Dell™ PowerVault™ Switch Manager

USER'S GUIDE

www.dell.com

February 2000 P/N 25PXC Rev. A00

Preface

About This Guide

This guide describes the Dell PowerVault Switch Manager and how to use each of its functions. The chapters and appendixes are summarized as follows:

- Chapter 1, "Introduction," provides an overview of the PowerVault Switch Manager and its features.
- Chapter 2, "Using the Dell PowerVault Switch Manager," describes how to launch and use the PowerVault Switch Manager, including details about each option.
- The Glossary contains definitions of terms, acronyms, and abbreviations used in this guide.

Other Documents You May Need

In addition to this *User's Guide*, you may need to refer to the following documentation:

- Your Dell system *User's Guide* or *Installation and Troubleshooting Guide* for an overview of system features, hardware installation guidelines and procedures, and safety information
- Your Dell system *Installation and Troubleshooting Guide* for troubleshooting procedures and instructions for using the Dell Diagnostics to test your computer system

NOTE: Documentation updates are sometimes included with your system or software to describe changes to your system and software. Always read these updates before consulting any other documentation because the updates often contain the latest information.

You may also have one or more of the following documents:

- Documentation for the Microsoft® Windows NT® Server 4.0, Enterprise Edition operating system. This documentation describes how to install (if necessary), configure, and use the operating system.
- Documentation for your operating system if you ordered your operating system from Dell. This documentation describes how to install (if necessary), configure, and use your operating system.
- Documentation for any options you purchase separately from your system. This documentation includes information that you need to configure and install these options in your Dell computer. Installation instructions for the options are included in your system *User's Guide*, *Installation and Troubleshooting Guide*, or product-specific *Quick Installation Guide*, if applicable. However, to install some options, you may need to refer to accompanying documentation from the option manufacturer.
- Technical information files—sometimes called readme files—installed on your hard-disk drive or included on your CD to provide last-minute updates about changes to your system or software. Readme files can also contain advanced technical reference material intended for experienced users or technicians.

Notes, Notices, Cautions, and Warnings

For safety cautions and warnings you must observe while servicing a hardware system, see your hardware *User's Guide*.

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, notices, cautions, and warnings, and they are used as follows:

NOTE: A NOTE indicates important information that helps you make better use of your computer system.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

WARNING: A WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious bodily injury.

Typographical Conventions

The following list defines (where appropriate) and illustrates typographical conventions used as visual cues for specific elements of text throughout this document:

- *Interface components* are window titles, button and icon names, menu names and selections, and other options that appear on the monitor screen or display. They are presented in bold.

  Example: Click **OK**.

- *Keycaps* are labels that appear on the keys on a keyboard. They are enclosed in angle brackets.

  Example: <Enter>

- *Key combinations* are series of keys to be pressed simultaneously (unless otherwise indicated) to perform a single function.

  Example: <Ctrl><Alt><Enter>

- *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed when referenced.

  Example: "Use the **format** command to . . . ."

  In contrast, commands presented in the Courier New font are part of an instruction and intended to be typed.

  Example: "Type `format a:` to format the diskette in drive A."

- *Filenames* and *directory names* are presented in lowercase bold.

  Examples: **autoexec.bat** and **c:\windows**

- *Syntax lines* consist of a command and all its possible parameters. Commands are presented in lowercase bold; variable parameters (those for which you substitute a value) are presented in lowercase italics; constant parameters are presented in lowercase bold. The brackets indicate items that are optional.

  Example: **del** [*drive***:**] [*path*] *filename* [**/p**]

- *Command lines* consist of a command and may include one or more of the command's possible parameters. Command lines are presented in the Courier New font.

  Example: `del c:\myfile.doc`

- *Screen text* is a message or text that you are instructed to type as part of a command (referred to as a *command line*). Screen text is presented in the Courier New font.

  Example: The following message appears on your screen:

  ```
  No boot device available
  ```

  Example: "Type `md c:\programs` and press <Enter>."

- *Variables* are placeholders for which you substitute a value. They are presented in italics.

  Example: DIMM_*x* (where *x* represents the DIMM socket designation)

Contents

Figure

Tables

CHAPTER 1
Introduction

The Dell™ PowerVault™ Switch Manager allows you to monitor, configure, and manage fabric switches using a Java-capable web browser from a standard desktop workstation. You can dynamically interact with any switch in the fabric to monitor status and performance. By using the information provided, you can manage overall topology or make administrative changes to switches or the fabric. The PowerVault Switch Manager provides the following capabilities:

- **Central status monitoring (from Fabric View)** — Access detailed switch information and administer any switch in the fabric.
- **Rapid access to any switch (from Fabric View)** — Access switch status, port status, throughput, performance, and operating conditions such as temperature, fan status, and power supply status.
- **Comprehensive asset management (from the Name Server Table)** — Access detailed information on all devices connected to the fabric.
- **Extensive administration and configuration capability** — Configure and administer individual ports or switches through a wide range of functions encompassing switch configuration and port management.
- **Distributed zoning control** — Apply zoning functions to appropriately configured switches. The zoning configuration changes are automatically distributed to all switches in the fabric.
- **Telnet interface for access to specialized functions** — Perform functions available only through Telnet.
- **Central maintenance functions** — Add new firmware from your desktop.

PowerVault Switch Manager Screens

The PowerVault Switch Manager provides a series of screens that display various aspects of the fabric such as physical configuration, data throughput, statistics, and status, as well as screens providing an administrative interface and a Telnet interface to the switches in the fabric.

Table 1-1 describes how these screens, or views, are organized:

Table 1-1. Switch Manager Screens

Screen	Description
Fabric View	Shows the number of switches in the fabric, with world-wide name, domain ID, switch name, and network internet protocol (IP) information. The **Fabric View** is the first view displayed and serves as the launch point for the following windows: **Switch Management Application**, Fabric topology (**Fabric**), **Name Server Table**, and **Zone Administration**
Fabric topology (**Fabric**)	Displays physical configuration, including active domains, paths, and routing information
Name Server Table	Displays the Name Server Table for the fabric which contains information about the devices attached to the fabric
Zone Administration	Allows you to configure zoning — zone alias settings, zone settings, and zone configuration settings
Switch Management Application	Displays switch information. Provides a real-time view of overall switch status. The **Switch Management Application** is the launch point for the following windows: **Port Information**, **Performance**, Administration, and **Telnet**
Port Information	Displays statistics, general information, and status for a specific port
Performance	Graphically portrays real-time data throughput for each port and displays total switch bandwidth utilization
Administration	Allows you to perform functions such as upgrading firmware versions or reconfiguring a switch
Telnet	Allows you to use Telnet commands for switch diagnostics, troubleshooting, and fabric management

CHAPTER 2
Using the Dell PowerVault Switch Manager

This chapter describes the requirements for the Dell PowerVault Switch Manager and how to launch and use the Switch Manager.

Requirements

To use the Switch Manager, your system must meet the following requirements:

- Microsoft Internet Explorer 4.0 or later or Netscape 4.0 or later with Microsoft Windows NT 4.0 operating systems
- Netscape 4.0 or later with Sun Solaris 2.5 or later systems
- 16-bit or higher color
- Java 1.2.2 plug-in

  You can install the plug-in from the *Dell PowerVault Fibre Channel Utilities* CD or the *Dell PowerVault Fibre Channel Update* CD. You can also download the plug-in from the Sun Microsystems World Wide Web site at **http://www.sun.com/**.

NOTES: In order to take full advantage of the enhanced switch management capabilities, you cannot launch the Switch Manager from a PowerVault 50F switch.

