

# hp StorageWorks

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## web tools version 3.0.x/4.0.x user guide

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This user guide provides information to help you install and understand Web Tools.



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## About this Guide

This guide provides information to help you:

- Understand and install Web Tools
- Configure and use Web Tools Fabric View
- Configure and use Web Tools Port View
- Contact technical support for additional assistance

### Intended Audience

This book is intended for use by system administrators who are experienced with the following:

- *HP StorageWorks*<sup>™</sup> Fibre Channel SAN switches
- Fabric Operating System V3.0.x or later

### Related Documentation

For a list of related documents included with this product, see the Related Documents section of the Release Notes that came with your switch.

For the latest information, documentation, and firmware releases, please visit the following StorageWorks website:

<http://www.compaq.com/storage/productindexdisk.html>

For information about Fibre Channel standards, visit the Fibre Channel Association website, located at <http://www.fibrechannel.com>.

## Document Conventions

The conventions included in [Table 1](#) apply.

**Table 1: Document Conventions**

Element	Convention
Cross-reference links	Blue text: <a href="#">Figure 1</a>
Key names, menu items, buttons, and dialog box titles	<b>Bold</b>
File names, application names, and text emphasis	<i>Italics</i>
User input, command names, system responses (output and messages)	Monospace font COMMAND NAMES are uppercase unless they are case sensitive
Variables	<i>Monospace, italic font</i>
Website addresses	Sans serif font ( <a href="http://thenew.hp.com">http://thenew.hp.com</a> )

## Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.



**WARNING:** Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

---



**CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

---

**IMPORTANT:** Text set off in this manner presents clarifying information or specific instructions.

**NOTE:** Text set off in this manner presents commentary, sidelights, or interesting points of information.

## Getting Help

If you still have a question after reading this guide, contact an HP authorized service provider or access our website: <http://thenew.hp.com>.

## HP Technical Support

In North America, call HP technical support at 1-800-652-6672, available 24 hours a day, 7 days a week.

**NOTE:** For continuous quality improvement, calls may be recorded or monitored.

Outside North America, call HP technical support at the nearest location. Telephone numbers for worldwide technical support are listed on the HP website: [http://thenew.hp.com/country/us/eng/contact\\_us.html](http://thenew.hp.com/country/us/eng/contact_us.html).

Be sure to have the following information available before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

## HP Storage Website

The HP storage website has the latest information on this product, as well as the latest drivers. Access the HP storage website at: <http://thenew.hp.com/country/us/eng/prodserv/storage.html>. From this website, select the appropriate product or solution.

## HP Authorized Reseller

For the name of your nearest HP Authorized Reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, access the HP website at [http://thenew.hp.com/country/us/eng/contact\\_us.html](http://thenew.hp.com/country/us/eng/contact_us.html) for locations and telephone numbers.



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# Introducing Web Tools

This chapter provides the following information:

- Overview on page 1–1
- Advantages of Web Tools on page 1–1
- Capabilities of Web Tools on page 1–2
- Web Tools Main Views on page 1–4

## Overview

Web Tools provides a graphical interface that allows the administrator to monitor and manage entire fabrics and individual switches and ports from a standard workstation. It is a standard product that runs on all StorageWorks switches running the V3.0.x or 4.0.x firmware streams.

**NOTE:** Web Tools is part of the switch's firmware. The version of Web Tools is the same as the version of the firmware.

## Advantages of Web Tools

Web Tools is an excellent partner to the traditional Telnet commands, and in many ways can provide faster and more effective results than can be achieved strictly through a Command Line Interface (CLI).

The following are some of the features that make Web Tools an important part of the switch management and administration process:

- Web Tools can be used from a standard workstation and provides the user the advantage of being “virtually” in front of any fabric, switch, or port.
- Web Tools makes zoning a simple “click and drag” process, rather than having to type out WWN addresses and port numbers to put in a configuration.

- Web Tools provides the “Performance Monitor” feature. This feature allows you to view the status and traffic of a switch or port in seconds by easily creating a variety of effective graphs.
- Web Tools is easy and intuitive to use.

## Capabilities of Web Tools

Web Tools provides the following information:

- Monitoring and managing the *entire fabric*. See “Fabric View” on page 3–1.
- Monitoring and managing *individual switches*. See “Switch View” on page 4–1.
- Monitoring and managing *individual ports*. See “Port View” on page 5–1.

When monitoring and managing the entire fabric, Web Tools allows you to perform the functions listed in Table 1–1.

**Table 1–1: Monitoring and Managing the Entire Fabric**

Task	Page number
View the status of all the switches in the fabric.	See “Fabric View” on page 3–1.
Access event logs for entire fabric.	See “Fabric Events View” on page 3–7.
Set-up and manage Zoning functions (optionally licensed).	See “Zone Administration View V3.0.x (Optional Software)” on page 3–13. See “Config Tab Fields” on page 3–67.
Access to the Name Server Table.	See “Name Server Table View” on page 3–11.
Access Telnet functions.	See “Telnet Interface” on page 4–130.
Utilize switch beaconing for rapid identification of a single switch in large fabric environments.	See “Beacon” on page 4–5.
Create and zone QuickLoops (optionally licensed).	See “Loop Tab” on page 5–8, “Configure Tab” on page 4–113, or “Zone Administration View V3.0.x (Optional Software)” on page 3–13. Feature not available on version 4.0.x.

When monitoring and managing individual switches, Web Tools allows you to perform the functions listed in Table 1–2.

**Table 1–2: Monitoring and Managing Individual Switches**

Task	Page number
View summary information about each switch.	See the “Switch Events View” on page 4–6.
View event logs for individual switches.	See the “Switch Events View” on page 4–6.
Perform switch configuration and administration.	See the “Configure Tab” on page 4–79, the “Configure Tab” on page 4–113, and the “Switch Settings Tab” on page 4–95.
Monitor switch and port performance.	“Performance Monitor” on page 4–26.
Utilize the ability to upgrade Fabric OS and license key administration.	See “Upload/Download Tab” on page 4–100 and “License Administration Tab” on page 4–107.
Utilize report capability for switch configuration information.	See “Report Tab” on page 4–109.

When monitoring and managing individual ports, Web Tools allows you to perform the functions listed in Table 1–3.

**Table 1–3: Monitoring and Managing Individual Ports**

Task	Page number
View the port status.	See “PortStats Tab” on page 5–5 and the “PortStats Tab” on page 5–14.
View information about GBIC (Gigabit Interface Converter)/SFP (Small form factor pluggable) Serial IDs.	See “SFP Tab” on page 5–17 (3.0.x) or the “SFP Tab” on page 5–17 (4.0.x).
View loop information.	See “Loop Tab” on page 5–8, “Configure Tab” on page 4–79, or “Zone Administration View V3.0.x (Optional Software)” on page 3–13. Feature not available on 4.0.x.
View port performance, including frame counts (frames in, frames out) and error counts.	See “The Configuration Report tab of the Threshold Configuration tab” on page 4–25.

## Web Tools Main Views

Web Tools provides access to and information about a fabric through a number of separate windows, called “views”, making it possible to manage and monitor several aspects of a fabric at the same time.

The main views available through Web Tools are:

- Fabric View—Figure 1–1
- Switch View—Figure 1–2 and Figure 1–3
- Port Information View—Figure 1–4

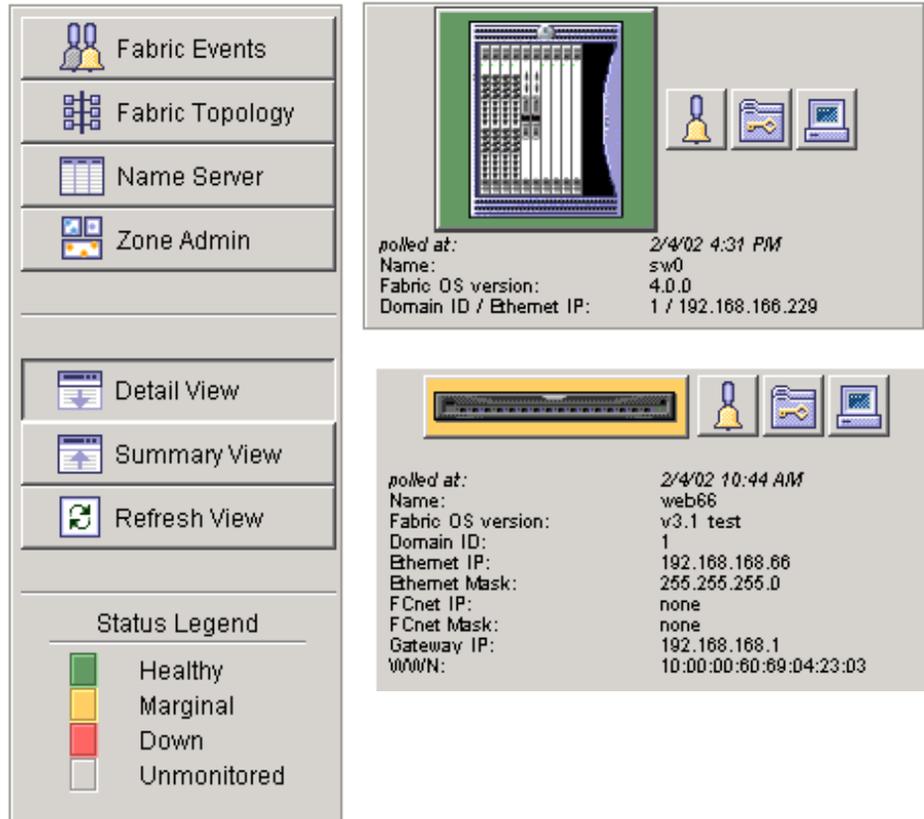
### Fabric View

This view displays a control panel that provides access to fabric-wide options, a panel for each switch in the fabric, plus a legend that explains the meaning of the background colors on the switch icons. Each panel contains an icon that represents the switch itself, in addition to icons for Switch Events and the Administrative and Telnet interfaces. The background color of the switch icon represents the status of that particular switch or Integrated Fabric (as defined by the Status Legend provided in the window).

**NOTE:** Switch status is calculated approximately once every 15 seconds; however the initial display does not occur until 30-60 seconds after the switch is booted. It is calculated from the state of data structures in the switch, and stored as the variable *switchStatus*.

**NOTE:** For all statuses that are based on errors per time interval, any errors will not cause the status to show faulty until the entire sample interval has passed.

See Figure 1–1 for an example of Fabric View. For information about the functions that are accessible through Fabric View, see “Fabric View” on page 3–1.



**Figure 1–1: Fabric View**

## Switch View

Displays information about individual switches, including a real-time view of switch status. Accessed by selecting the switch icon on a switch panel. The Switch View is also the launch point for the Switch Events View, Telnet Interface, Fabric Watch View,

Administrative Interface, Performance View, and Port Information View. It includes buttons that display the status of the switch fans, temperature monitors, switch info, switch status, power supply, High Availability (for 4.0.x), and beacon.

See Figure 1–2 and Figure 1–3 for examples of Switch View. For information about the functions that are accessible through the Switch View, see “Switch View” on page 4–1.

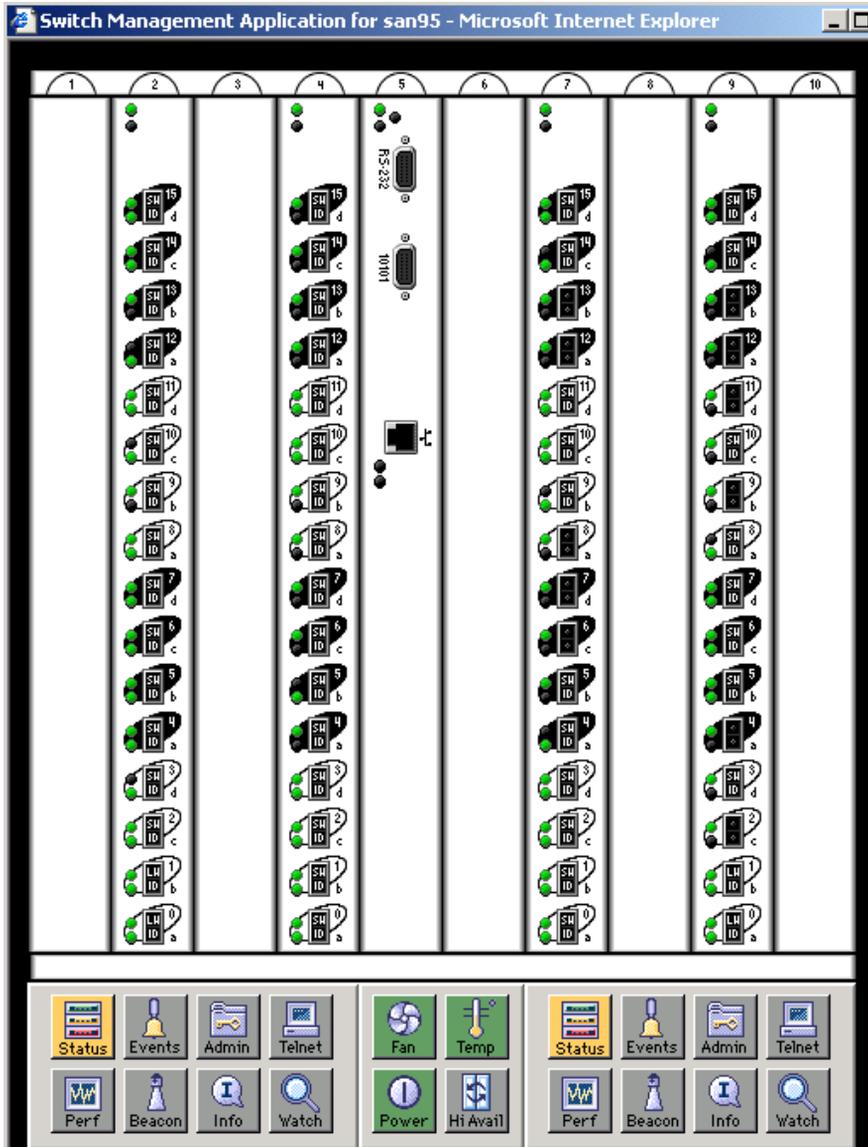


Figure 1–2: Switch View of StorageWorks Core switch series switch



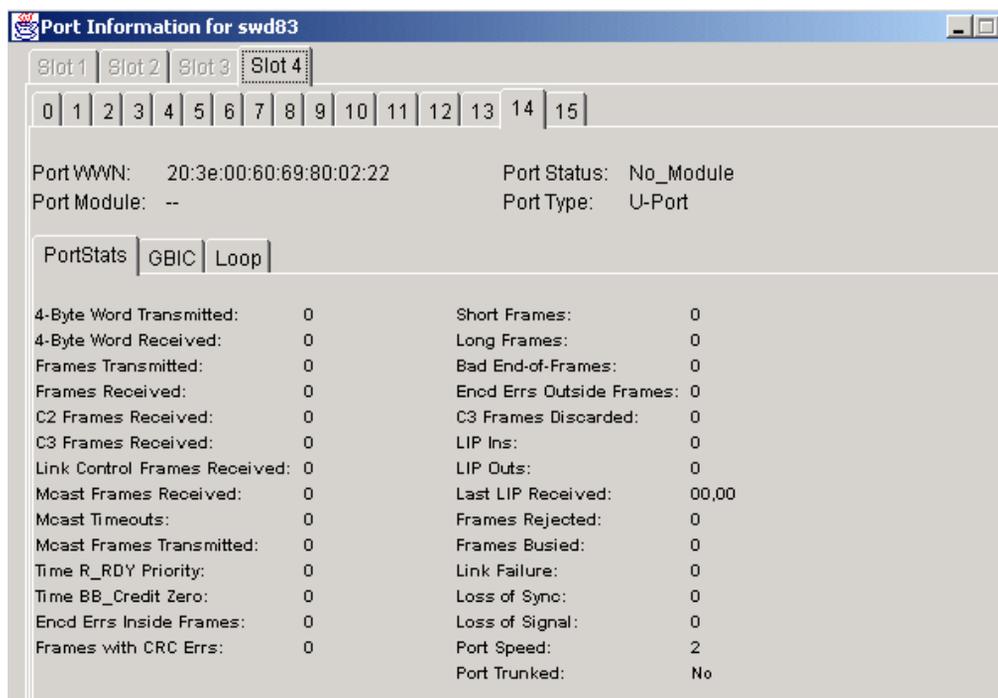
**Figure 1–3: Switch View of StorageWorks 2 Gb SAN switch**

## Port Information View

The Port Information View displays statistics and status for the selected port, GBIC/SFP, or loop. Accessed by selecting the icon for the relevant port in Switch View.

See Figure 1–4 for an example of Port View. For information about the functions that are accessible through the Port View, see “Port Information View V3.0.x” on page 5–1 or “Port Information View 4.0.x” on page 5–11.

**NOTE:** The Slot tabs will only appear on an StorageWorks Core switch series switch view.



**Figure 1–4: Port Information view**

**NOTE:** Each main view has several layers, or sub-views, that allow for more complex functionality. For more information about what you can do with these views, see Chapter 3, beginning with “Fabric View” on page 3–1.



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## Installing and Launching Web Tools

This chapter provides the following information:

- Requirements on page 2–1
- Launching Web Tools on page 2–6

### Requirements

The workstation and the switch must meet both specific requirements for the correct operation of Web Tools.

### Switch Requirements

Web Tools 4.0.x can be used to manage switches that meet the following requirements:

- StorageWorks switches running firmware streams v.2.x, v.3.0.x, and v.4.0.x
- StorageWorks SAN series switches and StorageWorks Core switch series switches. The SAN Switch Integrated/32 and SAN Switch Integrated/64 series switches can be managed individually, but not as a group.
- Fabric OS installed
  - Fabric OS V2.x or later must be installed to manage switches running 2x series switches.
  - Fabric OS V3.0.x or later must be installed to manage switches running 3x series switches.
  - Fabric OS V4.0.x must be installed to manage StorageWorks Core switch series switches.

### Workstation Requirements

The following items are required for the operation of Web Tools.

- One of the following operating systems:
    - Solaris 5.7, 5.8 or later
    - Windows 98 (not guaranteed for 4.0.x), or 2000
    - Windows NT 4.0
    - Linux
  - Adequate RAM (required for Windows operating systems only):
    - 128 MB for fabrics of 10 switches or less
    - 256 MB for fabrics of 20 switches or less
    - 512 MB or more for over 20 switches
  - 5 MB of free disk space
  - Minimum 8 MB of video RAM is recommended
  - One of the following web browsers:
    - Netscape Communicator 4.7x or later.
    - Internet Explorer 5.0 or later. Internet Explorer 5.5 Service Pack 6 is highly recommended.
- NOTE:** The browser must be configured to work with Web Tools. For information about how to do this, see “Installing a Web Browser” on page 2–3.
- The correct version of the Java Plug-in for the operating system:
    - Windows 98, NT, or 2000: Java Plug-in version 1.2.2-008 or later. Java Runtime Environment v1.2.1\_01a is recommended for best results.
    - Solaris: Java Plug-in version 1.2.2-02 for Solaris, and JRE 1,2,1 with patch.

## **Installation**

Perform the following steps before you use Web Tools to manage your fabric:

- Install of one of the supported web browsers on the workstation, if not already installed.
- Configure the web browser for use with Web Tools.
- Install the required Java Plug-in on the workstation, if not already installed.

## Installing a Web Browser

If not already installed, install one of the following browsers:

- Netscape Communicator 4.6x or later. It is available at <http://www.netscape.com>
- Internet Explorer 4.01 or later (i.e., 5.5 Service Pack 2 or later is highly recommended). It is available at: <http://www.microsoft.com>

## Configuring the Web Browser

Specific browser settings are required for the correct operation of Web Tools with either Netscape Communicator or Internet Explorer.

### Configuring Netscape Communicator

The web browser cache must be cleared after the installation of Fabric OS V4.0.x. Some browsers use local cache copies of .jar files and/or image files to improve performance (depending on the options selected in browser), which can cause incorrect display in Web Tools.

To remove cached files from Netscape Communicator:

1. Select **Edit > Preferences**
2. Click **Advanced** in the Category box to expand it, then click **Cache**.
3. On the Cache panel, click **Clear Memory Cache**.
4. Click **Clear Disk Cache**.
5. Click **OK**.
6. Exit and relaunch the browser.

### Configuring Internet Explorer

Correct operation of Web Tools with Internet Explorer requires clearing the browser cache after installation, and specifying the appropriate settings for browser refresh frequency and process model.

- The browser cache must be cleared after the installation of Fabric OS V4.0.x. The browser may use local cache copies of .jar files and/or image files to improve performance (depending on options selected in browser), which can cause incorrect display.

To remove cached files from Internet Explorer:

- a. Select **Internet Options** from the **Tools** menu.
  - b. Select the **General** tab.
  - c. Click **Delete Files...** (under “Temporary Internet Files”).
  - d. Click **OK**, then exit and relaunch the browser.
- Browser pages must be refreshed at every visit to ensure the correct operation of the Switch Admin feature.

To set the refresh frequency:

- a. Select **Internet Options** from the **Tools** menu.
  - b. Select the **General** tab and click **Settings** (under “Temporary Internet Files”).
  - c. Under “Check for newer versions of stored pages,” select “Every visit to the page.”
- The correct Browser Process Model must be selected.

To select the Browser Process Model:

- a. Select **View > Internet Options** if using Internet Explorer 4.0.x, or **Tools > Internet Options** if using Internet Explorer 5.x.
- b. Select the **Advanced** tab and click to expand the Browsing category.
- c. Under “Browsing,” select “Browse in a new process” if using Internet Explorer 4.0.x or 5.x.

## **Installing the Java Plug-in on the Workstation**

A Java Plug-in must be installed on the workstation for the correct operation of Web Tools. The required version depends on the operating system.

### **Installing the Java Plug-in on Solaris**

Solaris workstations require both the Java Plug-in version 1.2.2-02 for Solaris and JRE 1,2,1 with patch.

To install the Java Plug-in on Solaris:

1. Locate the Java Plug-in on the Internet, such as at the Sun Microsystems website.
2. Follow the instructions to install the Java Plug-in for Solaris.
3. Set environment variable `NPX_PLUGIN_PATH`. For example:

C Shell:

```
setenv NPX_PLUGIN_PATH /plug-in path  
(or could be added in .cshrc in home directory)
```

Bourne Shell:

```
NPX_PLUGIN_PATH=/plug-in path  
export NPX_PLUGIN_PATH  
(or could be added in .profile in home directory)
```

To install the patch on Solaris:

1. Go to the website at <http://access1.sun.com>, use the Search option, enter the string “108593” in the search field, and press **Enter**.
2. Follow the link to download the patch, and exit the browser when done.
3. Install the patch and reboot the system.
4. Relaunch the browser and enter the IP address of the switch.

## Installing the Java Plug-in on Windows 2000 or NT

Windows 98, 2000 and NT workstations require Java Plug-in version 1.2.2-008 or later. Java Runtime Environment v1.2.1\_01a is recommended for best results.

To determine the version of the Java Plug-in installed on Windows 98, NT, or 2000, and install if necessary:

1. Launch the Java Plug-in Control Panel from **Start > Programs > Java Plug-in Control Panel** and turn on the Java Console.
2. Launch the web browser, enter the name or IP address of a switch running Fabric OS v2.2 or later, and press **Enter**.

The switch launches the Java Plug-in console, which displays the Java Plug-in version currently installed.

3. Determine whether the correct Java Plug-in version is installed, and install if necessary:

- If the correct version is installed, Web Tools is ready to use.
- If no Java Plug-in is installed, point the browser toward a switch running Fabric OS V4.0.x, follow the link to the Sun Microsystems website, download the correct Java Plug-in, then double-click the downloaded file to install the plug-in.
- If an outdated version is currently installed, uninstall it, relaunch the browser, enter the address of a switch running Fabric OS V4.0.x or later, follow the link to the Sun Microsystems website, and download the new Java Plug-in.

## **Launching Web Tools**

You can launch Web Tools once the Java Plug-in is installed on the client machine browser.

To launch Web Tools:

1. Launch the Web browser from your host.
2. Enter the switch name or IP address in the URL field

For example:

<http://switch name/>

3. Press **Enter**.

Web Tools launches, displaying the default view, Fabric View.

---

## Fabric View

This chapter describes the views and interfaces available through the Fabric View of Web Tools, which consist of the following:

- Fabric Events View on page 3–7
- Fabric Topology View on page 3–9
- Name Server Table View on page 3–11
- Zone Administration View V3.0.x (Optional Software) on page 3–13
- Zone Administration View V4.0.x (Optional Software) on page 3–68

**NOTE:** Switch/Fabric administration can be accomplished through different methods, such as through Telnet, SNMP, and the Web, any of which can occur simultaneously.

