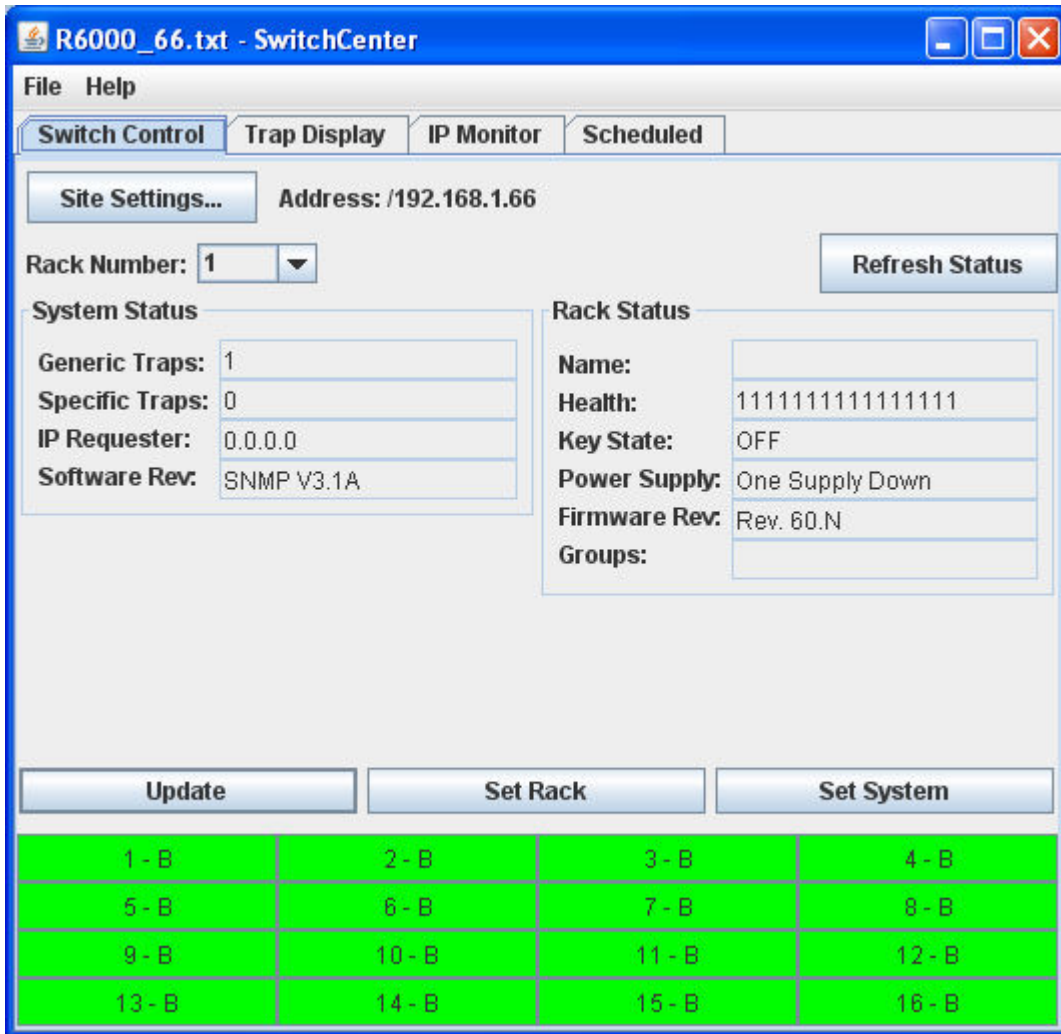


SwitchCenter

Gang Switch Control Software USERS MANUAL Version 2.1

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Market Central Inc., 19 North Main Street, Houston, PA 15342
Phone: (412) 494-2800, Fax: (412) 494-5550
www.seureswitch.com CAGE Code 1BGJ7
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Contents

<u>Chapter</u>	<u>Page</u>
1. Overview	2
2. Installation	2
3. SwitchCenter Main Window	3
4. Switch Control tab	4
5. Switch Port Control Area	5
6. Trap Display tab	7
7. IP Monitor tab	9
8. Scheduled tab	10
9. Site Settings... button	11
10. SNMP	16

1. Overview

SwitchCenter software is a JAVA based desktop application which allows the control and monitoring of a switching system.

SwitchCenter is compatible with the following switch models:

Switch Model: 0 – R1000

Switch Model: 1 – R5000

Switch Model: 2 – R6000

Switch Model: 2 – XK5000

Switch Model: 3 – D1000

Switch Model: 4 – R7000

With SwitchCenter you can:

- * control switches at the card, rack, and system levels
- * monitor system health status; power supplies, key switch position
- * display event traps from one or more systems
- * monitor IP addresses and switch in response to communication loss
- * set scheduled one time or repeating switching actions

After setting suitable parameters for a given site (system), these parameters can be saved to a file for later retrieval. In this way, any number of systems can be controlled by a single instance of the program, however only directly accessing one system at a time. SwitchCenter also supports a restricted mode, which allows only monitoring activities without an administrator password.

2. Installation

SwitchCenter software requires Java Runtime Environment 7 (JRE7) or later. Please refer to the SwitchCenter Installation Instructions for more details on the installation of Java. The SwitchCenter Installation Instructions also cover installation of the SwitchCenter application Java ARchive (JAR) file, how to configure a shortcut to start SwitchCenter, and instructions for starting SwitchCenter with a saved switch profile.

