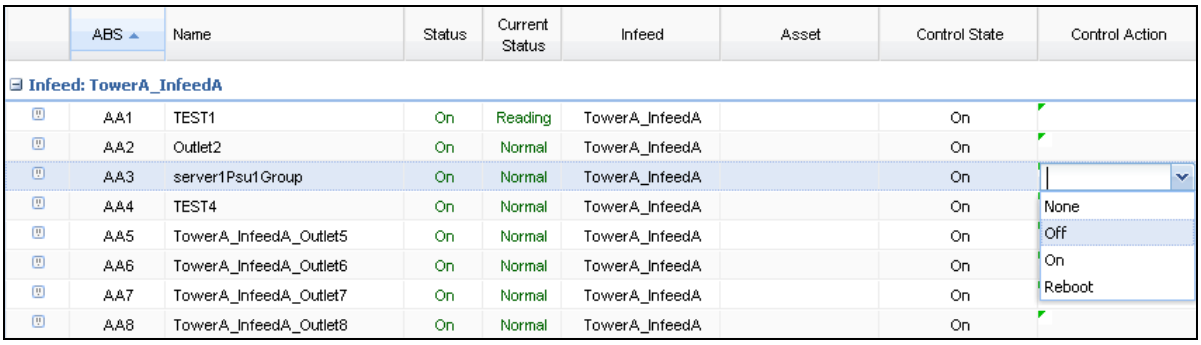
Outlet Control Actions

The following CDU outlet control actions are available in SPM:

- **None**: Clears your selection; no action on the outlet will be taken.
- **Off**: Outlet is off.
- **On**: Outlet is on.
- **Reboot**: Outlet is off and reboot action initiated.

Issuing Single Outlet Control

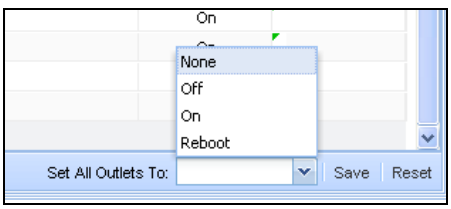
1. Select **Device Selection > CDUs** to display the CDUs list.
2. Select a CDU from the list.
3. Select the **Outlets > Outlet Control** tab. The Outlets page displays the available outlets for the CDU by infeed towers.



4. Select a specific outlet in the list that you want to control. Then click in the Control Action field on the far right.
5. From the drop-down list, select an outlet action command: None, Off, On, or Reboot to issue the command on the selected outlet.
6. Click **Save**. The Control State changes to show the effect on the outlet from the last issued command.

Issuing Global Outlet Control

1. Select **Device Selection > CDUs** to display the CDUs list.
2. Select a CDU from the list.
3. Select the **Outlets > Outlet Control** tab. The Outlets page displays the available outlets for the CDU by infeed towers.
4. In the lower right corner of the window, click in the Set All Outlets To field to display the drop-down menu options:

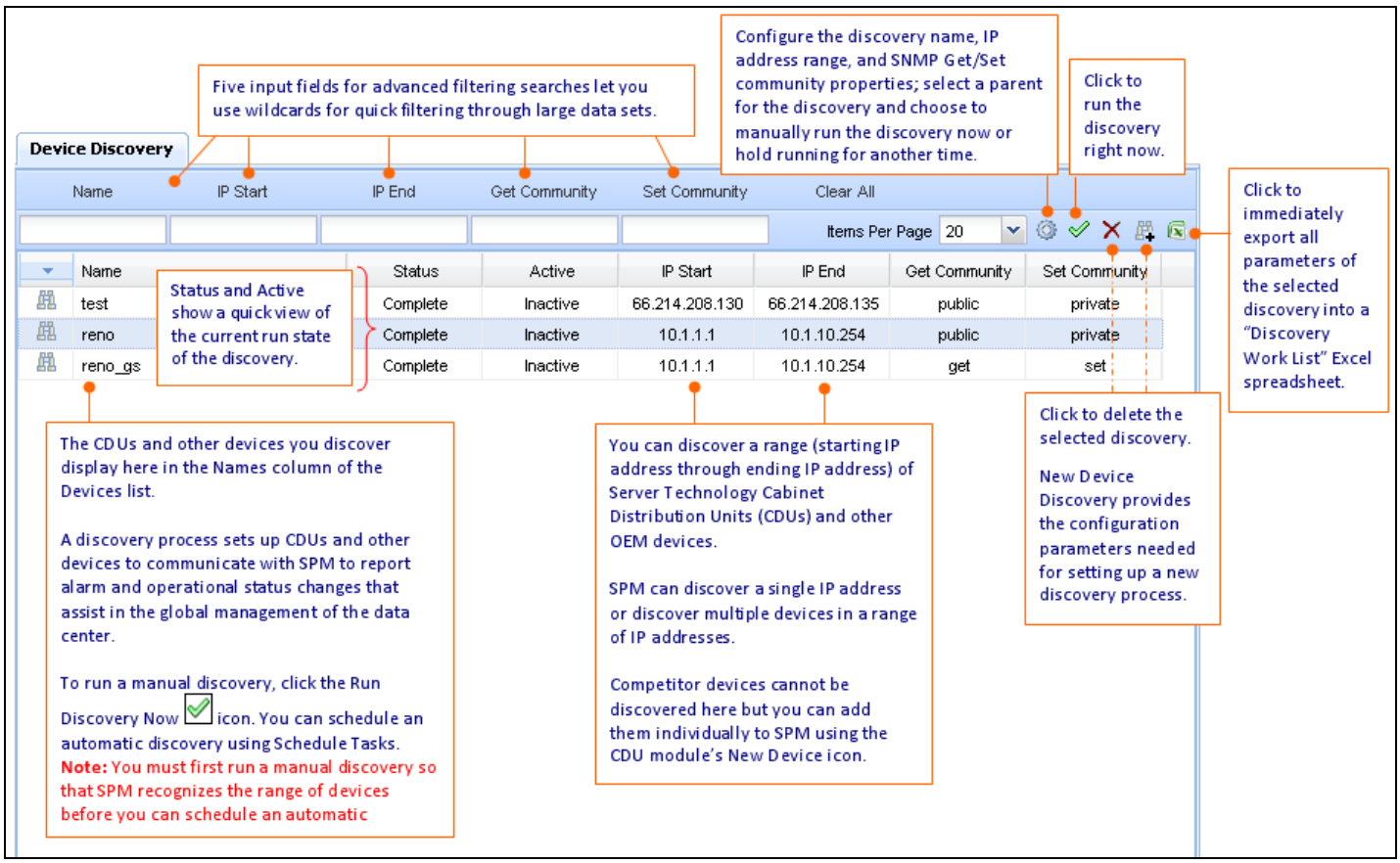


5. Select an outlet action command: None, Off, On, or Reboot to issue the command on all outlets.
6. Click **Save**. The Control State changes to show the effect on all outlets from the last issued command.

Discovering Network Devices

The Device Discovery module lets you define the parameters for a manual discovery of CDUs in your network. Discovery can be used for the initial network discovery when SPM is installed and then later as needed for new devices added to the network.

Select **Setup Items > Device Discovery** to display the Device Discovery list. The following graphic shows the list and illustrates the Device Discovery functions.



Running a Manual Device Discovery

To run a device discovery immediately, right-click a created discovery on the Device Discovery list and select the Run Discovery Now option. The discovery runs immediately using the configured parameters, and a successful confirmation message displays in the lower right corner of the window.

You can also click the Run Discovery Now icon on the toolbar or select Yes from the Run Discovery Now field on the Device Discovery parameter windows (shown above).

NOTE: You must first run a manual discovery for SPM to recognize a new range of devices before you can schedule an automatic discovery.

Running an Automatic Device Discovery

You can schedule an automatic device discovery using the Schedule Tasks feature. A device discovery is one of several system events that SPM can schedule according to the discovery parameters you determine in Schedule Tasks.

For more information, see Scheduling an Automatic Device Discovery in the Schedule Tasks section of this guide.

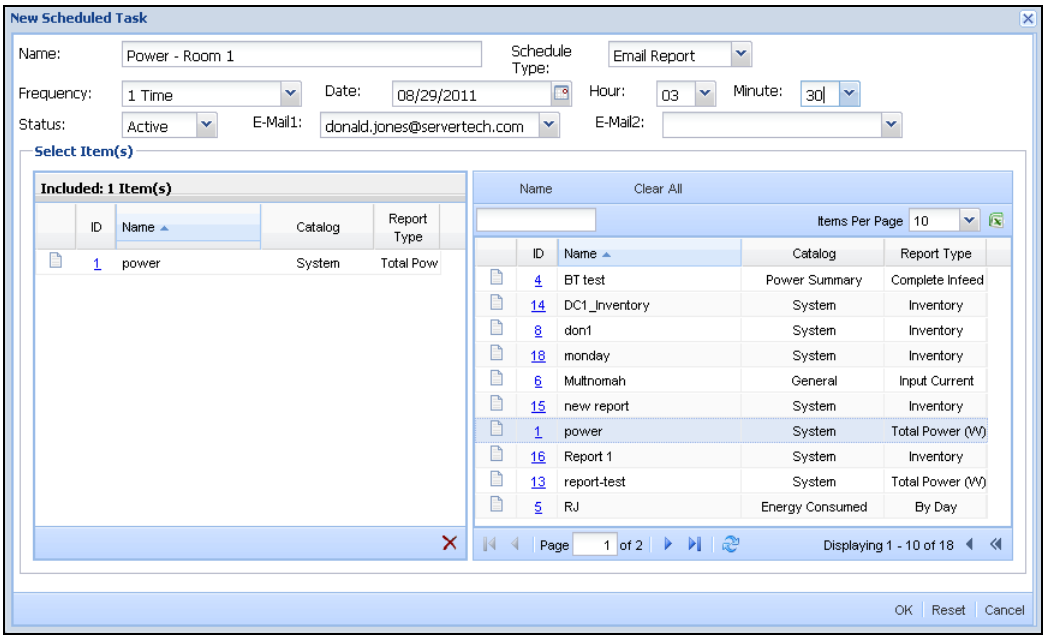
Emailing User Reports and Trend Graphs

SPM allows you to schedule system events that can be automatically run at a future date or on a recurring basis. This functionality includes the generation of user reports and trend graphs and allows for these items to be automatically emailed to a defined list of recipients. You can also bypass the scheduled task process and simply email a user report and trend graph as an attachment to an email.

Email a User Report (as a scheduled task)

NOTE: Before you can email a report, you must first create the report at **Reports Menu > Reports > Reports List > New User Report.**

1. Go to **Setup Items > Schedule Tasks >** New Scheduled Task icon:



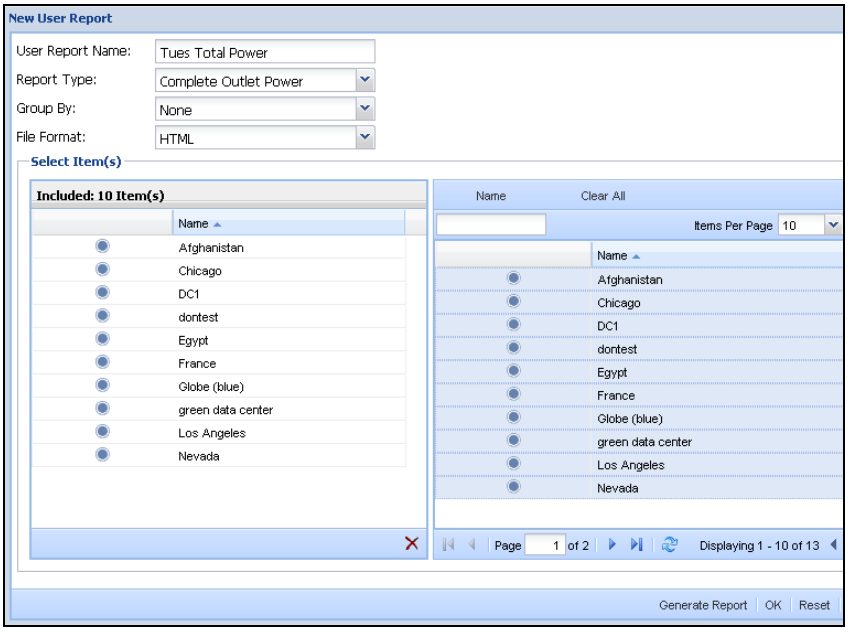
2. Provide a new name for the scheduled task (this is the name for the task that will email the report).
3. From the Scheduled Type drop-down list, select the Email Report option.
4. Provide the frequency, date, time, and status options.
5. From the E-Mail field, select an existing email recipient from the drop-down list (up to two recipients allowed), or type a new email address.
6. The list of existing reports on the right comes directly from the Reports list at Reports Menu > Reports > Reports List. You must first create a new user report before you can email it, or the list will not show the report you want. From the list of existing reports on the right, drag and drop the report you want to the Included section on the left. Once in the Included section, the report is targeted to be scheduled for emailing.
7. Click **OK**. The new scheduled task will automatically email the report to the specified email recipient at the designated frequency, date, and time.

Email a User Report (as an attachment)

This option just emails a report as an attachment to your email message, and NOT as a scheduled task.

NOTE: Before you can email a report, you must first create the report at **Reports Menu > Reports > Reports List > New User Report.**

1. Specify the parameters for a new user report in the New User Report window (shown below) or the Configure User Report window (for an existing user report in the Reports list), and then click the **Generate Report** button to create the report.



2. After clicking **Generate Report**, your web browser displays a box (the format of the box varies slightly depending on the browser), with choices to view the report or to save the report file. (Alternately, you can select an existing report in the SPM Reports list and then click the Export User Report icon to display the same browser box with choices to view or save the report.)