### Fabric View Page

The Fabric View is the first web page that displays when you connect to a switch. The Fabric View provides access to specific information about each switch, in addition to other options, and a legend explaining the colors used to indicate switch status.

To launch Web Tools and access Fabric View:

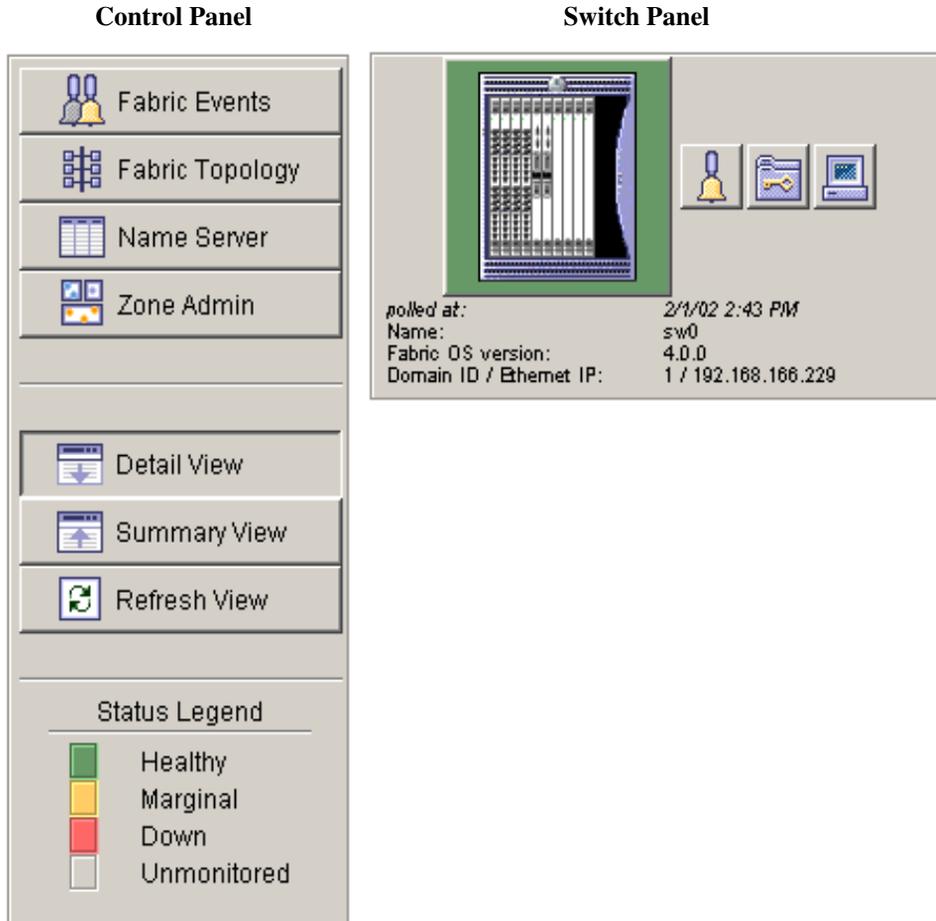
1. Launch the web browser.
2. Enter the switch name or IP address in the **Location/Address** field and press **Enter**.

For example: [http://switch name\\_or\\_ip](http://switch name_or_ip)

**NOTE:** This switch is assumed to be the local domain.

Web Tools launches, displaying Fabric View in detailed view as shown in Figure 3–1. The Fabric View consists of two logical parts:

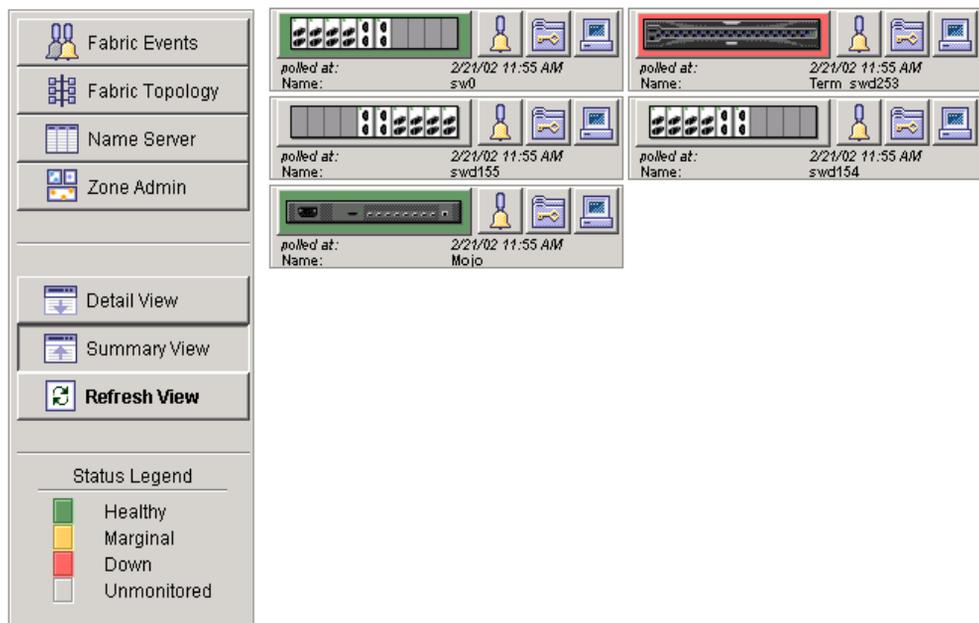
- Control Panel
- Switch Panel



**Figure 3–1: Detailed view of Fabric View**

To see the Summary view of the Fabric View, click the **Summary View** button on the left side of the Fabric View.

Fabric View with the Summary View selected is displayed as shown in Figure 3–2.



**Figure 3–2: Summary view of Fabric View**

Fabric View of an StorageWorks Core switch and StorageWorks 2 Gb SAN switch is displayed as shown in Figure 3–3.

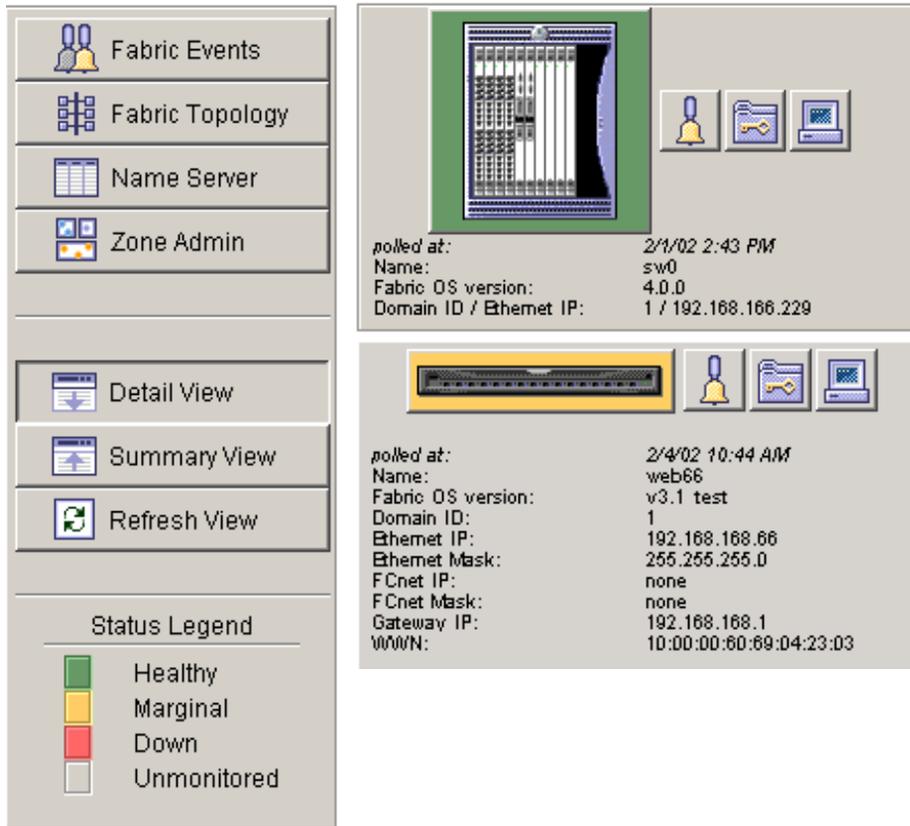


Figure 3–3: Detailed Fabric View

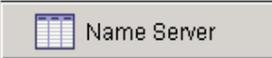
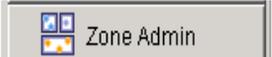
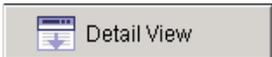
## Buttons and Icons

Table 3–1 describes the buttons and icons found in the control panel of the Fabric View.

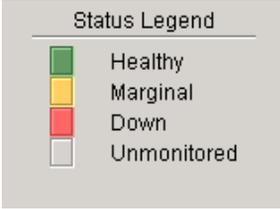
Table 3–1: Button and Icons in the Control Panel

The Control Panel (on the left side of Figure 3–1)	
<p><b>Fabric Events</b></p> 	<p>Select to open Fabric Events View. The Fabric Events View provides a running log of events in the fabric.</p> <p>For additional information, see the “Fabric Events View” on page 3–7.</p>

**Table 3–1: Button and Icons in the Control Panel (Continued)**

<p><b>Fabric Topology</b></p> 	<p>Select to open Fabric Topology View. The Fabric Topology View summarizes the physical configuration of the fabric from the perspective of the “local domain” (the domain of the switch entered as a URL in the web browser).</p> <p>For additional information, see the “Fabric Topology View” on page 3–9.</p>
<p><b>Name Server</b></p> 	<p>Select to open Name Server Table View. The Name Server Table View provides the name server entries listed in the Simple Name Server database.</p> <p>For additional information, see the “Name Server Table View” on page 3–11.</p>
<p><b>Zone Admin</b></p> 	<p>Select to open Zone Administration View. This view is available only if a Zoning license is installed (for additional information, see the “Zone Administration View V3.0.x (Optional Software)” on page 3–13 or “Zone Administration View V4.0.x (Optional Software)” on page 68.</p>
<p><b>Summary/Detail View</b></p>  	<p>Select this button to view either the Summary or Detail version of Fabric View. The Summary version shows abbreviated switch panels (see Figure 3–2). The default view is Detail.</p> <p>In the V3.0.x Fabric View, Summary and Detail appear as one alternating button. In the 4.0.x Fabric View, the Detail and Summary views appear as two separate buttons.</p>
<p><b>Refresh</b></p> 	<p>Select to update the Fabric View to display the latest changes. The Refresh button icon will flash when new information when the fabric shown in the Fabric View is not representative of the one that is actually present. The Refresh button is only available on 4.0.x switches.</p>

**Table 3–1: Button and Icons in the Control Panel (Continued)**

<p><b>Status legend</b></p> 	<p>Defines meaning of colors visible in the background of the switch icons. Each color indicates a different operational state:</p> <ul style="list-style-type: none"> <li>Green - Healthy</li> <li>Yellow - Marginal (mix of good and faulty readings)</li> <li>Red - Down (more than two faulty readings)</li> <li>Gray - Unknown or unmonitored</li> </ul> <p>If no data is available from a switch, the color displays as gray.</p> <p><b>NOTE:</b> For all statuses that are based on errors per time interval, any errors will not cause the status to show faulty until the entire sample interval has passed.</p>
<p><b>The Switch Panel (on the right side of Figure 3–1)</b></p>	
<p><b>Switch</b></p> 	<p>Select to open Switch View for the switch. Each switch type is represented by a different icon. The background color around the icon indicates the status of the switch</p> <p>For information about this view, see “Switch View” on page 4–1.</p>
<p><b>Events</b></p> 	<p>Select to open Switch Events View to display the switch events log</p> <p>For information about this view, see “Switch Events View” on page 4–6.</p>
<p><b>Admin</b></p> 	<p>Select to open Switch Administration View.</p>
<p><b>Telnet</b></p> 	<p>Select to launch the Telnet Interface for the switch</p> <p>For information about this view, see “Telnet Interface” on page 4–130.</p>

**Table 3–1: Button and Icons in the Control Panel (Continued)**

<b>Displayed only in 4.0.x</b>	
<b>polled at: or unreachable since:</b>	Time of the last status check, or if currently unavailable, the time of the last successful status check.
<b>Name:</b>	The name of the switch.
<b>Fabric OS version:</b>	Version of Fabric OS installed on the switch.
<b>Domain ID: Ethernet IP:</b>	A number that uniquely identifies the switch within the fabric. Ethernet IP address.
<b>Displayed only in 3.0</b>	
<b>Ethernet Mask:</b>	Ethernet subnetmask.
<b>FCnet IP:</b>	Fibre channel IP address.
<b>FCnet Mask:</b>	Fibre channel subnetmask.
<b>Gateway IP:</b>	Gateway IP address.
<b>WWN:</b>	Unique numeric identifier for the switch; assigned by manufacturer.

## Fabric Events View

The Fabric Events View provides a running log of events for all switches in the fabric.

### Accessing Fabric Events View

1. Launch Web Tools, displaying Fabric View.
2. Select the Fabric Events icon.

For more information, see “Buttons and Icons” on page 3–4. The Fabric Events View displays, as shown in Figure 3–4.

Switch	Number	Time	Count	Level	Message
sqab198	49	Sep 18 12:20:53	1	3	FW-BELOW eportState015 (E Port State Changes 15) is below low
sqab198	48	Sep 18 12:20:40	1	3	FW-BELOW eportLink015 (E Port Link Failures 15) is below low bc
sqab198	47	Sep 18 12:19:48	1	4	FW-CHANGED fabricED000 (Fabric E-port down) value has chang
san74	46	Sep 18 12:20:08	1	4	FW-CHANGED fabricFR000 (Fabric Reconfigure) value has chang
sqab198	46	Sep 18 12:19:38	1	3	FW-ABOVE eportState015 (E Port State Changes 15) is above high
san74	45	Sep 18 10:35:45	1	4	FW-CHANGED fabricFR000 (Fabric Reconfigure) value has chang
sqab198	45	Sep 18 12:18:02	1	3	FW-ABOVE eportLink015 (E Port Link Failures 15) is above high bc
san74	44	Sep 18 10:34:59	1	4	FW-CHANGED fabricFR000 (Fabric Reconfigure) value has chang
sqab198	44	Sep 18 12:18:02	1	4	FW-CHANGED fabricFR000 (Fabric Reconfigure) value has chang
san74	43	Sep 18 10:33:32	1	3	FW-BELOW fopportState000 (FOP Port State Changes 0) is below
sqab198	43	Sep 18 12:18:01	1	4	FW-CHANGED fabricED000 (Fabric E-port down) value has chang
san74	42	Sep 18 10:33:32	1	3	FW-BELOW fopportSync000 (FOP Port Loss of Sync 0) is below low
sqab198	42	Sep 18 10:34:49	1	3	FW-BELOW eportState015 (E Port State Changes 15) is below low
san74	41	Sep 18 10:33:20	1	3	FW-BELOW eportState005 (E Port State Changes 5) is below low t
sqab198	41	Sep 18 10:34:36	1	3	FW-BELOW eportLink015 (E Port Link Failures 15) is below low bc
san74	40	Sep 18 10:32:31	1	3	FW-ABOVE fopportState000 (FOP Port State Changes 0) is above t
sqab198	40	Sep 18 10:33:38	1	4	FW-CHANGED fabricFR000 (Fabric Reconfigure) value has chang
san74	39	Sep 18 10:32:31	1	3	FW-ABOVE fopportSync000 (FOP Port Loss of Sync 0) is above hig
sqab198	39	Sep 18 10:33:38	1	4	FW-CHANGED fabricED000 (Fabric E-port down) value has chang
san74	38	Sep 18 10:32:19	1	3	FW-ABOVE eportState005 (E Port State Changes 5) is above high l
sqab198	38	Sep 18 10:33:31	1	3	FW-ABOVE eportState015 (E Port State Changes 15) is above high

Warning: Applet Window

**Figure 3–4: Fabric Events view**

**NOTE:** To sort the events by a particular column, select the column header. To resize a column, drag the column divider.

Table 3–2 contains a description of the columns in the Fabric Events view.

**Table 3–2: Fabric Events View Columns Descriptions**

<b>Switch</b>	Displays the name of switch.
<b>Num... (number)</b>	Displays the event number for affected switch.
<b>Time</b>	Displays the time of event.
<b>Count</b>	Displays the number of consecutive occurrences of same event.
<b>Level</b>	Displays the severity level of event: 1. panic (switch reboots) 1. critical 2. error 3. warning 4. information 5. debug
<b>Message</b>	Displays the description of event.

## Fabric Topology View

The Fabric Topology View summarizes the physical configuration of the fabric from the perspective of the “local domain” (the domain of the switch entered as a URL in the web browser). This includes information about the “destination domains” (all other domains in the fabric) and the paths between each destination domain and the local domain.

### Accessing Fabric Topology View

1. Launch Web Tools, displaying Fabric View.
2. Select the Fabric Topology icon.

For more information, see “Buttons and Icons” on page 3–4.

The Fabric Topology View displays as shown in Figure 3–5.

**View Fabric Topology from Switch sw0:**

**There are total of 2 domains in the fabric**

Local Domain ID: 1 (Switch Name: sw0)
Domain ID: 1 (Switch Name: sw0)
Domain ID: 4 (Switch Name: sw1)

**Active Paths:**

**Destination Domain ID:4** (Switch Name: sw1)

Destination's World Wide Name: 10:00:00:60:69:80:04:15

Number of Path(s) to Domain 1: 4

Metric to reach the domain: 1000

**Path Number 1:**

Output Port	Input Ports	Total Bandwidth	Bandwidth Demand	Hop Count	Flag
12		1	0	1	D

**Figure 3–5: Fabric Topology view**

Table 3–3 gives a description of the fields in the Fabric Topology view.

**Table 3–3: Fields in the Fabric Topology View**

<b>View Fabric Topology from Switch [switch name]:</b>	Lists the switch in the domain that is assumed to be the local domain.
<b>There are a total of [n] domains in the fabric.</b>	Displays the number of domains in the fabric.
<b>Local domain ID:</b>	Displays a number that uniquely identifies the local switch within the fabric, and the name of the switch.
<b>Domain ID:</b> (may be more than one)	Displays a number that uniquely identifies the switch within the fabric, and the name of the switch.

**Table 3–3: Fields in the Fabric Topology View (Continued)**

<b>Active Paths:</b>	Displays information about each destination domain, including information about each of the paths between that domain and the local domain.
<b>Metric to Reach the Domain:</b>	Displays cost of reaching destination domain.
<b>For each Path:</b>	Displays the following for each path: <ul style="list-style-type: none"> <li>• Output Ports</li> <li>• Input Ports</li> <li>• Total Bandwidth</li> <li>• Bandwidth Demand (only displayed in 4.0.x)</li> <li>• Hop Count</li> <li>• Flag</li> </ul>
<b>Destination Domain ID:</b>	Displays the ID of the destination domain that is described in the lines following the ID. This information and the two lines following it display for each destination domain in the fabric.
<b>Destination World Wide Name:</b>	Displays the WWN of the destination domain.
<b>Number of Paths:</b>	Displays the number of active paths between the destination domain and the local domain.

## Name Server Table View

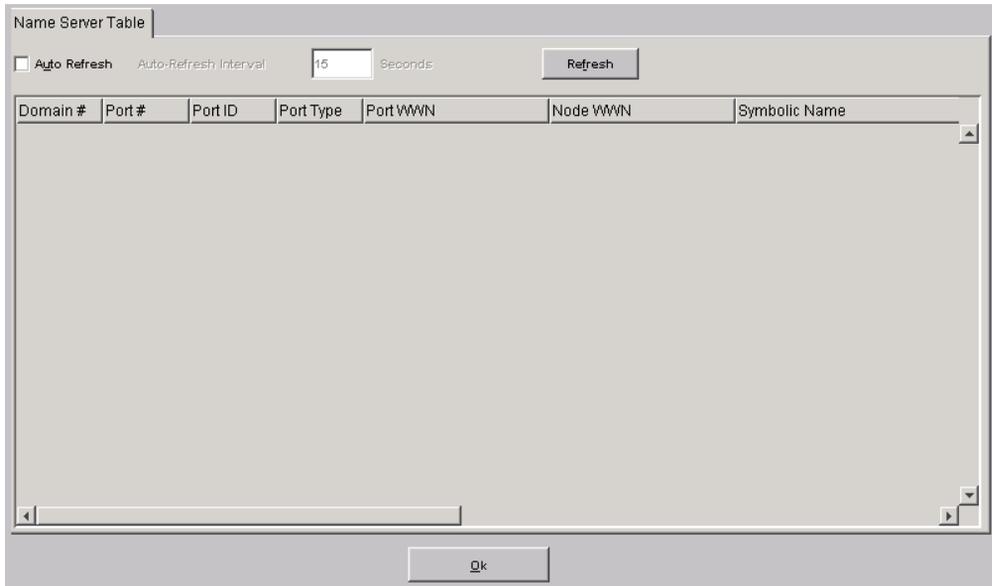
The Name Server Table View provides the name server entries listed in the Simple Name Server database. This includes all name server entries for the fabric, not only those that are local to the local domain. Each row in the table represents a different device.

### Accessing Name Server Table View

1. Launch Web Tools, displaying Fabric View.
2. Select the Name Server icon.

For more information, see “Buttons and Icons” on page 3–4.

The Name Server Table View displays as shown in Figure 3–6.



**Figure 3–6: Name Server Table view**

**NOTE:** To sort the events by a particular column, click the column header. To resize a column, drag the column divider.

Table 3–4 lists fields that are included in the Name Server Table view.

**Table 3–4: Name Server Table View Fields**

<b>Auto Refresh</b>	Check to enable Auto Refresh or uncheck to disable.
<b>Auto Refresh Interval</b>	If Auto Refresh is checked, enter the number of seconds for the refresh interval.
<b>Refresh</b>	Select to refresh the window immediately.
<b>OK</b>	Select to close the window.

The Name Server Table also includes the columns listed in Table 3–5.

**Table 3–5: Name Server Table View Additional Columns**

<b>Domain #</b>	Displays the domain ID of the switch to which the device is connected.
<b>Port #</b>	Displays the number of the switch port to which the device is connected.
<b>Port ID</b>	Displays the port ID of the device (24-bit hexadecimal value).
<b>Port Type</b>	Displays the port type of the device (N for fabric direct attached port or NL for fabric direct attached loop port).
<b>Port WWN</b>	Displays the World Wide Name of the device port.
<b>Node WWN</b>	Displays the World Wide Name of the device node.
<b>Symbolic Name</b>	Displays the symbolic name of the device assigned through the SCSI INQUIRY command.
<b>FC4 Types</b>	Displays the Fibre Channel FC4 layer types supported by the device, such as IP or FCP.
<b>COS</b>	Displays the Fibre Channel classes of service supported by the device.
<b>Fabric Port Name</b>	Displays the name of the fabric port in use by the device.
<b>Port IP Address</b>	Displays the IP address of the fabric port.
<b>Hard Address</b>	Displays the hard address of the fabric port.
<b>Member of Zones</b>	Displays the zones to which this device belongs. This column does not update when the table is refreshed. To view updated zoning information, close and reopen the Name Server Table.

## Zone Administration View V3.0.x (Optional Software)

A Zoning license and administrative privileges are required to access this view. If a switch or device is added or removed from the network, it is necessary to save the changes and relaunch the Zone Administration view for the changes to take effect.

**NOTE:** The following section is intended to describe Zoning configurations when using Web Tools V3.0.x. For specific 4.0.x Zoning information, see “Zone Administration View V4.0.x (Optional Software)” on page 3–68. For more detailed information about Zoning, refer to the *HP StorageWorks Zoning Version 3.0.x/4.0.x User Guide*.

## Accessing the Zone Administration View

1. Launch the web browser.
2. Enter the switch name or IP address in the Location/Address field and click **Enter**.

For example: <http://switch name>

This switch is assumed to be in the local domain.

Web Tools launches, displaying Fabric View.

3. Select Zone Admin.

A prompt displays requesting User Name and Password as shown in Figure 3–7.