*The only Switch Manager features available on the PowerVault 50F are **Fabric View** (without the **Name Server Table** and **Zone Administration**), and a single-page **Switch Administration Interface**.*

Name Resolution Service Requirements

To prevent domain name system (DNS) spoofing, the Java class libraries used for the Switch Manager perform a reverse lookup of the Internet Protocol (IP) addresses to resolve to corresponding device names. You must have a name resolution service with reverse lookup (such as DNS, Windows Internet Naming Service [WINS], or Network Information Service [NIS]) enabled on the Ethernet network that connects the switches in the managed fabric; the entries should correspond to the switches in the fabric.

If no name resolution service exists, place the entries corresponding to the switches in the **hosts** file (for example, in the Microsoft Windows NT 4.0 operating system, the **hosts** file is in the **winnt\system32\drivers\etc** directory).

Launching the PowerVault Switch Manager

To launch the PowerVault Switch Manager, perform the following steps:

1. Start your web browser.
2. Enter the name or IP address of a switch in the fabric you want to manage in the **Location** or **Address** field.

   The **Fabric View** appears and displays all the switches in the fabric.

Using the PowerVault Switch Manager Views

The following sections describe each of the screens, or views, in the PowerVault Switch Manager.

Fabric View

The **Fabric View** shows all the switches included in a fabric. It is the first page displayed once you have connected to a switch. From this view, you can display the **Switch Management Application** for an individual switch by clicking the switch icon, or access the fabric topology window, **Name Server Table** window, or **Zone Administration** window by clicking the appropriate button at the bottom of the **Fabric View**.

Figure 2-1 shows the **Fabric View**. Table 2-1 shows the descriptions for each component in this view.

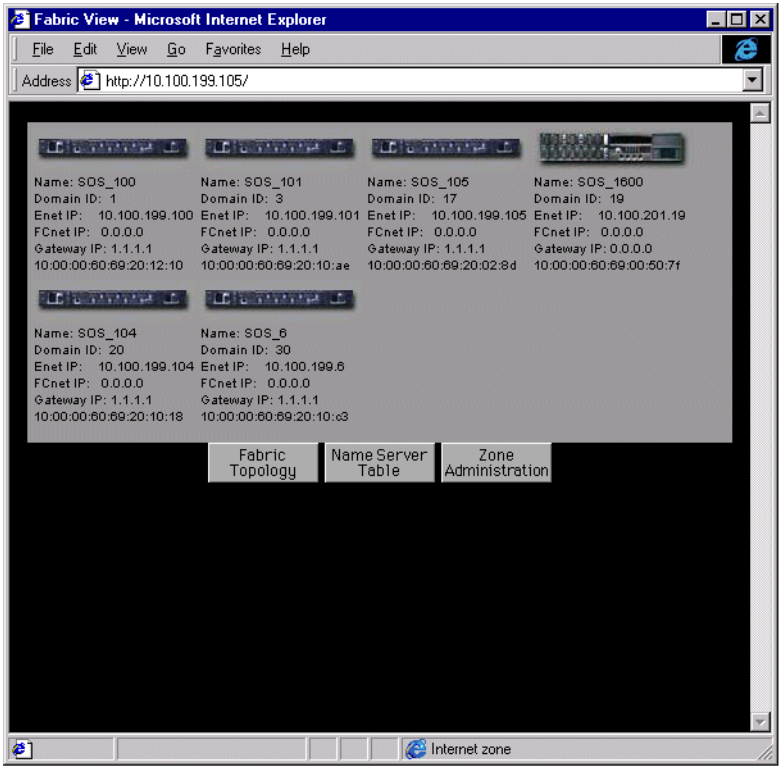

Figure 2-1. Fabric View Window

Table 2-1. Fabric View Components

Component	Description
Switch icon	Indicates the switch type and displays the following six fields of information for the selected switch:
Name field	Switch name
Domain ID field	Number that uniquely identifies the switch in a fabric
Enet IP field	Ethernet IP address
FCnet IP field	Fibre Channel IP address
Gateway IP field	Gateway IP address
World Wide Name (WWN) field	Unique numeric identifier for each switch; assigned by manufacturer
Fabric Topology button	Opens the fabric topology window

Table 2-1. Fabric View Components *(continued)*

Component	Description
Name Server Table button	Opens to the **Name Server Table** window
Zone Administration button	Opens the **Zone Administration** window

Fabric Topology

The fabric topology window shows the physical configuration of the fabric including active domains and paths. The topology is shown as viewed from the host domain (the switch initially requested from the web browser). To access this screen, click **Fabric Topology** from the **Fabric View**.

NOTE: Each switch in a fabric is a domain with its own unique domain ID.

Figure 2-2 shows the fabric topology window. Table 2-2 provides a description for each component in this window.

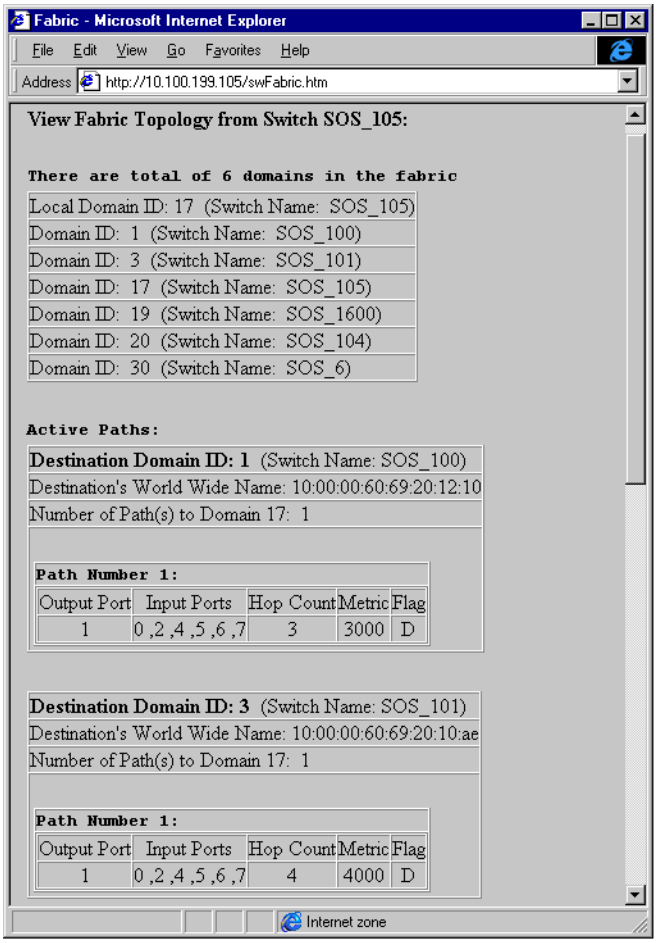

Figure 2-2. Fabric Topology Window

Table 2-2. Fabric Topology Components

Component	Description
Domains field	Displays a list of active switches (domains) in the fabric with switch name and switch domain ID.
Active Paths field	Displays active paths from the host domain to all remote domains within the fabric. Information is displayed by the domain ID associated with the switch name. It includes World Wide Name (WWN) and total number of paths by domain with output ports, input ports, hop count, metric and flag for each path.

Name Server Table

The **Name Server Table** window displays the Name Server Table for the fabric. The Name Server Table contains name server entries for the fabric that are kept in the Simple Name Server database. This includes all name server entries, not just those local to a single switch. The **Name Server Table** window is accessed by clicking **Name Server Table** at the bottom of the **Fabric View**.

You can sort the **Name Server Table** by fields by clicking the appropriate column heading. **Auto Refresh** automatically resorts the table to the default view. You must disable **Auto Refresh** to prevent resorting.

Figure 2-3 shows the **Name Server Table** window. Table 2-3 provides a description for each component in this view.