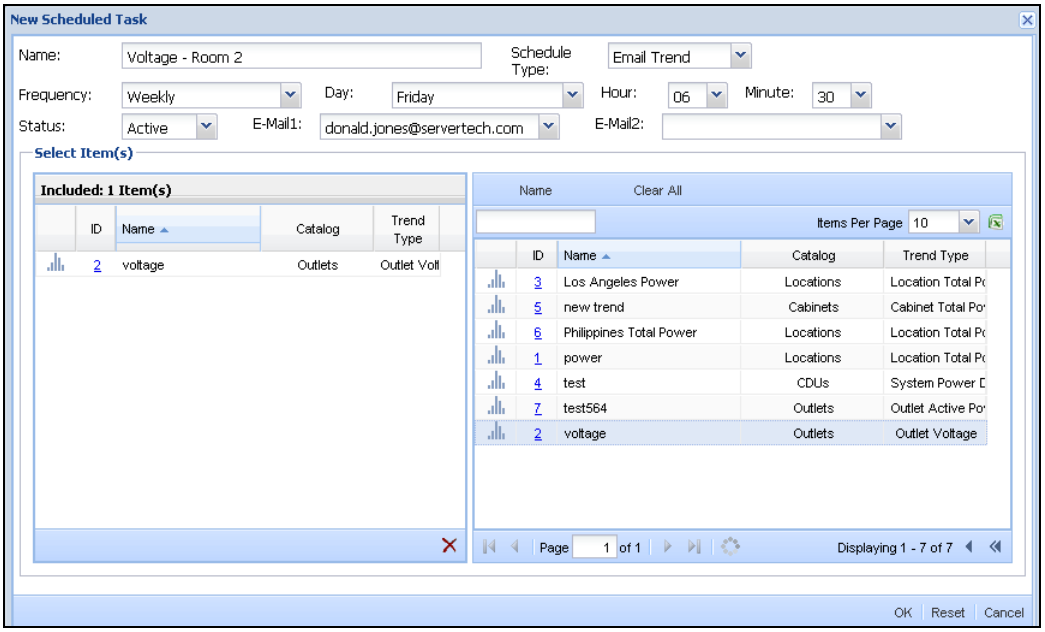
3. To email the report, select the Save option in the browser's box. The report file will be saved to the location where your browser has been configured to save downloads.

4. Once you have saved the report, locate it in your web-based downloads location, and then simply attach the report file to your new email message.

Email a Trend Graph (as a scheduled task)

NOTE: Before you can email a trend graph, you must first create the trend at **Reports Menu > Trends > Trends List > New Trend.**

1. Go to **Setup Items > Schedule Tasks >** New Scheduled Task icon:



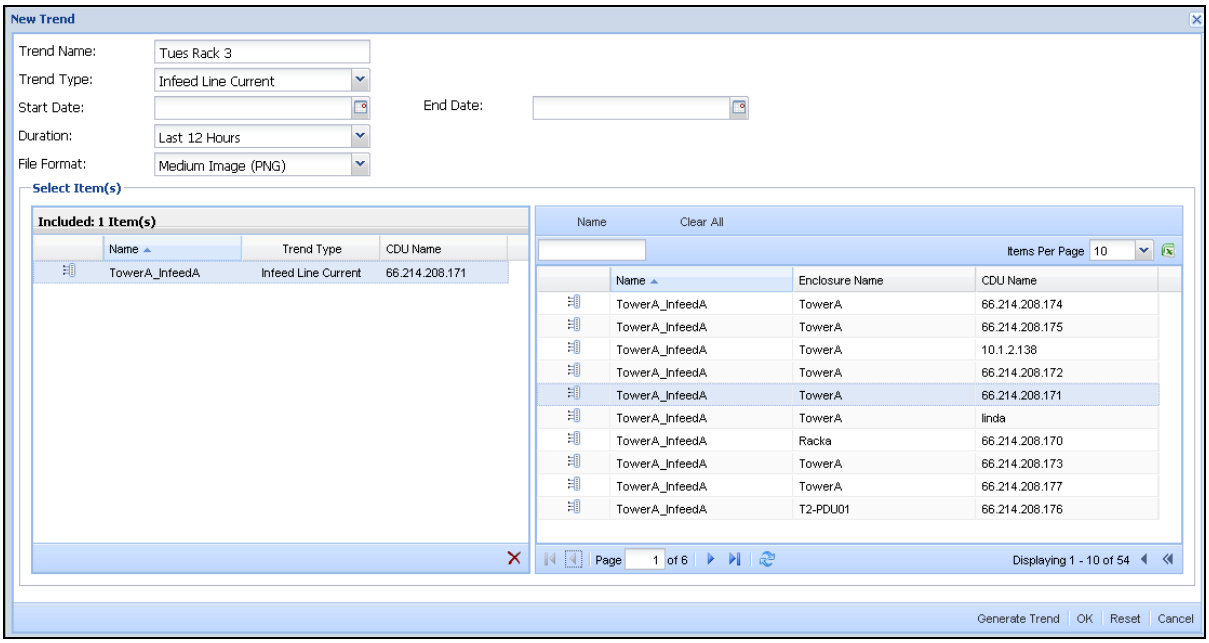
2. Provide a new name for the scheduled task (this is the name for the task that will email the trend graph).
3. From the Scheduled Type drop-down list, select the Email Trend option.
4. Provide the frequency, date, time, and status options.
5. From the Email field, select an existing email recipient from the drop-down list 9up to two recipients allowed), or type a new email address.
6. The list of existing trend graphs on the right comes directly from the Trends list at Reports Menu > Trends > Trends List. You must first create a new trend graph before you can email it, or the list will not show the trend you want. From the list of existing trends on the right, drag and drop the trend you want to the Included section on the left. Once in the Included section, the trend is targeted to be scheduled for emailing.
7. Click **OK**. The new scheduled task will automatically email the trend graph to the specified email recipient at the designated frequency, date, and time.

Email a Trend Graph (as an attachment)

This option just emails a trend graph as an attachment to your email message, and NOT as a scheduled task.

NOTE: Before you can email a trend graph, you must first create the trend at **Reports Menu > Trends > Trends List > New Trend.**

1. Specify the parameters for a new trend graph in the New Trend window (shown below) or the Configure Trend window (for an existing trend in the Trends list), and then click the **Generate Trend** button to create the trend graph.



2. After clicking **Generate Report**, your web browser displays a box (the format of the box varies slightly depending on the browser) with choices to view the trend graph or to save the trend file. (Alternately, you can select an existing trend graph in the Trends list and then click the Export Trend icon to display the same browser box with choices to view or save the trend graph.)

3. To email the trend graph, select the Save option. The trend file will be saved to the location where your browser has been configured to save downloads.

4. Once you have saved the trend graph, locate it in your web-based downloads location, and then simply attach the trend file to an email.

Exporting User Reports, Trend Graphs, and Data Sets (Lists)

SPM allows the following export functions for user reports, trend graphs, and data displayed in the entire Reports List and Trends List.

Export User Reports Go to **Reports Menu > Reports >** to display the Reports List			
Click this icon…	**for this function…**	**to display this box…**	**and the end result is…**
(or right-click a report in the Reports List)	Export User Report	"view or save" option box **	The single user report you selected.
	Export Raw Data to Excel	"view or save" option box **	Entire Reports List in Excel format.

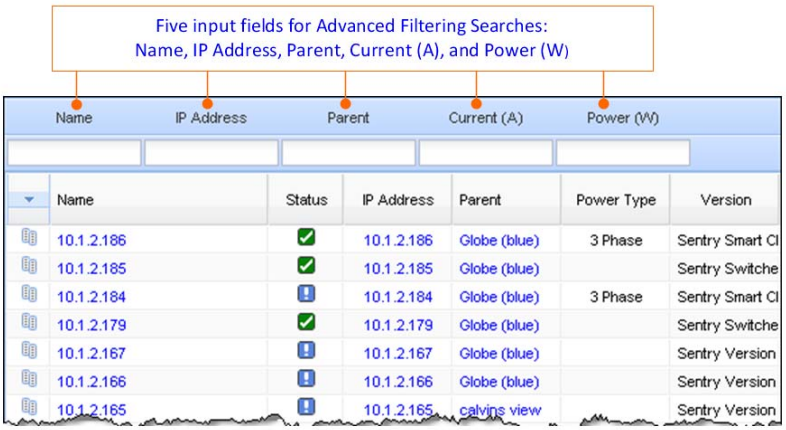
****** The "view or save" option box varies slightly in appearance depending on your web browser. The option box gives the choices to open the report and view it online or to save the report file. If you select save, the report file will be saved to the location where your browser has been configured to save downloads.

Export Trend Graphs Go to **Reports Menu > Trends >** to display the Trends List			
Click this icon…	**for this function…**	**to display this box…**	**and the end result is…**
(or right-click a trend in the Trends List)	Export Trend	"view or save" option box **	The single trend graph you selected.
	Export Raw Data to Excel	"view or save" option box **	Entire Trends List in Excel format.

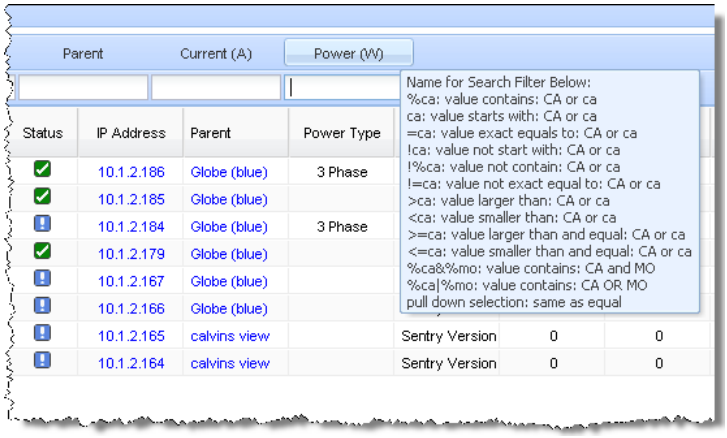
****** The "view or save" option box varies slightly in appearance depending on your web browser. The option box gives the choices to open the trend graph and view it online or to save the trend file. If you select save, the trend file will be saved to the location where your browser has been configured to save downloads.

Searching Data Sets Using Advanced Filters

The Advanced Filtering Search tool provides a fast and highly flexible search for devices in large data sets. The five input fields you use to activate the search display at the top of SPM data sets, like the CDU data set in the following example:



Hover the mouse over an input field *heading* (not the input field) for a popup showing several lines of unique wildcard character sets that you can use for advanced filter searching:



The wildcard character sets support advanced searching techniques, such as text comparison, numerical comparison, "like" functionality, and the ability to create compound statements.

A closer view of the character sets shows a combination of special wildcard characters and the search description that SPM supports:

Name for Search Filter Below:
%ca: value contains: CA or ca
ca: value starts with: CA or ca
=ca: value exact equals to: CA or ca
!ca: value not start with: CA or ca
!%ca: value not contain: CA or ca
!=ca: value not exact equal to: CA or ca
>ca: value larger than: CA or ca
<ca: value smaller than: CA or ca
>=ca: value larger than and equal: CA or ca
<=ca: value smaller than and equal: CA or ca
%ca&%mo: value contains: CA and MO
%ca|%mo: value contains: CA OR MO
pull down selection: same as equal

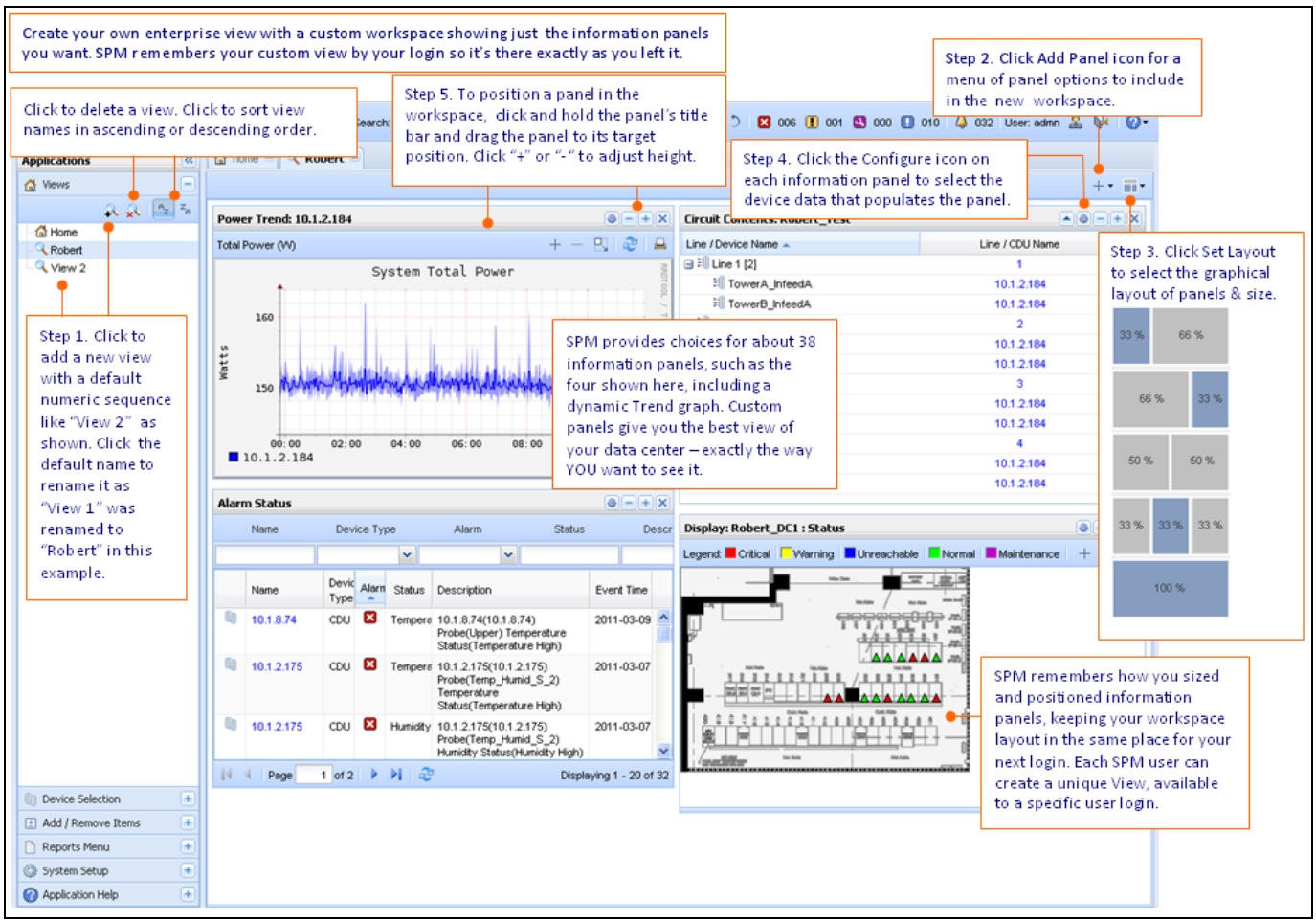
Chapter 4: Creating Custom Views

This chapter introduces SPM Views and shows how to customize the layout of your workspace with a variety of system information panels that let you monitor and manage network devices using your personal preferences.