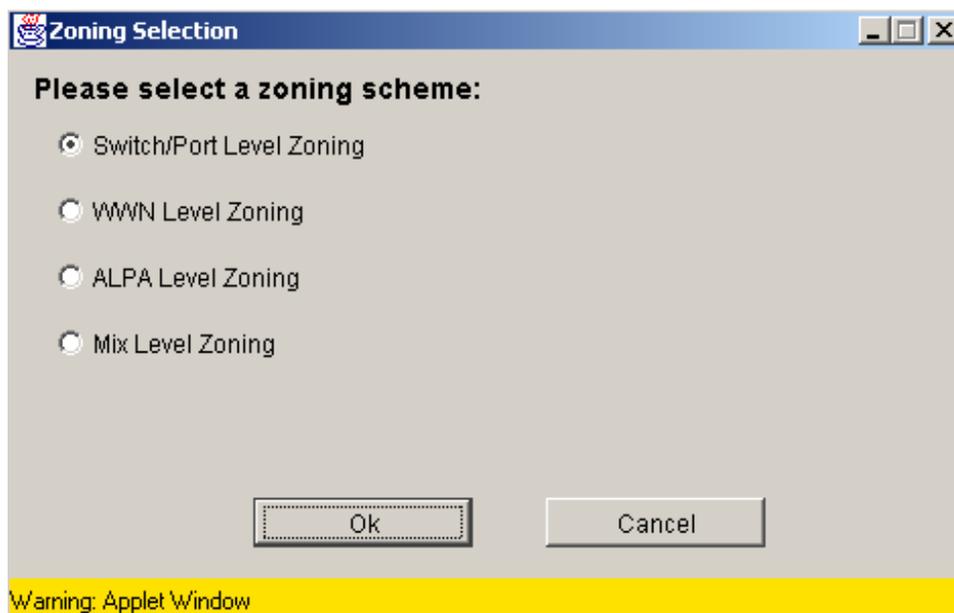


**Figure 3–7: Enter Network Password window**

4. Enter User Name and Password.
5. Click **OK**.

The Zoning Selection menu displays, as shown in Figure 3–8.

**NOTE:** For information specific to QuickLoop to be available, the QuickLoop switch must be the local domain.



**Figure 3–8: Zoning Selection window**

A description of each of the zoning schemes is shown in Table 3–6.

**Table 3–6: V3.0.x Zoning Schemes**

<b>Switch/Port Level Zoning</b>	All alias, zoning and configuration file operations must be on ports. Aliases, zones, and configuration files which have objects other than ports cannot be selected or operated on.
<b>WWN Level Zoning</b>	All aliases, zoning, and configuration file operations must be on WWNs. Aliases, zones, and configuration files which have objects other than WWNs cannot be selected or operated on.
<b>AL_PA Level Zoning</b>	All aliases, zoning, and configuration file operations must be on AL_PA in a QuickLoop. Aliases, zones, and configuration files which have objects other than AL_PAs in a QuickLoop cannot be selected or operated on.
<b>Mixed Level Zoning</b>	In this mode, any object can be selected to be a member of a zone, alias, or configuration file.

When administering Zoning, the following steps are recommended:

1. Define zone aliases to establish groupings.
2. Add zone members.
3. Place zones into one or more zone configurations.
4. Enable one of the zone configurations (only one can be enabled at a time).

There are three separate methods for adding members to a zone. Each method corresponds to a zoning “mode,” and the combination of the methods corresponds to an additional mode. Once a mode is selected, all operations on zones must use the zoning object selected. Zoning operations must correspond to that mode, and any zones, aliases, and configuration files which cannot be selected.

## Switch/Port Level Zoning

Upon selecting the Switch/Port Level Zoning button from the Zoning Selection menu and selecting OK, the Switch/Port Level Zoning menu with the Port Alias tab displays as shown in Figure 3–9.

Following is a list of the tabs provided in the Switch/Port Level Zoning menu:

- Port Alias
- Port Zone
- QuickLoop
- Port Fabric Assist
- Port Config

## Port Alias Tab

The Port Alias tab shows only Domain/Ports that are in the fabric. This tab is used to configure zones that consist only of Domain/Ports and aliases that contain only Domain/Ports. The Port Alias tab is displayed as shown in Figure 3–9.

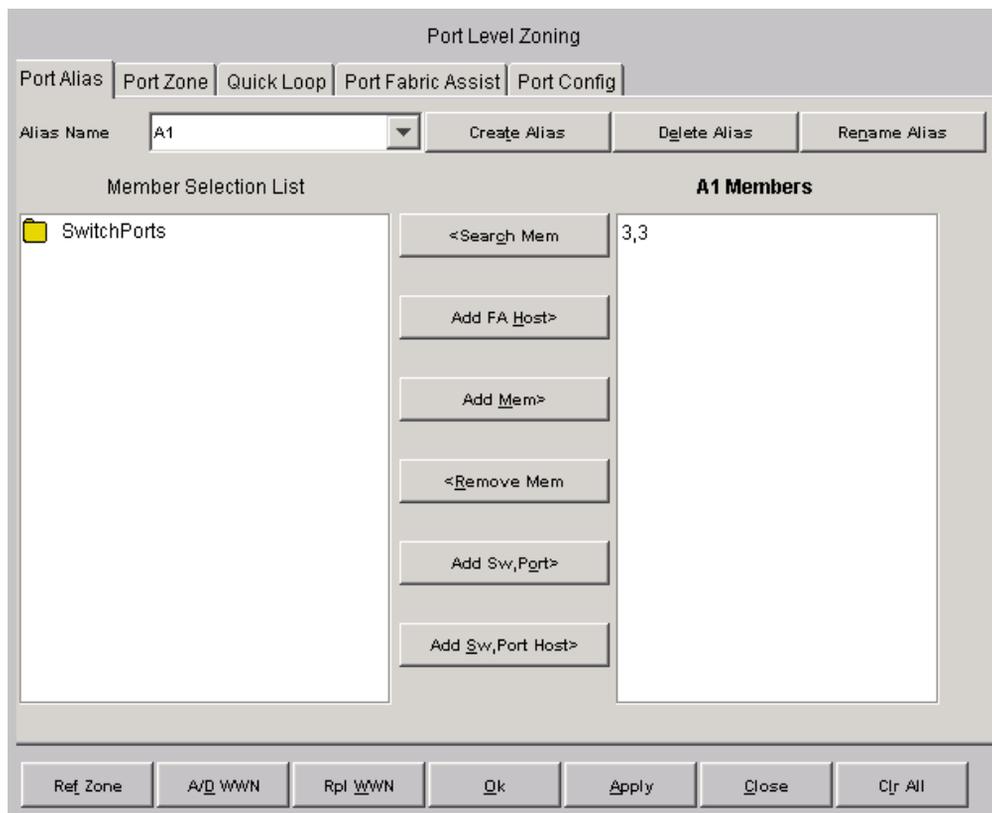


Figure 3–9: Alias tab of the Switch/Port Level Zoning menu

Table 3–7 gives descriptions of the fields on the Port Alias tab.

**Table 3–7: Port Alias Tab Fields**

<b>Alias Name</b>	Select an existing alias name to be modified.
<b>Create Alias</b>	Select to create a new alias. A new alias dialog displays. Enter a new alias name that is unique. The new alias name cannot contain spaces.
<b>Delete Alias</b>	Select to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones.
<b>Rename Alias</b>	Select to rename the alias selected in the Alias Name field. A dialog displays in which you can edit the alias name. Renaming an alias automatically renames it in all zones.
<b>Member Selection List</b>	This field contains a list of potential alias members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>Add Mem</b>	Select to add the item selected in the Member Selection List to the Alias Members list. You can add individual ports or an entire switch. If a switch is added, all ports on the switch are added. To add a device WWN, select either a node WWN (folder icon) or port WWN (blue circle icon) from the WWN sub-tree.
<b>Remove Mem</b>	Select to remove the member selected from the Alias Name Members Selection list.
<b>Alias Members</b>	This field lists the members of the alias selected in the Alias Name field. The name of this list depends on the name of the selected alias. If no alias is selected, the name displays as “Null Members.”
<b>Search Mem</b>	Select to search for a switch name, WWN, alias, zone, or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host</b>	Click to add an FA Host that currently is not part of the fabric.
<b>Add Sw/Port</b>	Select to add a switch/port combination that currently is not part of the fabric.
<b>Add Switch/Port/Host</b>	Click to add a switch/port/host combination that currently is not part of the fabric.

**Table 3–7: Port Alias Tab Fields (Continued)**

<b>Ref Zone</b>	Select to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Select to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Select to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Applies the changes to the switch and exits the frame.
<b>Apply</b>	Select to apply all changes made since the Zone Administration View was opened, including changes made on other tabs in the view. Changes cannot be cancelled once applied.
<b>Close</b>	Select to exit the frame without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Port Zone Tab

Use the Port Zone tab to specify which ports on a switch are to be in the selected zone and to create and manage zones. A zone can have one or multiple members, and can include switches, ports, WWNs, aliases, and QuickLoop AL\_PAs. The Port Zone tab is shown in Figure 3–10.

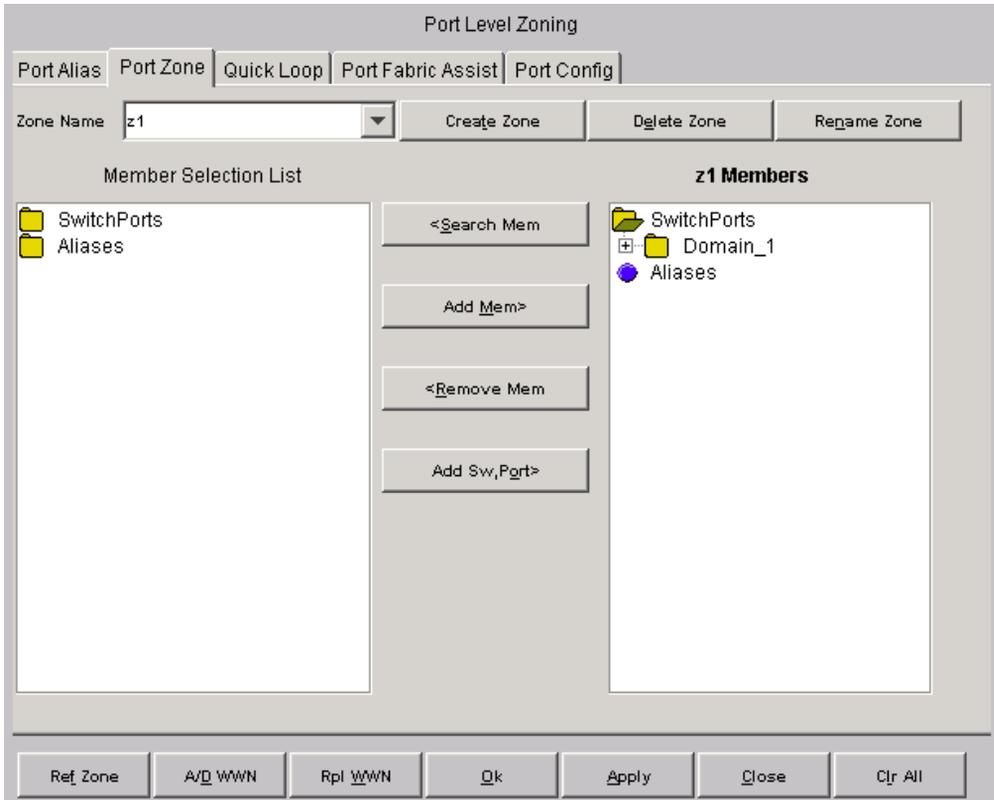


Figure 3–10: The Port Zone tab of the Switch/Port level zoning menu

Table 3–8 gives descriptions of the fields on the Port Zone tab.

**Table 3–8: Port Zone Tab Fields**

<b>Zone Name</b>	To modify an existing zone, select a zone name.
<b>Create Zone</b>	Select to create a new zone. A dialog displays in which you can enter the name of the new zone. All names must be unique and contain no spaces.
<b>Delete Zone</b>	Select to delete the zone selected in the Zone Name field. Deleting a zone automatically removes it from all zone configurations.
<b>Rename Zone</b>	Select to edit the name of the zone selected in the Zone Name field. A dialog displays in which you can edit the name of the zone.
<b>Search Mem</b>	Select to search the list of potential zone members.
<b>Member Selection List</b>	A list of potential zone members, including switches, ports, WWNs, aliases, and QuickLoop AL_PAs, and Fabric Assists.
<b>Add Mem</b>	Select to add the member selected in the Member Selection List to the Zone Members list. If an entire switch is selected, all ports on the switch are added to the zone. You can also select individual ports. To add a device WWN, select either a node WWN (folder icon) or port WWN (blue circle icon) from the WWNs sub-tree. To add an alias to the zone, select it from the Aliases sub-tree (the alias must already exist).
<b>Remove Mem</b>	Select to remove the selected member from the Zone name Members list.
<b>[Zone name] Members</b>	This field lists members of the zone selected in the Zone Name field. The name of this list depends on the name of the selected zone. If no zone is selected, the name displays as “null Members.”
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.

**Table 3–8: Port Zone Tab Fields (Continued)**

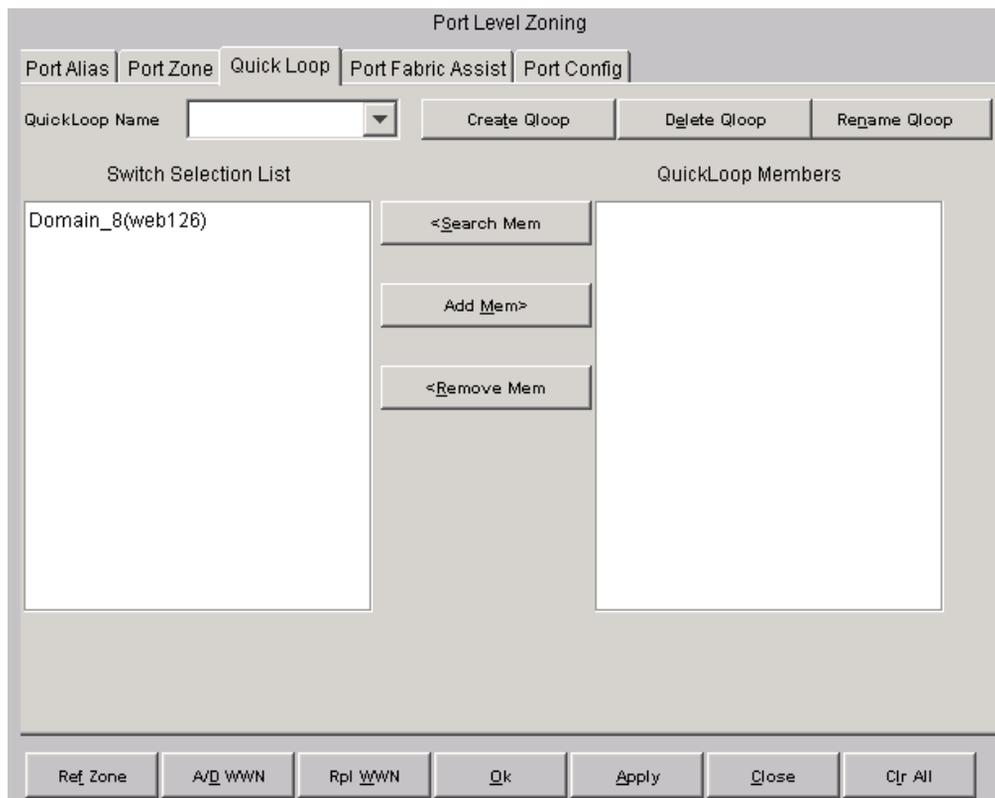
<b>OK</b>	Applies the changes to the switch and exits the frame.
<b>Apply</b>	Click to apply all changes made since the Zone Administration View was opened, including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## QuickLoop Tab

A QuickLoop license is required to use this tab. You can use the QuickLoop tab to create and manage QuickLoops if used in conjunction with Zoning. For information on managing the QuickLoop feature separately, see “QuickLoop Tab (Optional Software)” on page 4–77 in this document.

**NOTE:** QuickLoop feature is not supported by V4.0.x switches.

The QuickLoop tab is shown in Figure 3–11.



**Figure 3–11: The QuickLoop tab of the Switch/Port Level Zoning menu**

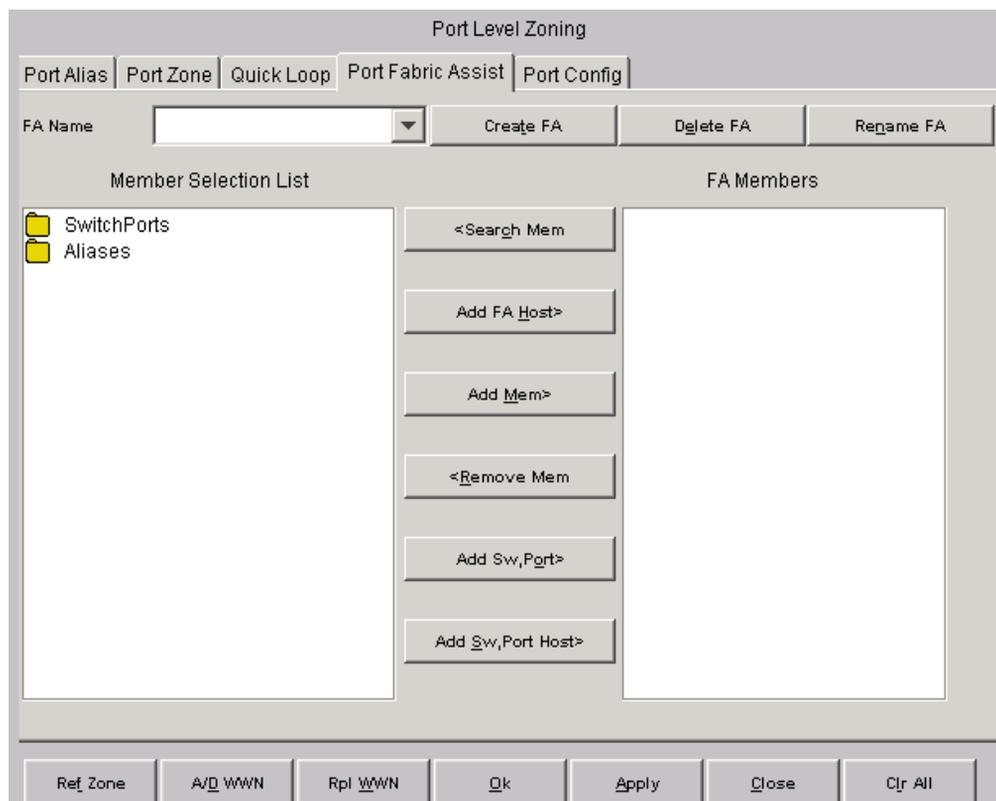
Table 3–9 gives descriptions of the fields on the QuickLoop tab.

**Table 3–9: QuickLoop Tab Fields**

<b>QuickLoop Name</b>	To modify an existing QuickLoop, select a QuickLoop name.
<b>Create Qloop</b>	Click to create a new QuickLoop. A dialog displays in which you can enter the name of the new QuickLoop. All names must be unique and contain no spaces.
<b>Delete Qloop</b>	Click to delete the QuickLoop selected in the QuickLoop Name field. Deleting a QuickLoop automatically removes it from all aliases, zones, and zone configurations, including the associated AL_PAs.
<b>Rename Qloop</b>	Click to edit the name of the QuickLoop selected in the QuickLoop Name field. A dialog displays in which you can edit the name of the QuickLoop.
<b>Switch Selection List</b>	A list of the switches available to add to the QuickLoop.
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop in the Switch Selection List based on the type of objects displayed in that list.
<b>Add Mem</b>	Click to add the switch selected in the Switch Selection List to the QuickLoop Members list.
<b>Remove Mem</b>	Click to remove the selected member from the QuickLoop Name list.
<b>[QuickLoop Name] Members</b>	A list of the members of the QuickLoop currently selected in the QuickLoop Name field. The name of this list depends on the name of the selected QuickLoop. If no QuickLoop is selected, the name displays as “null Members.”
<b>Apply</b>	Click to apply all changes made since the Zone Administration View was opened, including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to cancel all changes since the changes were last applied and to exit Zone Administration. Changes cannot be cancelled once they are applied.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Port Fabric Assist Tab

Use the Port Fabric Assist tab to create and manage Fabric Assists. A QuickLoop license is required to use this tab. The Port Fabric Assist tab is shown in Figure 3–12.



**Figure 3–12: The Port Fabric Assist tab of the Switch/Port Level Zoning menu**

A description of the fields on the Port Fabric Assist tab is provided in Table 3–10.

**Table 3–10: Port Fabric Assist Tab Fields**

<b>FA Name</b>	Select the existing Port Fabric Assist name to be modified.
<b>Create FA</b>	Click to create a new Port Fabric Assist name. A dialog displays. Enter the name of the new Port Fabric Assist. All names must be unique and contain no spaces.
<b>Delete FA</b>	Click to delete the Port Fabric Assist selected in the FA Name field. Deleting a Port Fabric Assist automatically removes it from all aliases, zones, and zone configurations, including the associated AL_PAs.
<b>Rename FA</b>	Click to edit the name of the Port Fabric Assist selected in the FA Name field.
<b>Member Selection List</b>	This field displays a list of members available to add to the Port Fabric Assist list.
<b>Add FA Host</b>	Click to add the selected item as a host to the Port Fabric Assist name list. Only a domain port or a WWN can be added as a host.
<b>Add Mem</b>	Click to add the member selected in the Member Selection List to the Port Fabric Assist name list.
<b>Remove Mem</b>	Click to remove the selected member from the Port Fabric Assist name list.
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Switch/Port</b>	Click to add a switch/port combination that is not currently part of the fabric.
<b>Add Switch/Port/Host</b>	Click to add a switch/port/host combination that currently is not part of the fabric.

Table 3–10: Port Fabric Assist Tab Fields (Continued)

<b>[Fabric Assist Name] Members</b>	This field displays a list of the members that belong to the Port Fabric Assist currently selected in the FA Name field. The name of this list depends on the name of the Port Fabric Assist selected. If no Port Fabric Assist is selected, the name displays as “null Members.”
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply changes made in this window and exit the window.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes in this window cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Click to clear all aliases, zones, configs, or FA zones locally on the switch.

## Port Config Tab

Use the Port Config tab to create and manage zone configurations. Zone configurations are used to enable or disable a group of zones at the same time. The Port Config tab is shown in Figure 3–13.

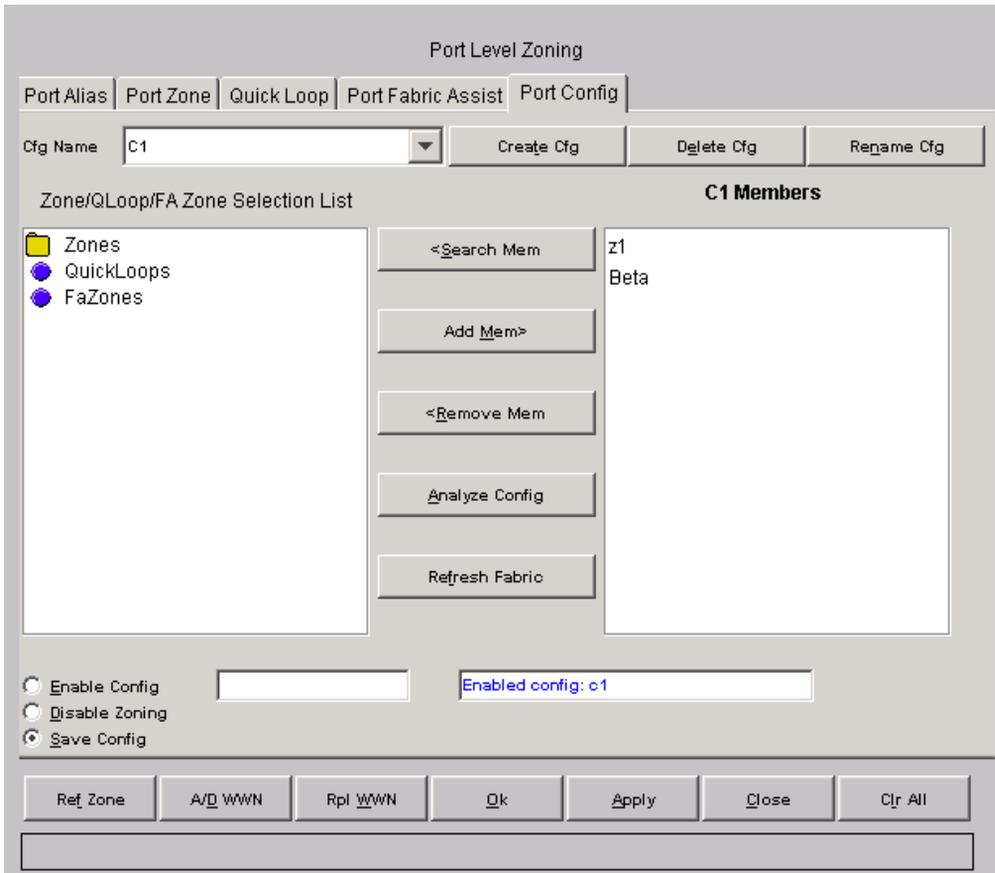


Figure 3–13: The Port Config tab of the Switch/Port Level Zoning menu

Table 3–11 gives descriptions of the fields and buttons that appear on the Port Config tab.