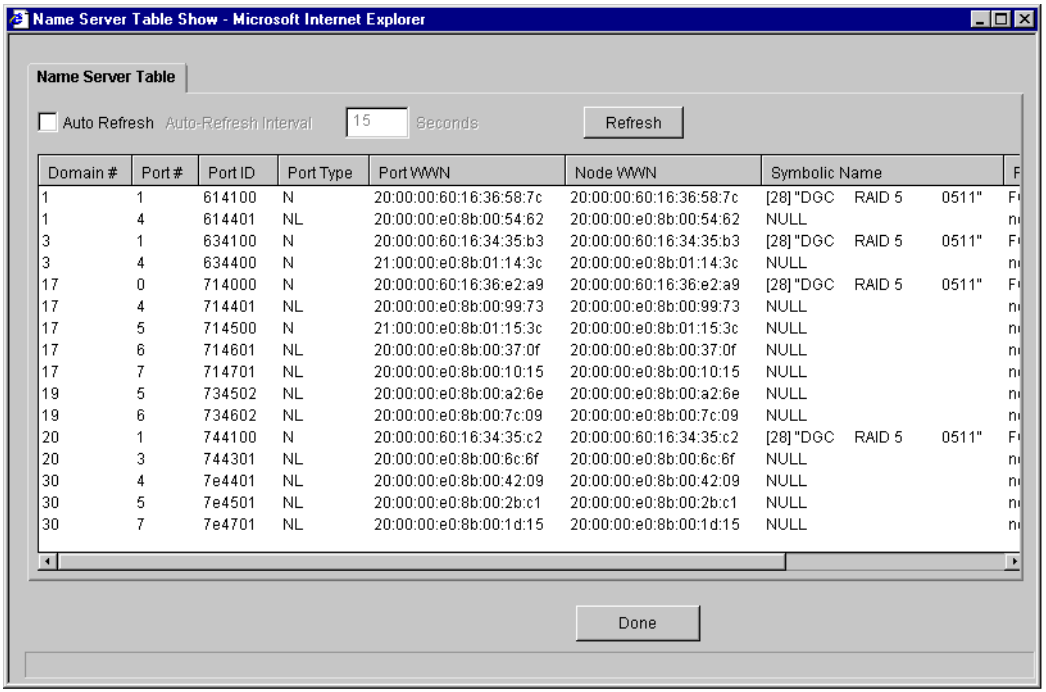

Figure 2-3. Name Server Table Window

Table 2-3. Name Server Table Window Components

Component	Description
Auto Refresh checkbox	Check to enable Auto Refresh; uncheck to disable
Auto Refresh Interval field	Displays refresh interval in seconds

Table 2-3. Name Server Table Window Components *(continued)*

Component	Description
Refresh button	Click to refresh on demand
Domain # field	Displays the domain ID of a switch to which each device is connected
Port # field	Displays the port number of the switch
Port ID field	Displays the port ID of a device (Fibre Channel 24-bit ID in hexadecimal)
Port Type field	Displays the port type of a device (N for fabric direct attached port or NL for fabric direct attached loop port)
Port WWN field	Displays the WWN for a device port
Node WWN field	Displays the WWN for a device node
Symbolic Name field	Displays the symbolic name of a device reported by the **SCSI INQUIRY** command
FC4 Types field (not shown in Figure 2-3)	Displays the Fibre Channel FC4 layer types supported by device, such as IP and FCP
COS field (not shown in Figure 2-3)	Displays the Fibre Channel classes of service supported by the device
Member of Zones field (not shown in Figure 2-3)	Lists all the zones of which the device is a member
Done button	Click to close the window

Zone Administration

The **Zone Administration** consists of the following functions:

- **Zone Alias Settings**
- **Zone Settings**
- **Zone Config Settings**

*NOTE: You should make **Zone Administration** changes incrementally. Changes to the zoning information are transferred to the switches only when you click **Apply**; if you have made a large number of changes, the fabric can become unusable while the information is being updated on all the switches in the fabric. Dell recommends that you click **Apply** to update the changes frequently when modifying the zoning information.*

When making zoning changes, perform the following steps:

1. Define zone aliases to establish groupings. Assigning aliases is optional.

   See "Zone Alias Settings" later in this chapter.

2. Create zone members.

   See "Zone Settings" later in this chapter.

3. Place zones into a zone configuration.

   See "Zone Config Settings" later in this chapter.

4. Enable the zone configuration.

   See "Zone Config Settings" later in this chapter.

NOTICE: The Zone Administration window shows the PowerVault 50F switch with 16 ports. Use only ports 0 to 7 on the PowerVault 50F for zoning. Using ports 8 to 15 may result in invalid zones.

*NOTES: If a switch or device is added or removed from the fabric, relaunch **Zone Administration** to get the updated information.*

*You must have **admin** privilege to access these functions.*

To access zoning functions, click **Zone Administration** at the bottom of the **Fabric View**.

The first function that appears is **Zone Alias Settings**. To access the other **Zone Administration** functions, click the appropriate tab. The following sections describe each function.

Zone Alias Settings

Use **Zone Alias Settings** to configure and manage alias membership (zone aliases are optional). To access **Zone Alias Settings**, click **Zone Administration** from the **Fabric View**. You can also click the **Zone Alias Settings** tab in the **Zone Administration** window.

Figure 2-4 shows the **Zone Alias Settings** screen. Table 2-4 provides a description for each component in this tab.

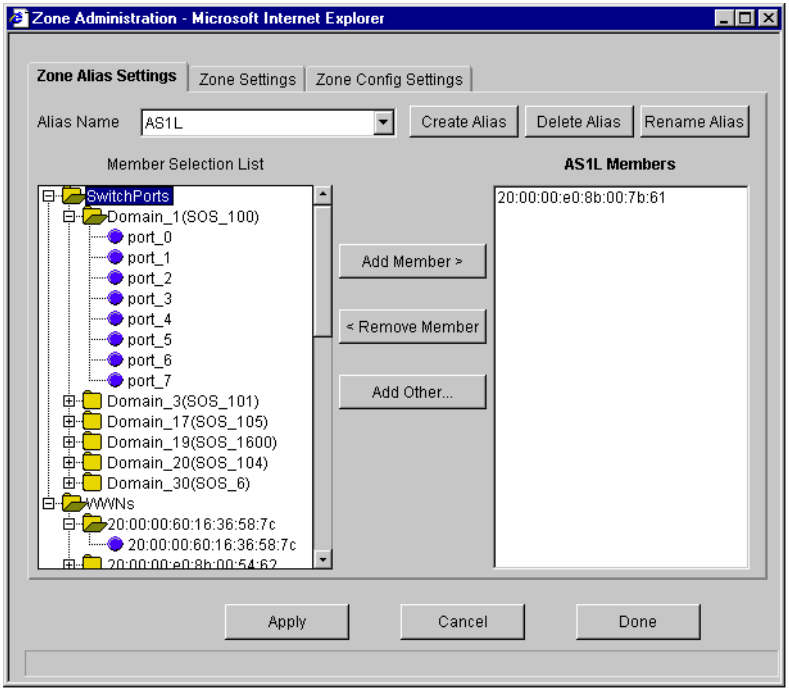

Figure 2-4. Zone Alias Settings Tab

Table 2-4. Zone Alias Settings Components

Component	Description
Alias Name field	Displays the currently selected alias.
Create Alias button	Click to enter the name of a new alias; *all names must be unique and contain no spaces*.
Delete Alias button	Click to delete an alias appearing in the **Alias Name** field.
Rename Alias button	Click to enter a new name for the currently selected alias.
Member Selection List field	Displays a list of available switches, ports, and WWNs.
Add Member button	Select a member from the **Member Selection List** and click **Add Member** to add to the list of members for the currently selected alias.
Remove Member button	Select a member from a list of members for the currently selected alias and click **Remove Member** to remove from the member list.

Table 2-4. Zone Alias Settings Components *(continued)*

Component	Description
Add Other button	Click to add switch domain, port, or WWN not in member selection list.
Alias Members field	Displays members of the currently selected alias.
Apply button	Click to apply all changes made to the switch during this session. *NOTE: If you have made changes to a function, click **Apply** before switching to another function; otherwise, you may lose the changes.*
Cancel button	Click to cancel all changes and exit **Zone Administration**. Changes cannot be canceled after they have been applied.
Done button	Click to apply all changes made to the switch during this session and close the dialog box.