Additional note:

If you use java.exe instead of javaw.exe to run SwitchCenter, a command window is displayed. The application uses this command window to display error and/or Exception messages. Running javaw.exe suppresses this command window.

3. SwitchCenter Main Window

This is the main application window presented when running SwitchCenter. The top menu bar provides file access and help, while the body of the main window contains tabs for selecting among the various pages of control.

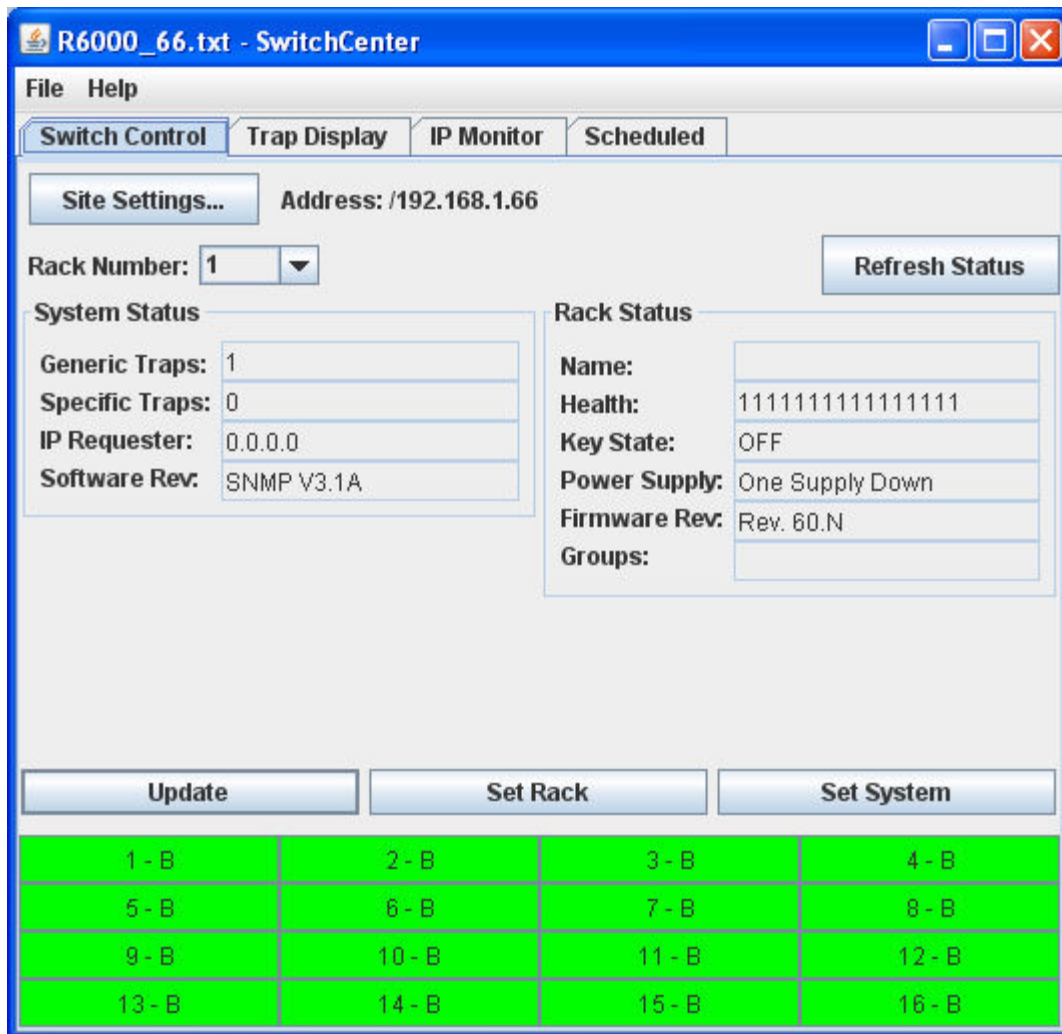


Figure 1 - SwitchCenter Main Application Window

Select from the File drop-down menu list to Save or Open a SwitchCenter configuration profile file. This file will contain all the site setup parameters, as well as IP monitor and scheduled event lists. You can save multiple files to allow quick access to different systems, or differing access to a single system (different scheduled event lists for instance). The current SwitchCenter profile name will be displayed in the main window title bar.

SwitchCenter can be started with a command line filename for specifying site setting parameters. In general it's best to do this, otherwise SwitchCenter starts with default parameters and as they most likely won't match your site settings, startup will be slower as the initial status information updates fail.

Select "About" from the Help drop-down menu to access information about the version of SwitchCenter.

To navigate between the pages of the main window, select the named tabs under the menu bar; Switch Control, Trap Display, IP Monitor, or Scheduled.

4. Switch Control tab

The Switch Control page is where all status and switching of the system is controlled. First, the site information must be entered (at minimum IP address, read/write passwords and model).

Quick Site Setup...

Click the button labeled **Site Settings...**

Enter the IP address of the switch system. The default is 192.168.1.30.

Enter the SNMP read community name. The default for the switch is "public".