**Table 3–11: Port Config Tab Fields**

<b>Cfg Name</b>	Select an existing configuration to modify.
<b>Create Cfg</b>	Click to create a new configuration. A dialog displays. Enter the name of the new configuration. All names must be unique and contain no spaces.
<b>Delete Cfg</b>	Click to delete the configuration selected in the Cfg Name field.
<b>Rename Cfg</b>	Click to edit the name of the configuration selected in the Cfg Name field.
<b>Zone/QLoop Selection List</b>	This field provides a list of the zones and QuickLoops available to add to the configuration.
<b>Add Mem</b>	Click to add the switch selected in the Zone/QLoop Selection List to the Config Members list.
<b>Remove Mem</b>	Click to remove the selected member from the Config Members list.
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Config Members</b>	The members of the configuration selected in the Cfg Name field. The name of this list depends on the selection. Only one configuration can be enabled at a time; if none are enabled, zoning is not active in the fabric.
<b>Enable Config</b>	Check to enable the configuration selected in the Cfg Name field, or uncheck to disable it.
<b>Disable Zoning</b>	Check to disable zoning.
<b>Analyze Config</b>	Analyzes the configuration that is selected along with its member zones and aliases. A zoning configuration error screen (see Figure 3–34) displays in the event of a conflict.
<b>Refresh Fabric</b>	Click to refresh the fabric view with the latest Domain/Port and WWN changes.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.

**Table 3–11: Port Config Tab Fields (Continued)**

<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>Apply</b>	Click to apply all changes made since the Zone Administration View was opened, including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Ok</b>	Applies the changes to the switch and exits the window.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Zoning Configuration Analysis screen

The Zoning Configuration Analysis screen displays a summary of the saved configuration and attempts to point out some of the zoning conflicts before applying the changes to the switch. Some of the potential errors it might catch are:

- Ports/WWNs/Devices that are part of the selected configuration, but not part of the fabric.
- Zones with only a single member.

The Zoning Configuration Analysis screen is shown in Figure 3–14.

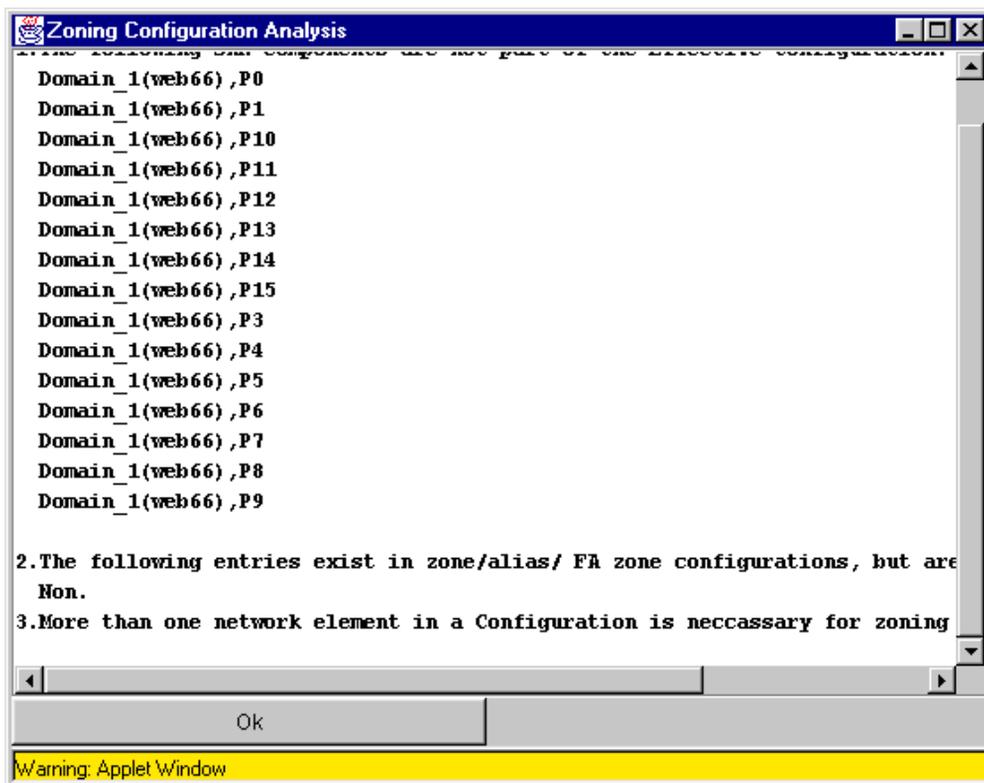


Figure 3–14: Zoning Configuration Analysis screen

## **WWN Level Zoning**

With WWN Zoning, only World Wide Names are displayed on the tabs. This window is used to configure aliases, zones, and configuration files. After selecting the WWN Level Zoning button from the Zoning Selection menu and clicking OK, the WWN Level Zoning menu displays.

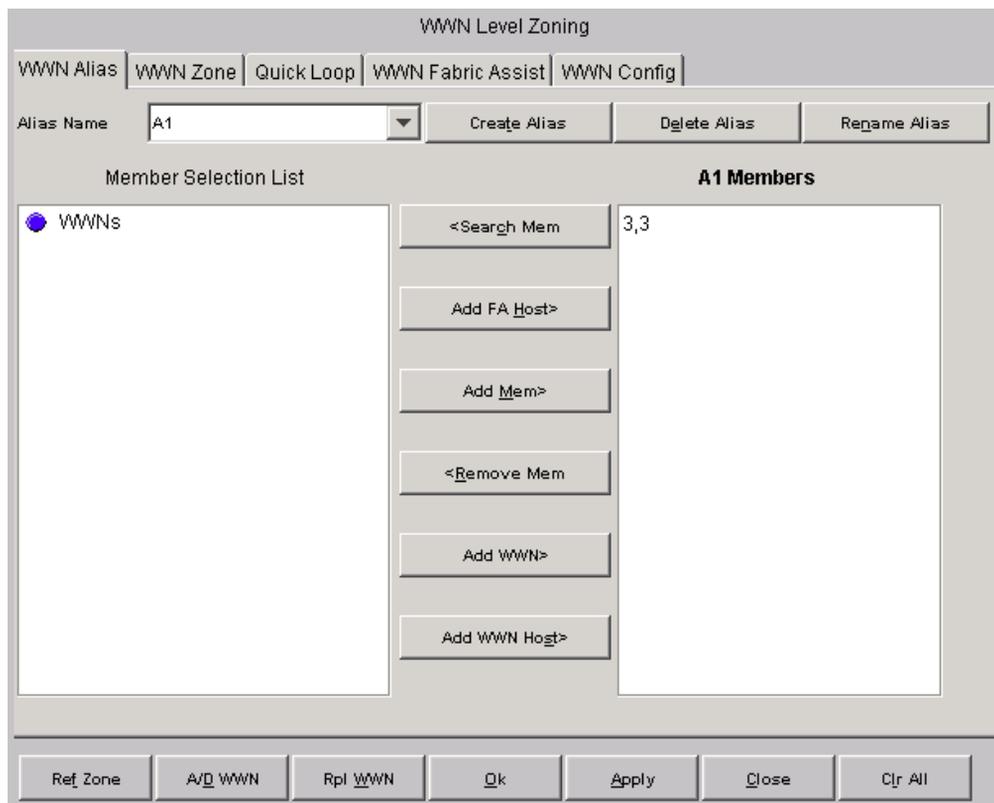
Following is a list of the tabs provided in the WWN Level Zoning menu:

- WWN Alias
- WWN Zone
- QuickLoop
- WWN Fabric Assist
- WWN Config

## WWN Aliases

Use the WWN Alias tab to configure WWN Aliases.

The WWN Alias tab is shown in Figure 3–15.



**Figure 3–15: WWN Alias tab of the WWN Level Zoning menu**

Table 3–12 gives descriptions of the fields on the WWN Alias tab.

**Table 3–12: WWN Alias Tab Fields**

<b>Alias Name</b>	Select an existing alias to modify.
<b>Create Alias</b>	Click to create a new alias. A dialog displays in which you can enter the name of the new alias. All names must be unique and contain no spaces.
<b>Delete Alias</b>	Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones.
<b>Rename Alias</b>	Click to rename the alias selected in the Alias Name field. A dialog displays in which you can edit the alias name. Renaming an alias automatically renames it in all zones.
<b>Member Selection List</b>	A list of potential alias members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>Alias Members</b>	This field lists the members of the alias selected in the Alias Name field. The name of this list depends on the name of the selected alias. If no alias is selected, the name displays as “Null Members.”
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop, in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host</b>	Click to add the selected item as a host to the Members list. Only a domain port or a WWN can be added as a host.
<b>Add Mem</b>	Click to add the item selected in the Member Selection List to the Alias Members list. You can add individual ports or an entire switch. If a switch is added, all ports on the switch are added. To add a device WWN, select either a node WWN (folder icon) or port WWN (blue circle icon) from the WWN sub-tree.
<b>Remove Mem</b>	Click to remove the selected member from the Configuration name list.
<b>Add WWN</b>	Click to add a WWN that currently is not part of the Fabric.

**Table 3–12: WWN Alias Tab Fields (Continued)**

<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the window.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## WWN Zone

Use the WWN Zone tab to specify the members of the WWN Zone. In this window, only switches and WWN are available to be selected as members of the zone.

The WWN Zone tab is shown in Figure 3–16.

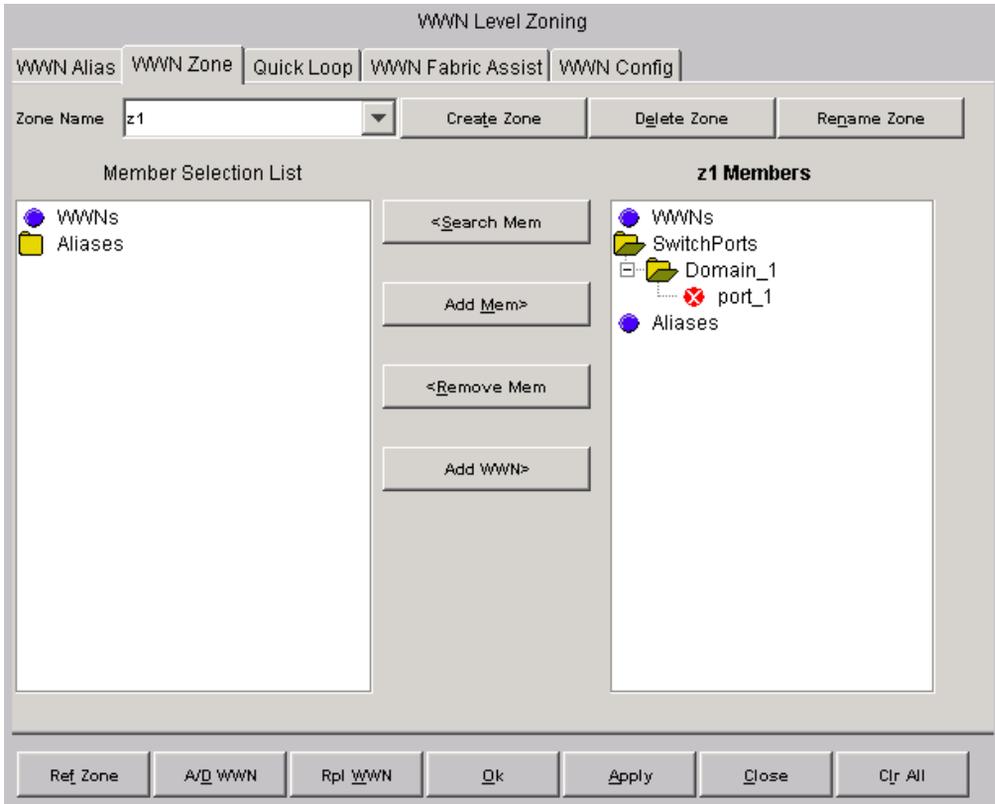


Figure 3–16: WWN Zone tab of the WWN Level Zoning menu

Table 3–13 gives descriptions of the fields on the WWN Zone tab.

**Table 3–13: WWN Zone Tab Fields**

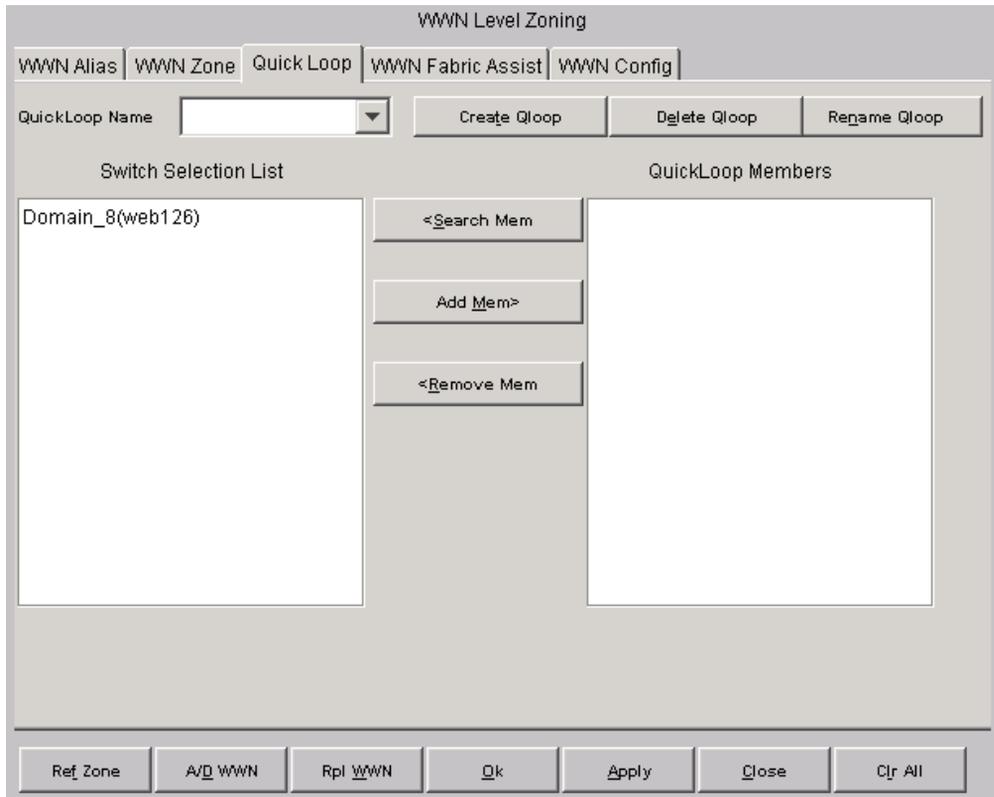
<b>Zone Name</b>	Select an existing zone member to modify.
<b>Create Zone</b>	Click to create a new zone member.
<b>Delete Zone</b>	Click to delete a zone member.
<b>Rename Zone</b>	Click to rename a zone member.
<b>Member Selection List</b>	This field displays a list of potential zone members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>Zone Members</b>	This field lists the zone members selected in the Zone Name field. The name on this list depends on the name of the selected zone member. If a name is not selected, the name displays as “null Members.”
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem</b>	Click to add a member from the Member Selection list into the Zone Member contents.
<b>Remove Mem</b>	Click to remove a member from the Zone Member list.
<b>Add WWN</b>	Click to add a WWN that is not currently part of the Fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## QuickLoop

A QuickLoop license is required to use this tab. You can use the QuickLoop tab to create and manage QuickLoops if used in conjunction with Zoning. For information on managing the QuickLoop feature separately, see “Loop Tab” on page 5–8.

**NOTE:** The QuickLoop feature is not supported by 4.0.x switches.

The QuickLoop tab is shown in Figure 3–17.



**Figure 3–17: QuickLoop tab of the WWN Level Zoning menu**

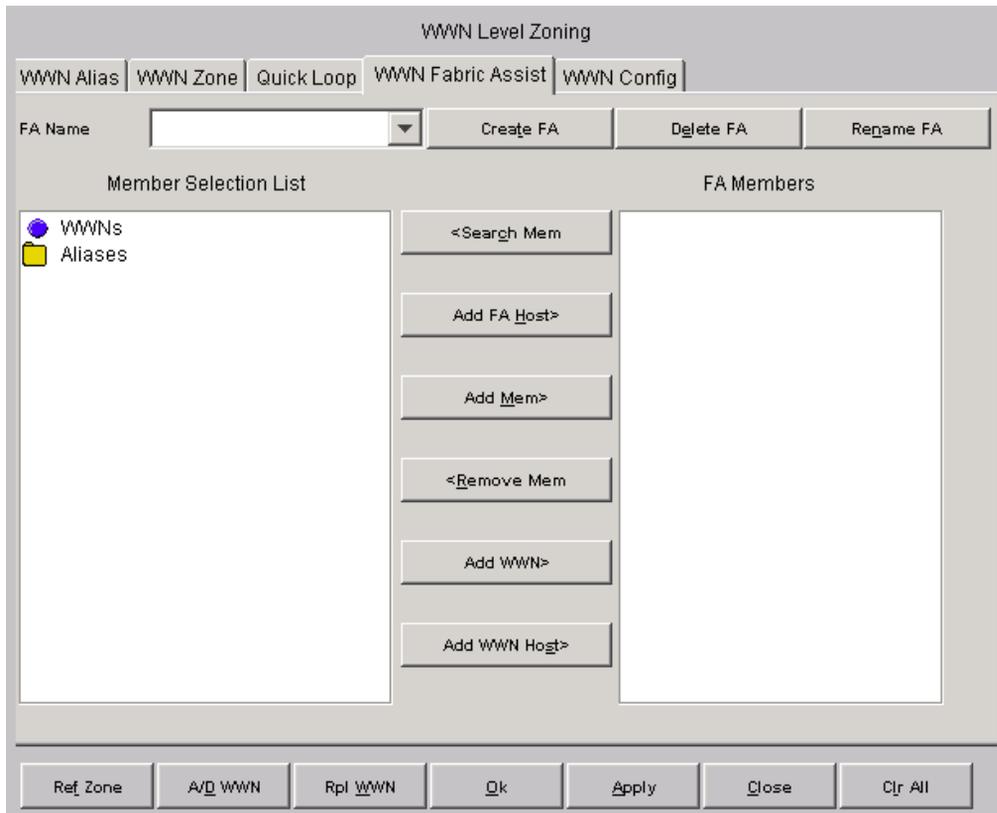
Table 3–14 provides a description of the fields on the QuickLoop tab.

**Table 3–14: QuickLoop Tab Fields**

<b>QuickLoop Name</b>	Select an existing QuickLoop member to modify.
<b>Create Qloop</b>	Click to create a new QuickLoop member.
<b>Delete Qloop</b>	Click to delete a QuickLoop member.
<b>Rename Qloop</b>	Click to rename a QuickLoop member.
<b>Switch Selection List</b>	This field displays a list of potential QuickLoop members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>QuickLoop Members</b>	This field contains a list of the zone members selected in the QuickLoop Name field. The name on this list depends on the name of the selected QuickLoop member. If a name is not selected, the name displays as “null Members.”
<b>Search Mem</b>	Click to search for a switch name, WWN, Alias, Zone or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem</b>	Click to add a member from the member selection list into the QuickLoop member contents.
<b>Remove Mem</b>	Click to remove a member from the QuickLoop member list when selected.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.

## WWN Fabric Assist

Use the WWN Fabric Assist tab to create and manage WWN Fabric Assists. A QuickLoop license is required to use this tab. The WWN Fabric Assist tab is shown in Figure 3–18.



**Figure 3–18: WWN Fabric Assist tab of the WWN Level Zoning menu**

Table 3–15 gives descriptions of the fields on the WWN Fabric Assist tab.

**Table 3–15: WWN Fabric Assist Tab Fields**

<b>FA Name</b>	Select an existing WWN Fabric Assist name to modify.
<b>Create FA</b>	Click to create a new WWN Fabric Assist. A dialog displays. Enter the name of the new WWN Fabric Assist. All names must be unique and contain no spaces.
<b>Delete FA</b>	Click to delete the WWN Fabric Assist selected in the FA Name field. Deleting a WWN Fabric Assist automatically removes it from all aliases, zones, and zone configurations, including the associated AL_PAs.
<b>Rename FA</b>	Click to edit the name of the WWN Fabric Assist selected in the FA Name field.
<b>Member Selection List</b>	This field displays a list of members available to add to the WWN Fabric Assist.
<b>Add FA Host</b>	Click to add the selected item as a host to the WWN Fabric Assist name list. Only a domain port or a WWN can be added as a host.
<b>Add Mem</b>	Click to add the member selected in the Member Selection List to the WWN Fabric Assist name list.
<b>Remove Mem</b>	Click to remove the selected member from the WWN Fabric Assist name list.
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>[WWN Fabric Assist Name] FA Members</b>	A list of the members that belong to the WWN Fabric Assist currently selected in the FA Name field. The name of this list depends on the name of the WWN Fabric Assist selected. If no WWN Fabric Assist is selected, the name displays as “null Members.”

**Table 3–15: WWN Fabric Assist Tab Fields (Continued)**

<b>Ref Zone</b>	Click to refresh the local zoning database copy from the switch. This button would automatically flash red/gray if the fabric zoning data is changed by another client.
<b>Add WWN</b>	Click to add a WWN that is not currently part of the Fabric.
<b>Add WWN Host</b>	Click to add a WWN Host that is not currently part of the Fabric.
<b>A/D WWN</b>	Click to add/delete a WWN to/from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Select OK to the changes to the switch and exit the window.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## WWN Config

Use the WWN Config tab to specify which zones comprise a WWN Zone Configuration file. The WWN Config tab is shown in Figure 3–19.

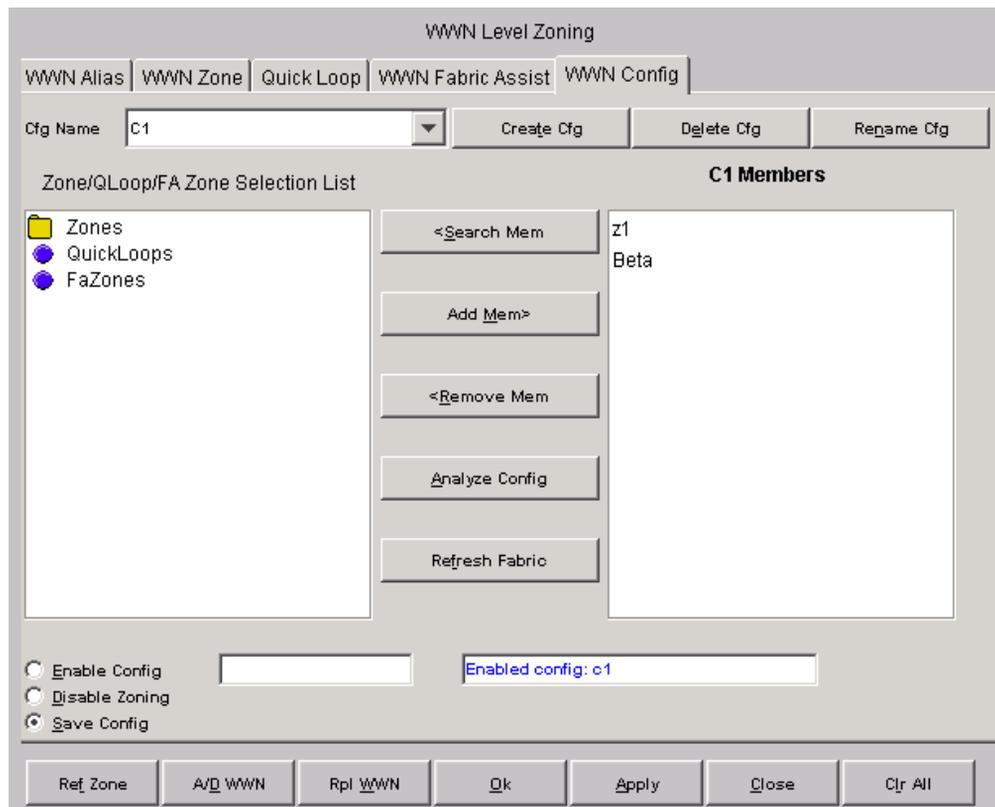


Figure 3–19: WWN Config tab of the WWN Level Zoning menu

Table 3–16 gives descriptions of the fields on the WWN Config tab.