Zone Settings

Use **Zone Settings** to create, delete, or rename zones and to add or delete members from zones.

To access **Zone Settings**, click the **Zone Settings** tab in the **Zone Administration** window.

Figure 2-5 shows the **Zone Settings** tab. Table 2-5 provides a description for each component in this tab.

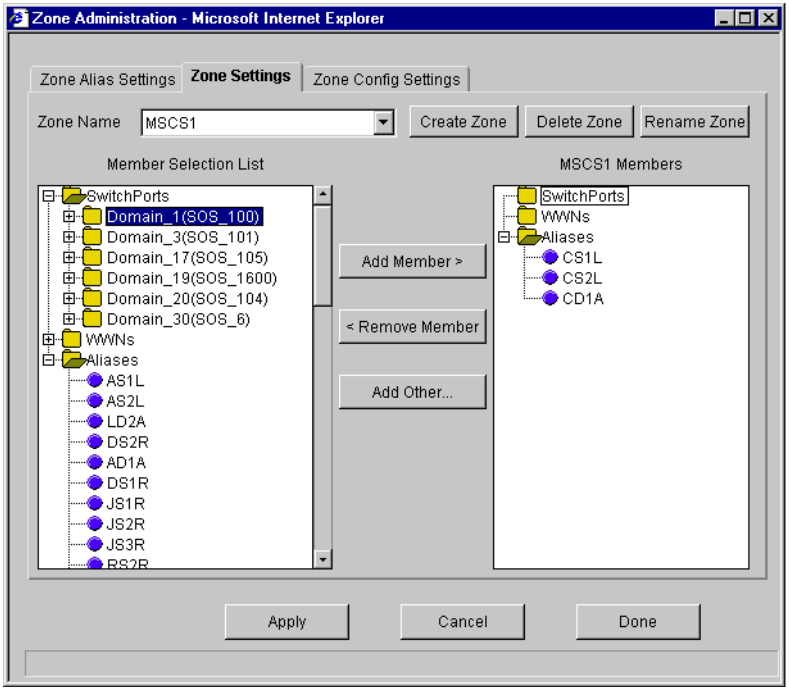

Figure 2-5. Zone Settings Tab

Table 2-5. Zone Settings Components

Component	Description
Zone Name field	Displays the currently selected zone
Create Zone button	Click to enter the name of a new zone; all names must be unique and contain no spaces
Delete Zone button	Click to delete the selected zone
Rename Zone button	Click to enter a new name for the currently selected zone
Member Selection List field	Displays a list of available switches, ports, device WWNs, and aliases

Table 2-5. Zone Settings Components *(continued)*

Component	Description
Add Member button	Select a member from the **Member Selection List** and click **Add Member** to add to the list of members for the currently selected zone If a switch is selected, the switch and all ports are added to the zone; individual ports are added by selecting a port from within a switch To add a device WWN, select a node WWN (folder icon) or port WWN (blue circle icon) from the WWN sub-tree. To add an alias, select it from the **Aliases** subtree; zone aliases must have been previously created
Remove Member button	Select a member from a list of members for the currently selected zone and click **Remove Member** to remove from the member list
Add Other button	Click for a dialog box to add members not in the member selection list; the dialog box prompts for WWN or Domain, Port
Zone **Members** field	Displays members of the currently selected zone
Apply button	Click to apply all changes made to the switch during this session *NOTE: If you have made changes to a function, click* ***Apply*** *before switching to another function; otherwise, you may lose the changes.*
Cancel button	Click to cancel all changes and exit **Zone Administration**; changes cannot be canceled after they have been applied
Done button	Click to apply all changes made to the switch during this session and close the dialog box

Zone Configuration Settings

Use **Zone Config Settings** to create zone configurations, to place zones into configurations, or to rename or delete zone configurations. To access zone configuration settings, click the **Zone Config Settings** tab in the **Zone Administration** window.

Figure 2-6 shows the **Zone Config Settings** tab. Table 2-6 provides a description for each component in this tab.

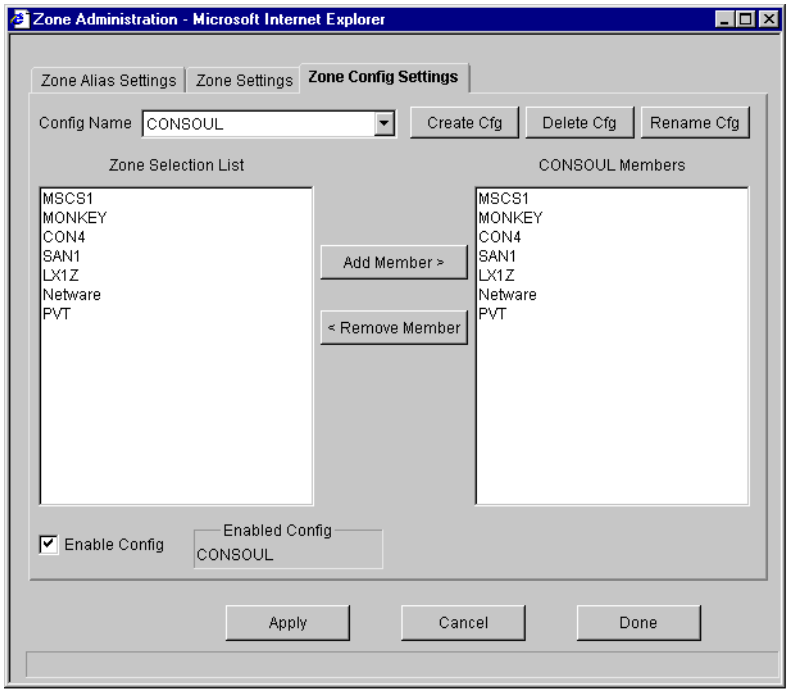

Figure 2-6. Zone Config Settings Tab

Table 2-6. Zone Config Settings Components

Component	Description
Config Name field	Displays the currently selected configuration name
Create Cfg button	Click to enter the name of a new configuration; all names must be unique and contain no spaces
Delete Cfg button	Click to delete the selected configuration
Rename Cfg button	Click to enter a new name for currently selected configuration
Zone Selection List field	Displays a list of available zones that can be added to the selected configuration
Add Member button	Select a member from the **Zone Selection List** and click **Add Member** to add to the list of selected configuration members
Remove Member button	Select a member from a list of configuration members and click **Remove Member** to remove from the member list

Table 2-6. Zone Config Settings Components *(continued)*

Component	Description
Configuration **Members** field	Displays a list of members for the selected zone configuration; only one configuration can be enabled at a time; if no configurations are enabled, the zone configurations are not active in the fabric
Enable Config checkbox	Check to enable the currently selected configuration; uncheck to disable; the enabled configuration does not actually take effect until you click **Apply**
Enabled Config field	Displays the enabled configuration or the configuration that will be enabled when you change configurations and click **Apply**; the enabled configuration does not actually take effect until you click **Apply**
Apply button	Click to apply all changes made to the switch during this session *NOTE: If you have made changes to a function, click* ***Apply*** *before switching to another function; otherwise, you may lose the changes.*
Cancel button	Click to cancel all changes and exit **Zone Administration**; changes cannot be canceled after they have been applied
Done button	Click to apply all changes made to the switch during this session and close the dialog box

Switch Management Application

The **Switch Management Application** is a representation of the front panel of the switch and is displayed when you click a switch icon from the **Fabric View**. The information displayed is as close as possible to a real time view of switch status.

Figure 2-7 shows the **Switch Management Application**. Table 2-7 provides a description for each component in this window.