Views

The Views application is the gateway to SPM, providing at-a-glance monitoring and management of your data center enterprise the way you want to see it.

Step-by-Step: Customize Your Workspace



Working with User Views

The Views application lets you customize the type of device data you see within a customized workspace layout. An overview of the features and functions of the Views application are described as follows:

About the Shared (Public) User View

A shared user view is public for viewing by other logged-in SPM users. With a public view you can:

- Set a user view to public (shared) for other SPM users to see.
- Set a public (shared) user view back to private (unshared).
- Set a public (shared) user view as the home (default) view.

About the Default (Home) User View

A shared user view is public for viewing by other logged-in SPM users.

- The default (home) view is the first user view that displays upon SPM login.
- Set a default user view to a public (shared) user view for other SPM users to see.
- Set a default user view back to a non-default user view.
- Set a default view to a public (shared) user view.

NOTE: Only one user view (shared or private) can be the default view at a time.

User View Icons

The following icons show status of user views:

	Private View (not shared)
	Shared View
	Do Not Share View
	Set Default View
	Remove Default View
	Shared View and Default View

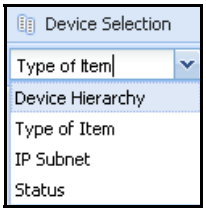
Chapter 5: Working with Devices

This chapter presents the Device Selection, Setup Items, Device Discovery, and Schedule Task applications for working with networked devices.

Device Selection

Device Selection is an SPM application designed for viewing and accessing only the system objects that can be configured into a hierarchy, like CDU within cabinet, cabinet within location, etc.

Device Selection shows metered polling results and provides the Device Hierarchy option to show system objects in their pre-established hierarchy. Other options include showing these system objects by Type of Item, IP Subnet, and Status. The Type of Item option shows lists that you can work with much like the Setup Items application.:



Device Hierarchy: Shows device-to-parent hierarchy, like CDUs in cabinets, cabinets in locations.

Type of Item: Displays the list by device type like cabinet, CDU, circuit, lines.

IP Subnet: Provides a list of IP addresses (expandable) within IP subnets.

Status: Shows IP addresses within the Critical, Maintenance, Unreachable, and Warning statuses.

Cabinets

The Cabinets module allows management of individual, user-defined cabinets that contain CDUs and other networked devices. The functions provided by SPM for cabinets include configuring threshold levels for power, capacity, and load measurements, as well as viewing the cabinet's operational data. You can also generate power/current-over-time trend graphs for the cabinet.

About Power Modifier

The optional Power Modifier value sets the cabinet's total power. The Power Modifier field is available at **Cabinets > Configure Threshold**.

Power Modifier is a threshold value (in Watts) that you provide for static loads to cabinets. The value you enter for Power Modifier is the known power usage from your own history of device data.

SPM tracks the value (if any) in the Power Modifier field (the static value in Watts that you enter for a cabinet), and then lets you view power usage for all CDUs in that cabinet as part of the total power displayed in the cabinet reports.

CDUs

The Cabinet Distribution Unit (CDU) module provides monitoring and administrative-level configuration of networked CDUs and other devices (including competitor devices). The functions provided by SPM for CDUs include digital readouts for sensor temperature/humidity readings; setting alarm thresholds; and configuration of all device areas, such as infeeds, environmental monitors, and associated outlets.

NOTE: Thresholds for temperature and humidity can be set for all sensors globally at one time from the tabs.

Circuits

The Circuits module lets you plan, track, and manage the physical infrastructure of power systems feeding one or multiple CDUs. The Circuits module provides a summarized view of the defined circuit layout in your data center. SPM considers a circuit to be a full power line to the data center, either single phase or 3-phase, as you define the circuit.

If you define the circuit as single phase

You can assign any infeed you think is on your line of power.

If you define the circuit as 3-phase

The Circuits module analyzes the balance of power in a 3-phase system. The 3-phase circuit can have up to 3 lines. You can assign multiple 3-phase CDUs to the circuit, automatically creating all the sub-lines of power based on the defined line support for the CDU. You can also add additional infeeds (to cover any redundant power feeds) from other single phase CDUs to the line for additional power monitoring.

How the circuit module works

Since a circuit tracks lines of power across multiple devices, the Circuits module reports aggregate total power and load values across multiple power sources. All load and power readings for the devices on lines and circuits are totaled, and the balance of power in a 3-phase system is analyzed.

You can see this effect reported in trending over time in the Trend graphs which assists in assigning thresholds for real-time warnings. You can use circuit trending for aggregated power to analyze the power usage of lines of power over time to monitor the results of devices turning on and off at specific times of the day.

Contact Closures

The Contact Closures module allows you to monitor and configure any optional contact closures. A discovered CDU — or an environmental monitor on that CDU — must have one or more connected contact closures or the Contact Closures module will not display in SPM.

Information provided in the Contact Closures module can assist with establishing a customized network configuration; for example, you can gather information in a hierarchy under a named zone. Information about contact closures can also be useful network asset management.

Enclosures

The Enclosures module lets you monitor and configure enclosures. A discovered Server Technology CDU must have a configured enclosure or the Enclosures module will not display in SPM.

Information provided in the Enclosures module can assist with establishing a customized network configuration; for example, you can gather information in a hierarchy under a named zone. Information about enclosures can also be useful network asset management.

Environmental Monitors

The Environmental Monitors module allows you to monitor and configure environmental monitors. A discovered CDU must have at least one connected environmental monitor or this module will not display in SPM.

Information provided in the Environmental Monitors module can assist you with establishing a customized network configuration; for example, you can gather information in a hierarchy under a named zone. Information about environmental monitors can also be useful for network asset management.

Infeeds

The Infeeds module lets you monitor and configure the infeeds on a CDU. discovered CDU must have recognized infeeds on the unit or the Infeeds module will not display in SPM. The Infeeds module provides monitoring and configuration for infeeds, TRMS data (if CDU is not PIPS), and data for single phase or 3-phase PIPS CDUs.

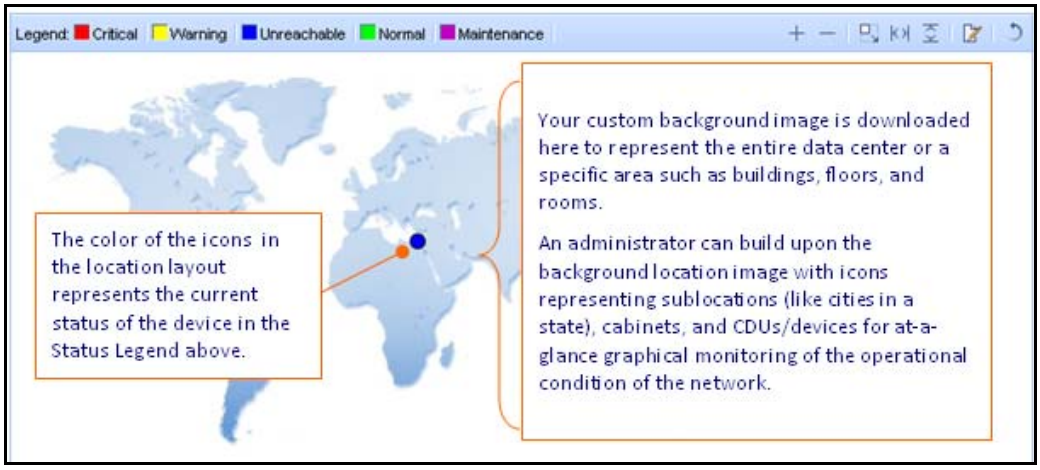
Lines

The Lines module shows detailed data for power lines in circuits. Line data assists in providing instant feedback for the state of the full circuit, allowing high/low thresholds to be set for power and load.

NOTE: Lines are components of circuits; therefore, lines cannot be created individually in the Lines module. You must create individual lines in the Circuits module.

Locations

The Locations module gives you the tools necessary for the review and management of networked devices. Locations, in the form of graphic images – such as a state map or a data center floor layout – are the background on the Views page upon which the administrator builds a graphic representation of the data center with icons for sublocations, cabinets, and CDUs. Location images represent the customized levels of your data center, such as buildings, floors, and rooms.



Outlet Clusters

An outlet cluster is a collection of outlet groups that allow you to define and control large blocks of outlets that span multiple cabinets and multiple IP addresses.

The Outlet Clusters module lets you select various CDU power outlets (as part of an outlet group) and place the outlets into a collection of named "outlet clusters" for convenient and fast administration of outlet control.

The outlet control tab (outlet clusters)

Lets you issue outlet On, Off, and Reboot (or None) commands (depending on your assigned user capabilities) on specific outlets or globally on all outlets in a CDU.

The outlet control actions are:

None: Clears your selection, no action on the outlet will be taken.

Off: Outlet is off.

On: Outlet is on.

Reboot: Outlet is off and reboot action initiated.

Outlet Groups

An outlet group is a collection of outlets in a CDU (up to two linked enclosures) with a single IP address. An outlet group can be in multiple outlet clusters.

The Outlet Groups module lets you select various CDU power outlets and place them into a collection of named "outlet groups" for convenient and fast administration of outlet control.

The outlet control tab (outlet groups)

Lets you issue outlet On, Off, and Reboot (or None) commands (depending on your assigned user capabilities) on specific outlets or globally on all outlets in a CDU.

The outlet control actions are:

None: Clears your selection, no action on the outlet will be taken.

Off: Outlet is off.

On: Outlet is on.

Reboot: Outlet is off and reboot action initiated.

Outlets

The Outlets module displays all outlets for the CDUs in SPM and allows outlet power monitoring, outlet command control (on/off/reboot), outlet configuration (name/asset/URL), and configuration of user group permissions for the outlets. The Outlets Module has two tabs: Outlet Power and Outlet Control.

The outlet power tab (outlets)

The Outlet Power tab displays the operational details of outlets in a list for monitoring outlet status and power.

The outlet control tab (outlets)

The Outlet Control tab provides a list of outlets on discovered CDUs for outlet power monitoring/outlet control, and optionally for asset management.

From the Outlet Control tab you can issue outlet On, Off, and Reboot (or None) commands (depending on your assigned user capabilities) on specific outlets, or issue commands globally on all outlets in a CDU.

Sensors

The Sensors module displays any optional sensors connected to a device. A discovered CDU — or an environmental monitor on that CDU — must have at least one connected sensor or the Sensors module will not display in SPM.

Zones

The Zones module gives you an additional way to virtually group CDUs or cabinets (in a named zone) for viewing and trending, regardless of the physical locations of the devices. Only CDUs and cabinets can be grouped into a zone - you cannot group other system objects (locations, circuits, lines, outlet groups, etc.) into a zone.

NOTE: You can select either CDUs or cabinets to be grouped into a specific zone – CDUs and cabinets cannot be mixed in the same zone.

Setup Items

Setup Items is an SPM application designed for quickly viewing and accessing all SPM system objects, with or without a pre-established hierarchy.

Setup Items is a sequential list of items. Polling is not used with Setup Items, so the benefits to you are filtered lists for quick configuration, as well as being able to view default configuration data for all system objects. Device Discovery and Schedule Task are also items in this list.

NOTE: The Setup Items list shows the same system objects as the Device Selection list: cabinets, CDUs, circuits, contact closures, enclosures, environmental monitors, infeeds, lines, locations, outlet clusters, outlet groups, outlets, sensors, and zones. For a description of these system objects, please see the previous section, Device Selection.

In addition to the system objects, the Setup Items list also has two unique modules that you won't find in Device Selection: **Device Discovery** and **Scheduled Tasks**, both described in this section as follows.

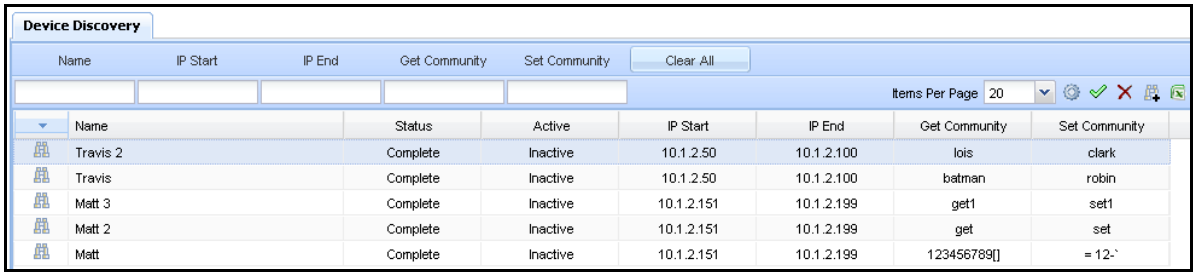
Device Discovery

The Device Discovery module lets you define the parameters for a manual discovery of CDUs in your network. Discovery can be used for the initial network discovery when SPM is installed and then later as needed for new devices added to the network

You can discover a single IP address in your network or you can discover multiple devices in a range of IP addresses (starting IP address through ending IP address).