Enter the SNMP write community name. The default for the switch is "private".

Select the Switch Model from the drop-down list.

Click **OK** and you are ready to go.

(see the detailed Site Settings section for a description of advanced site settings).

After changing the site settings, or loading from a saved file, the rack number will be set to 1. This is the default first rack in a system, and the rack with the SNMP port must be set to address 1. When the rack number is changed, or there is no prior information, SwitchCenter will collect from the addressed system all of the appropriate information to populate the System and Rack Status frames, as well as update the switch control area (found at the lower section of the main window) including individual switch names if configured to do so (see Site Settings section for advanced site setup parameters).

Note that some fields and SwitchCenter functions are supported only by the latest revision switch system software (as reported in the System and Rack Status frames). Unsupported fields will be shown as **no response** or **skipped** when encountered.

To change the addressed rack, enter a new number in the Rack Number field and press the keyboard Enter key. Alternatively, change the Rack Number and click the button labeled **Refresh Status**.

To refresh the information displayed in the System and Rack Status frames, click the button labeled **Refresh Status**. To update the switch port control area, click the button labeled **Update** (if the switch names are already loaded they will not be re-loaded).

The System Status area contains the latched generic and system traps. Pausing the mouse pointer over either displays a decoded listing of the events corresponding to the displayed number. These latched trap values collect traps that occur in the system. Double-click either latched trap to clear that particular value. This area also shows the SNMP handler software revision (from the switching system) and the IP Requestor variable (which is the IP address of the last entity to access the switch). These values are read only.

The Rack Status area contains the following entries:

Name	This name is stored in the switching system's non-volatile memory. Double-click to change.
Health	This shows the status of each switch card in the rack. A 1 indicates the card is present and healthy (communicating, no internal errors), and a 0 indicates the card is either not present or faulty in some manner. Read only. Note that this feature is supported by Switch Models: 2 and 4, it is not supported by Switch Models: 0, 1, or 3.
Key State	The rack keylock switch status - either ON or OFF. Must be ON to allow manual switching. Has no affect for SNMP or SwitchCenter control. Read only.
Power Supply	Shows the power supply status; two supplies, one supply down, external supply. Read only.
Software Rev	Software revision level of the rack controller card firmware. Read only.
Groups	This field allows cards within a rack to be controlled in groups where a single command will cause all cards in that group to switch together. Note that this feature is supported by Switch Models: 2 and 4, it is not supported by Switch Models: 0, 1, or 3. The rack group setting string is a 16 character field with one character for each card (up to sixteen cards) in the rack. Any character can be used to label a group except 0 or upper case X. The 0 character is reserved to indicate that the associated card operates independently (is not in any group). Upper case X is used to skip a position - when editing an existing group string upper case X will leave that card's group character unchanged from its previous setting. All cards in a group follow any switching command to any card in the group, including manual switching. Once switching has occurred, click on the Update button to display the new switch positions in the rack. Double-click in the Groups field area on the screen to change the Groups setting. Changes to the Groups settings are saved in the target Switching System's non-volatile memory to insure that cards within a group maintain their associations even if the connection to the SwitchCenter application is lost. The following example shows how the Groups settings can be used. Suppose that a switch rack has cards in slots 1 through 10 and 12 thru 16 (slot 11 empty). You could set the first 4 cards in one group, the next 6 in a second group, set the card in slot 12 to operate independently, and configure the last 3 cards to operate as a third group by double clicking in the Groups area and entering the string 1111222222e0333. In this example, any character could be used for slot 11 since it is an empty slot.

5. Switch Port Control Area

Below the System Status and Rack Status areas on the Switch Control tab display screen is the switch port control area. This area displays a button for each of 16 possible switch ports in the addressed rack, and shows the position as either A, B, or X (and grayed out) if the switch position is not populated in that rack. For Switch Model 4, the switch position may be A, B, C, D, or X, or for Switch Model 4, dual channel cards, switch positions may be AC, AD, BC, or BD. The switch name is also displayed if the switch name feature is enabled. To change the state of an individual switch port, click that button once, and select the desired state from the popup menu. To set all the switch ports in the addressed rack click the button labeled Set Rack and select the desired state from the popup menu. And to set all the switch ports in the addressed system click the button labeled Set System and select the desired state from the popup menu. To change the name of a switch port (the "use switch names" checkbox under the "Site Settings..." button, "Advanced" tab, must be selected for this feature to work), right-click the appropriate button and enter a new name in the box provided. The switch port names are stored in the switching system's non-volatile memory.

For SwitchCenter to properly address the individual switch cards in a Switch Model: 1 switching system, the switch cards must be numbered similar to a Switch Model: 2 switching system. The Switch Model: 1 switch cards should be numbered sequentially with cards 1 through 16 in rack 1, cards 17 through 32 in rack 2 and so on. In the “Site Settings...” page, “Advanced” tab, the “Skip status fields on timeout or error” is used to reduce time spent waiting for responses from racks or cards which are not present. If the “Skip status fields on timeout or error” box is checked, and the switch cards are addressed 1, 2, 3, and 5, SwitchCenter will get a timeout when requesting information from card 4, and it will not request data from cards 5 through 16.