**Table 3–16: WWN Config Tab Fields**

<b>Cfg Name</b>	Select to modify an existing WWN configuration name to be modified.
<b>Create Cfg</b>	Click to create a new WWN configuration.
<b>Delete Cfg</b>	Click to delete a WWN configuration.
<b>Rename Cfg</b>	Click to rename a WWN configuration.
<b>Zone/QLoop Selection List</b>	This field displays a list of Zone and QuickLoop members available to add to the WWN configuration.
<b>Add Mem</b>	Click to add a member from the config members list into the zone selection list.
<b>Remove Mem</b>	Click to remove a member from the zone selection list into the Config Member list.
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or Qloop in the Zone Selection List based on the type of objects displayed in that list.
<b>Config Members</b>	This field displays a list of the members that belong to the WWN Configuration currently selected in the Cfg Name field. The name of this list depends on the name of the WWN configuration selected. If WWN configuration is not selected, the name displays as “null Members.”
<b>Analyze Config</b>	Click to analyze the configuration that is selected along with its member zones and aliases. A zoning error screen (see Figure 3–14) appears in the event of a conflict.
<b>Enable Config</b>	If this option is checked, and the Apply button pressed, the selected configuration would be used for zoning the fabric.
<b>Disable Config</b>	Click the Disable Config radio button to disable the selected WWN Zone configuration.
<b>Refresh Fabric</b>	Click to refresh the fabric view with the latest Domain/Port and WWN changes.

**Table 3–16: WWN Config Tab Fields (Continued)**

<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add/delete a WWN to/from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Applies the changes to the switch and exits the switch.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## AL\_PA Level Zoning

AL\_PA Level Zoning is a replacement for QuickLoop Zoning. With AL\_PA Level Zoning, only members of a QuickLoop can be a member of the zone. Zone members are specified through their AL\_PA. Upon selecting the AL\_PA Level Zoning button from the Zoning Selection window and clicking OK, the AL\_PA Level Zoning menu with the AL\_PA Device Alias tab displays.

Figure 3–20 shows a typical AL\_PA Device Alias tab of the AL\_PA Zoning window.

Following is a list of the tabs provided in the AL\_PA Level Zoning menu:

- Device Alias
- Device Zone
- QuickLoop
- Device Config

## AL\_PA Device Alias

Use the AL\_PA Device Alias tab to create and manage QuickLoop configurations. QuickLoop configurations are used to enable or disable a group of zones at the same time.

The AL\_PA **Device Alias** tab is shown in Figure 3–20.

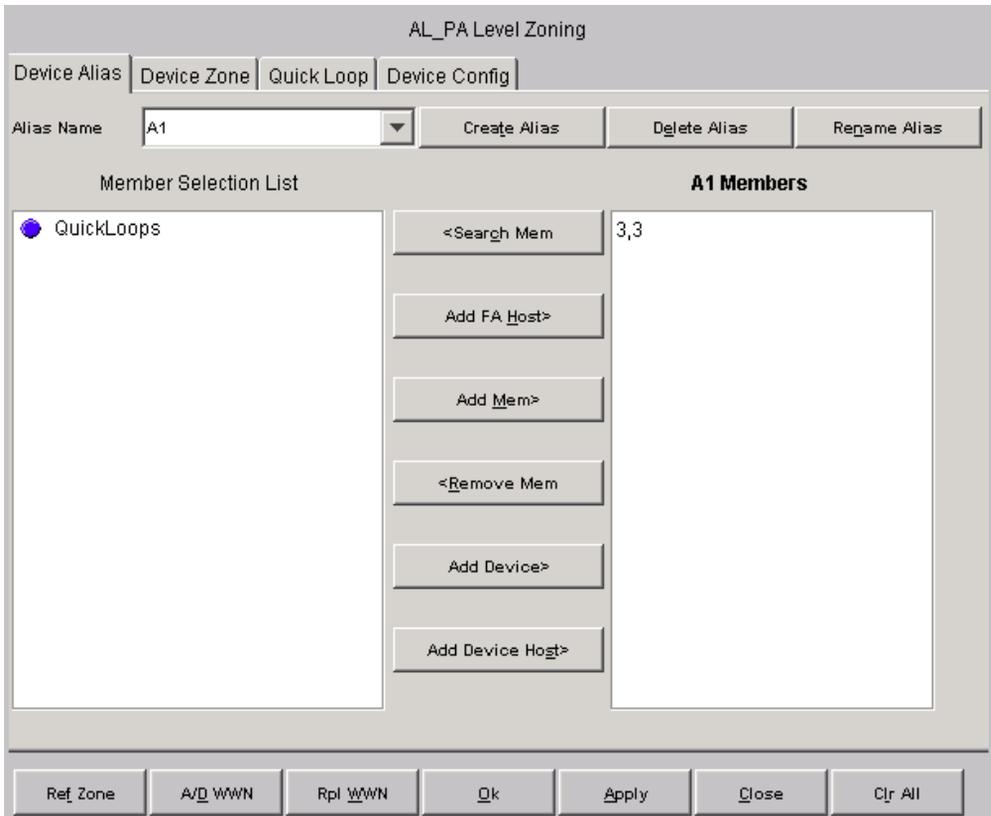


Figure 3–20: AL\_PA Device Alias tab of the AL\_PA Level Zoning menu

Table 3–17 gives descriptions of the fields on the AL\_PA Device Alias tab.

**Table 3–17: AL\_PA Level Zoning Menu**

<b>Alias Name</b>	Select an existing alias name to modify.
<b>Create Alias</b>	Click to create a new alias. A dialog displays. Enter the name of the new alias. All names must be unique and contain no spaces.
<b>Delete Alias</b>	Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones.
<b>Rename Alias</b>	Click to rename the alias selected in the Alias Name field. A dialog displays in which you can edit the alias name. Renaming an alias automatically renames it in all zones.
<b>Member Selection List</b>	This field displays a list of potential alias members, including switches, ports, WWNs, QuickLoop AL_PAs, and Fabric Assists.
<b>Alias Members</b>	This field lists the members of the alias selected in the <b>Alias Name</b> field. The name of this list depends on the name of the selected alias. If no alias is selected, the name displays as "Null Members."
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or Qloop in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host</b>	Click to add the selected item as a host to the Members list. Only a domain port or a WWN can be added as a host.
<b>Add Mem</b>	Click to add a member from the Member Selection List to the Alias Members list.
<b>Add Device</b>	Click to allow adding a device that currently is not part of the fabric.
<b>Remove Mem</b>	Click to remove the selected member from the Alias Members list.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.

**Table 3–17: AL\_PA Level Zoning Menu (Continued)**

<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## AL\_PA Device Zone

Use the AL\_PA Device Zone tab to select members of a device zone. Members are specified by their AL\_PA. The AL\_PA Device Zone tab is shown in Figure 3–21.

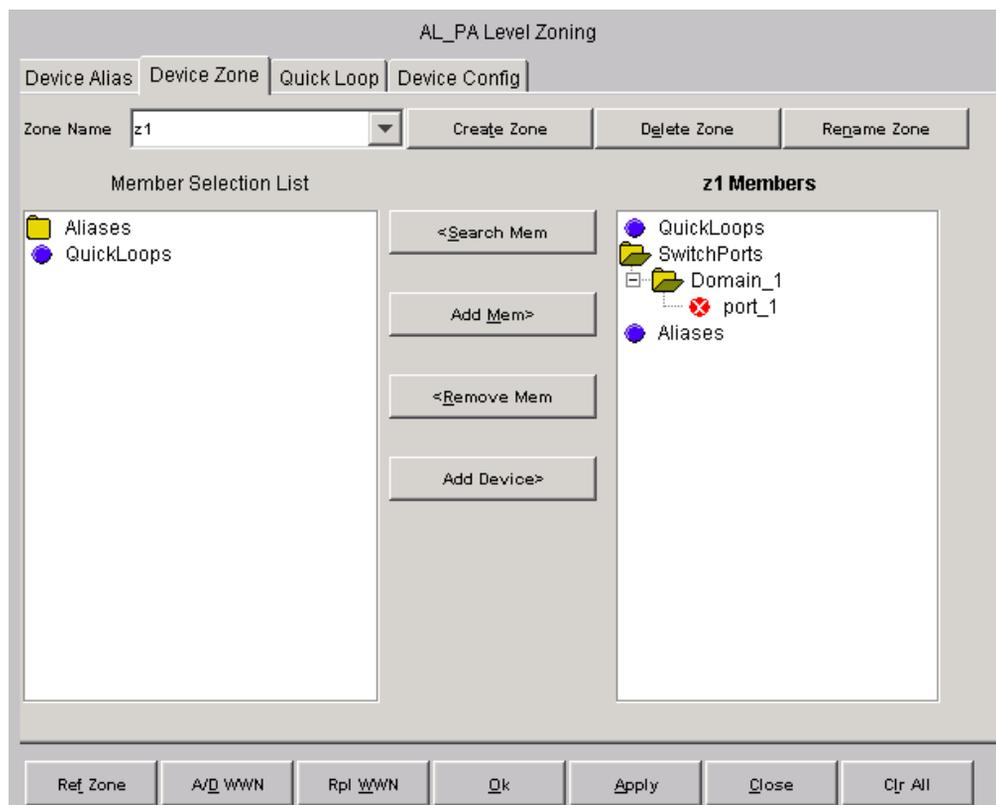


Figure 3–21: AL\_PA Device Zone tab of the AL\_PA Level Zoning menu

Table 3–18 gives descriptions of the fields on the AL\_PA Device Zone tab.

**Table 3–18: AL\_PA Device Zone Tab Fields**

<b>Zone Name</b>	Select an existing zone member to modify.
<b>Create Zone</b>	Click to create a new zone member.
<b>Delete Zone</b>	Click to delete a zone member.
<b>Rename Zone</b>	Click to rename a zone member.
<b>Member Selection List</b>	This field displays a list of potential zone members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>Zone Members</b>	This field lists the zone members selected in the <b>Zone Name</b> field. The name on this list depends on the name of the selected zone member. If a name is not selected, the name displays as “null Members.”
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Add Device</b>	Click to add a device that currently is not part of the Fabric.
<b>Add Mem</b>	Click to add a member from the member selection list into the Zone Members list.
<b>Remove Mem</b>	Click to remove a member from the Zone Members List when selected.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.

**Table 3–18: AL\_PA Device Zone Tab Fields (Continued)**

<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.
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## QuickLoop

A QuickLoop license is required to use this tab. Use the QuickLoop tab to create and manage QuickLoops. For information on managing the QuickLoop feature separately, see “Loop Tab” on page 5–8. The QuickLoop tab is shown in Figure 3–22.

The screenshot displays the 'AL\_PA Level Zoning' menu with the 'Quick Loop' tab selected. At the top, there are four tabs: 'Device Alias', 'Device Zone', 'Quick Loop', and 'Device Config'. Below the tabs, there is a 'QuickLoop Name' dropdown menu and three buttons: 'Create Qloop', 'Delete Qloop', and 'Rename Qloop'. The main area is divided into two sections: 'Switch Selection List' on the left, which contains the text 'Domain\_8(web126)', and 'QuickLoop Members' on the right, which is currently empty. Between these two sections are three buttons: '<Search Mem', 'Add Mem>', and '<Remove Mem'. At the bottom of the interface, there is a row of seven buttons: 'Ref\_Zone', 'A/Q WWN', 'Rpl WWN', 'Ok', 'Apply', 'Close', and 'Clr All'.

**Figure 3–22: QuickLoop tab of the AL\_PA Level Zoning Menu**

Table 3–19 gives descriptions of the fields on the QuickLoop tab.

**Table 3–19: QuickLoop Tab Fields**

<b>QuickLoop Name</b>	Select an existing QuickLoop member name to modify.
<b>Create Qloop</b>	Click to create a new QuickLoop member.
<b>Delete Qloop</b>	Click to delete a QuickLoop member.
<b>Rename Qloop</b>	Click to rename a QuickLoop member.
<b>Switch Selection List</b>	This field displays a list of potential QuickLoop members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>QuickLoop Members</b>	This field displays a list of the zone members selected in the QuickLoop Name field. The name on this list depends on the name of the selected QuickLoop member. If a name is not selected, the name displays as “null Members.”
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem</b>	Click to add a member from the member selection list into the QuickLoop member contents.
<b>Remove Mem</b>	Click to remove a member from the QuickLoop Members list when selected.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.

## AL\_PA Device Config

Use the AL\_PA Device Config tab to specify the Device Zone that belongs to the Device Zone Configuration file. All members of this configuration file must be Zones consisting entirely of AL\_PAs in a QuickLoop. The AL\_PA Device Config tab is shown in Figure 3–23.

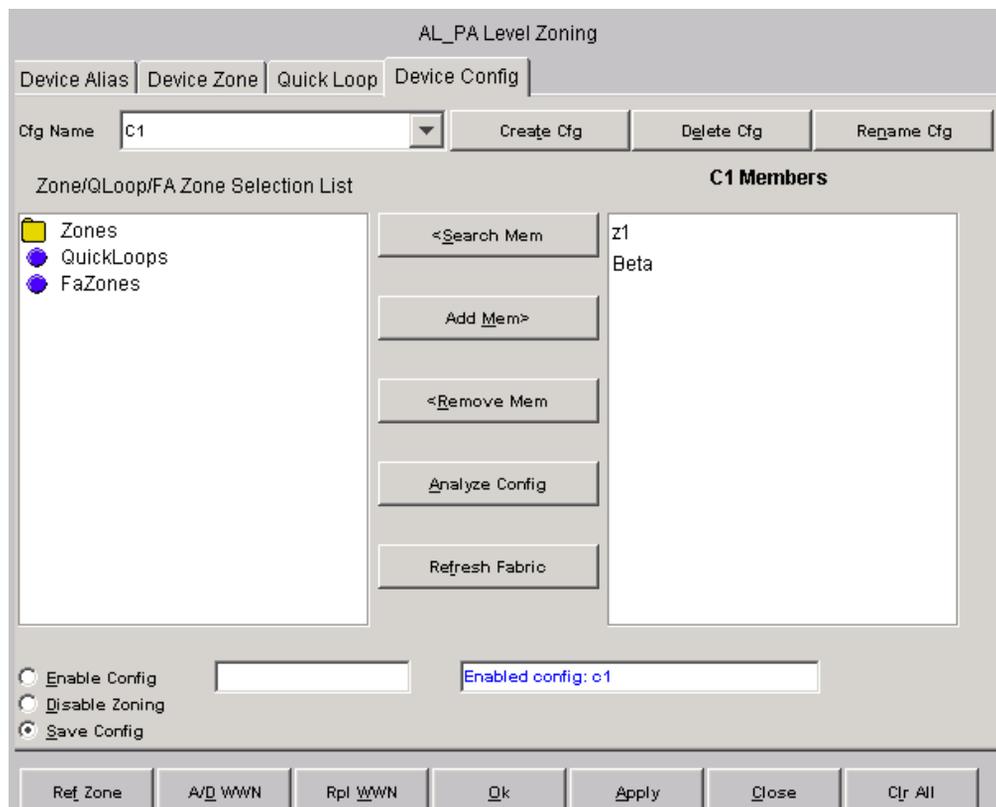


Figure 3–23: AL\_PA Device Config tab of the AL\_PA Level Zoning menu

Table 3–20 gives descriptions of the fields on the AL\_PA Device Config tab.

**Table 3–20: AL\_PA Device Config Tab Fields**

<b>Cfg Name</b>	Select an existing AL_PA Configuration name to modify.
<b>Create Cfg</b>	Click to create a new AL_PA configuration.
<b>Delete Cfg</b>	Click to delete a AL_PA configuration.
<b>Rename Cfg</b>	Click to rename a AL_PA configuration.
<b>Zone/QLoop Selection List</b>	A list of Zone/QuickLoop members available to add to the AL_PA configuration.
<b>Add Mem</b>	Click to add a member from the Zone Selection List into the Configuration Member List.
<b>Remove Mem</b>	Click to remove a member from the Zone Selection List into the Configuration Member List.
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or Qloop in the Member Selection List based on the type of objects displayed in that list.
<b>AL_PA Config Members name</b>	This field displays a list of the members that belong to the AL_PA Configuration currently selected in the Cfg Name field. The name of this list depends on the name of the AL_PA configuration selected. If an AL_PA configuration is not selected, the name displays as “null Members.”
<b>Analyze Config</b>	Click to analyze the configuration that is selected along with its member zones and aliases, and comes up with a zoning error screen (see Figure 3–14) in the event of a conflict.
<b>Enable Config</b>	Select this option and press the Apply button to enable the selected config for zoning the fabric.
<b>Disable Zoning</b>	Select this option and press the Apply button to disable the selected config for zoning the fabric.
<b>Refresh Fabric</b>	Click to refresh the fabric view with the latest Domain/Port and WWN changes.

**Table 3–20: AL\_PA Device Config Tab Fields (Continued)**

<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Applies the changes to the switch and exits the switch.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Mixed Level Zoning

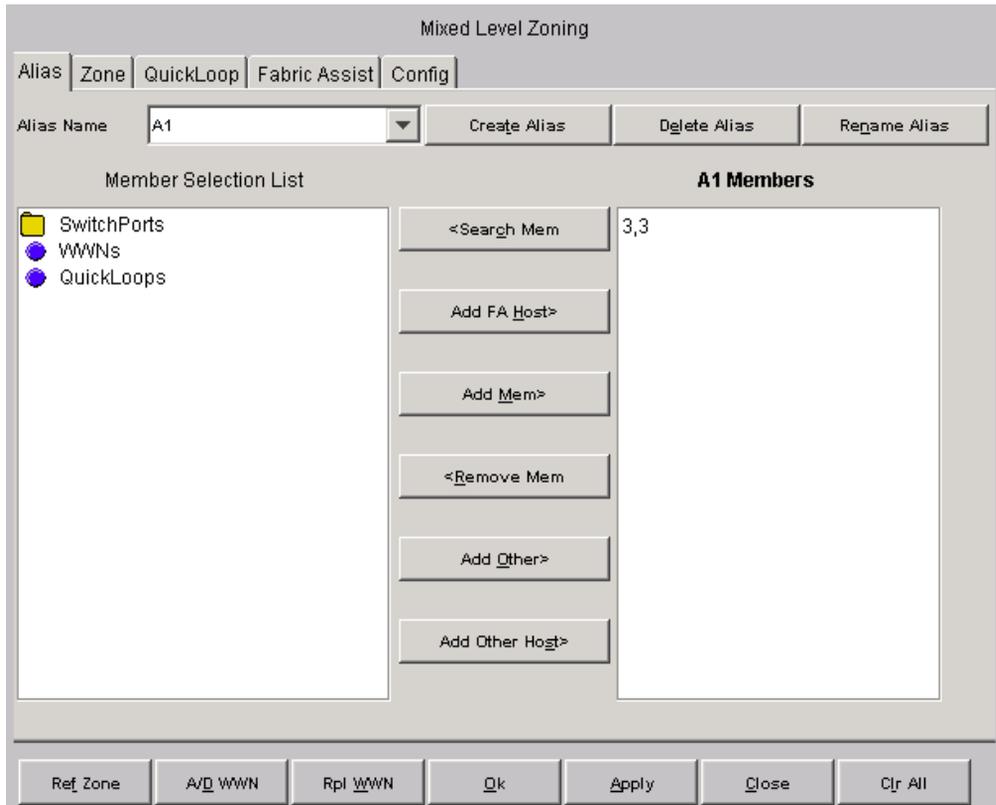
Mixed Level Zoning is provided for backward compatibility of pre-3.0.x zones. After selecting the Mixed Level Zoning button from the Zoning Selection window and clicking OK, the Mixed Level Zoning window with the Alias tab is displayed as shown in Figure 3–24.

Following is a list of the tabs provided in the Mixed Level Zoning menu:

- Alias
- Zone
- QuickLoop
- Fabric Assist
- Config

## Alias

Use the Alias tab to set up mixed aliases. The Alias tab is shown in Figure 3–24.



**Figure 3–24: Alias tab of the Mixed Level Zoning menu**

A description of the fields on the Alias tab is shown in Table 3–21.

**Table 3–21: Alias Tab Fields**

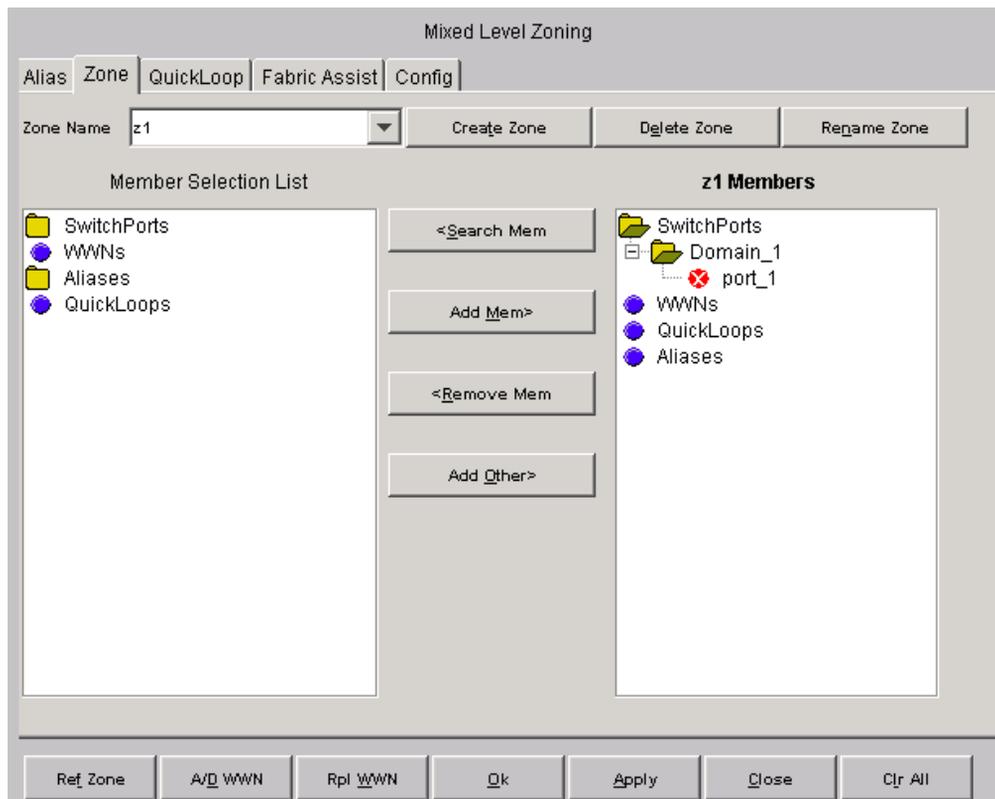
<b>Alias Name</b>	Select an existing alias to modify.
<b>Create Alias</b>	Click to create a new alias. A dialog displays. Enter the name of the new alias. All names must be unique and contain no spaces.
<b>Delete Alias</b>	Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones.
<b>Rename Alias</b>	Click to rename the alias selected in the Alias Name field. A dialog displays in which you can edit the alias name. Renaming an alias automatically renames it in all zones.
<b>Member Selection List</b>	This field displays a list of potential alias members, including switches, ports, WWNs, QuickLoop AL_PAs, and Fabric Assists.
<b>Alias Members</b>	This field lists the members of the alias selected in the <b>Alias Name</b> field. The name of this list depends on the name of the selected alias. If no alias is selected, the name displays as “Null Members.”
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or Qloop in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host</b>	Click to add the selected item as a host to the Members list. Only a domain port or a WWN can be added as a host.
<b>Add Mem</b>	Click to add a member from the Member Selection List to the Alias Members list.
<b>Add Other</b>	Click to add a switch/port, WWN, or a device that currently is not part of the fabric.
<b>Add Other Host</b>	Click to add other Host that is not currently part of the fabric.
<b>Remove Mem</b>	Click to remove the selected member from the Alias Members list.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.

**Table 3–21: Alias Tab Fields (Continued)**

<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the window.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Zone

Use the Zone tab to specify the member of a mixed zone. Mixed zone members can be AL\_PAs, ports, and WWNs. The Zone tab is shown in Figure 3–25.



**Figure 3–25: Zone tab of the Mixed Level Zoning menu**

Table 3–22 gives descriptions of the fields on the Zone tab.