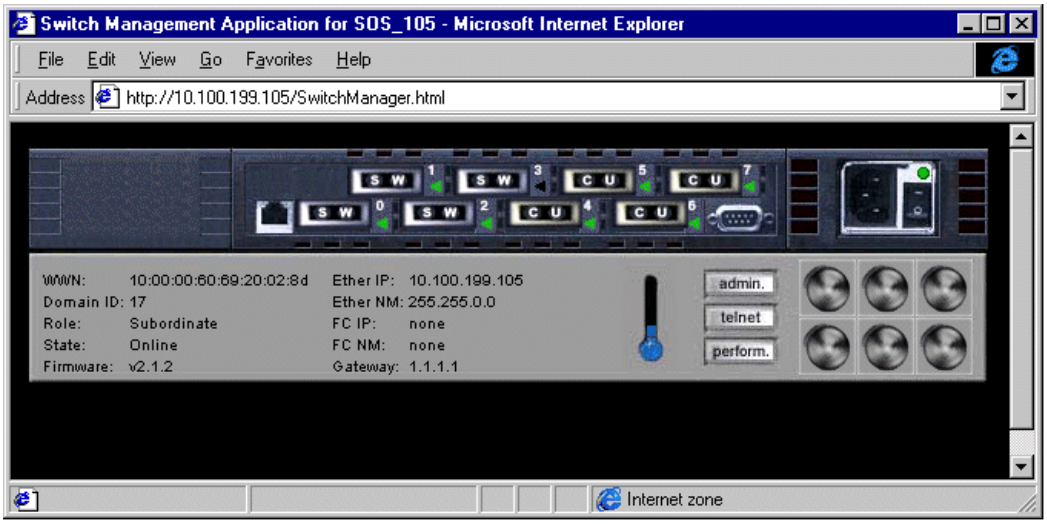

Figure 2-7. Switch Management Application Window

Table 2-7. Switch Management Application Components

Component	Description
Port icon	Indicates gigabit interface converter (GBIC) type: • **ID** — Serial ID GBIC • **CU** — Copper • **SW** — Short wave • **LW** — Long wave • **Blank** — No GBIC present A yellow outline around the port icon indicates a port failure For detailed port information, click the port icon for the **Port Statistics** window
Number icon	Number of the port

Table 2-7. Switch Management Application Components *(continued)*

Component	Description
LED status indicator icon	• No light — No device attached • Steady yellow — Receiving light, but not online; (check cable connections) • Slow yellow — Disabled (diagnostics or **portDisable** command) • Fast yellow — Error, fault with port • Steady green — Online (connected with a device by cable) • Slow green — Online but segmented (loopback cable or incompatible switch) • Fast green — Internal loopback (diagnostic) • Flickering green — Online and transmitting and receiving frames
WWN field	Unique permanent numeric identifier for each switch; assigned by the manufacturer.
Domain ID field	Number that uniquely identifies the switch in a fabric
Role field	• **Principal** — Principal switch as defined in FC_SW protocol • **Subordinate** — Switch enabled, but not as the principal switch • **Disabled** — Switch disabled
State field	Switch state: • **Online** • **Offline** • **Testing** • **Faulty**
Firmware field	Firmware version
Ether IP field	Ethernet IP address
Ether NM field	Ethernet netmask value
FC IP field	Fibre Channel IP address
FC NM field	Fibre Channel netmask value
Gateway field	IP address of the default gateway; must be properly set to access the switch from other networks

Table 2-7. Switch Management Application Components *(continued)*

Component	Description
thermometer icon	Indicates the highest temperature from the last data sample. Click to display the temperature readings from all switch thermo sensors
admin. button	Click to link to the **Administrative Interface**, where you can perform switch management functions
telnet button	Click to launch a Telnet session
perform. button	Click to link to the **Performance** window, where you can monitor switch performance
fan icon	Spinning disks indicate that the fans are operating; if a disk stops spinning and turns yellow, the fan is experiencing a problem
power supply icon	Left and right power assemblies are updated to show the presence/absence and status of each power supply

Port Information

Port Information provides statistics, by port. To display statistics for a particular port, click the appropriate tab at the top of the window. Port information is automatically updated whenever a port is selected; this information is also refreshed periodically while the port is selected.

Figure 2-8 shows the **Port Information** window. Table 2-8 provides a description for each component in this window.

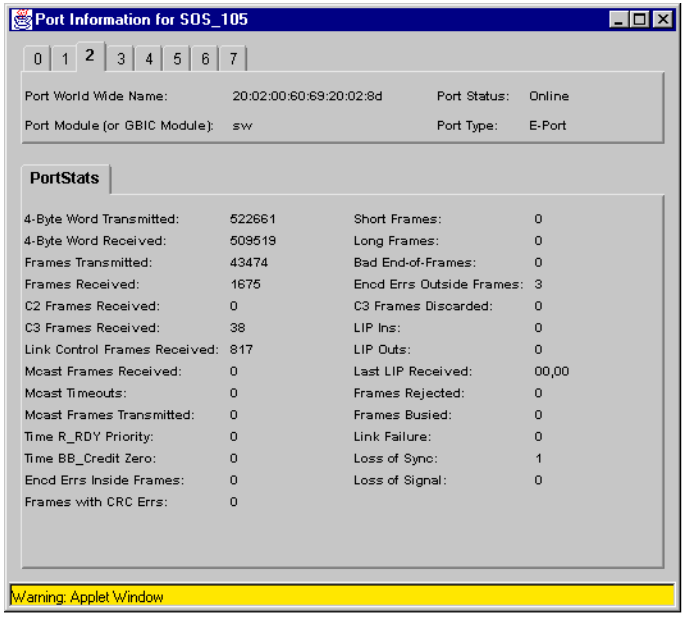

Figure 2-8. Port Information Window

Table 2-8. Port Information Components

Component	Description
Port World Wide Name field	WWN for this port
Port Module (or GBIC Module) field	GBIC type: • **--** (two hyphens) — No GBIC present • **sw** — Short-wave GBIC • **lw** — Long-wave GBIC • **cu** — Copper GBIC • **id** — Might include any of the above types

Table 2-8. Port Information Components *(continued)*

Component	Description
Port Status field	• **No_Module** — No GBIC module in this port • **No_Light** — The module is not receiving light • **No_Sync** — The module is receiving light but is out of sync • **In_Sync** — The module is receiving light and is in sync • **Laser_Flt** — The module is signaling a laser fault (defective GBIC) • **Port_Flt** — The port is marked faulty (defective GBIC, cable, or device) • **Diag_Flt** — The port failed diagnostics • **Online** — The port is up and running • **Lock_Ref** — The port is locking to the reference signal
Port Type field	• **E-Port** — Switch link port • **G-Port** — Generic port • **U-Port** — Universal port • **F-Port** — Fabric port • **FL-Port** — Fabric loop port • **L-Port** — Loop port
PortStats tab	
4-Byte Word Transmitted field	Number of four-byte words transmitted
4-Byte Word Received field	Number of four-byte words received
Frames Transmitted field	Number of frames transmitted
Frames Received field	Number of frames received
C2 Frames Received field	Number of class 2 frames received
C3 Frames Received field	Number of class 3 frames received

Table 2-8. Port Information Components *(continued)*

Component	Description
Link Control Frames Received field	Number of link control frames received
Mcast Frames Received field	Number of multicast frames received
Mcast Timeouts field	Number of multicast timeouts
Mcast Frames Transmitted field	Number of multicast frames transmitted
Time R_RDY Priority field	Number of times R_RDY has priority over frames to be sent
Time BB_Credit Zero field	Number of times BB_Credit went to zero
Encd Errs Inside Frames field	Number of encoding errors inside frames
Frames with CRC Errs field	Number of frames with CRC errors
Short Frames field	Number of frames shorter than the minimum
Long Frames field	Number of frames longer than the maximum
Bad End-of-Frames field	Number of frames with bad end-of-frames
Encd Errs Outside Frames field	Number of frames with encoding errors outside frames
C3 Frames Discarded field	Number of class 3 frames discarded
LIP Ins field	Number of LIPs received
LIP Outs field	Number of times loop initialized by FL_Port
Last LIP Received field	Last LIP received: AL_PD, AL_PS
Frames Rejected field	Number of F_RJTs sent
Frames Busied field	Number of F_BSYs sent
Link Failure field	Number of times NOS received/sent

Table 2-8. Port Information Components *(continued)*

Component	Description
Loss of Sync field	Number of times loss of sync occurred
Loss of Signal field	Number of times loss of signal occurred

Performance

The **Performance** window displays throughput for each port and for the entire switch. Throughput is shown in megabytes per second (MB/sec). The switch throughput is the sum of throughput for all ports. Port throughput represents the number of bytes received plus the number of bytes transmitted.