6. Trap Display tab

The trap display page displays traps sent to this computer from one or more sources. These sources can be one or more switching systems, or any other source of traps, if they are sent to the IP address of this machine. Note that the switching systems support a number of specific traps that identify changes to the switching system's status (refer to the documentation for your particular Switch Model to see which MIB and SNMP variables are applicable to your product).

To inhibit display of traps not originating from the addressed switching system, select the appropriate trap filter option from the "Site Settings..." radio button (click on Site Settings, then select the Advanced tab, then click on the appropriate check box). Some routers and other SNMP devices broadcast traps which will be received and displayed if not filtered.

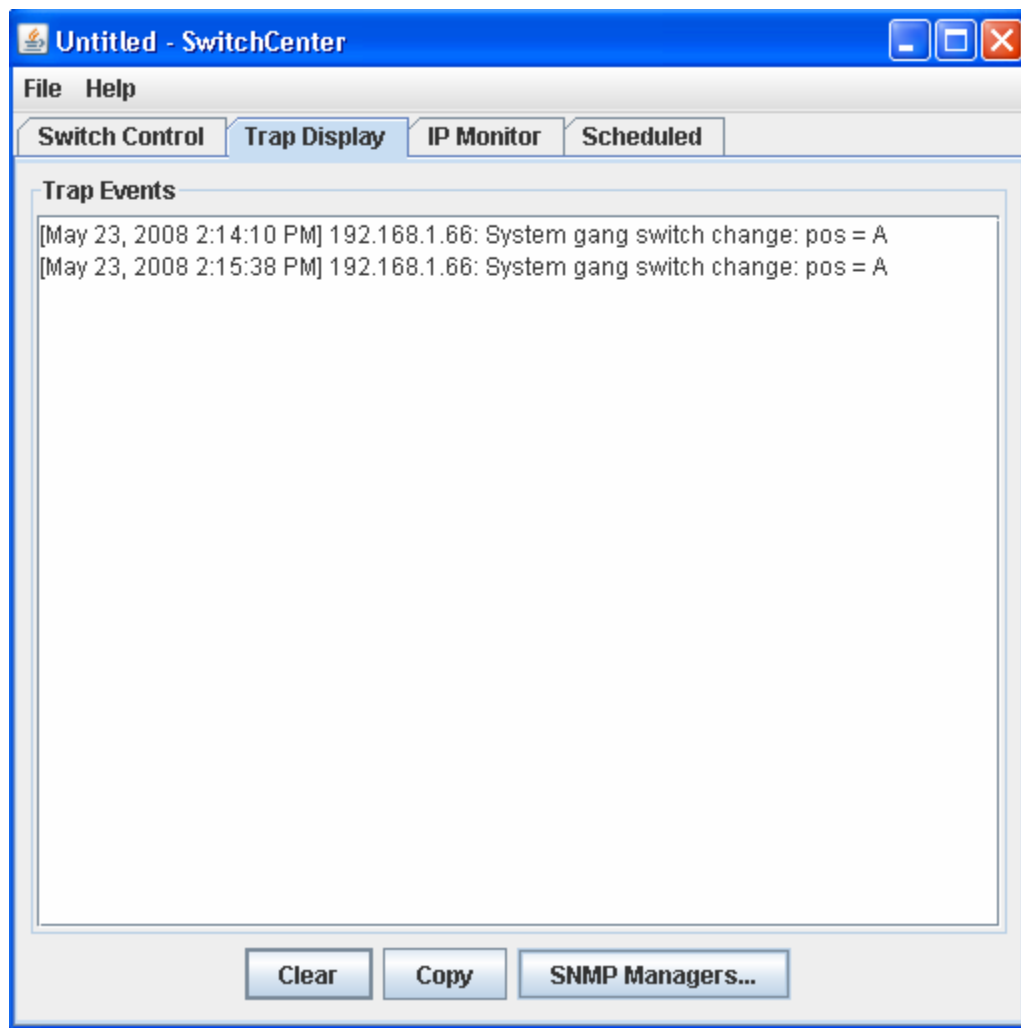


Figure 2 - Trap Display Window

To clear the trap display, click the button labeled **Clear**. To copy the event listing to the clipboard click the button labeled **Copy**.

You can also manage the SNMP manager settings within the switch system by clicking the button labeled

SNMP Managers... This will open a window allowing the editing of SNMP manager addresses 1 thru 16 on the switching system. Select an entry in the table, and select **Edit...** or **Remove** to change or clear an SNMP address entry. When all changes are made, click **Close**. The SNMP Manager IP addresses are stored in the switching system, not in the saved profile.