**Table 3–22: Zone Tab Fields**

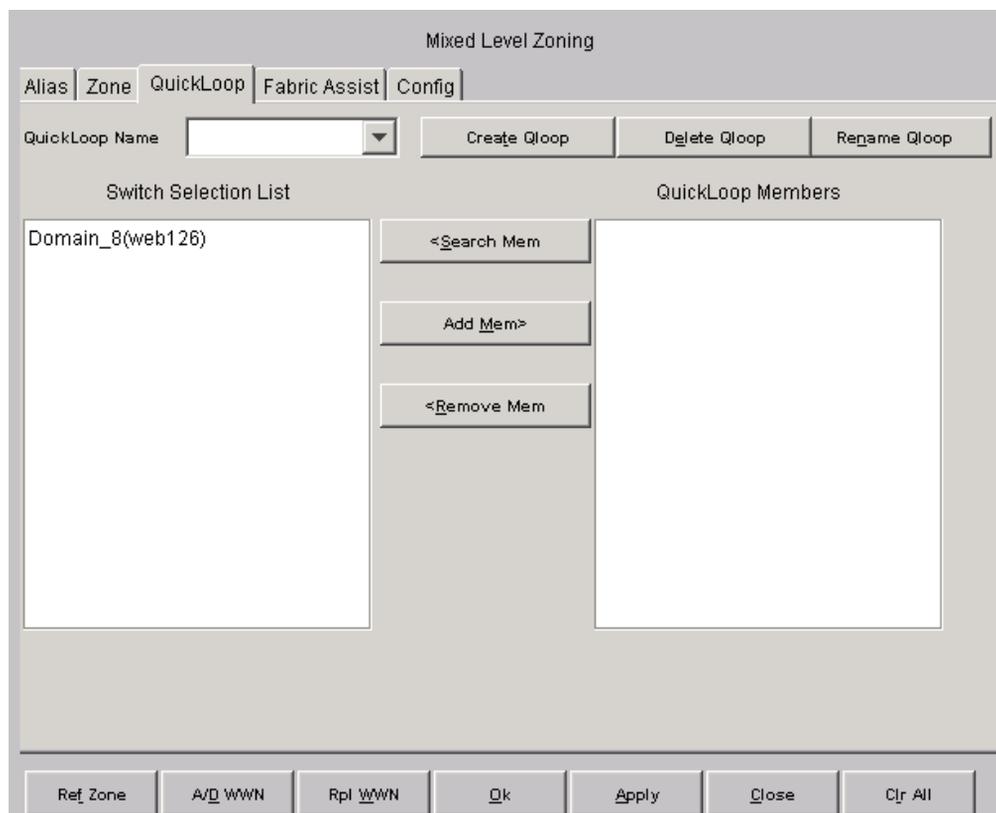
<b>Zone Name</b>	Select an existing zone member to modify.
<b>Create Zone</b>	Click to create a new zone member.
<b>Delete Zone</b>	Click to delete a zone member.
<b>Rename Zone</b>	Click to rename a zone member.

**Table 3–22: Zone Tab Fields (Continued)**

<b>Member Selection List</b>	This field displays a list of potential zone members, including switches, ports, WWNs, QuickLoop AL_PAs, and Fabric Assists.
<b>[Zone] Members</b>	This field displays a list of the zone members selected in the Zone Name field. The name on this list depends on the name of the selected zone member. If a name is not selected, the name displays as “null Members.”
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem</b>	Click to add a member from the Member Selection List into the Zone Member contents.
<b>Remove Mem</b>	Click to remove a member from the zone member list when selected.
<b>Add Other</b>	Click to add a switch/port, WWN, or a device that currently is not part of the Fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## QuickLoop

A QuickLoop license is required to use this tab. In conjunction with Zoning, use the QuickLoop tab to create and manage QuickLoops. For information on managing the QuickLoop feature separately, see “Loop Tab” on page 5–8 in this document. The QuickLoop tab is shown in Figure 3–26.



**Figure 3–26: QuickLoop tab of the Mixed Level Zoning menu**

Table 3–23 gives descriptions of the fields on the QuickLoop tab.

**Table 3–23: QuickLoop Tab Fields**

<b>QuickLoop Name</b>	Select an existing QuickLoop member to modify.
<b>Create Qloop</b>	Click to create a new QuickLoop member.
<b>Delete Qloop</b>	Click to delete a QuickLoop member.

**Table 3–23: QuickLoop Tab Fields (Continued)**

<b>Rename Qloop</b>	Click to rename a QuickLoop member.
<b>Switch Selection List</b>	This field displays a list of potential QuickLoop members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>QuickLoop Members</b>	This field displays a list of the zone members selected in the QuickLoop Name field. The name on this list depends on the name of the selected QuickLoop member. If a name is not selected, the name displays as “null Members.”
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem</b>	Click to add a member from the member selection list into the QuickLoop member contents.
<b>Remove Mem</b>	Click to remove a member from the QuickLoop member list when selected.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the window.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Fabric Assist

Use the Fabric Assist tab to create and manage Fabric Assists. A QuickLoop license is required to use this tab. The Fabric Assist tab is shown in Figure 3–27.

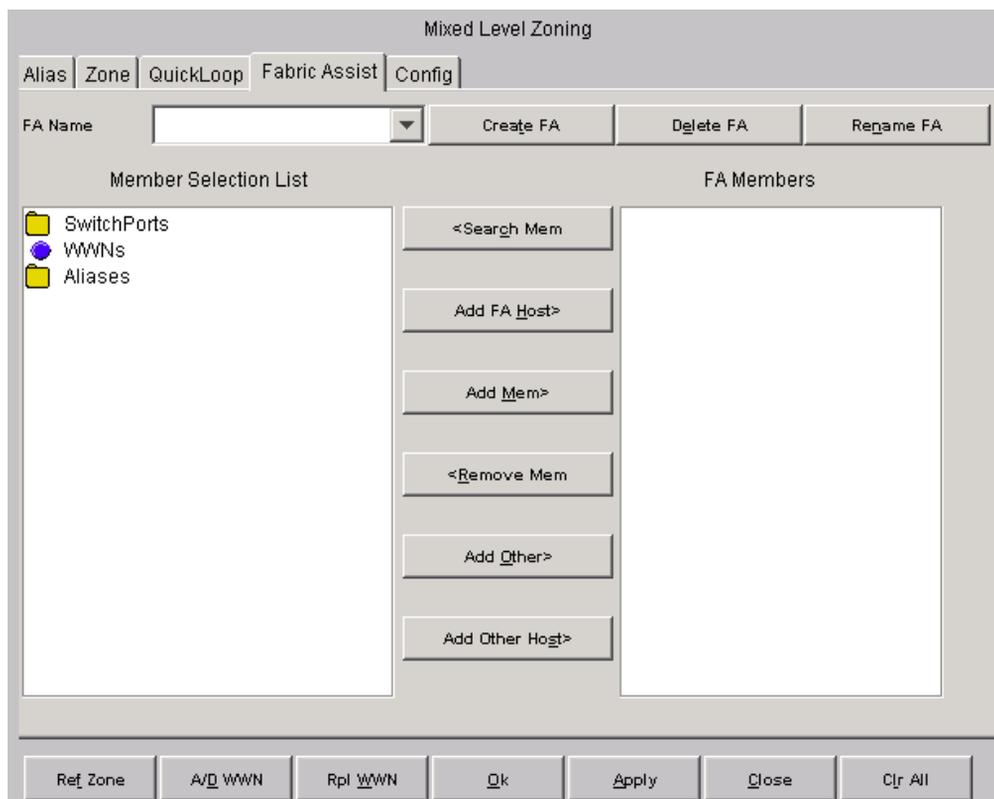


Figure 3–27: Fabric Assist tab of the Mixed Level Zoning menu

Table 3–24 gives descriptions of the fields on the Fabric Assist tab.

**Table 3–24: Fabric Assist Tab Fields**

<b>FA Name</b>	Select an existing Fabric Assist name to be modified.
<b>Create FA</b>	Click to create a new Fabric Assist. A dialog displays. Enter the name of the new Fabric Assist. All names must be unique and contain no spaces.
<b>Delete FA</b>	Click to delete the Fabric Assist selected in the FA Name field. Deleting a Fabric Assist automatically removes it from all aliases, zones, and zone configurations, including the associated AL_PAs.
<b>Rename FA</b>	Click to edit the name of the Fabric Assist selected in the FA Name field.
<b>Member Selection List</b>	This field displays a list of members available to add to the Fabric Assist.
<b>Add FA Host</b>	Click to add the selected item as a host to the Fabric Assist name Members list. Only a domain port or a WWN can be added as a host.
<b>Add Mem</b>	Click to add the member selected in the Member Selection List to the Fabric Assist name Members list.
<b>Remove Mem</b>	Click to remove the selected member from the Fabric Assist name Members list.
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Other</b>	Click to add a switch/port, WWN, or a device that currently is not part of the Fabric.
<b>Add Other Host</b>	Click to add other host that currently is not part of the fabric.

**Table 3–24: Fabric Assist Tab Fields (Continued)**

<b>Fabric Assist Name</b>	This field displays a list of the members that belong to the Fabric Assist currently selected in the FA Name field. The name of this list depends on the name of the WWN Fabric Assist selected. If a Fabric Assist is not selected, the name displays as “null Members.”
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Applies the changes to the switch and exits the window.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Config

Use the Config tab to save and enable a Mixed Zone Configuration file. A Mixed Zone Configuration file can contain any type of zoneable objects, ports, WWNs and AL\_PAs. The Config tab is shown in Figure 3–28.

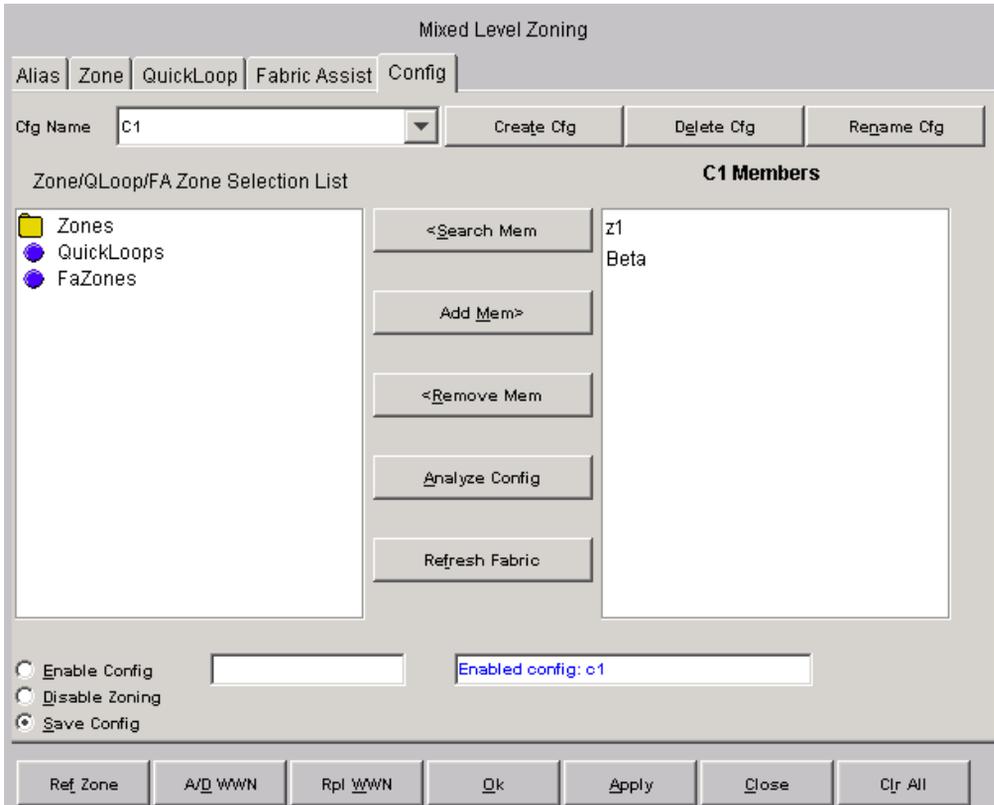


Figure 3–28: Config tab of the Mixed Level Zoning menu

For a description of the fields on the Config tab, see Table 3–25.

**Table 3–25: Config Tab Fields**

<b>Cfg Name</b>	Select the existing Cfg name to be modified.
<b>Create Cfg</b>	Click to create a new configuration.
<b>Delete Cfg</b>	Click to delete a configuration.
<b>Rename Cfg</b>	Click to rename a configuration.
<b>Zone/QLoop Selection List</b>	A list of Zone/QuickLoop members available to add to the configuration.
<b>Add Mem</b>	Click to add a member from the Zone Selection list into the Config Member list.
<b>Remove Mem</b>	Click to remove a member from the Config Members list into the Zone Selection list.
<b>Search Mem</b>	Click to search for a switch name, WWN, alias, zone, or QuickLoop in the Member Selection List based on the type of objects displayed in that list.
<b>Config Members</b>	A list of the members that belong to the Configuration currently selected in the Cfg Name field. The name of this list depends on the name of the configuration selected. If a configuration is not selected, the name displays as “null Members.”
<b>Analyze Config</b>	Click to analyze the configuration that is selected along with its member zones and aliases, and comes up with a zoning error screen (see Figure 3–34 on page 3–82) in the event of a conflict.
<b>Refresh Fabric</b>	Click to refresh the fabric view with the latest Domain/Port and WWN changes.
<b>Enable Config</b>	If this option is checked, and the Apply button pressed, the selected config would be used for zoning the fabric.
<b>Disable Zoning</b>	Select this option and press the Apply button to disable the selected zoning configuration.
<b>Ref Zone</b>	Click to reload the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.

**Table 3–25: Config Tab Fields (Continued)**

<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases and zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases and zones defined.
<b>OK</b>	Applies the changes to the switch and exits the window.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Zone Administration View V4.0.x (Optional Software)

A Zoning license and administrative privileges are required to access this view. If a switch or device is added or removed from the network, it is necessary to save the changes and relaunch the Zone Administration view for the changes to take effect.

**NOTE:** The following section is intended to describe Zoning configurations when using Web Tools 4.0.x. For information specific to V3.0.x, see "Zone Administration View V3.0.x (Optional Software)" on page 3–13. For more detailed information about Zoning, refer to the *HP StorageWorks Zoning Version 3.0.x/4.0.x User Guide*.

### Accessing the Zone Administration View

1. Launch Web Tools, displaying Fabric View.
2. Click the **Zone Admin** icon.

For more information, see "Buttons and Icons" on page 3–4.

A prompt displays requesting User Name and Password.

3. Enter User Name and Password.

**NOTE:** Logging in as Root or Admin will allow you have Read and Write access. Logging in as a User will only allow Read access.

4. Click **OK**.

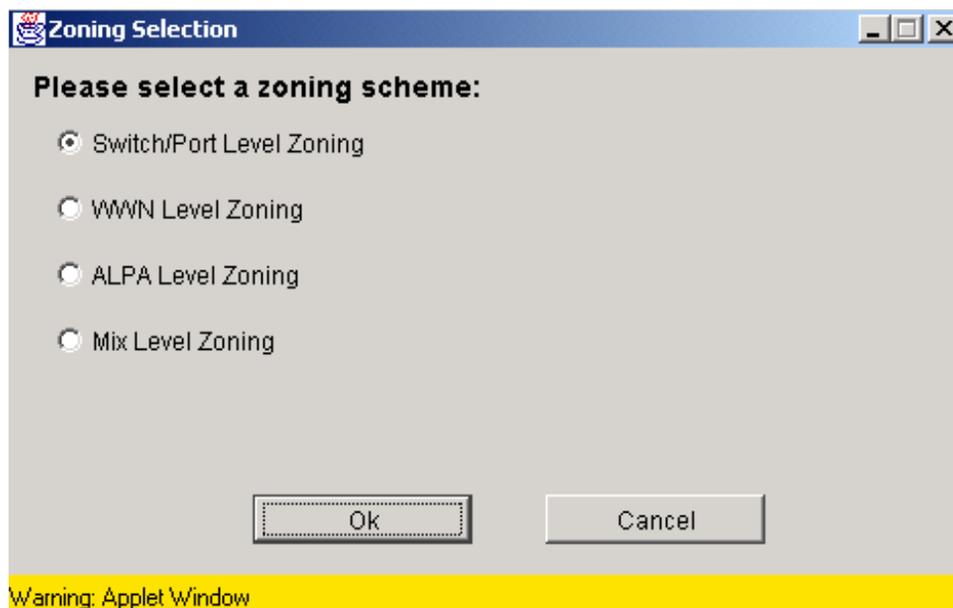
The Zoning Selection menu displays as shown in Figure 3–29.

## Administering Zoning

When administering Zoning, the following steps are recommended:

1. Define zone aliases to establish groupings.
2. Add zone members.
3. Place zones into one or more zone configurations.
4. Enable one of the zone configurations (only one can be enabled at a time).

## Zoning Schemes



**Figure 3–29: Zoning Selection view**

**Table 3–26: 4.0.x Zoning Schemes**

<b>Switch/Port Level Zoning</b>	Use when alias, zoning, and configuration file operations are on ports. Aliases, zones, and configuration files which have objects other than ports can also be selected or operated on.
<b>WWN Level Zoning</b>	Use when alias, zoning, and configuration file operations are on WWNs. Aliases, zones, and configuration files which have objects other than WWNs can also be selected or operated on.
<b>AL_PA Level Zoning</b>	Use when alias, zoning, and configuration file operations are on an AL_PA. Aliases, zones, and configuration files which have objects other than AL_PAs can also be selected or operated on.
<b>Mixed Level Zoning</b>	Use this mode when you want any object to be selected as a member of a zone, alias, or configuration file. This mode does not allow specification of a LUN.

## Switch/Port Level Zoning

Upon selecting the Switch/Port Level Zoning button from the Zoning Selection menu and selecting OK, the Switch/Port Level Zoning menu with the Port Alias tab displays, as shown in Figure 3–30.

Following is a list of the tabs provided in the Switch/Port Level Zoning menu:

- Port Alias
- Port Zone
- QuickLoop
- Port Fabric Assist
- Port Config

## Port Alias Tab

The Port Alias tab shows only Domain/Ports that are in the fabric. This tab is used to configure zones that consist only of Domain/Ports and aliases that contain only Domain/Ports. The Port Alias tab is displayed, as shown in Figure 3–30.

Port Alias | Port Zone | Quick Loop | Port Fabric Assist | Port Config

Alias Name: fake\_dev [v]    Create Alias    Delete Alias    Rename Alias

Member Selection List      fake\_dev Members

SwitchPorts      <Search Mem      50,60

Add FA Host>

Add Mem>

<Remove Mem

Add Sw,Port>

Add Sw,Port Host>

Ref Zone    A/D WWN    Rpl WWN    Ok    Apply    Close    Clr All

**Figure 3–30: Port Alias Tab of the Switch/Port Level Zoning menu**

Table 3–27 provides a description of the fields on the Port Alias tab.

**Table 3–27: Port Alias Tab Fields**

<b>Alias Name</b>	Select an existing alias name to be displayed or modified.
<b>Create Alias</b>	Select to create a new alias. A new alias dialog displays. Enter a new alias name that is unique. The new alias name cannot contain spaces.
<b>Delete Alias</b>	Select to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones.
<b>Rename Alias</b>	Select to rename the alias selected in the Alias Name field. A dialog displays in which you can edit the alias name. Renaming an alias automatically renames it in all zones.
<b>Member Selection List</b>	This field contains a list of potential alias members, including switches and ports.
<b>[Alias] Member List</b>	Displays a list of selected Alias Members.
<b>&lt; Search Mem</b>	Select to search for a Domain or switch name in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host &gt;</b>	Select to add a Fabric Assist Host to the [Alias] Member Selection List.
<b>Add Mem &gt;</b>	Select to add the item selected in the Member Selection List to the Alias Members list. You can add individual ports or an entire switch. If a switch is added, all ports on the switch are added.
<b>&lt; Remove Mem</b>	Select to remove the member selected from the Alias Name Members Selection list.
<b>Add Sw, Port Host &gt;</b>	Select to add a switch/port combination that currently is not part of the fabric. A dialog box will appear to enter the chosen member.
<b>[Alias] Members</b>	This field lists the members of the alias selected in the Alias Name field. The name of this list depends on the name of the selected alias. If no alias is available, the name displays as “Null Members.”
<b>Ref Zone</b>	Select to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.

**Table 3–27: Port Alias Tab Fields (Continued)**

<b>A/D WWN</b>	Select to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Select to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Applies the changes to the switch and exits the frame.
<b>Apply</b>	Select to apply all changes made since the Zone Administration View was opened, including changes made on other tabs in the view. Changes cannot be cancelled once applied.
<b>Close</b>	Select to exit the frame without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Port Zone Tab

Use the Port Zone tab to specify which ports on a switch are to be in the selected zone and to create and manage zones. A zone can have one or multiple members, and can include switches, ports, and aliases. The Port Zone tab is shown in Figure 3–31.

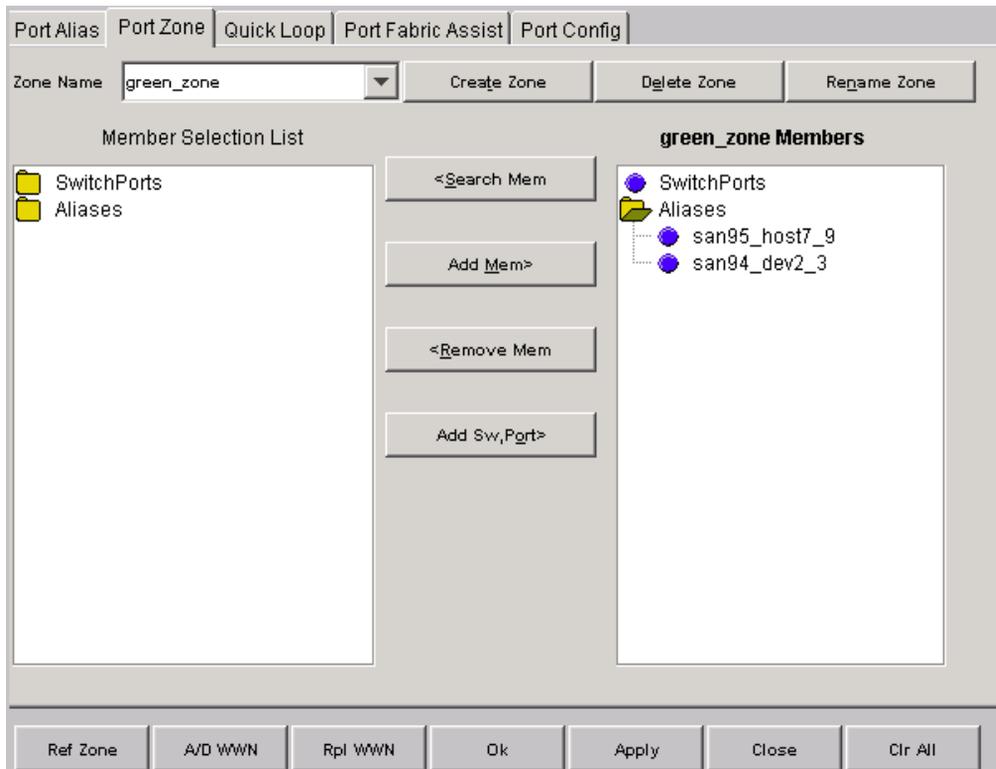


Figure 3–31: The Port Zone Tab of the Switch/Port Level Zoning menu

A description of the fields on the Port Zone tab is shown in Table 3–28.

**Table 3–28: Port Zone Tab Fields**

<b>Zone Name</b>	To display or modify an existing zone, select a zone name.
<b>Create Zone</b>	Select to create a new zone. A dialog displays in which you can enter the name of the new zone. All names must be unique and contain no spaces.
<b>Delete Zone</b>	Select to delete the zone selected in the Zone Name field. Deleting a zone automatically removes it from all zone configurations.
<b>Rename Zone</b>	Select to edit the name of the zone selected in the Zone Name field. A dialog displays in which you can edit the name of the zone.
<b>Member Selection List</b>	A list of potential zone members, including switches, ports, and aliases.
<b>[Zone Name] Members</b>	This field lists members of the zone selected in the Zone Name field. The name of this list depends on the name of the selected zone. If no zone is available, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Select to search the list of potential zone members.
<b>Add Sw, Port &gt;</b>	Select to add a switch/port that is not a part of the member list, or current fabric.
<b>Add Mem &gt;</b>	Select to add the member selected in the Member Selection List to the Zone Members list. If an entire switch is selected, all ports on the switch are added to the zone. You can also select individual ports. To add an alias to the zone, select it from the Aliases sub-tree (the alias must already exist).
<b>&lt; Remove Mem</b>	Select to remove the selected member from the [Zone name] Members list.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Applies the changes to the switch and exits the frame.