The device discovery tab

Shows a list of the created device discoveries and their parameters, as shown in the following example:

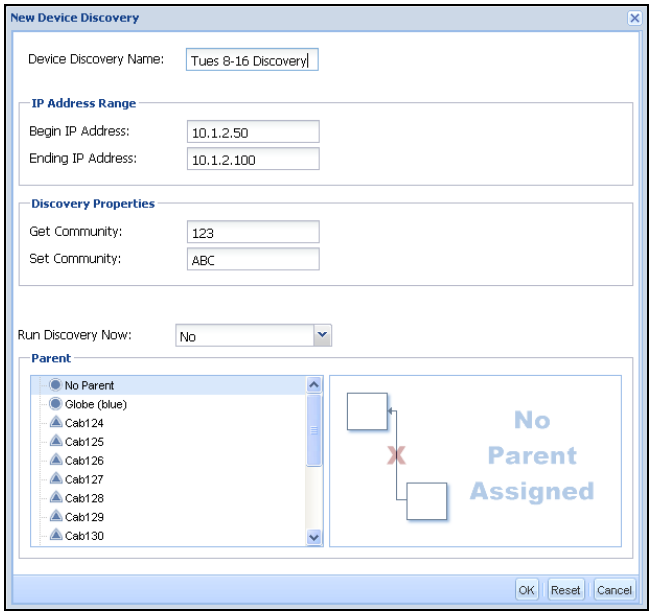


Name	Status	Active	IP Start	IP End	Get Community	Set Community
Travis 2	Complete	Inactive	10.1.2.50	10.1.2.100	lois	clark
Travis	Complete	Inactive	10.1.2.50	10.1.2.100	batman	robin
Matt 3	Complete	Inactive	10.1.2.151	10.1.2.199	get1	set1
Matt 2	Complete	Inactive	10.1.2.151	10.1.2.199	get	set
Matt	Complete	Inactive	10.1.2.151	10.1.2.199	123456789[]	= 12-`

Creating a New Device Discovery

Click the New Device Discovery icon (or right-click a discovery in the Device Discovery list and select New Device Discovery option). The New Device Discovery window opens to allow setting the parameters for the new discovery.

Create a new name for your discovery, and provide IP addresses, Get/Set community strings, and select a parent system object. Note the Run Discovery Now field where you can run the device discovery immediately (manual discovery) or hold until you decide to run the discovery later.



Configuring Device Discovery

Select a created discovery in the Name field of the Device Discover list and click the Configure icon (or right-click the discovery in the list and select the Configure Device Discovery option). The Configure Device Discover window opens to allow editing of the parameters for the selected discovery.

Running a Manual Device Discovery

To run a device discovery immediately, right-click a created discovery on the Device Discovery list and select the Run Discovery Now option. The discovery runs immediately using the configured parameters, and a successful confirmation message displays in the lower right corner of the window.

You can also click the Run Discovery Now icon on the toolbar or select Yes from the Run Discovery Now field on the Device Discovery parameter windows (shown above).

NOTE: You must first run a manual discovery for SPM to recognize a new range of devices before you can schedule an automatic discovery.

Running an Automatic Device Discovery

You can schedule an automatic device discovery using the Schedule Tasks feature. See “Scheduling an Automatic Device Discovery” in the Schedule Tasks section.

About Competitor Devices

Competitor Devices cannot be discovered with the Device Discovery feature. You can add competitor devices individually to SPM using the New Device icon in the CDU module.

Run Discovery Now

To run a device discovery immediately, right-click a created discovery on the Device Discovery list and select the Run Discovery Now option. The discovery runs immediately using the configured parameters, and a successful confirmation message displays in the lower right corner of the window.

You can also click the Run Discovery Now icon on the toolbar or select Yes from the Run Discovery Now drop-down list on the Device Discovery parameter windows (shown above). To hold the running of the discovery for another time, select No from the drop-down list.

NOTE: You must first run a manual discovery for SPM to recognize a new range of devices before you can schedule an automatic discovery.

Schedule Tasks

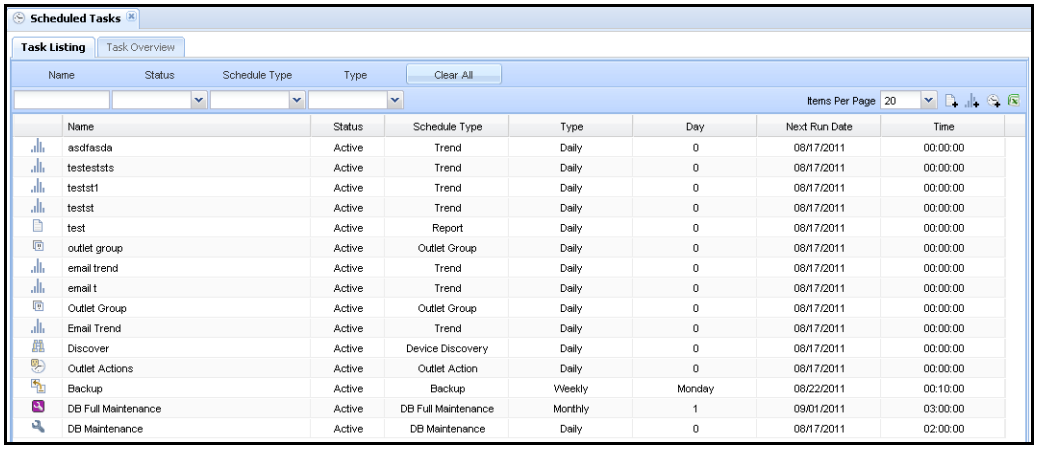
The Schedule Tasks module allows you to define and schedule the frequency of SPM system events that can be automatically run at a specific future date, or run on a recurring basis. For example, a scheduled task can be an SPM configuration that automatically commands individual outlets (or groups of outlets) to turn on, turn off, or reboot at the same time each week.

Which tasks can be scheduled?

SPM allows the following system events to be scheduled: outlet actions, device discovery, email report, email trend, backup, outlet group, outlet cluster, database maintenance (basic and faster), and database full maintenance (advanced and longer running).

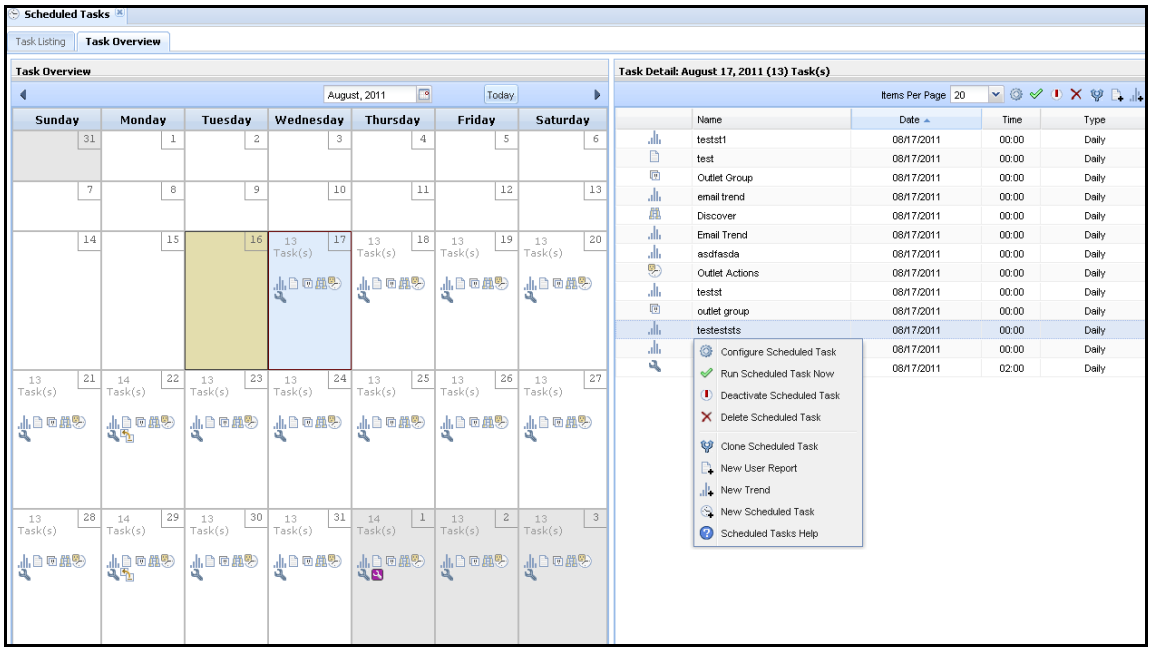
The task listing tab

The Task Listing tab shows all created SPM system events as scheduled tasks.



The task overview tab

The Task Overview tab provides quick access to monthly events calendars for at-a-glance review and planning of past, current, and future scheduled tasks.



Click a day on the calendar to display a list of the task details for that day on the right side of the window. Then right-click a task in the list for schedule task menu options.

The blue shaded calendar day is the day selected for details (August 17 in this example); the gold shaded day is the current day; the gray shaded days are in the next month.

Creating a new schedule task

Click the New Device Discovery icon (or right-click a discovery in the Device Discovery list and select New Device Discovery option). The New Device Discovery window opens to allow setting the parameters for the new discovery.

Configuring a schedule task

Select a created schedule task in the Task Listing and click the Configure icon (or right-click the task in the list and select the Configure Scheduled Task option). The Configure Scheduled Task window opens to allow editing of the parameters for the selected task.

Cloning a task schedule

You can save time when creating a new task by cloning some or all of the parameters from an existing task. SPM allows the cloning of outlet actions, device discovery, email report, email trend, backup, outlet group, outlet cluster, database maintenance (basic and faster), and database full maintenance (advanced and longer running).

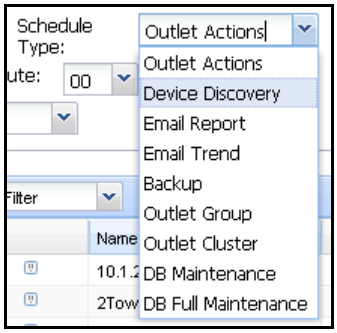
By selecting an existing task schedule, and then clicking the Clone icon (or right-clicking the selected task and selecting the Clone Scheduled Task option), the Clone Scheduled Task window displays with the parameters configured for the selected task. The parameters displayed depend on the system event you are cloning. You then name the new (cloned) task, and either accept the same parameters from the previous task or edit the parameters as desired for your new cloned task.

Clone Example: When you schedule On/Off for outlet, outlet groups, or outlet clusters, the clone option lets you create a second schedule to create an exact copy of the original schedule. You just need to provide a new schedule task name and then you can change the parameters for frequency, hour, and minute as desired.

If 50 outlets are scheduled to be turned Off Friday PM, clone that schedule task and edit the clone to Monday AM to turn the outlets back on.

NOTE: Once you create a cloned task, the clone does not automatically sync to the original schedule you based the clone on. You will need to update both the original schedule and the cloned schedule.

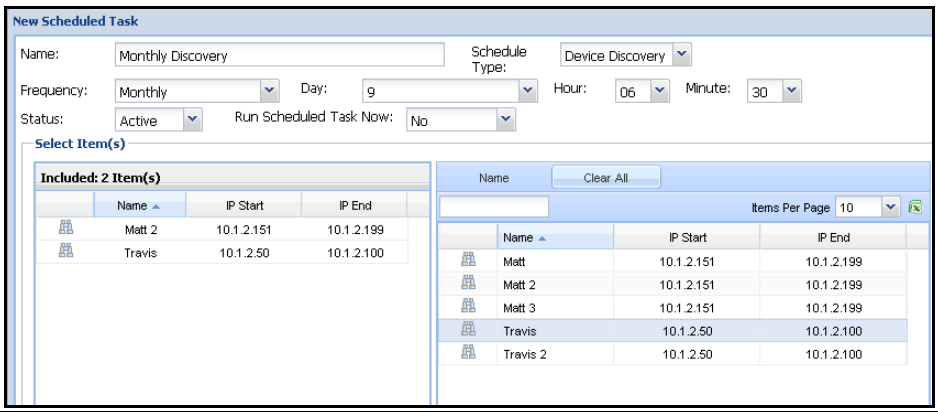
Scheduling an automatic device discovery



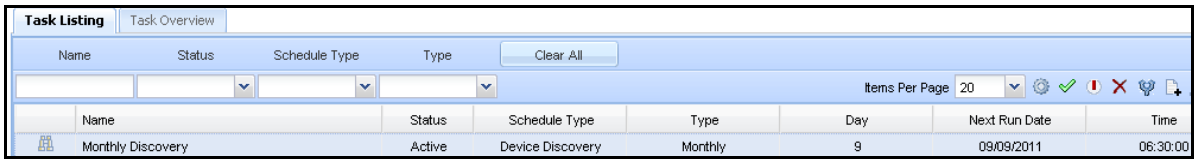
A device discovery process sets up CDUs and other devices to communicate with SPM to report alarm and operations status changes that assist in the global management of the data center. One of the schedule tasks you can automate is a device discovery.

From the New Scheduled Task window, select Device Discovery from the Schedule Type drop-down list.

The New Scheduled Task window displays where you name the device discovery, configure run parameters, and select the IP addresses of the devices to be included in the discovery.



The schedule discovery then displays in the Task Listing



Active, inactive, deactivate, and delete

The Active option in the Status field of the Scheduled Task window makes the schedule task active to run as currently scheduled.

The Deactivate icon deactivates the scheduled task until you make the task active again. Same as the Inactive option in the Status field of the Scheduled task window.

The Delete icon permanently deletes a selected task from the Task Listing and from SPM.

Server Time vs. Logged-In Time

When configuring scheduled tasks, note the server's time shown in the lower right corner of the Schedule Tasks window:

The Scheduled Tasks feature runs using the server's time, which may differ from your logged in time

Refer to your time zone setup in the SPM Network Time Protocol (NTP) settings at System Setup > Settings.

Chapter 6: Reports, Trend Graphs, System Logs, and Alarms

This chapter provides an overview of the customized reports, trend graphs, system logs, active alarm information, and alarm history available in SPM.

Reports

The Reports module allows you to customize a user report by selecting from several types of reports and reporting parameters that show detailed data collected from CDU readings.

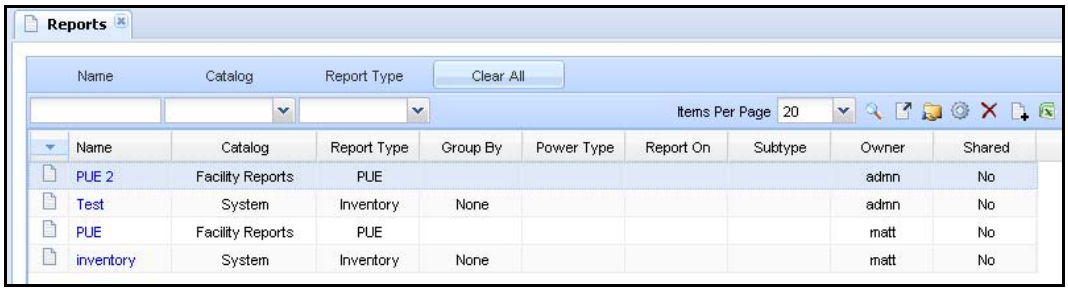
Some available reports that you can generate include POPS energy consumed/utilized, inventory, load/voltage/power, environmental sensors, outlet/infeed/power, PUE/DCiE green data center efficiency metrics, and many other power usage reports.