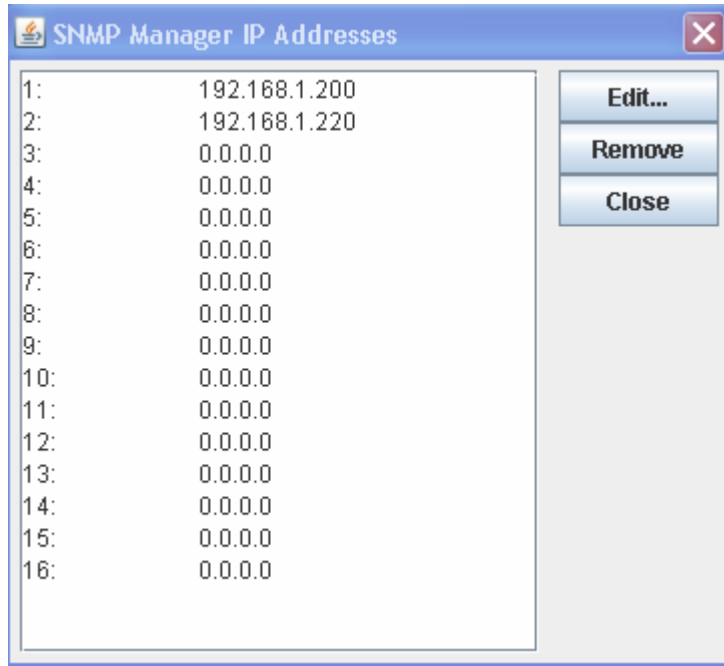


Figure 3 - SNMP Manager setup window

Note that displayed trap events are not saved through the File Save operations.

7. IP Monitor tab

The IP monitor page of SwitchCenter allows any IP address to be monitored for connectivity, and when that host fails to respond, a port can be disconnected (switched from B to A). This feature can be used to monitor a host attached to a port, and if that host is removed (unplugged) then the port will be disconnected preventing another device being connected to the network at that point. In addition, the switching action will cause a SwitchPortChange trap if this trap is supported by your switching system. This trap can be used to alert security personnel of the tamper event. The affected port then has to be manually switched back on (either physically or through SwitchCenter).

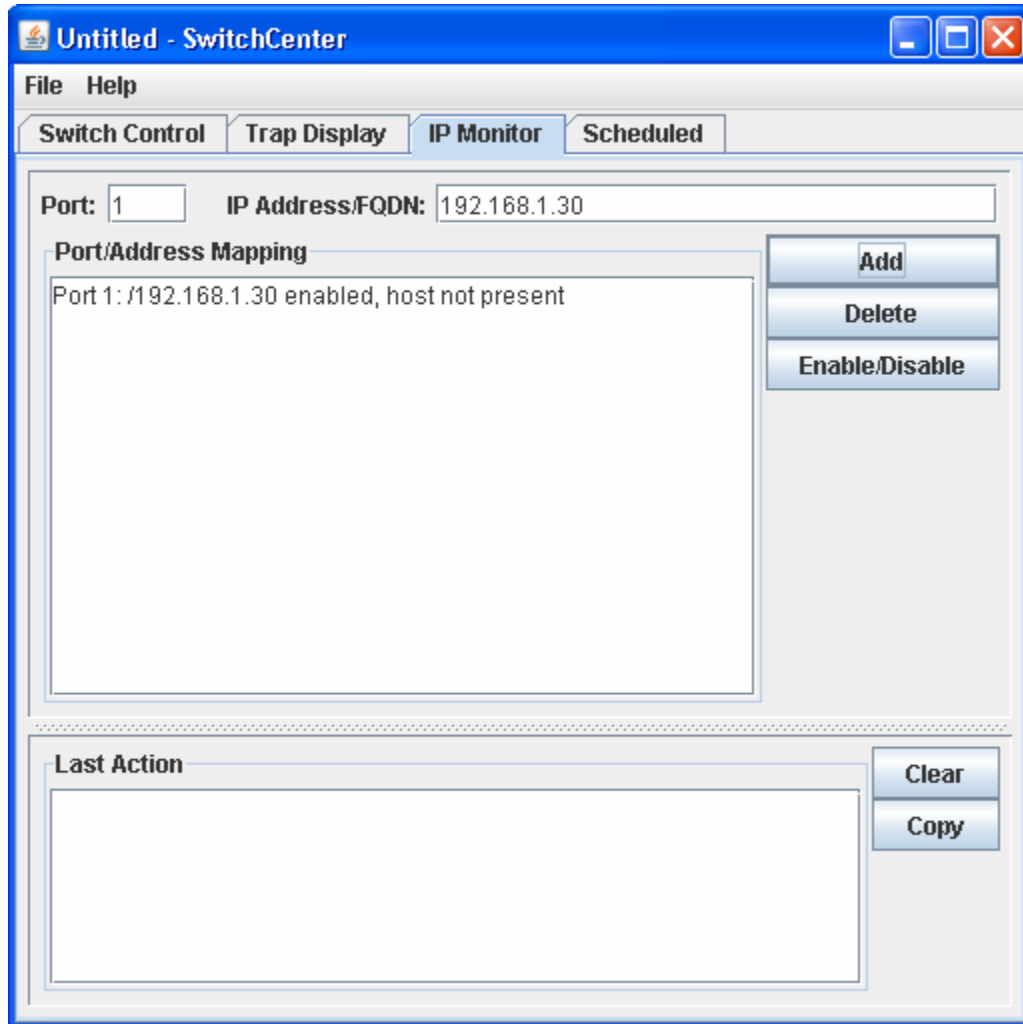


Figure 4 - IP Monitor Window

To add a monitored IP address, enter the Port and IP address at the top of the page, and then click **Add**. An existing IP monitor entry can be temporarily disabled by selecting the entry and clicking **Enable/Disable**. Similarly an entry can be removed by selecting and clicking **Delete**.