**Table 3–28: Port Zone Tab Fields (Continued)**

<b>Apply</b>	Click to apply all changes made since the Zone Administration View was opened, including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Port Fabric Assist Tab

Use the Port Fabric Assist tab to create and manage Port Fabric Assist if used in conjunction with Zoning. The Port Fabric Assist tab is shown in Figure 3–32.

The screenshot displays the 'Port Fabric Assist' tab within a web-based configuration interface. At the top, there are navigation tabs: 'Port Alias', 'Port Zone', 'Quick Loop', 'Port Fabric Assist' (which is selected), and 'Port Config'. Below the tabs, there is a text input field for 'FA Name' with a dropdown arrow, followed by three buttons: 'Create FA', 'Delete FA', and 'Rename FA'. The main area is divided into two panes: 'Member Selection List' on the left and 'FA Members' on the right. The 'Member Selection List' contains two folder icons labeled 'SwitchPorts' and 'Aliases'. Between these panes is a vertical column of buttons: '<Search Mem', 'Add EA Host>', 'Add Mem>', '<Remove Mem', 'Add Sw,Port>', and 'Add Sw,Port Host>'. At the bottom of the interface is a horizontal bar with seven buttons: 'Ref Zone', 'A/D WWN', 'Rpl WWN', 'Ok', 'Apply', 'Close', and 'Clr All'.

**Figure 3–32: The Port Fabric Assist Tab of the Switch/Port Level Zoning menu**

A description of the fields on the Port Fabric Assist tab is provided in Table 3–29.

**Table 3–29: Port Fabric Assist Tab Fields**

<b>FA Name</b>	Select a Fabric Assist name to display or modify an existing Fabric Assist.
<b>Create FA</b>	Click to create a new Fabric Assist. A dialog displays in which you can enter the name of the new Fabric Assist. All names must be unique and contain no spaces.
<b>Delete FA</b>	Click to delete the Fabric Assist selected in the Fabric Assist Name field. Deleting a Fabric Assist automatically removes it from all aliases, zones, and zone configurations, including the associated AL_PAs.
<b>Rename FA</b>	Click to edit the name of the Fabric Assist selected in the Fabric Assist Name field. A dialog displays in which you can edit the name of the Fabric Assist.
<b>Member Selection List</b>	Displays a list of the switches, ports and aliases available to add to the Fabric Assist.
<b>[Fabric Assist Name] Members</b>	A list of the members of the Fabric Assist currently selected in the Fabric Assist Name field. The name of this list depends on the name of the selected Fabric Assist. If no Fabric Assist is available, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name or Alias in the Switch Selection List based on the type of objects displayed in that list.
<b>Add FA Host &gt;</b>	Select to add an FA Host to the list of members.
<b>Add Mem &gt;</b>	Click to add the switch selected in the Member Selection List to the Fabric Assist Members list.
<b>&lt; Remove Mem</b>	Click to remove the selected member from the [Fabric Assist Member] list.
<b>Add Sw, Port</b>	Select to add a switch/port that is not a part of the member list, or current fabric.
<b>Add Sw, Port Host &gt;</b>	Select to add a host that is not part of the Member List or current fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.

**Table 3–29: Port Fabric Assist Tab Fields (Continued)**

<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Applies the changes to the switch and exits the frame.
<b>Apply</b>	Click to apply all changes made since the Zone Administration View was opened, including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Port Config Tab

Use the Port Config tab to create and manage zone configurations. Zone configurations are used to enable or disable a group of zones at the same time.

The Port Config tab is shown in Figure 3–33.

The screenshot shows the 'Port Config' tab of a web-based configuration interface. At the top, there are navigation tabs: 'Port Alias', 'Port Zone', 'Quick Loop', 'Port Fabric Assist', and 'Port Config'. Below the tabs is a 'Cfg Name' field with a dropdown arrow, followed by three buttons: 'Create Cfg', 'Delete Cfg', and 'Rename Cfg'. The main area is divided into two columns: 'Zone/QLoop/FA Zone Selection List' on the left and 'Config Members' on the right. The left column contains three radio buttons: 'Zones', 'QuickLoops', and 'FaZones'. The right column is currently empty. Between the columns are five buttons: '<Search Mem', 'Add Mem>', '<Remove Mem', 'Analyze Config', and 'Refresh Fabric'. At the bottom left, there are three radio buttons: 'Enable Config', 'Disable Zoning', and 'Save Config'. To the right of these are two empty text input fields. At the very bottom, there is a row of seven buttons: 'Ref Zone', 'A/D WWN', 'Rpl WWN', 'Ok', 'Apply', 'Close', and 'Clr All'.

Figure 3–33: The Port Config Tab of the Switch/Port Level Zoning menu

Table 3–30 provides a description of the fields and buttons that appear on the Port Config tab.

**Table 3–30: Port Config Tab Fields**

<b>Cfg Name</b>	Select an existing configuration to display or modify.
<b>Create Cfg</b>	Click to create a new configuration. A dialog displays. Enter the name of the new configuration. All names must be unique and contain no spaces.
<b>Delete Cfg</b>	Click to delete the configuration selected in the Cfg Name field.
<b>Rename Cfg</b>	Click to edit the name of the configuration selected in the Cfg Name field.
<b>Zone/QLoop Selection List</b>	This field provides a list of the zones, QuickLoops, and FA Zones available to add to the configuration.
<b>[Config] Members</b>	The members of the configuration selected in the Cfg Name field. The name of this list depends on the selection. Only one configuration can be enabled at a time; if none are enabled, zoning is not active in the fabric.
<b>&lt; Search Mem</b>	Click to search for a Zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add the switch selected in the Zone/QLoop Selection List to the Config Members list.
<b>&lt; Remove Mem</b>	Click to remove the selected member from the Config Members list.
<b>Analyze Config</b>	Analyzes the configuration that is selected along with its member zones and aliases. A zoning configuration error screen (see Figure 3–34) appears in the event of a conflict.
<b>Refresh Fabric</b>	Click to refresh the fabric view with the latest Domain/Port and WWN changes.
<b>Enable Config</b>	Check to enable the configuration selected in the Cfg Name pull-down menu, or uncheck to disable it.
<b>Disable Zoning</b>	Check to disable zoning.
<b>Save Config</b>	Check to save config without enabling or disabling.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.

**Table 3–30: Port Config Tab Fields (Continued)**

<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>Ok</b>	Applies the changes to the switch and exits the window.
<b>Apply</b>	Click to apply all changes made since the Zone Administration View was opened, including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Zoning Configuration Analysis screen

The Zoning Configuration Analysis screen displays a summary of the saved configuration and attempts to point out some of the zoning conflicts before applying the changes to the switch. Some of the potential errors it might catch are:

- Ports/WWNs/Devices that are part of the selected configuration, but not part of the fabric.
- Zones with only a single member

To access the Zoning Configuration Analysis screen, select the Analyze Config button where available in the various Zoning windows.

The Zoning Configuration Errors analysis screen is shown in Figure 3–34.

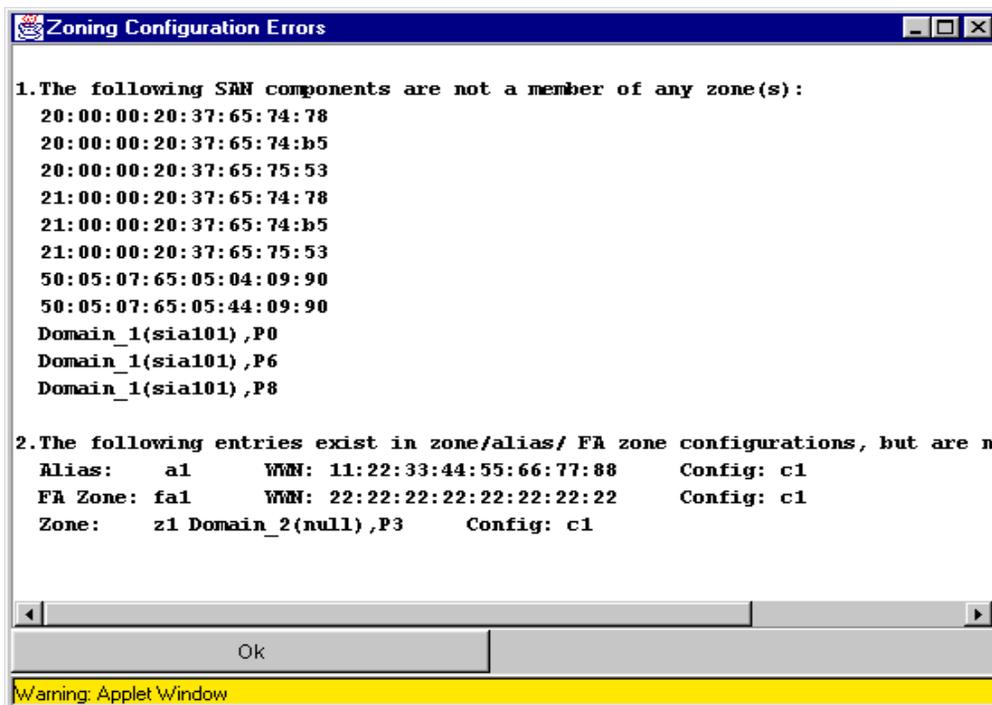


Figure 3–34: Zoning Configuration Errors analysis screen

## WWN Level Zoning

With WWN Zoning, only World Wide Names are displayed on the tabs. This window is used to configure aliases, zones and configuration files. After selecting the WWN Level Zoning button from the Zoning Selection menu and clicking OK, the WWN Level Zoning menu displays. Figure 3–35 shows a typical WWN Alias tab display.

The following is a list of the tabs that are provided in the WWN Level Zoning menu:

- WWN Alias
- WWN Zone
- QuickLoop
- WWN Fabric Assist
- WWN Config

## WWN Aliases Tab

Use the WWN Alias tab to configure WWN Aliases.

The WWN Alias tab is shown in Figure 3–35.

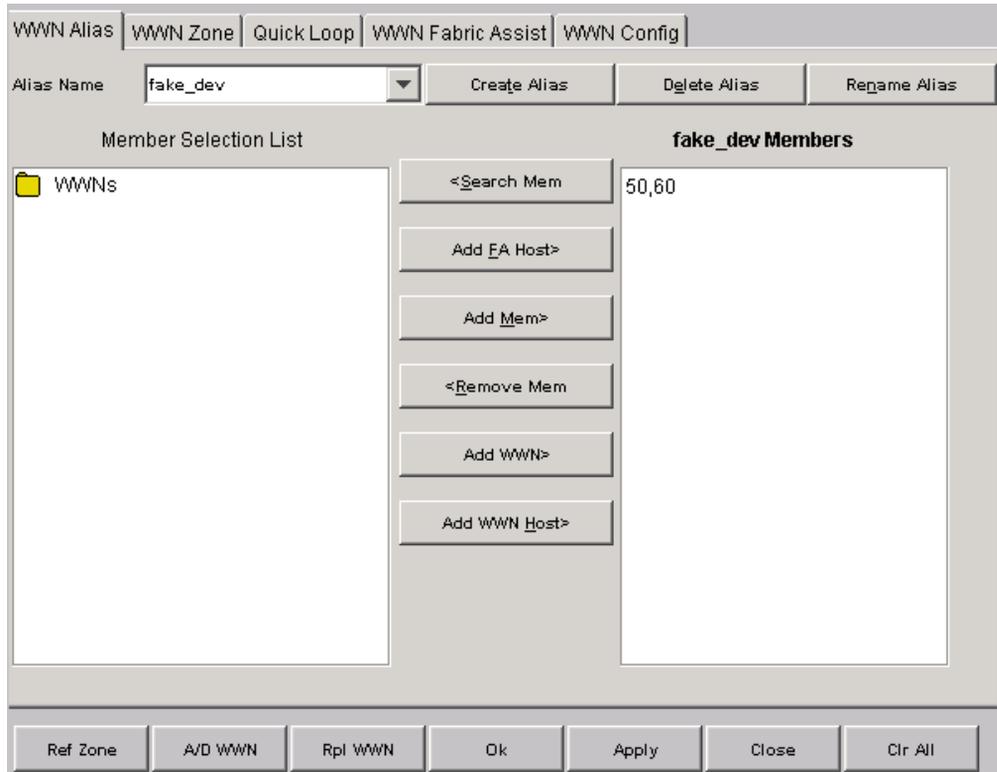


Figure 3–35: WWN Alias Tab of the WWN Level Zoning menu

Table 3–31 provides a description of the fields on the WWN Alias tab.

**Table 3–31: WWN Alias Tab Fields**

<b>Alias Name</b>	Select an existing alias to display or modify.
<b>Create Alias</b>	Click to create a new alias. A dialog displays in which you can enter the name of the new alias. All names must be unique and contain no spaces.
<b>Delete Alias</b>	Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones.
<b>Rename Alias</b>	Click to rename the alias selected in the Alias Name field. A dialog displays in which you can edit the alias name. Renaming an alias automatically renames it in all zones.
<b>Member Selection List</b>	Displays a list of potential alias member WWNs.
<b>[Alias] Members</b>	Lists the members of the alias selected in the Alias Name pull-down menu. The name of this list depends on the name of the selected alias. If no alias is available, the name displays as “Null Members.”
<b>&lt; Search Mem</b>	Click to search for a WWN in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host &gt;</b>	Click to add the selected item as a host to the Members list. Only a domain port or a WWN can be added as a host.
<b>Add Mem &gt;</b>	Click to add the item selected in the Member Selection List to the [Alias Members] list. If a switch is added, all ports on the switch are added. To add a device WWN, select either a node WWN (folder icon) or port WWN (blue circle icon) from the WWN sub-tree.
<b>&lt; Remove Mem</b>	Click to remove the selected member from the [Alias Member] list.
<b>Add WWN &gt;</b>	Click to add a WWN that currently is not part of the fabric.
<b>Add WWN Host &gt;</b>	Click to add a host that is not currently part of the fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.

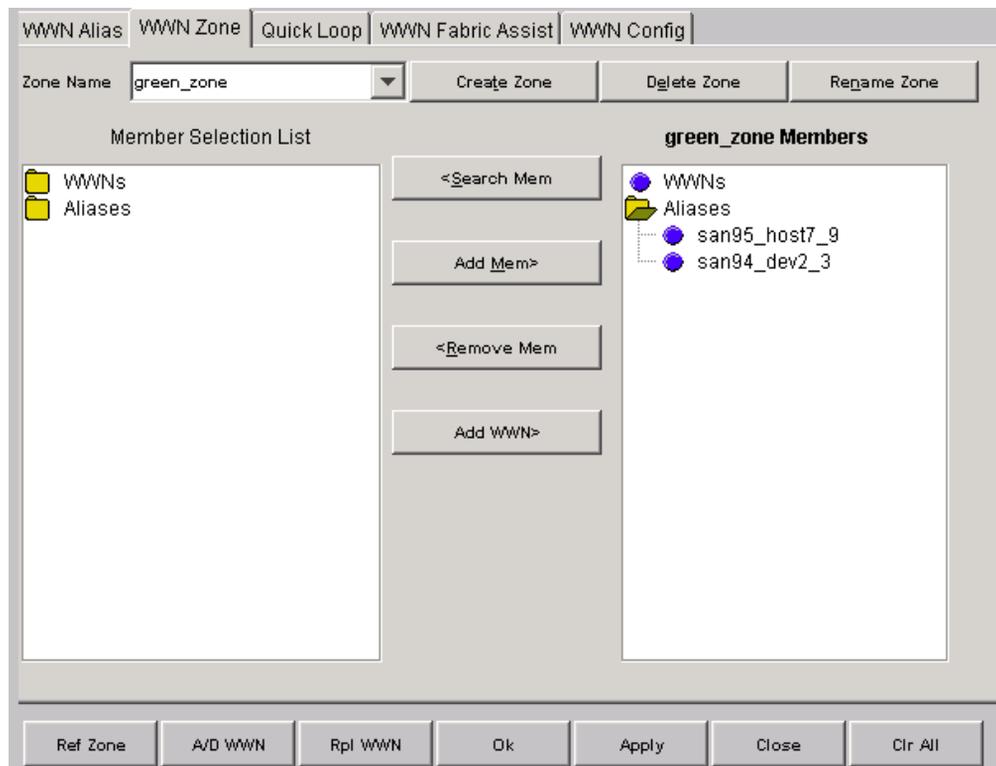
**Table 3–31: WWN Alias Tab Fields (Continued)**

<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the window.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## WWN Zone

Use the WWN Zone tab to specify the members of the WWN Zone. In this window, only switches and WWN are available to be selected as members of the zone.

The WWN Zone tab is shown in Figure 3–36.



**Figure 3–36: WWN Zone Tab of the WWN Level Zoning menu**

Table 3–32 provides a description of the fields on the WWN Zone tab.

**Table 3–32: WWN Zone Tab Fields**

<b>Zone Name</b>	Select an existing zone member to modify.
<b>Create Zone</b>	Click to create a new zone member.
<b>Delete Zone</b>	Click to delete a zone member.
<b>Rename Zone</b>	Click to rename a zone member.
<b>Member Selection List</b>	This field displays a list of potential zone members, including WWNs and aliases.
<b>[Zone] Members</b>	This field lists the zone members selected in the Zone Name pull-down menu. The name on this list depends on the name of the selected zone member. If a name is not available, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a WWN or Alias, in the Member Selection List, based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the Member Selection list into the [Zone Members] contents.
<b>&lt; Remove Mem</b>	Click to remove a member from the [Zone Members] list.
<b>Add WWN &gt;</b>	Click to add a WWN that is not currently part of the Fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## QuickLoop

Use the QuickLoop tab to create and manage QuickLoops if used in conjunction with Zoning. For information on managing the QuickLoop feature separately, see “Loop Tab” on page 5–20.

**NOTE:** This feature can only be used with 2x and 3x series switches.

The QuickLoop tab is shown in Figure 3–37.

**Figure 3–37: QuickLoop tab of the WWN Level Zoning menu**

Table 3–33 a description of the fields on the QuickLoop tab.

**Table 3–33: QuickLoop Tab Fields**

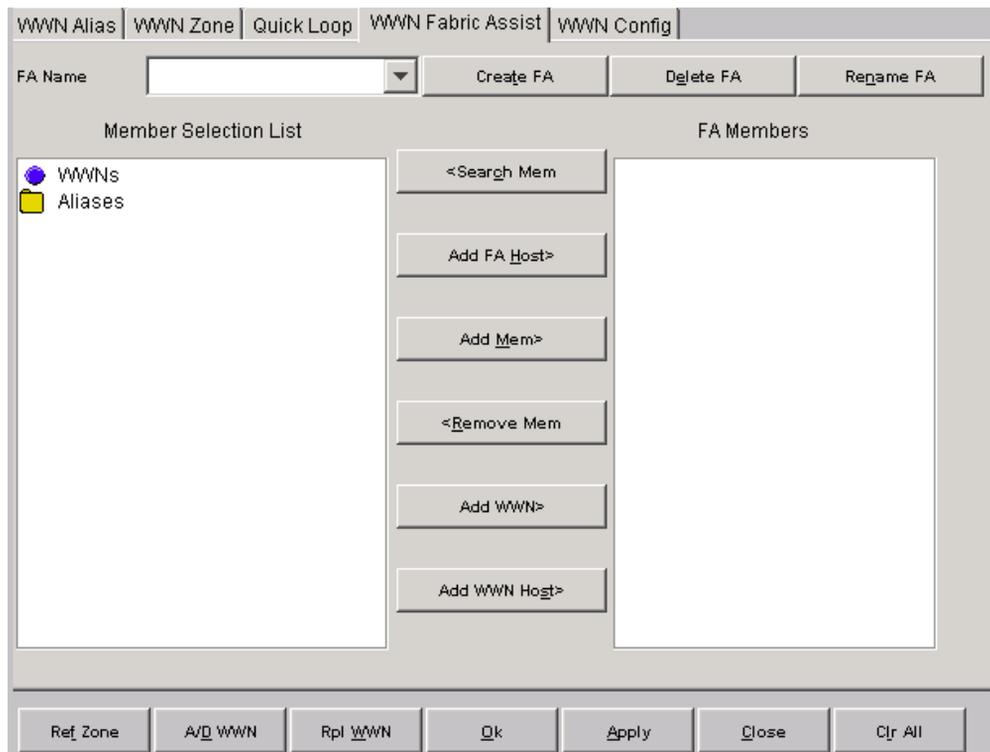
<b>QuickLoop Name</b>	Select an existing QuickLoop member to modify.
<b>Create Qloop</b>	Click to create a new QuickLoop member.

**Table 3–33: QuickLoop Tab Fields (Continued)**

<b>Delete Qloop</b>	Click to delete a QuickLoop member.
<b>Rename Qloop</b>	Click to rename a QuickLoop member.
<b>Switch Selection List</b>	This field displays a list of potential QuickLoop members, including switches.
<b>[QuickLoop] Members</b>	This field contains a list of the zone members selected in the QuickLoop Name pull-down menu. The name on this list depends on the name of the selected QuickLoop member. If a name is not available, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a Domain or a switch name in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the member selection list into the [QuickLoop member] contents.
<b>&lt; Remove Mem</b>	Click to remove a member from the [QuickLoop] members list when selected.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## WWN Fabric Assist

Use the WWN Fabric Assist tab to create and manage WWN Fabric Assists. The WWN Fabric Assist tab is shown in Figure 3–38.



**Figure 3–38: WWN Fabric Assist Tab of the WWN Level Zoning menu**

Table 3–34 provides a description of the fields on the WWN Fabric Assist tab.

**Table 3–34: WWN Fabric Assist Tab Fields**

<b>FA Name</b>	Select an existing WWN Fabric Assist name to modify.
<b>Create FA</b>	Click to create a new WWN Fabric Assist. A dialog displays. Enter the name of the new WWN Fabric Assist. All names must be unique and contain no spaces.
<b>Delete FA</b>	Click to delete the WWN Fabric Assist selected in the FA Name field. Deleting a WWN Fabric Assist automatically removes it from all aliases, zones, and zone configurations, including the associated AL_PAs.
<b>Rename FA</b>	Click to edit the name of the WWN Fabric Assist selected in the FA Name field.
<b>Member Selection List</b>	This field displays a list of members available to add to the WWN Fabric Assist.
<b>[WWN Fabric Assist Name] FA Members</b>	A list of the members that belong to the WWN Fabric Assist currently selected in the FA Name field. The name of this list depends on the name of the WWN Fabric Assist selected. If no WWN Fabric Assist is selected, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a WWN, alias, or zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host &gt;</b>	Click to add the selected item as a host to the WWN Fabric Assist name list. Only a domain port or a WWN can be added as a host.
<b>Add Mem &gt;</b>	Click to add the member selected in the Member Selection List to the [WWN Fabric Assist name] member list.
<b>&lt; Remove Mem</b>	Click to remove the selected member from the [WWN Fabric Assist name] member list.
<b>Add WWN &gt;</b>	Click to add a WWN that is not currently part of the Fabric.

**Table 3–34: WWN Fabric Assist Tab Fields (Continued)**

<b>Add WWN Host &gt;</b>	Click to add a WWN Host that is not currently part of the Fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copy from the switch. This button would automatically flash red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add/delete a WWN to/from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>Ok</b>	Select OK to apply the changes to the switch and exit the window.
<b>Apply</b>	Click to apply all changes made, including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## WWN Config

Use the WWN Config tab to specify which zones comprise a WWN Zone Configuration file.

The WWN Config tab is shown in Figure 3–39.

The screenshot shows the WWN Config tab of a web-based interface. At the top, there are five tabs: WWN Alias, WWN Zone, Quick Loop, WWN Fabric Assist, and WWN Config (which is selected). Below the tabs is a 'Cfg Name' dropdown menu and three buttons: 'Create Cfg', 'Delete Cfg', and 'Rename Cfg'. The main area is divided into two columns: 'Zone/QLoop/FA Zone Selection List' on the left and 'Config Members' on the right. The left column contains three radio buttons: 'Zones', 'QuickLoops', and 'FaZones', all of which are selected. The right column is currently empty. Between the two columns are five buttons: '<Search Mem', 'Add Mem>', '<Remove Mem', 'Analyze Config', and 'Refresh Fabric'. At the bottom left, there are three radio buttons: 'Enable Config', 'Disable Zoning', and 'Save Config' (which is selected). To the right of these is a text input field containing 'Enabled config:'. At the very bottom, there is a row of seven buttons: 'Ref Zone', 'A/D WWN', 'Rpl WWN', 'Ok', 'Apply', 'Close', and 'Clr All'.