NOTES:

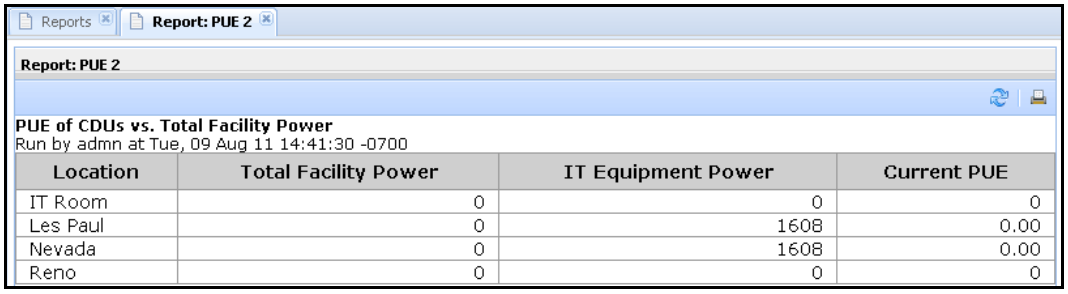
- You have the option to make one or more reports public to be shared with other logged-in SPM users.
- You have the option to group reports within a predefined zone.

The Reports Tab

Shows a list of the created custom reports and their parameters.



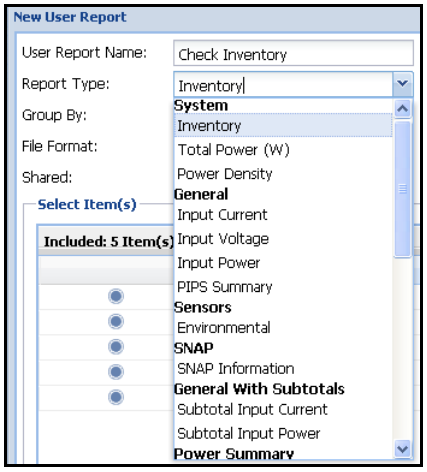
Clicking a report name on the list displays it, for example the “PUE 2” report:



Creating a new report

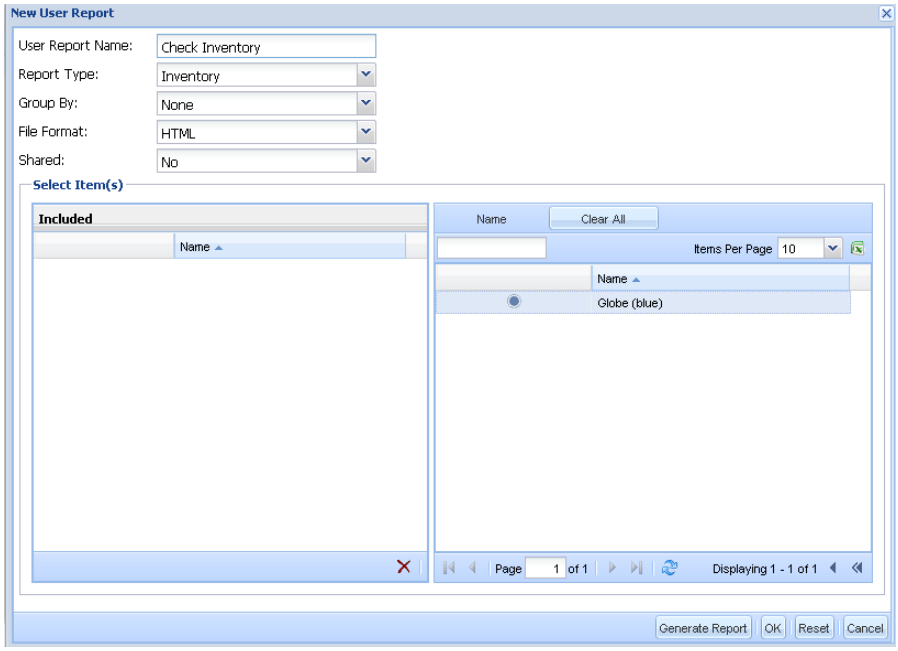
Click the New Report icon (or right-click a report in the Reports list and select New User Report option). The New User Report window opens to allow setting the parameters for the new user report.

Create a name for your new report in the User Report Name field, and then select from several report types shown in the drop-down list.



Most reports can be grouped by location, cabinet, location and cabinet, and zone. Report formats can be HTML, XML, Microsoft Word, or Microsoft Excel. A report can be shared or not-shared (available for your login only).

The New User Report window also lets you select the objects from the data list on the right and drag one or more objects to the left to be included in the report, such as the locations shown in this example:



Sample reports

The following Inventory report was generated on the location included in the above report screen.

Inventory

Run by admn at Wed, 22 Feb 12 13:49:04 -0800

CDU	Device	Enclosure	IP Address	NIC Serial Number	Firmware Version	Serial Number	Model Number	Type	Max Capacity (VA)
10.1.2.186	STI MIB version 3	TowerA	10.1.2.186	8040063	Sentry Smart CDU Version 6.1d	ABYR0000451	CS-18VDX813A2	3 Phase	0
10.1.2.186	STI MIB version 3	TowerB	10.1.2.186	8040063	Sentry Smart CDU Version 6.1d	ABYR0000451	CS-18VDX813A2	3 Phase	0
10.1.2.186	STI MIB version 3	TowerC	10.1.2.186	8040063	Sentry Smart CDU Version 6.1d	ABYT0000524	CL-18VDX813A2	3 Phase	0
10.1.2.186	STI MIB version 3	TowerD	10.1.2.186	8040063	Sentry Smart CDU Version 6.1d	ABYT0000524	CL-18VDX813A2	3 Phase	0
10.1.2.188	STI MIB version 3	TowerA	10.1.2.188	8039726	Sentry Smart CDU Version 6.1d	ACJC0000051	CS-2HD2C131Z1	208V	0
10.1.2.190	STI MIB version 3	TowerA	10.1.2.190	8160565	Sentry Switched CDU Version 6.1d	ABFL0002028	CW-24VY-L30M	3 Phase	0

The following Total Power report was generated on the same location above but grouped by location.

Total Power

Run by admn at Wed, 22 Feb 12 13:57:09 -0800

Location	CDU	Total Power (W)
Chicago		
	10.1.2.132	0
DC1		
	66.214.208.170	0
Nevada		
	10.1.2.186	705
Philippines		
	10.1.2.138	0
	66.214.208.171	90
	66.214.208.172	267
	66.214.208.173	417
	66.214.208.174	0
	66.214.208.175	81
	66.214.208.176	90
	66.214.208.177	50
	66.214.208.178	0
	66.214.208.179	0
	66.214.208.180	94
	linda	28
None		
	10.1.2.170	46

Configuring a report

Select a report in the Reports list and click the Configure icon (or right-click the report in the list and select the Configure User Report option). The Configure User Report window opens to allow editing of the parameters for the selected user report.

What reports are available?

SPM provides the following available types of reports. You select the type you want to generate from the Report Type drop-down list:

- **System:** Inventory, Total Power (W), Power Density
- **General:** Input Current, Input Voltage, Input Power, PIPS Summary,
- **Sensors:** Environmental
- **SNAP:** SNAP Information
- **General With Subtotals:** Subtotal Input Current, Subtotal Input Power
- **Power Summary:** Complete Outlet Power, Complete Infeed Power, Complete Power Summary
- **Circuit Reports:** Circuit summary, Detailed Circuit Summary
- **Facility Reports:** PUE
- **Group/Cluster Power:** Outlet Cluster Power, Outlet Group Power, Outlet Cluster Power Detailed
- **Energy Consumed:** By Day, By Month, By Year **(POPS Report)**
- **Energy Utilization:** No Usage, Low Usage, High Usage **(POPS Report)**

About the POPS reports

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

The following two reports are generated for POPS:

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

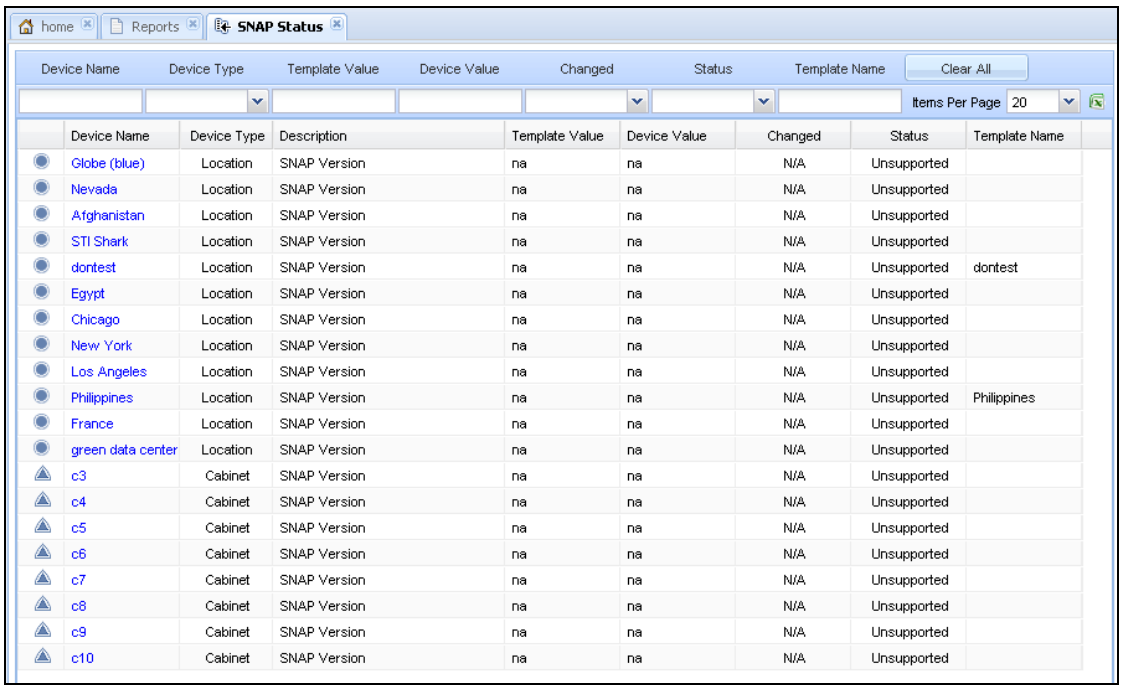
Energy Utilization: Produces reports from energy value readings to measure and evaluate CDU and outlet group/outlet cluster outlet energy usage and efficiency. Reports are available by location, reading, CDU, and outlet group/cluster based on a specified timeframe.

About the SNAP report

The Sentry Network Access Protocol (SNAP) report shows Sentry firmware parameter configuration settings. Configuration values displayed on the report were configured using SNAP templates.

Sample SNAP report

The following sample of a SNAP report shows details about firmware parameter settings:



Device Name	Device Type	Description	Template Value	Device Value	Changed	Status	Template Name
Globe (blue)	Location	SNAP Version	na	na	N/A	Unsupported	
Nevada	Location	SNAP Version	na	na	N/A	Unsupported	
Afghanistan	Location	SNAP Version	na	na	N/A	Unsupported	
STI Shark	Location	SNAP Version	na	na	N/A	Unsupported	
dontest	Location	SNAP Version	na	na	N/A	Unsupported	dontest
Egypt	Location	SNAP Version	na	na	N/A	Unsupported	
Chicago	Location	SNAP Version	na	na	N/A	Unsupported	
New York	Location	SNAP Version	na	na	N/A	Unsupported	
Los Angeles	Location	SNAP Version	na	na	N/A	Unsupported	
Philippines	Location	SNAP Version	na	na	N/A	Unsupported	Philippines
France	Location	SNAP Version	na	na	N/A	Unsupported	
green data center	Location	SNAP Version	na	na	N/A	Unsupported	
c3	Cabinet	SNAP Version	na	na	N/A	Unsupported	
c4	Cabinet	SNAP Version	na	na	N/A	Unsupported	
c5	Cabinet	SNAP Version	na	na	N/A	Unsupported	
c6	Cabinet	SNAP Version	na	na	N/A	Unsupported	
c7	Cabinet	SNAP Version	na	na	N/A	Unsupported	
c8	Cabinet	SNAP Version	na	na	N/A	Unsupported	
c9	Cabinet	SNAP Version	na	na	N/A	Unsupported	
c10	Cabinet	SNAP Version	na	na	N/A	Unsupported	

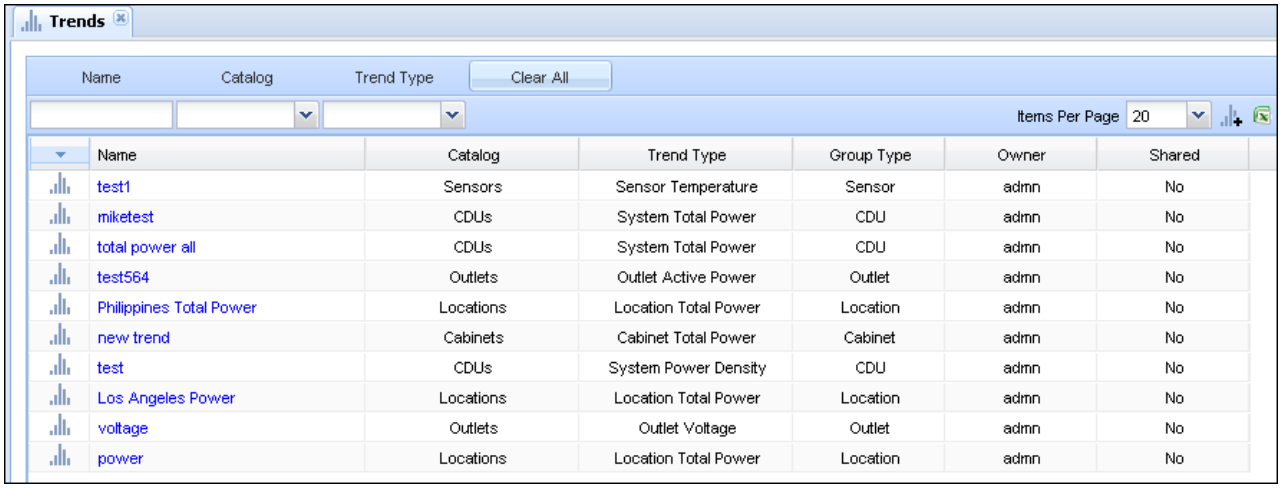
Trends

The Trends module generates graphical reports on specific parameters from available CDU hardware readings. Trend graphs show power trending information (automatically reloaded) for your networked CDUs over a specified time frame.