The **Port/Address Mapping** area shows the current list of mappings, and their status. The **Last Action** display area logs state changes (hosts becoming present/not present). Note that port/address mappings are saved by the File Save operations while the last action log is not.

8. Scheduled tab

The scheduled events page of SwitchCenter allows setting a point in time to cause a switching action. This action can be set up to 7 days in advance. Repeating switching actions are also possible, with individual selection of day of week.

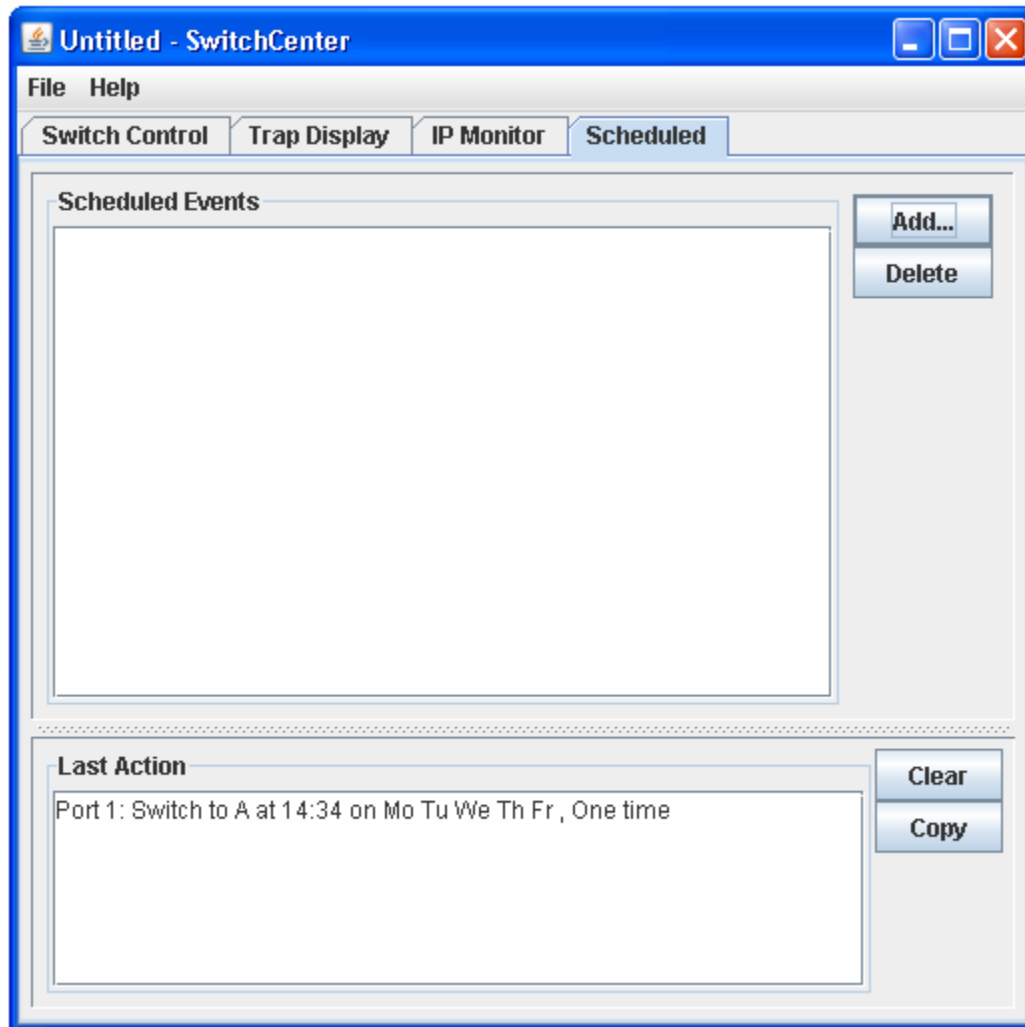


Figure 5 - Scheduled Events Window

To add a scheduled event, click **Add...**. This opens a window allowing the entry of port, rack, or system, position (A or B) or (A, B, C, or D) for Switch Model: 4, time, day(s) of week, and one time/repeat. After setting desired parameters, click **OK** to enter the scheduled event into the list. An entry can be removed by selecting and clicking **Delete**.

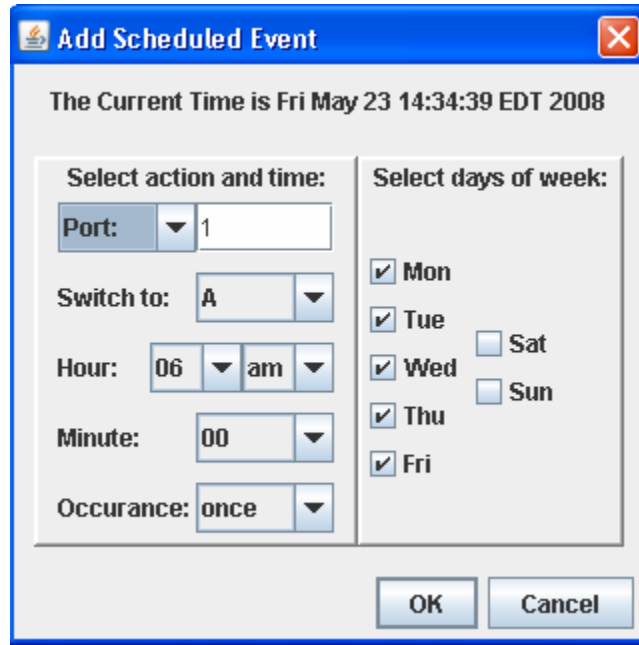


Figure 6 - Add Scheduled Event Window

The **Scheduled Events** display area shows all pending scheduled events and their status. After one time events occur they are automatically removed from the list. Repeating events will remain active on the scheduled events list indefinitely, or until removed.