In the **Performance** window, the horizontal axis represents elapsed time and the vertical axis represents throughput. Each port graph contains up to 60 seconds of performance data; the switch graph at the bottom contains up to 4 minutes of data.

To access this window, click **perform.** in the **Switch Management Application**.

Figure 2-9 shows the **Performance** window.

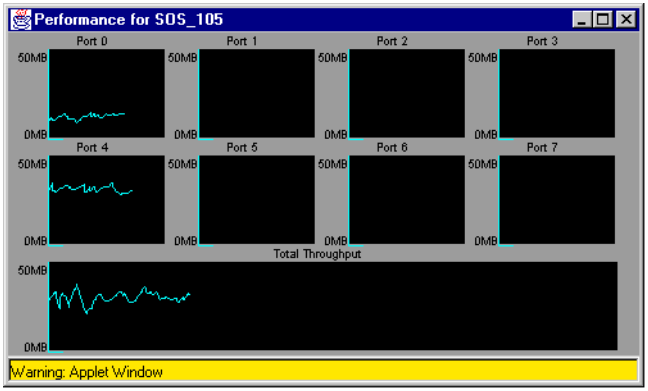

Figure 2-9. Performance Window

Administration

The administration window consists of the following functions.

NOTE: You must have admin privilege to access these functions.

- Switch administration
- User administration
- Firmware upgrade

- Reboot switch
- Simple Network Management Protocol (SNMP) administration

To access these functions, click **admin.** from **Switch Management Application**. The first function to appear is **Switch Admin**. To access all other **Switch Admin** functions, click the appropriate tab.

The following sections describe each function.

Switch Admin

Use **Switch Admin** to change IP information, disable a switch, change the domain, change the switch name, or to see which ports are disabled.

To access **Switch Administration**, click **admin.** from the **Switch Management Application**. You can also click the **Switch Admin** tab from any administration window.

Figure 2-10 shows the **Switch Admin** tab. Table 2-9 provides a description for each component in this tab.

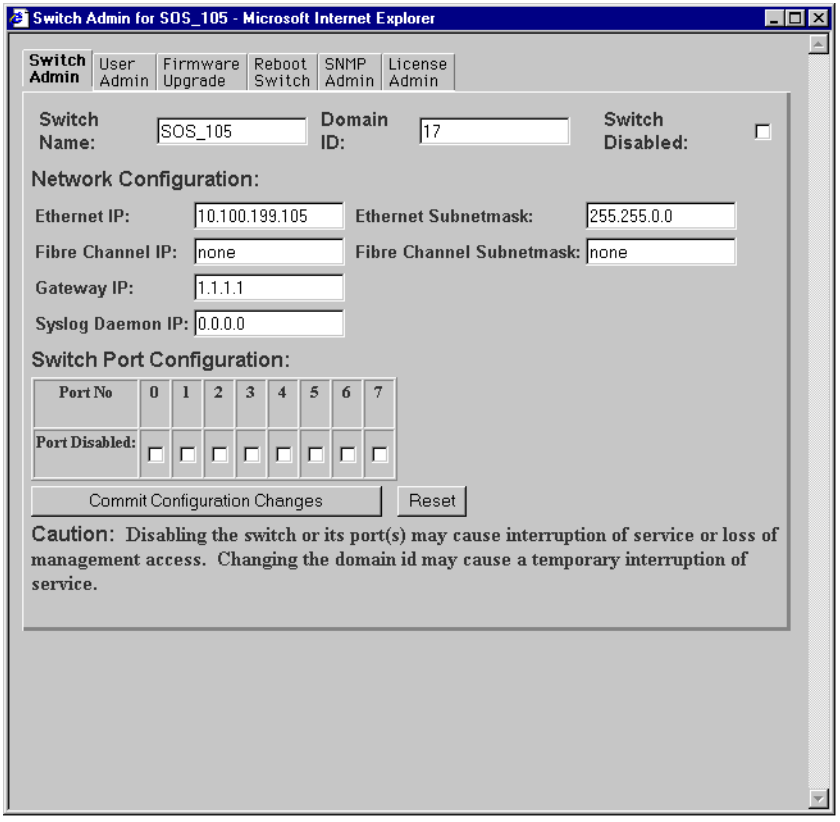

Figure 2-10. Switch Administration Tab

Table 2-9. Switch Administration Components

Component	Description
Switch Name field	Displays or sets the switch name. To change the name, enter a new name in this field.
Domain ID field	Displays or sets the switch domain ID. Domain IDs must be unique within a fabric. To change the domain ID, enter a new domain ID in this field. Use a number from 1 to 239 for normal operating mode (FCSW compatible) and a number from 0 to 31 for VC-encoded address format mode (backward compatible to PowerVault 50F switch).
Switch Disabled checkbox	Check to disable the switch; uncheck to enable.
Network Configuration	
Ethernet IP field	Displays or sets the IP address for the Ethernet connection to the switch.
Ethernet Subnetmask field	Displays or sets the ethernet subnetmask. The default value is none. Contact your network administrator for the value to enter. If you change the value, restart your browser.
Fibre Channel IP field	Displays or sets the Fibre Channel IP address.
Fibre Channel Subnetmask field	Displays or sets Fibre Channel subnetmask. If you change the value, restart your browser.
Gateway IP field	Displays or sets the gateway IP address. Contact your network administrator for the IP address. If you change the value, restart your browser.
Syslog Daemon IP field	Displays or sets the destination station IP address for sending events using syslog protocol to host. Contact your network administrator for the IP address.
Switch Port Configuration field	
Port Disabled checkbox	If checked, the port is disabled. To enable the port, uncheck the box.
Commit Configuration Changes button	Click to apply the changes you made.
Reset button	Click to reset all components to the values present when you launched the Switch Administration.

*NOTE: If the IP address of the switch from which you initially started the **Switch Manager** is changed, close the browser and restart the **Switch Manager**.*

User Admin

Use **User Admin** to rename accounts or change passwords.

To access **User Administration**, click the **User Admin** tab from any administration window.

Figure 2-11 shows the **User Admin** tab. Table 2-10 provides a description for each component in this tab.