NOTE: You have the option to make one or more trend graphs public to be shared with other logged-in SPM users.

The Trends Tab

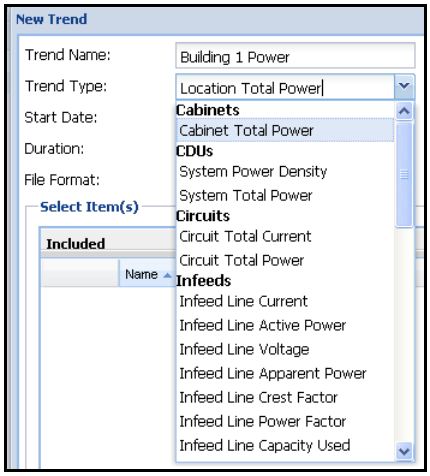
Shows a list of the created custom trend graphs and their parameters.



Creating a new trend graph

Click the New Trend icon (or right-click a report in the Trends list and select New Trend option). The New Trend window opens to allow setting the parameters for the new trend graph.

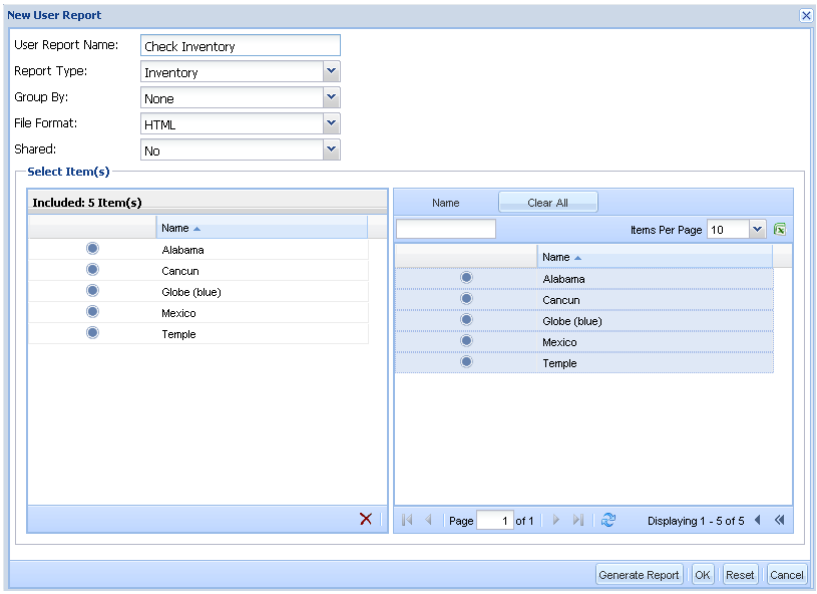
Create a name for your new trend graph in the Trend Name field, and then select a type shown in the drop-down list.



Provide a start and end date range for the trend reporting period, and select the trend duration, for example, report on the last 3 hours, the last day, the last 6 months, or several other duration choices.

Trend graph formats can be PDF, XML, or PNG (in small, medium, or large images).

The New User Report window also lets you select the objects from the data list on the right and drag one or more objects to the left to be included in the report, such as the locations shown in this example:



Configuring a trend graph

Select a report on the Reports list and click the Configure icon (or right-click the report in the list and select the Configure User Report option). The Configure User Report window opens to allow editing of the parameters for the selected user report.

What trend graphs are available?

SPM provides the following available types of trend graphs. You select the type you want to generate from the Trend Type drop-down list:

- **Cabinets:** Cabinet Total Power
- **CDUS:** System Power Density, System Total Power
- **Circuits:** Circuit Total Current, Circuit Total Power
- **Infeeds:** Infeed Line Current, Infeed Lind Active Power, Infeed Line Voltage, Infeed Line Apparent Power , Infeed Line Crest Factor, Infeed Line Power Factor, Infeed Line Capacity Used, Infeed Phase Current, Infeed Phase Voltage
- **Lines:** Line Total Current, Line Total Power.
- **Locations:** Location Total Power
- **Outlets:** Outlet Current, Outlet Active Power, Outlet Voltage, Outlet Apparent Power, Outlet Crest Factor, Outlet Power Factor, Outlet Capacity.
- **Outlet Groups:** Outlet Group Total Current, Outlet Group Total Power.
- **Outlet Clusters:** Outlet Cluster Total Current, Outlet Cluster Total Power.
- **PIPS:** PIPS Capacity Used, PIPS Active Power, PIPS Apparent Power, PIPS Power Factor.
- **Sensors:** Sensor Temperature, Sensor Humidity.
- **Zones:** Zone Total Power.

Logs

The Logs module provides dynamic logs of system events that occur for device discoveries, user actions, and user logins.

The Logs Tab

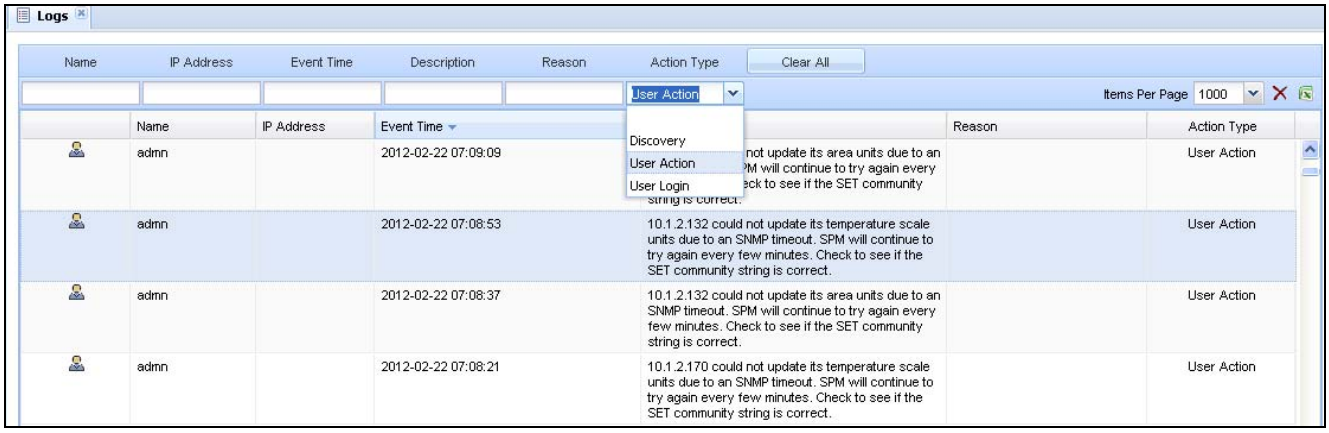
Displays the last log viewed and allows access to the Action Type drop-down list to select the Discovery, User Action, and User Login.

Discovery Log

Lists event details that occur during discovery of CDUs (and other devices) in your network. The most current logged event displays first.

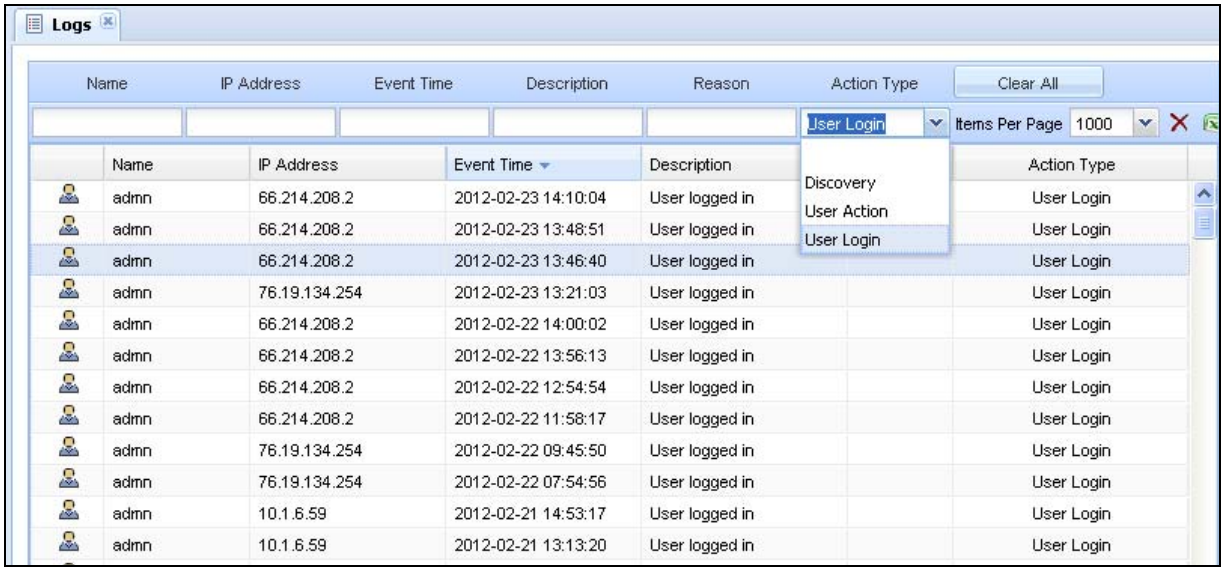
User Action Log

Displays user-initiated activities, such as a location enabled, the setting of a parent location, the converting of temperature units, and many more system actions when users are logged in and working with SPM. The most current logged event displays first.



User Login

User Login reports the login/logout time for each SPM user and the IP address of the related device. The most current logged event displays first.



Working with the Logs

Advanced filtering search

Type characters in the input fields (Name, IP Address, Event Time, Description, and Reason) at the top of the logs window for advanced filtering searching of the logs. Click the **Clear All** button to clear the filter input fields.

Items per page

Select a number from the Items Per Page drop-down list to customize the number of data rows that display on a single page.

Alarm Management (Alarm History and Active Alarms)

Every alarm condition that occurs in your SPM system is critical to understanding the operational status of the network and the discovered devices in the network. SPM provides a dynamic Alarm Management module with data about immediate active alarms and an alarm history log.

What's a "Rolled Up" Alarm?

SPM reports status and alarm conditions for devices, but also for system objects. This means you can see a Warning in the Device Status Bar for an object (such as a cabinet), if that cabinet contains a CDU (or other device) with a power level that exceeds configured high/low thresholds. This is the "rolled up" method SPM uses for status/alarm reporting: the status and alarm conditions reported by a device are "rolled up" into the non-device object, like the cabinet that contains the devices in alarm, or the location that contains the cabinet with the devices in alarm. Remember that the "roll up" reporting only considers device alarms.

Example of a rolled-up alarm:

A Location named Floor-1 contains a cabinet named Cab-123, which contains two CDUs named CDU-1 and CDU-2.

If the total power of CDU-1 and CDU-2 exceeds configured high/low thresholds for current and/or power levels, an alarm triggers on Cab-123 but CDU-1 and CDU-2 report Normal status. The location status for Floor-1 also reports Normal status.

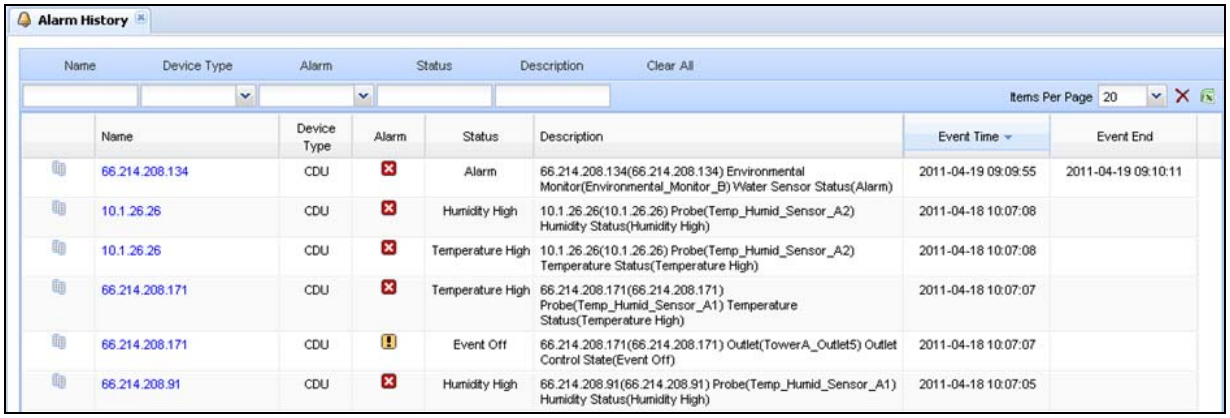
However, if CDU-1 or CDU-2 reports a Critical alarm due to exceeded thresholds, then Cab-123 and Floor-1 report as Critical.

Alarm History

The Alarm History function records each alarm event in a historical log that includes the device name and device type, alarm type, device status, description of the event, event time, and event end.

Alarm history tab

SPM maintains a history of alarm events in a list so you can track trends and locate problem areas in the network.