The **Last Action** display area logs scheduled events (one time or repeating). Note that scheduled events are saved by the File Save operations while the last action log is not.

9. Site Settings... button

To access the Site Settings, navigate to the Switch Control tab of the main application window and click the button labeled **Site Settings...**. This will open a window to allow entering of all the information pertinent to your site. There are three tabs, labeled **General**, **Display**, and **Advanced**.

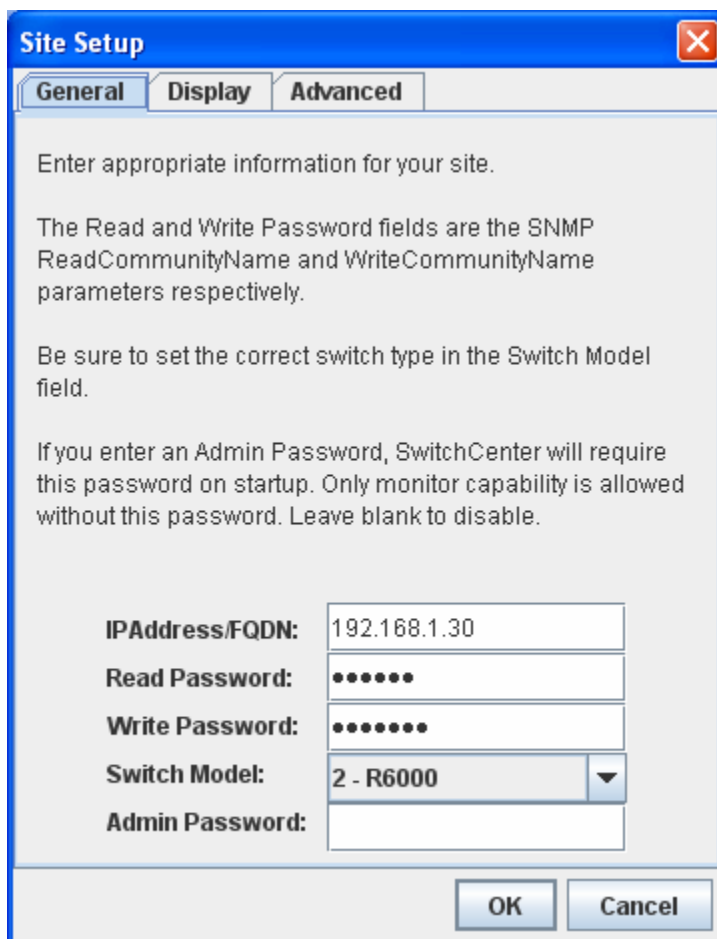


Figure 7 - Site Setup, General tab

General tab

IPAddress/FQDN:

Enter an IP address in the form of X.X.X.X, or a fully qualified domain name like www.secureswitch.com. This is the address of your switching system. On the switching system, you will have to configure this address through the console initially.

Read Password:

This is the read community name for SNMP access as set through the console of the switching system. The initial default for this is “public”. Note that capitalization is important with this setting and must match the switch system setting exactly.

Write Password:

This is the write community name for SNMP access as set through the console of the switching system. The initial default for this is “private”. Note that capitalization is important with this setting and must match the switch system setting exactly.

Switch Model:

Select the switching system model from the drop-down list. This setting must match your switching system in order for SwitchCenter to function properly.

Admin Password:

Leaving this field blank allows full access to SwitchCenter. If you enter a password here, when this site setup is loaded from the File Open menu (or as a command line specified configuration profile filename), a user will need to enter the password to gain access to all but monitoring functions.



Figure 8 - Site Setup, Display tab

Display tab

Number of Racks:

Set to the highest rack number in your system. SwitchCenter supports up to 255 racks in one system, using rack numbers 1 through 255.

State Display Color:

You can set the switch port panel color in the switch port control area (bottom) of the Switch Control tab for the switch state A, B, C, D, AC, AD, BC, and BD buttons to make it easier to identify which switch state any port is currently set to. Click any of the "A, B, C, D, AC, AD, BC, or BD State Color..." buttons, then use one of the optional methods to select a color to display. Click OK to select the new color, and be sure to click OK when closing the Site Setup window. The colors for switch states C and above are not used by all switching systems.