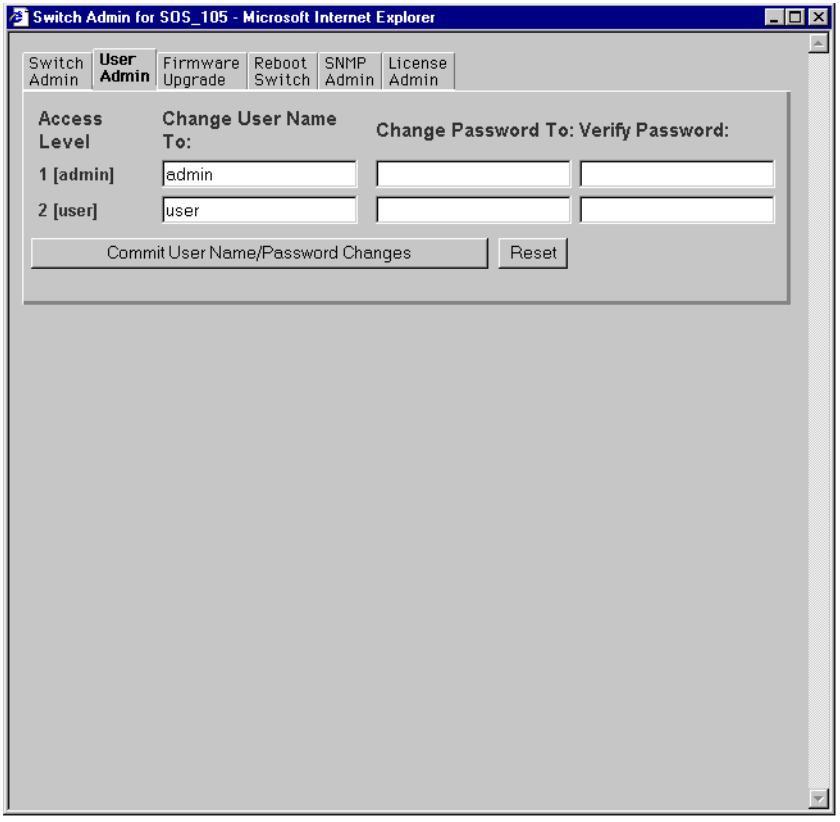

Figure 2-11. User Admin Tab

Table 2-10. User Admin Components

Component	Description
Change User Name To field	Enter a new user name
Change Password To field	Enter a new password
Verify Password field	Reenter the password to verify
Commit User Name/ Password Changes button	Click to apply the changes you made
Reset button	Click to reset all components to the values set at the last submission

Firmware Upgrade

Use **Firmware Upgrade** to download firmware upgrades.

To access **Firmware Upgrade**, click the **Firmware Upgrade** tab from any administration window.

Figure 2-12 shows the **Firmware Upgrade** tab. Table 2-11 provides a description for each component in this tab.

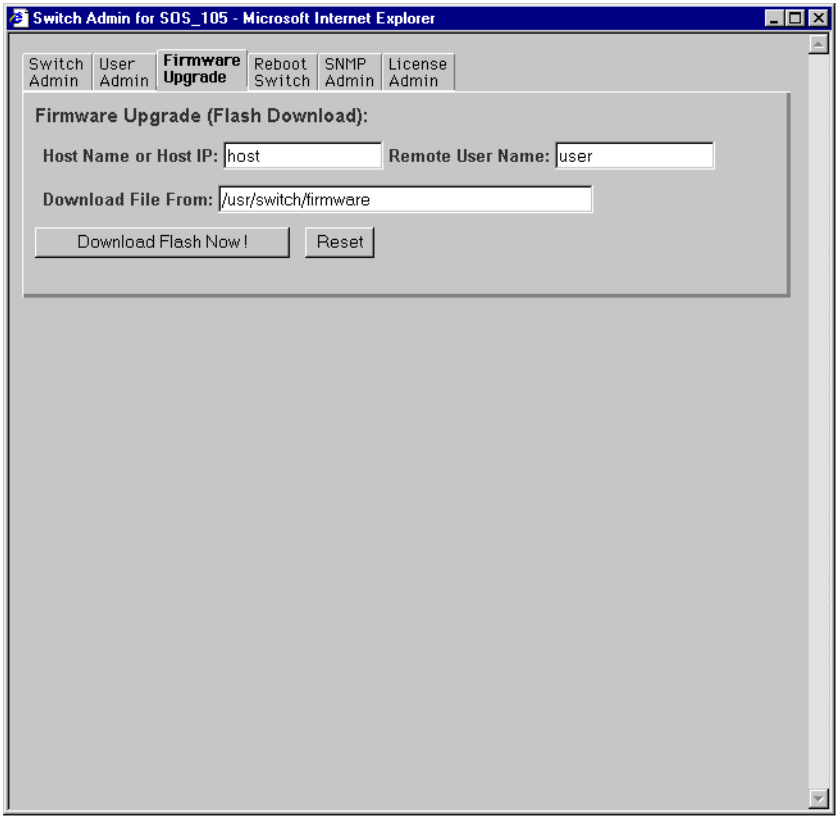

Figure 2-12. Firmware Upgrade Tab

Table 2-11. Firmware Upgrade Components

Component	Description
Host Name or Host IP field	Displays or sets the host name or host IP address
Remote User Name field	Displays or sets the remote user name
Download File From field	Displays or sets the absolute directory path from the source host where the binary file resides *NOTE: You must use forward slashes (/) when downloading the firmware from Microsoft Windows NT operating systems.*
Download Flash Now! button	Click to download the firmware
Reset button	Click to reset all components to the values set when you launched the **Firmware Upgrade** screen

Reboot Switch

Use **Reboot Switch** to reboot or fast boot the switch. You can also disable the power-on self-test (POST) for future reboots.

To access **Reboot Switch**, click the **Reboot Switch** tab from any administration window.

Figure 2-13 shows the **Reboot Switch** tab. Table 2-12 provides a description for each component in this tab.

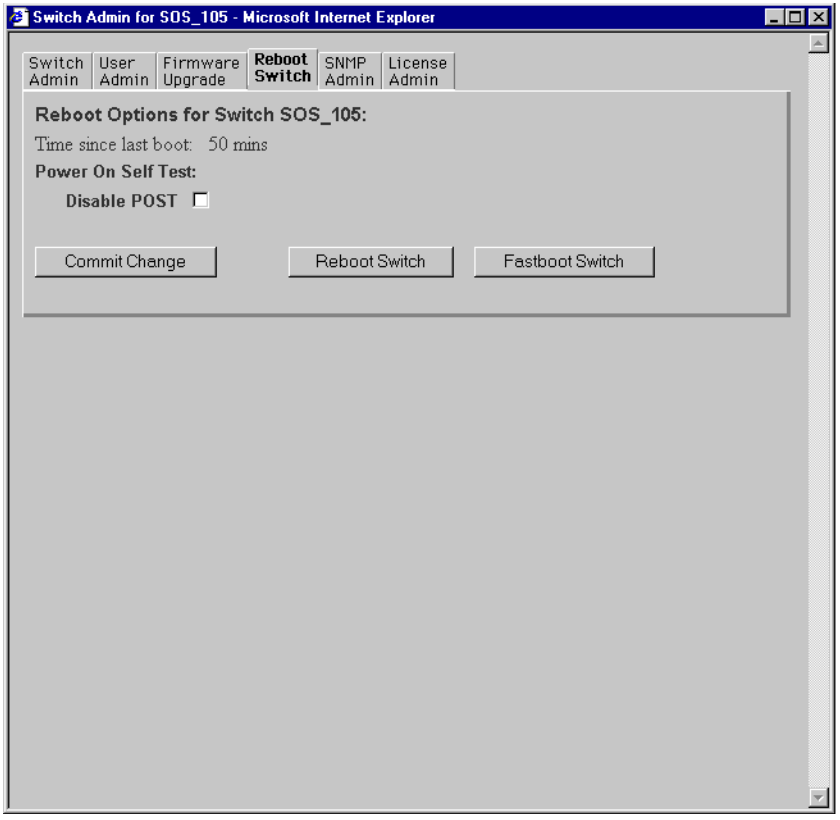

Figure 2-13. Reboot Switch Tab

Table 2-12. Reboot Switch Components

Component	Description
Disable POST checkbox	Checked to disable POST on future reboots; uncheck to enable POST on future reboots
Commit Change button	Click to save settings
Reboot Switch button	Click to reboot the switch
Fastboot Switch button	Click to perform a fast reboot of the switch; a fast reboot bypasses POST (this is the same as a reboot with POST disabled)

SNMP Admin

Use **SNMP Admin** to set SNMP options.