Name	Device Type	Alarm	Status	Description	Event Time	Event End
66.214.208.134	CDU		Alarm	66.214.208.134(66.214.208.134) Environmental Monitor(Environmental_Monitor_B) Water Sensor Status(Alarm)	2011-04-19 09:09:55	2011-04-19 09:10:11
10.1.26.26	CDU		Humidity High	10.1.26.26(10.1.26.26) Probe(Temp_Humid_Sensor_A2) Humidity Status(Humidity High)	2011-04-18 10:07:08	
10.1.26.26	CDU		Temperature High	10.1.26.26(10.1.26.26) Probe(Temp_Humid_Sensor_A2) Temperature Status(Temperature High)	2011-04-18 10:07:08	
66.214.208.171	CDU		Temperature High	66.214.208.171(66.214.208.171) Probe(Temp_Humid_Sensor_A1) Temperature Status(Temperature High)	2011-04-18 10:07:07	
66.214.208.171	CDU		Event Off	66.214.208.171(66.214.208.171) Outlet(TowerA_Outlet5) Outlet Control State(Event Off)	2011-04-18 10:07:07	
66.214.208.91	CDU		Humidity High	66.214.208.91(66.214.208.91) Probe(Temp_Humid_Sensor_A1) Humidity Status(Humidity High)	2011-04-18 10:07:05	

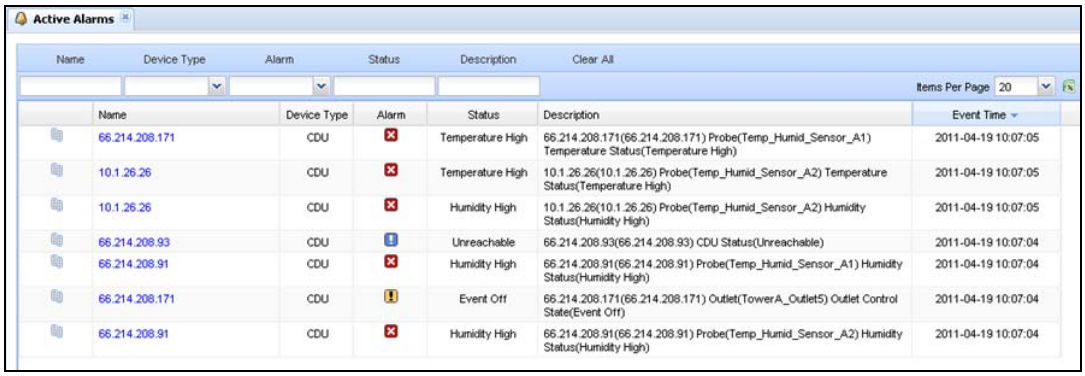
Alarm history information shows an operational pattern that can assist you with revising equipment maintenance schedules and preventing future device and network issues.

Active Alarms

Active Alarms is a dynamic alarm list that shows a mixed set of CDU, device, and system object alarms in immediate Critical, Warning, or Unreachable status.

Active alarms tab

SPM maintains a list of active alarm events so you can quickly respond to problem areas in the network.

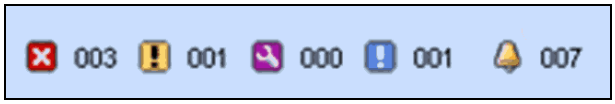


This above example shows CDU as the only device type listed. However, Active Alarms can also report “rolled up” alarms for main SPM system objects:

- CDU
- Cabinets
- Locations
- Outlet Groups
- Outlet Clusters
- Circuits

Active Alarms on the Device Status Bar

The Device Status Bar shows the Active Alarm icon and the dynamic count of active alarms – 007 shown in the following example. The count of active alarms must be at least 001 to display an Active Alarms log.



Chapter 7: Configuring SPM (for the Administrator)

This chapter covers the configuration of the SPM system. Configuration is performed by SPM administrative-level user accounts, and involves determining settings for the SPM system, settings for the network, and email notification parameters.

System Setup

The overall System Setup application provides access to major configuration settings (SPM system, SNMP, Server, and Syslog), and access to the parameters for setting up new (and configuring existing) users, user groups, user group capabilities, and user permissions.

System Setup also allows configuration of LDAP and TACACS+ servers, and allows the administrator to add a new SPM software license key..

The Configuration Tab

Provides system setup parameters for the SPM settings, SNMP, Server, and Syslog areas.

Settings

Sets up SPM as an appliance, eliminating the need to configure system and network settings through the operating system. Standard default port numbers are provided or you can designate port numbers within your network firewall.

SNMP

Stores the data necessary to configure SPM for 2-way communication with applications and hardware devices. Recommended fields values are displayed in the SNMP section.

Warning: The SNMP section is advanced configuration only – the SNMP settings control the behavior of how SPM uses SNMP to communicate with system objects. SNMP traffic is made up of UDP packets, so heavy network loads may lead to lost packets. The SNMP settings are intended to tune SPM to specific sites.

Server

Provides values to optimize the most commonly used Server resources. Default settings are provided.

Warning: The Server section is advanced configuration only – the Server settings define internal server processing and behavior. Most of the delays in these settings are in place to make SPM less aggressive on small systems. Server Technology's devices generally do have response issues, but some other devices may fail to respond if too many reads are performed too quickly. Not recommended to change the values of Server settings unless approved by Server Technology Technical Support.

Syslog

Enables parameters for a Syslog server configuration for remote or local activity log collection. Once configured, the Syslog server is the central location for viewing SPM system activity information.

The Network Tab

Provides the parameters to establish a primary/default network (Network 1) and up to three additional network ports for SPM remote access.

Network 1 (default)

These settings cover the primary port for the SPM web interface and for communication with network devices. You determine automatic port configuration using Dynamic Host Configuration Protocol (DHCP) and the primary/secondary DNS names if you want a domain name association for IP addresses.

Networks 2, 3, and 4 (optional)

Optional networks if you want additional secondary network ports. Network 2 allows for an additional subnet mask and gateway. Networks 2, 3, and 4 allow for automatic port configuration using DHCP.

The Email Notification Tab

The Email Notification tab alerts email and text communication recipients with selected SPM system activity logs.

Email server

This section configures the SMTP host name/port number and the sending email address.

Notification categories

Select the logs that you want emailed to the recipients: Discovery, Alarm Status, User Login, User Actions. All recipients will receive the same logs at the same time.

Recipients

Provide up to four separate recipient email addresses.

About Message Relay

For the SPM Administrative-level user account:

When an SPM user emails an SPM report or trend graph (either by directly emailing the report/trend graph as an attachment, or by emailing the report/trend graph through the SPM Schedule Task function), your Email Server may view these incoming emails from the SPM Host as "message relay", and the email may be blocked.

If this happens in your environment, a recommendation is to make the SMTP Host field unique for SPM in the Email Notification tab.

Then have your Email Server's Administrator place an exemption on the SMTP Host . The exemption is not a security issue because SPM emails from the SMTP Host Name already initiate from within your network's firewall.

SMS Text Messaging

To use SMS text communication and receive notification on mobile phones, convert the 10-digit recipient mobile number to an email address. The format of the email address and the text message rates that apply depend on the mobile provider.

Example: If the mobile provider is ATT, convert the following mobile number to an email address as shown:

This ATT mobile phone number 775-555-1234

converted to an email address is 7755551234@txt.att.net

Type the email address into one of the "Mail To" recipient fields in the Email Notification tab.

Manage Users

The Manage Users feature allows the administrator account to configure the parameters of SPM users, user groups, and LDAP settings. SPM allows individual user logins to manage their account parameters and preferences, and to change their password.

User Group Capabilities

Capabilities are the predefined levels of user group access to SPM system objects as granted by the SPM administrator (or power user) to individual user groups. SPM recognizes the following user group capabilities:

User Group Capabilities

Level	Capability
Administrator	The Administrative user group has full access for all configuration, control (On, Off, Reboot), status, and serial/pass-thru ports. **NOTE:** The SPM default administrative user is the **admn** user account. (There is no "i" in the **admn** name/password.) The **admn** user may grant full administrative access level rights to other Administrator user groups. For security it is recommended that you first use the default **admn** user account to grant capabilities to another administrative user group, and then associate a new user with the new administrative user group. Use the new administrative user account to then change the default **admn** user account password. The **admn** user account cannot be deleted or demoted.
Power	The Power user group has the same capabilities as Administrator but with no user setup capabilities.
Regular	The Regular user group has partial access for outlet action control (On, Off, Reboot), outlet status, and pass-thru of assigned outlets, outlet groups, outlet clusters, and serial/pass-thru ports. The Administrator has options for the Regular user's default access: No Access, Off, On, Outlet Control, Reboot, Setup, and View Only.

Default Permissions

Default permissions are the predefined levels of access rights a user (in a Regular user group only) has to specific system objects as granted by the SPM administrator (or power user). SPM recognizes the following default permissions:

Default Permissions

Permission	Capability
No Access	User has no access to any of the SPM system objects.
Off	User has partial access for control (Off), status and pass-thru of assigned outlets. Off is available only to SPM system objects that contain outlets.
On	User has partial access for control (On), status and pass-thru of assigned outlets. On is available only to SPM system objects that contain outlets.
Outlet Control	User has full outlet control access. Outlet Control is available only to SPM system objects that contain outlets.
Reboot	User has partial access for control (Reboot) status and pass-thru of assigned outlets, groups, and serial/pass-thru ports. Reboot is available only to SPM system objects that contain outlets.
Setup	User has full Administrator access to the CDU.
View Only	User has data view access only. User cannot save changes or perform actions on SPM system objects.

Notes About User Group Permissions

The SPM Administrator can now work with user group permissions as follows:

- Mixed permissions are allowed.
- Settings can be defaulted to On.
- Permissions can be set on CDUs, Outlets, Locations, Cabinets, Zones, Circuits, Outlet Groups, and Outlet Clusters.
- Permissions can be set using the right-click menu.
- Permission hierarchy is not supported; for example, changing the top-level location will not change permissions in the lower locations of the hierarchy.
- Permissions can be set using the multi-select function in the object lists.

The Users Tab

Establishes a new SPM user and associates the user with a user group. Current SPM users are shown by name, associated user groups, and the capabilities assigned to the users.

The User Groups Tab

Establishes a new SPM user group and associates individual users with the group. Displays current SPM user groups by name and the capabilities assigned to each user group.

Configure user group permissions

The User Groups Tab allows the administrator to configure user group permissions by granting or denying access to SPM system resources.

The LDAP Settings Tab

Allows the enabling of LDAP and provides the configuration necessary for authentication with LDAP servers to establish connection with SPM. Recommended fields values are displayed in the LDAP settings window.

TACACS+ Settings

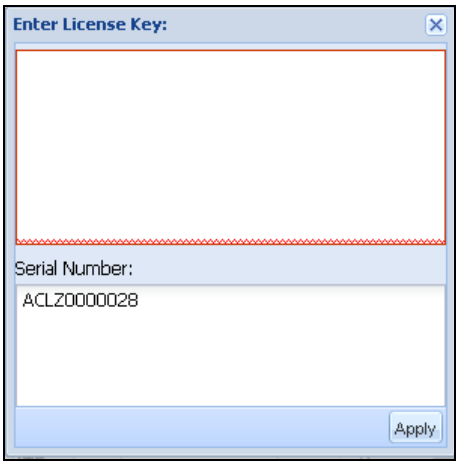
Allows the enabling of TACACS+ and provides the configuration necessary for authentication with TACACS+ servers to establish connection with SPM. The SPM Administrator provides the primary/secondary host, port, and encryption key.

User Login

The User Login tab is a list (by user name) that quickly shows the SPM Administrator which SPM users are currently logged in. The list provides login time, user group name, user group capabilities, and the default permission for each user in the list.

Add License

The Add License function allows the SPM administrator to enter the software license key received from Server Technology for SPM. The licensing allows the addition of CDUs to the network.

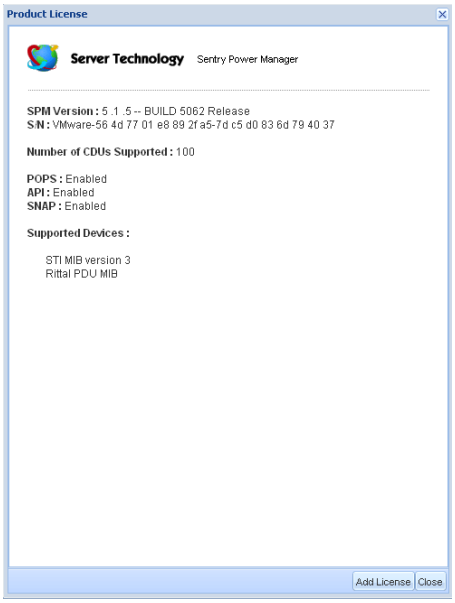


For the SPM Administrator:

Go to **System Setup > Add License**

Type the SPM software license key received from Server Technology, based on the SPM serial number displayed.

This function allows the Administrator to add additional CDUs to the data center network for discovery and communication with SPM.



For all SPM users:

Go to **Application Help > Product License**

The Product License window shows the details of the current SPM system.

This window displays the SPM version, serial number, total number of supported CDUs in the network currently communicating with SPM, additional features enabled/disabled (such as POPS and/or the SPM API), the STI-MIB-supported devices, and the model names of supported OEM and competitor devices

Quick Configuration Tips

Fast Right-Click Configuration for Objects

SPM offers several ways for quick access to the operational settings of SPM objects and user group permissions:

- Right-click an object in a list (CDUs list, Cabinets list, etc.), from the menu options, select a configuration option.
- Right-click an object in the SPM left pane, from the menu options, select a configuration option.
- From an object list (CDUs list, Cabinets list, etc.), select a configuration icon on the SPM toolbar. All objects in the list display in a new list with options for globally configuring specific parameters for all displayed objects.

Configuration: Toolbar Icons and Right-Click Menu Options

Icon	Menu Option	Description
	Configure [object]	Opens a dialog box for setting parameters based on the object you select.
	Set CDU's Parent	Opens a dialog box for setting parent location or cabinet.
	Configure Threshold	Opens the dialog box for editing threshold values for the object.
	SNAP	Opens the SNAP template to configure several types of Sentry firmware parameters.
	Configure User Group Permissions	Opens the dialog box for the object's associated user group so you can assign various permission access levels to the user group for specific system objects.

NOTE: The exact menu options, option names, and available configuration icons in the toolbar may vary slightly depending on the type of system object you select (and your user account level).

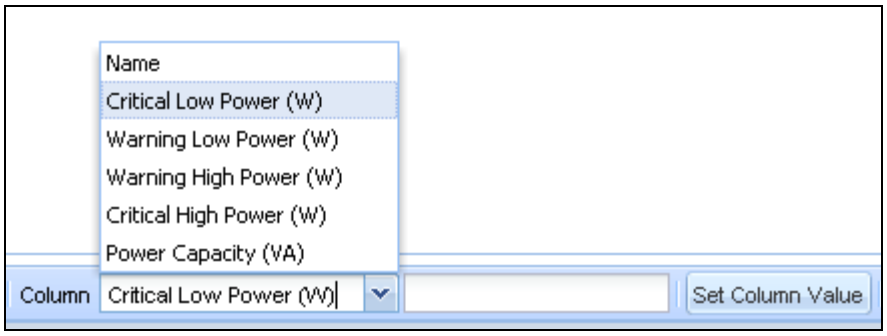
Mass Configuration of Object Threshold Values

To apply a threshold value to all objects in an object list (for example the CDUs list, Cabinets list, etc.), from the object list, click the Configure Threshold icon on the toolbar.