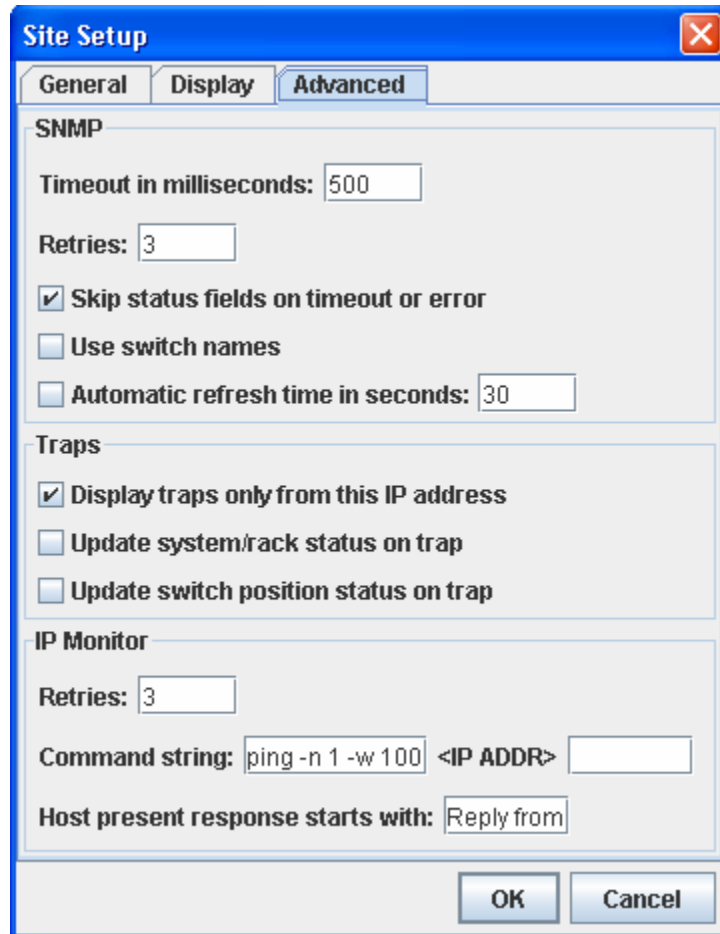


Figure 9 - Site Setup, Advanced tab

Advanced tab

Timeout in milliseconds:

This is the amount of time to wait for SNMP commands to respond before timing out. If your switching system is connected directly to the same subnet as your computer, this can be set relatively low (200-500). However, if your system is located across a WAN or through other potentially time consuming links, then you should set this to a higher value (1000-6000). Setting this too low risks missing packets that otherwise actually do complete, while setting too high

makes SwitchCenter take a long time to refresh information if communication is actually interrupted to your switch system. A good initial setting is on the order of 2X to 3X the average round trip return time reported by an echo utility like PING. See your operating system documentation to determine the appropriate way to invoke PING on your system.

The SNMP interface board in Switch Models: 1, 2, and 4 may wait for up to 3 seconds for a response from the system. If you are receiving “no response” or “skipped” for items you know are present, try increasing the SwitchCenter timeout to 3500 or 4000 milliseconds.

SNMP Retries:

SwitchCenter will retry a failed SNMP operation this many times before reporting an error or timeout. SNMP uses the low priority UDP message service of IP, and therefore is subject to packet loss. Set this to at least 3 to recover from packets dropped from the network.

Skip status fields on timeout or error:

Selecting this checkbox tells SwitchCenter to skip remaining status commands during a refresh or update when a timeout occurs. This prevents long update delays when the site is inaccessible for some reason. Fields will display “no response” or “skipped” as appropriate in the event of a fatal timeout condition (no response for all retries).

Use switch names:

Selecting this checkbox tells SwitchCenter to retrieve and display switch port names in the individual switch port control area (bottom) of the Switch Control tab. This provides a way to label the switches for ease of control, however on slow networks (or across WAN links) this may cause unacceptable delays when switching racks or refreshing switch names.

Automatic refresh time in seconds:

This checkbox and text field control automatic refresh of status and switch information on the main switch control page of SwitchCenter. Enable the checkbox and enter an update interval in seconds to use this feature.

Display traps only from this IP address:

Select this checkbox to filter incoming traps to only display those from the target switching system site address. Otherwise, SwitchCenter will display all traps received (including any broadcast traps sent by some routers).

Update system/rack status on trap:

Selecting this option causes SwitchCenter to refresh system and rack status when any trap is received.

Update switch position status on trap:

Selecting this option causes SwitchCenter to refresh switch position status when any trap is received.

IP Monitor Retries:

SwitchCenter will retry a failed echo command this many times before initiating the switching action associated with that entry. This is to allow occasional packet loss without tripping unnecessarily. Typically this is set to at least 2, but it can be set as high as desired depending on the response your application needs.

Command string:

Use these fields to set the echo command string required by your operating system to detect the presence/absence of a host. The command is constructed by using the first field, followed by the IP address or FQDN, followed by the second field. This allows control of any parameters you may require in the command line. This command string is passed to the underlying operating system for execution. The default values provided are for all versions of the Windows operating system.

Host present response starts with:

Use this field to indicate the beginning of a successful echo command response. The absence of this starting string in all lines of the entire echo response indicates a host not present. The default value provided is for all versions of the Windows operating system.

10. SNMP

SwitchCenter uses the SNMP protocol to communicate with the target switch system. It is not necessary to understand SNMP to use SwitchCenter, however, if you will be also accessing the system through SNMP (an SNMP manager residing on a machine elsewhere on your network for example), then you should be aware that manipulation of the system with SwitchCenter will affect the associated SNMP variables. Refer to the documentation for your particular switching system to see which MIB and SNMP variables are applicable to your product.