To access **SNMP Administration**, click the **SNMP Admin** tab from any administration window.

Figure 2-14 shows the **SNMP Administration** tab. Table 2-13 provides a description for each component in this tab.

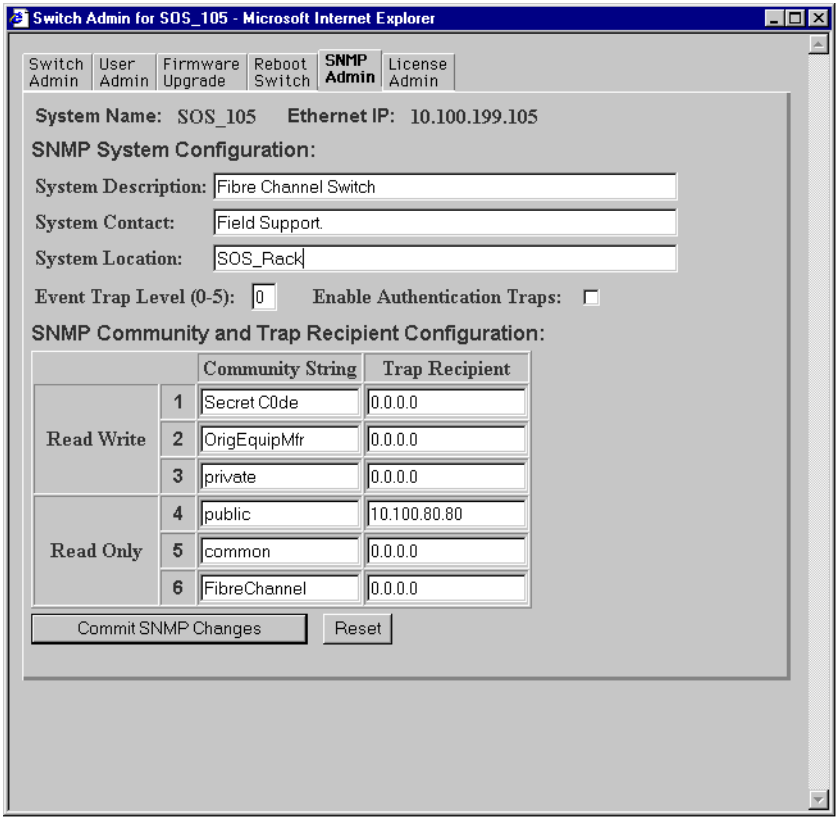

Figure 2-14. SNMP Admin Tab

Table 2-13. SNMP Admin Components

Component	Description
System Description field	Displays or sets the system description; the default is **Fibre Channel Switch**
System Contact field	Displays or sets the contact information for the switch; the default is **Component Support**
System Location field	Displays or sets the location of the switch; the default is **End User Premise**
Event Trap Level (0–5)	Sets the severity level of switch events that prompt SNMP traps; the default is **0**
Enable Authentication Traps	Check to enable authentication traps; uncheck to disable (Dell recommends disabling)
Read Write	Displays or sets up to three strings that work with the SNMP **set** command
Read Only	Displays or sets up to three strings that work with the SNMP **get** or **get-next** command
Community String	Displays the name of the community string.
Trap Recipients	Displays or sets the recipients for traps (usually the IP address of the SNMP management station)
Commit SNMP Changes	Click to apply the changes you made
Reset	Click to reset all components to the values set when you launched **SNMP Admin**

NOTE: To disable community string or trap recipient fields, leave them empty.

Telnet

To access **Telnet**, click **telnet** on the **Switch Management Application**. This brings up a Telnet session directly from your Web browser. Because only one Telnet session can be active, a message appears if a session is already active. Click **Abort Session** to terminate the existing Telnet session or click **Cancel** to cancel the transaction.

NOTE: You must have admin privilege to abort a Telnet session.

Glossary

The following list defines or identifies technical terms, abbreviations, and acronyms used in Dell™ user documents.

alias server
A fabric software facility that supports multicast group management.

arbitrated loop
The FC Arbitrated Loop (FC-AL) is a standard defined on top of the FC-PH standard. It defines the arbitration on a loop where several FC nodes share a common medium.

Class 2
In Class 2 service, the fabric and destination N_Port provide connectionless service with notification of delivery or nondelivery between the two N_Ports.

Class 3
Class 3 service provides connectionless service without notification of delivery between N_Ports. The transmission and routing of Class 3 frames is the same as for Class 2 frames.

Class F
A class of service used for interswitch control traffic. It provides connectionless service with notification of delivery or nondelivery between two E_Ports.

community (SNMP)
An SNMP community is a relationship between an SNMP agent and a set of SNMP managers that defines authentication, access control, and proxy characteristics.

credit
Credit, applied to a switch, is a numeric value that represents the maximum number of receive buffers provided by an F_Port or FL_Port to its attached N_Port or NL_Port respectively such that the N_Port or NL_Port may transmit frames without overrunning the F_Port or NL_Port.

domain_ID
The domain number uniquely identifies the switch in a fabric. This switch domain ID is normally automatically assigned by the switch and may be any value between 0 and 31. This number may also be assigned manually.

E_D_TOV (Error-Detect Time-Out Value)
E_D_TOV (Error-Detect Time-Out Value) defines the time the switch waits for an expected response before declaring an error condition. The error detect time out value is adjustable in 1 ms increments from two seconds up to 10 seconds.

E_Port
A port is designated an E_Port when it is used as an interswitch expansion port to connect to the E_Port of another switch to build a larger switch fabric.

fabric
The name applied to a network resulting from the interconnection of switches and devices by interswitch links (ISLs). A fabric is an active, intelligent, nonshared interconnect scheme for nodes.

F_Port
The F_Port is the Fabric access port used to connect an N_Port.

FL_Port
The FL_Port is the fabric access port used to connect NL_Ports to the switch in a loop configuration.

FSPF
Fibre-Channel shortest path first.

G_Port
A port is designated as a G_Port when it has not assumed a specific function. A G_Port is a generic switch port that can operate either as an E_Port or an F_Port. A port is defined as a G_Port, for example, when it is not connected or has not yet assumed a specific function in the fabric.

gateway
Hardware that connects incompatible networks by providing the necessary translation, both for hardware and software.

interswitch link (ISL)
ISL is a fiber link between two switches

isolated E_Port
ISL is online but not operational between switches because of overlapping domain ID or nonidentical parameters such as E_D_TOVs.

loop
A loop is a configuration of devices (for example, JBODs) connected to the fabric via and FL_Port interface card.

multicast
Multicast is used when multiple copies of data are to be sent to designated multiple destinations.

N_Port
The N_Port is the designation of an equipment port connected to the fabric.

NL_Port
The NL_Port is the designation of an equipment port connected to the fabric in a loop configuration via an FL_Port.

power-on self-test (POST)
The POST is a series of self-tests that run each time the unit is booted or reset.

Resource Allocation Time Out Value (R_A_TOV)
R_A_TOV is used to time out operations that depend on the maximum possible time that a frame could be delayed in a fabric and still be delivered. The value of R_A_TOV is adjustable in 1-microsecond increments over a range from 10 to 120 seconds.

Simple Network Management Protocol (SNMP)
SNMP is a TCP/IP protocol that generally uses the User Datagram Protocol (UDP) to exchange messages between a management information base and a management client residing on a network. Since SNMP does not rely on the underlying communication protocols, it can be made available over other protocols, such as UDP/IP.

SNMPv1
The original standard for SNMP is now referred to as SNMPv1.

Trap (SNMP)
A trap is a mechanism for SNMP agents to notify the SNMP management station of significant events.

Unicast
Unicast routing provides one or more optimal path(s) between any of two switches that make up the fabric. This is for a single copy of the data to be sent to designated destinations.

World Wide Name (WWN)
Unique numeric identifier for each switch; assigned by manufacturer.