All objects from the list display in a new list that shows the editable threshold columns at the bottom of the window (sample below).

Select a column from the list, enter a value in the box on the right, and click **Set Column Value**. The threshold value will be applied to the column for all objects in the list.

NOTE: The exact column names as shown below will vary depending on the object list.

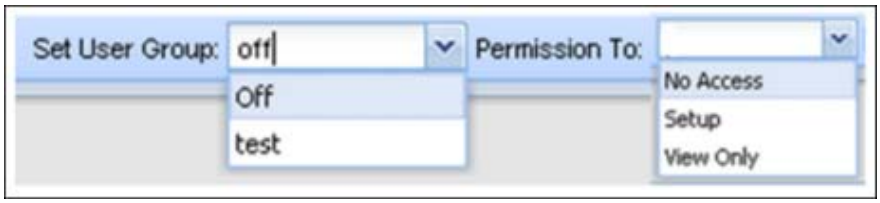


Mass Configuration of User Group Permissions

To apply a user group permission globally to all objects in an object list (for example the CDUs list, Cabinets list, etc.), from the object list, click the Configure User Group Permission icon on the toolbar.

All objects from the list display in a new list that shows the available user group names and permissions in drop-down lists at the bottom of the window (shown below).

Select a user group name, select a permission, and click **Save**. The permission is applied to all objects in the list associated with the selected user group.



Chapter 8: Using SNAP™

SNAP™ is an SPM Administrator function that allows Sentry firmware configuration parameters to be assigned to CDUs directly from the SPM interface using a SNAP template.

SNAP provides fast network management by allowing you to use the SPM interface to globally download the latest CDU operational parameters from Sentry firmware to a single CDU or to multiple CDUs in the SPM network. The SNAP parameters are the same parameters you configure using Sentry firmware (web interface or CLI) – now always readily available in the SPM.

System Requirements for SNAP

To see the SNAP templates and Sentry CDU parameters in the SPM interface, you must:

- Be an SPM Administrative-level user account.
- Run SPM version 5.1 or greater.
- Have SPM-discovered CDUs with Sentry firmware version 6.1 or greater.

What is a SNAP Template?

The SNAP Template is a series of windows that are the mirror-image of Sentry CDU parameters. These are the same parameters you configure using the Sentry firmware's Web interface or Command Line Interface, such as , such as SNMP, Telnet, FTP/SNTP, LDAP, TACACS, and more. All necessary CDU parameters are provided in SPM in the SNAP Template.

When you discover CDUs in your SPM network that have Sentry firmware 6.1 or greater, the default SNAP template shows the parameter values exactly as they have been set in the CDU itself. You can configure one or more parameters in this default SNAP Template and assign the edited values to a different template that you can reuse on different CDUs.

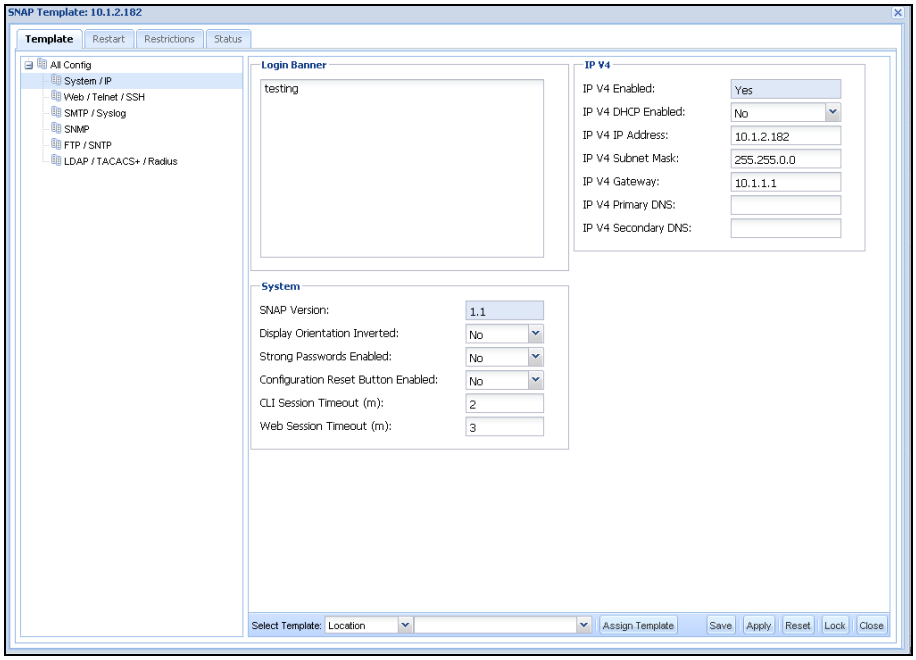
You can also use a SNAP Template based on Cabinet, Location, and Zone that will apply all CDU parameters to all CDUs in the hierarchy of Cabinet, Location, or Zone in one mass update. However, you can protect one or more CDUs in the hierarchy from these mass updates.

Quick Overview of the SNAP Template Tabs

Template tab

When you discover CDUs in your SPM network that have Sentry firmware 6.1 or greater, the default SNAP template shows the parameter values exactly as they have been set in the CDU itself.

You can configure one or more parameters in this default SNAP Template and assign the edited values to a different template that you can reuse on different CDUs.



Restart tab

The Restart tab allows you to reset the CDU's RAM that stores Administrator-configured options. These are the same options in the firmware restart. The Reset function (in the "Restart and Reset to Factory defaults" option) clears these configured options and resets them to their default values, including all user accounts.

Restrictions tab

The Restrictions tab lets you determine if the CDU SNAP settings you have configured are protected (locked) or unprotected (unlocked) from future SNAP mass updates from the CDU's parent identified here in the SNAP Parent list.

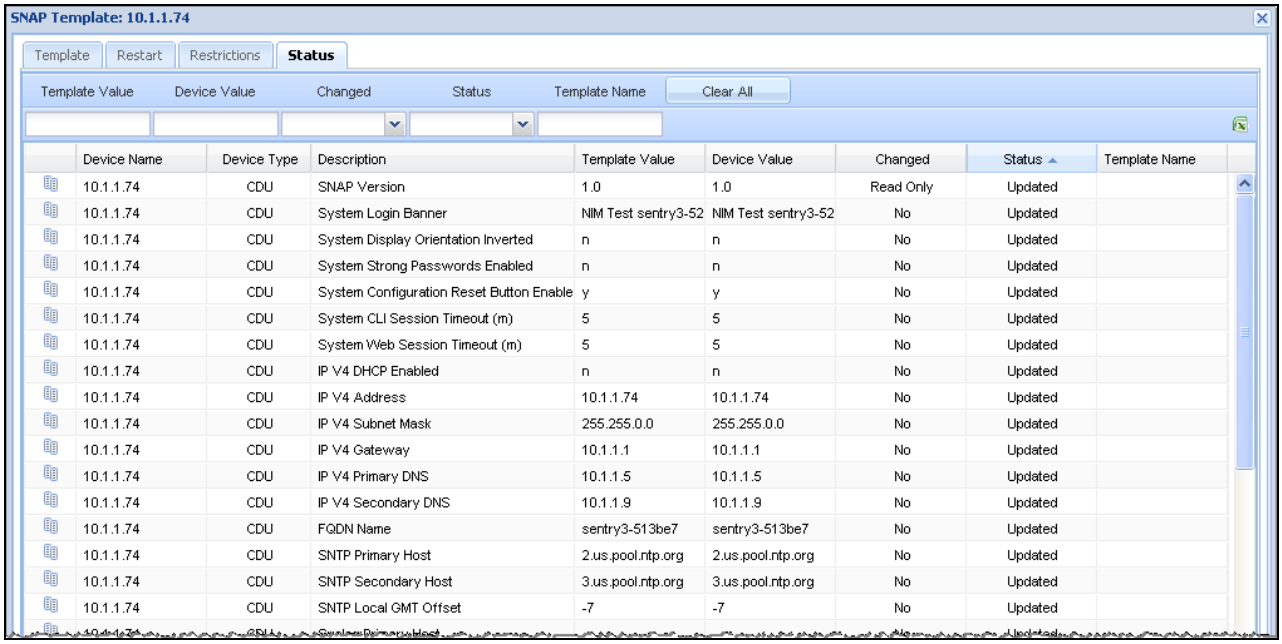
A **Lock** (protect) button and an **Unlock** (unprotect) button on the Restrictions window let you determine whether the SNAP settings of an individual CDU (or all CDUs that are under the hierarchy of the parent shown above) are mass-updated or bypassed.

The caution statement in the left pane reminds you that unlock (unprotected) allows the updating of all SNAP CDU settings for all affected CDUs.

Status tab

The SNAP Status tab is a report that mirrors the current SNAP parameters assigned to a CDU by SPM.

SNAP Status shows SNAP CDU settings and their values for a specific CDU, whether the parameter setting was updated, and the name of the SNAP template used.



Device Name	Device Type	Description	Template Value	Device Value	Changed	Status	Template Name
10.1.1.74	CDU	SNAP Version	1.0	1.0	Read Only	Updated	
10.1.1.74	CDU	System Login Banner	NIM Test sentry3-52	NIM Test sentry3-52	No	Updated	
10.1.1.74	CDU	System Display Orientation Inverted	n	n	No	Updated	
10.1.1.74	CDU	System Strong Passwords Enabled	n	n	No	Updated	
10.1.1.74	CDU	System Configuration Reset Button Enable	y	y	No	Updated	
10.1.1.74	CDU	System CLI Session Timeout (m)	5	5	No	Updated	
10.1.1.74	CDU	System Web Session Timeout (m)	5	5	No	Updated	
10.1.1.74	CDU	IP V4 DHCP Enabled	n	n	No	Updated	
10.1.1.74	CDU	IP V4 Address	10.1.1.74	10.1.1.74	No	Updated	
10.1.1.74	CDU	IP V4 Subnet Mask	255.255.0.0	255.255.0.0	No	Updated	
10.1.1.74	CDU	IP V4 Gateway	10.1.1.1	10.1.1.1	No	Updated	
10.1.1.74	CDU	IP V4 Primary DNS	10.1.1.5	10.1.1.5	No	Updated	
10.1.1.74	CDU	IP V4 Secondary DNS	10.1.1.9	10.1.1.9	No	Updated	
10.1.1.74	CDU	FQDN Name	sentry3-513be7	sentry3-513be7	No	Updated	
10.1.1.74	CDU	SNTP Primary Host	2.us.pool.ntp.org	2.us.pool.ntp.org	No	Updated	
10.1.1.74	CDU	SNTP Secondary Host	3.us.pool.ntp.org	3.us.pool.ntp.org	No	Updated	
10.1.1.74	CDU	SNTP Local GMT Offset	-7	-7	No	Updated	

SNAP and the SPM System Objects

SNAP templates and CDU parameter fields are available in SPM for the following SPM system objects:

- CDUs
- Cabinets
- Locations
- Zones

Globally Apply SNAP Parameters to CDUs

Although you can use SNAP to apply CDU parameters to one CDU at a time, SPM allows you to apply all CDU parameters to all CDUs with a single SNAP Template. You can use a single Cabinet, Location, or Zone SNAP Template to push CDU firmware parameters down to every CDU within the hierarchy of the Cabinet, Location, or Zone – all in one action.

For example, If a location in your SPM network contains 100 CDUs, a single SNAP Temple action can automatically mass-update the entire 100 CDUs in the location's hierarchy (as long as the CDUs have Sentry firmware version 6.1 or greater). However, you have a chance to lock (protect) one or more CDUs in the hierarchy. The Lock process prevents the mass-updates from the parent Cabinet, Location, or Zone to the CDU. You can also easily toggle to unlock (unprotect) one or more CDUs so that mass-updates from the parent are applied to the CDU.

Because you can use SNAP globally to apply CDU parameters at the parent-level of SPM system objects (Cabinets, Locations, and Zones) at one time for all CDUs in the network, SNAP saves the significant time and effort required to log in to the Sentry firmware to manually configure CDU parameters separately for each IP address.

Recommendation for Using the SNAP Template with Zones

You can create a new zone (example, Zone 1) for Switched CDUs and edit the Switched parameters as you prefer.

Then, create a another new zone (example, Zone 2) for Smart CDUs and edit the Smart parameters as you prefer, but change the FTP parameters in Zone 2 to be specific to Smart CDU firmware uploads.

Now you have a SNAP Zone Template for Switched CDUs (Zone 1) with Switched CDU FTP parameters than can be pushed in a SNAP Mass Update to only the Switched CDUs under the hierarchy of Zone 1.

You also have the SNAP Zone Template for Smart CDUs (Zone 2) to globally push FTP parameters to only the Smart CDUs under the hierarchy of Zone 2

Chapter 9: Product Information

This chapter provides SPM product information about links to product warranty, registration, regulatory compliance, contacting Technical Support, and the Return Merchandize Authorization (RMA).

Warranty

For Server Technology warranty information, please see our website at www.servertech.com

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 product on our website at: www.servertech.com

Regulatory Compliance

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

Recycling

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

Waste Electrical and Electronic Equipment (WEEE)

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

For information on how to recycle this product responsibly in your country, please visit the Server Technology website at: www.servertech.com

Technical Support

Experience Server Technology's FREE SMARTER Technical Support

Server Technology understands that there are often questions when installing and using a new product. Free Technical Support is provided from 8:00 a.m. to 5:00 p.m. PST, Monday through Friday. After-hours service is provided to ensure your requests are handled quickly no matter what time zone or country you are located in.

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Return Merchandise Authorization

If you have a unit that is not functioning properly and is in need of technical assistance or repair, see the Server Technology Return Merchandize Authorization (RMA) process on our website at: www.servertech.com

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