**Figure 3–39: WWN Config Tab of the WWN Level Zoning menu**

Table 3–35 provides a description of the fields on the WWN Config tab.

**Table 3–35: WWN Config Tab Fields**

<b>Cfg Name</b>	Select to modify an existing WWN configuration name to be modified.
<b>Create Cfg</b>	Click to create a new WWN configuration.
<b>Delete Cfg</b>	Click to delete a WWN configuration.
<b>Rename Cfg</b>	Click to rename a WWN configuration.
<b>Zone/QLoop Selection List</b>	This field displays a list of Zones, QuickLoop, and alias members available to add to the WWN configuration.
<b>[Config] Members</b>	This field displays a list of the members that belong to the WWN Configuration currently selected in the Cfg Name field. The name of this list depends on the name of the WWN configuration selected. If WWN configuration is not available, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for an alias, zone, QuickLoop, or FA Zones in the Zone Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the [Config Members] list into the zone selection list.
<b>&lt; Remove Mem</b>	Click to remove a member from the zone selection list into the [Zone/QLoop Selection] list.
<b>Analyze Config</b>	Click to analyze the configuration that is selected along with its member zones and aliases. A zoning error screen (see Figure 3–34) appears in the event of a conflict.
<b>Refresh Fabric</b>	Click to refresh the fabric view with the latest Domain/Port and WWN changes.
<b>Enable Config</b>	If this option is checked, and the Apply button pressed, the selected configuration would be used for zoning the fabric.
<b>Disable Zoning</b>	Click to disable zoning.
<b>Save Config</b>	Click to save a zoning configuration without enabling or disabling zoning.

**Table 3–35: WWN Config Tab Fields (Continued)**

<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add/delete a WWN to/from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>Ok</b>	Applies the changes to the switch and exits the switch.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## AL\_PA Level Zoning

AL\_PA Level Zoning is a replacement for QuickLoop Zoning. With AL\_PA Level Zoning, only members of a QuickLoop can be a member of the zone. Zone members are specified through their AL\_PA.

Figure 3–40 shows a typical AL\_PA Device Alias tab of the AL\_PA Zoning window.

The following tabs are provided in the AL\_PA Level Zoning menu:

- Device Alias
- Device Zone
- QuickLoop
- Device Config

## Device Alias Tab

Use the Device Alias tab to create and manage QuickLoop configurations. QuickLoop configurations are used to enable or disable a group of zones at the same time. The AL\_PA Device Alias tab is shown in Figure 3–40.

The screenshot shows the 'Device Alias' tab of the AL\_PA Level Zoning menu. At the top, there are four tabs: 'Device Alias' (selected), 'Device Zone', 'Quick Loop', and 'Device Config'. Below the tabs, there is an 'Alias Name' field containing 'fake\_dev' and a dropdown arrow. To the right of the field are three buttons: 'Create Alias', 'Delete Alias', and 'Rename Alias'. Below this is a 'Member Selection List' on the left and a 'fake\_dev Members' list on the right. The 'Member Selection List' contains one item: 'QuickLoops' with a blue circular icon. Between the two lists are four buttons: '<Search Mem', 'Add Mem>', '<Remove Mem', and 'Add Device>'. The 'fake\_dev Members' list is currently empty. At the bottom of the window, there are seven buttons: 'Ref Zone', 'A/D WWN', 'Rpl WWN', 'Ok', 'Apply', 'Close', and 'Clr All'.

Figure 3–40: AL\_PA Device Alias Tab of the AL\_PA Level Zoning menu

Table 3–36 provides a description of the fields on the AL\_PA Device Alias tab.

**Table 3–36: AL\_PA Device Alias Tab Fields**

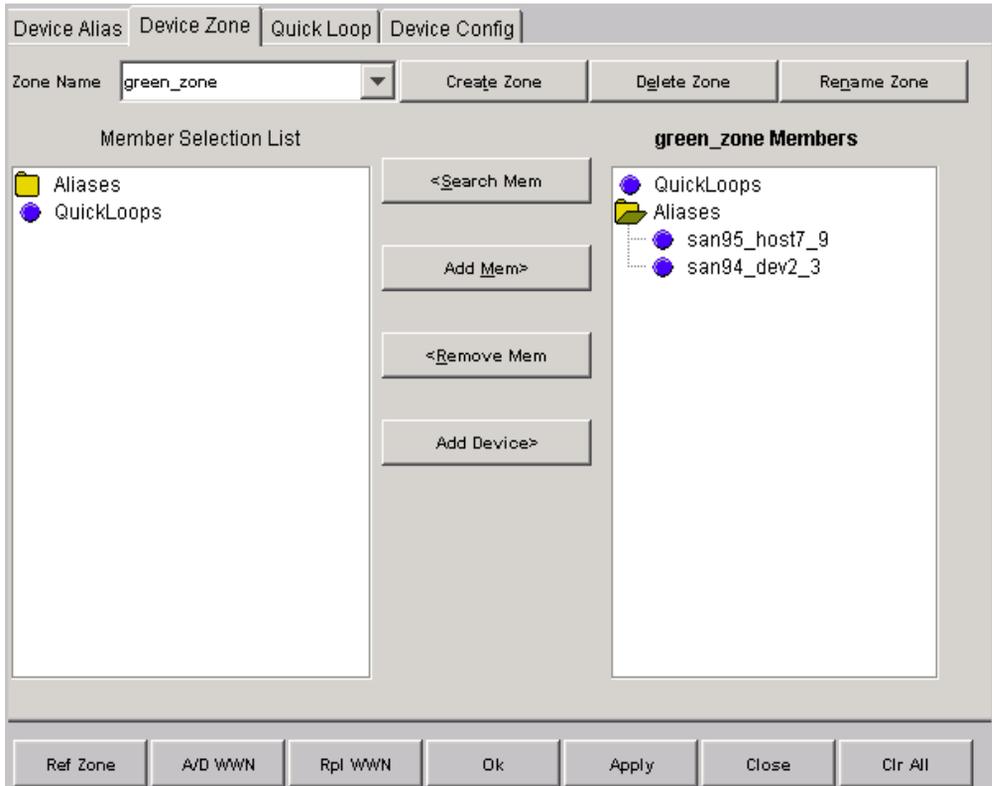
<b>Alias Name</b>	Select an existing alias name from the drop-down menu to modify.
<b>Create Alias</b>	Click to create a new alias. A dialog displays. Enter the name of the new alias. All names must be unique and contain no spaces.
<b>Delete Alias</b>	Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones.
<b>Rename Alias</b>	Click to rename the alias selected in the Alias Name field. A dialog displays in which you can edit the alias name. Renaming an alias automatically renames it in all zones.
<b>Member Selection List</b>	This field displays a list of potential alias members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>[Alias] Members</b>	This field lists the members of the alias selected in the Alias Name pull-down menu. The name of this list depends on the name of the selected alias. If no alias is selected, the name displays as “Null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the Member Selection List to the Alias Members list.
<b>&lt; Remove Mem</b>	Click to remove the selected member from the Alias Members list.
<b>Add Device &gt;</b>	Click to allow adding a device that currently is not part of the Fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.

**Table 3–36: AL\_PA Device Alias Tab Fields (Continued)**

<b>Ok</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Device Zone Tab

Use the AL\_PA Device Zone tab to select members of a device zone. Members are specified by their AL\_PA. The AL\_PA Device Zone tab is shown in Figure 3–41.



**Figure 3–41: AL\_PA Device Zone Tab of the Zoning > AL\_PA Level menu**

Table 3–37 provides a description of the fields on the AL\_PA Device Zone tab.

**Table 3–37: AL\_PA Device Zone Tab Fields**

<b>Zone Name</b>	Select an existing zone member to modify.
<b>Create Zone</b>	Click to create a new zone member.
<b>Delete Zone</b>	Click to delete a zone member.
<b>Rename Zone</b>	Click to rename a zone member.

Table 3–37: AL\_PA Device Zone Tab Fields (Continued)

<b>Member Selection List</b>	This field displays a list of potential zone members, including switches, ports, WWNs, QuickLoop AL_PAs, and Fabric Assists.
<b>[Name] Zone Members</b>	This field lists the zone members selected in the Zone Name pull-down menu. The name on this list depends on the name of the selected zone member. If a name is not selected, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the member selection list into the Zone Members list.
<b>&lt; Remove Mem</b>	Click to remove a member from the Zone Member List when selected.
<b>Add Device &gt;</b>	Click to add a device that currently is not part of the Fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## QuickLoop Tab

Use the QuickLoop tab to create and manage QuickLoops. For information on managing the QuickLoop feature separately, see the “Loop Tab” on page 5–20 in this document. The QuickLoop tab is shown in Figure 3–42.

**Figure 3–42: QuickLoop Tab of the AL\_PA Level Zoning menu**

Table 3–38 provides a description of the fields on the QuickLoop tab.

**Table 3–38: QuickLoop Tab Fields**

<b>QuickLoop Name</b>	Select an existing QuickLoop member name to modify.
<b>Create Qloop</b>	Click to create a new QuickLoop member.
<b>Delete Qloop</b>	Click to delete a QuickLoop member.
<b>Rename Qloop</b>	Click to rename a QuickLoop member.

Table 3–38: QuickLoop Tab Fields (Continued)

<b>Switch Selection List</b>	This field displays a list of potential QuickLoop members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>[QuickLoop] Members</b>	This field displays a list of the zone members selected in the QuickLoop Name pull-down menu. The name on this list depends on the name of the selected QuickLoop member. If a name is not selected, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the member selection list into the QuickLoop member contents.
<b>&lt; Remove Mem</b>	Click to remove a member from the QuickLoop member list when selected.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Device Config Tab

Use the AL\_PA Device Config tab to specify the Device Zone that belongs to the Device Zone Configuration file. All members of this configuration file must be Zones consisting entirely of AL\_PAs in a QuickLoop.

The AL\_PA Device Config tab is shown in Figure 3–43.

The screenshot shows the 'Device Config' tab of the AL\_PA Level Zoning menu. At the top, there are four tabs: 'Device Alias', 'Device Zone', 'Quick Loop', and 'Device Config'. Below the tabs is a 'Cfg Name' dropdown menu and three buttons: 'Create Cfg', 'Delete Cfg', and 'Rename Cfg'. The main area is divided into two sections: 'Zone/QLoop/FA Zone Selection List' on the left and 'Config Members' on the right. The 'Zone/QLoop/FA Zone Selection List' contains three radio buttons: 'Zones', 'QuickLoops', and 'FaZones'. The 'Config Members' section is currently empty. Between these two sections are several buttons: '<Search Mem', 'Add Mem>', '<Remove Mem', 'Analyze Config', and 'Refresh Fabric'. At the bottom left, there are three radio buttons: 'Enable Config', 'Disable Zoning', and 'Save Config'. To the right of these is a text input field labeled 'Enabled config:'. At the very bottom, there is a row of buttons: 'Ref Zone', 'A/D WWN', 'Rpl WWN', 'Ok', 'Apply', 'Close', and 'Clr All'.

Figure 3–43: AL\_PA Device Config Tab of the AL\_PA Level Zoning menu

Table 3–39 provides a description of the fields on the AL\_PA Device Config tab.

**Table 3–39: AL\_PA Device Config Tab Fields**

<b>Cfg Name</b>	Select an existing AL_PA Configuration name to modify.
<b>Create Cfg</b>	Click to create a new AL_PA configuration.
<b>Delete Cfg</b>	Click to delete a AL_PA configuration.
<b>Rename Cfg</b>	Click to rename a AL_PA configuration.
<b>Zone/QLoop/FA Zone Selection List</b>	A list of Zone/QuickLoop members available to add to the AL_PA configuration.
<b>[AL_PA] Config Members name</b>	This field displays a list of the members that belong to the AL_PA Configuration currently selected in the Cfg Name field. The name of this list depends on the name of the AL_PA configuration selected. If a AL_PA configuration is not selected, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the Zone Selection List into the Configuration Member List.
<b>&lt; Remove Mem</b>	Click to remove a member from the Zone Selection List into the Configuration Member List.
<b>Analyze Config</b>	Click to analyze the configuration that is selected along with its member zones and aliases, and comes up with a zoning error screen (see Figure 3-13) in the event of a conflict.
<b>Refresh Fabric</b>	Click to refresh the fabric view with the latest Domain/Port and WWN changes.
<b>Enable Config</b>	Select this option and press the Apply button to enable the selected config for zoning the fabric.
<b>Disable Zoning</b>	Select this option and press the Apply button to disable the selected config for zoning the fabric.
<b>Save Config</b>	Select this option to save the configuration without enabling or disabling.

**Table 3–39: AL\_PA Device Config Tab Fields (Continued)**

<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Applies the changes to the switch and exits the switch.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Mixed Level Zoning

Mixed Level Zoning is provided for backward compatibility with zones created by releases prior to 4.0.x. After selecting the Mixed Level Zoning button from the Zoning Selection window and clicking OK, the Mixed Level Zoning window with the Alias tab is displayed as shown in Figure 3–44.

Following is a list of the tabs provided in the Mixed Level Zoning menu:

- Alias
- Zone
- QuickLoop
- Fabric Assist
- Config

## Alias Tab

Use the Alias tab to set up mixed aliases. The Alias tab is shown in Figure 3–44.



Figure 3–44: Alias Tab of the Mixed Level Zoning menu

Table 3–40 provides a description of the fields on the Alias tab.

**Table 3–40: Alias Tab Fields**

<b>Alias Name</b>	Select an existing alias to modify.
<b>Create Alias</b>	Click to create a new alias. A dialog displays. Enter the name of the new alias. All names must be unique and contain no spaces.
<b>Delete Alias</b>	Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones.
<b>Rename Alias</b>	Click to rename the alias selected in the Alias Name field. A dialog displays in which you can edit the alias name. Renaming an alias automatically renames it in all zones.
<b>Member Selection List</b>	This field displays a list of potential alias members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>[Alias] Members</b>	This field lists the members of the alias selected in the Alias Name pull-down menu. The name of this list depends on the name of the selected alias. If no alias is selected, the name displays as “Null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host &gt;</b>	Click to add a Fabric Assist Host to the member list.
<b>Add Mem &gt;</b>	Click to add a member from the Member Selection List to the Alias Members list.
<b>&lt; Remove Mem</b>	Click to remove the selected member from the Alias Members list.
<b>Add Other &gt;</b>	Click to add a switch/port, WWN or a device that currently is not part of the fabric. A dialog box will display for you to type in the host that is not a member of the fabric.
<b>Add Other Host &gt;</b>	Click to add a host that is not currently part of the fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.

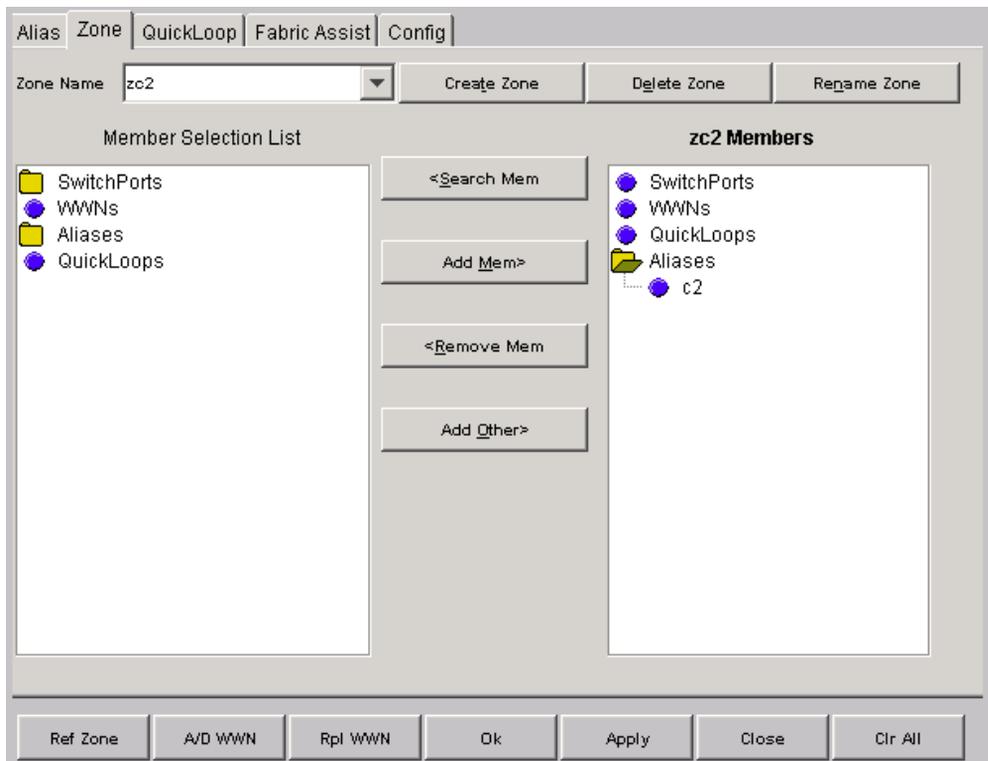
**Table 3–40: Alias Tab Fields (Continued)**

<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the window.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Zone Tab

Use the Zone tab to specify the member of a mixed zone. Mixed zone members can be AL\_PAs, ports, and WWNs.

The Zone tab is shown in Figure 3–45.



**Figure 3–45: Zone Tab of the Mixed Level Zoning menu**

Table 3–41 provides a description of the fields on the Zone tab.

**Table 3–41: Zone Tab Fields**

<b>Zone Name</b>	Select an existing zone member to modify.
<b>Create Zone</b>	Click to create a new zone member.
<b>Delete Zone</b>	Click to delete a zone member.
<b>Rename Zone</b>	Click to rename a zone member.

Table 3–41: Zone Tab Fields (Continued)

<b>Member Selection List</b>	This field displays a list of potential zone members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>[Zone] Members</b>	This field displays a list of the zone members selected in the Zone Name pull-down menu. The name on this list depends on the name of the selected zone member. If a name is not selected, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the Member Selection List into the Zone Member contents.
<b>&lt; Remove Mem</b>	Click to remove a member from the zone member list when selected.
<b>Add Other &gt;</b>	Click to add a switch/port, WWN or a device that currently is not part of the Fabric.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the switch.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## QuickLoop Tab

In conjunction with Zoning, use the QuickLoop tab to create and manage QuickLoops. For information on managing the QuickLoop feature separately, see “Loop Tab” on page 5–20.

**NOTE:** The QuickLoop feature is not available on the StorageWorks Core switch series switch. The QuickLoop tab is shown in Figure 3–46.

**Figure 3–46: QuickLoop tab of the Mixed Level Zoning menu**

Table 3–42 provides a description of the fields on the QuickLoop tab.

**Table 3–42: QuickLoop Tab Fields**

<b>QuickLoop Name</b>	Select an existing QuickLoop member to modify.
<b>Create Qloop</b>	Click to create a new QuickLoop member.

Table 3–42: QuickLoop Tab Fields (Continued)

<b>Delete Qloop</b>	Click to delete a QuickLoop member.
<b>Rename Qloop</b>	Click to rename a QuickLoop member.
<b>Switch Selection List</b>	This field displays a list of potential QuickLoop members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists.
<b>[QuickLoop] Members</b>	This field displays a list of the zone members selected in the QuickLoop Name pull-down menu. The name on this list depends on the name of the selected QuickLoop member. If a name is not selected, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the member selection list into the QuickLoop member contents.
<b>&lt; Remove Mem</b>	Click to remove a member from the QuickLoop member list when selected.
<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Click to apply the changes to the switch and exit the window.
<b>Apply</b>	Click to apply the changes to the switch.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Fabric Assist Tab

Use the Fabric Assist tab to create and manage Fabric Assists. The Fabric Assist tab is shown in Figure 3-47.

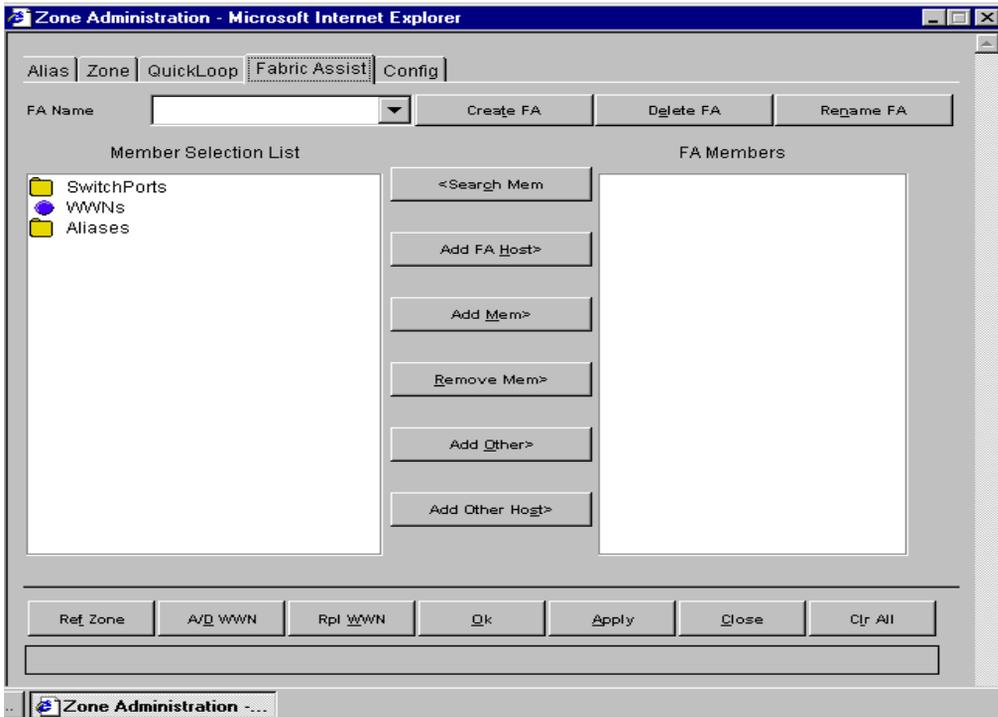


Figure 3-47: Fabric Assist tab of the Mixed Level Zoning menu

Table 3–43 provides a description of the fields on the Fabric Assist tab.

**Table 3–43: Fabric Assist Tab Fields**

<b>FA Name</b>	Select an existing Fabric Assist name to be modified.
<b>Create FA</b>	Click to create a new Fabric Assist. A dialog displays. Enter the name of the new Fabric Assist. All names must be unique and contain no spaces.
<b>Delete FA</b>	Click to delete the Fabric Assist selected in the FA Name field. Deleting a Fabric Assist automatically removes it from all aliases, zones, and zone configurations, including the associated AL_PAs.
<b>Rename FA</b>	Click to edit the name of the Fabric Assist selected in the FA Name field.
<b>Member Selection List</b>	This field displays a list of members available to add to the Fabric Assist.
<b>FA Members</b>	This field displays a list of the members that belong to the Fabric Assist currently selected in the FA Name field. The name of this list depends on the name of the WWN Fabric Assist selected. If a Fabric Assist is not selected, the name displays as “null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QuickLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add FA Host &gt;</b>	Click to add the selected item as a host to the Fabric Assist name Members list. Only a domain port or a WWN can be added as a host.
<b>&lt; Add Mem</b>	Click to add the member selected in the Member Selection List to the Fabric Assist name Members list.
<b>Remove Mem &gt;</b>	Click to remove the selected member from the Fabric Assist name Members list.
<b>Add Other &gt;</b>	Click to add a switch/port, WWN or a device that currently is not part of the Fabric.
<b>Add Other Host &gt;</b>	Click to add other host that currently is not part of the fabric.

**Table 3–43: Fabric Assist Tab Fields (Continued)**

<b>Ref Zone</b>	Click to refresh the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Applies the changes to the switch and exits the window.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.

## Config Tab

Use the Config tab to save and enable a Mixed Zone Configuration File. A Mixed Zone Configuration file can contain any type of zoneable objects, ports, WWNs and AL\_PAs.

The Config tab is shown in Figure 3–48.



**Figure 3–48: Config Tab of the Mixed Level Zoning menu**

Table 3–44 provides a description of the fields on the Config tab.

**Table 3–44: Config Tab Fields**

<b>Cfg Name</b>	Select the existing Cfg name to be modified.
<b>Create Cfg</b>	Click to create a new configuration.
<b>Delete Cfg</b>	Click to delete a configuration.
<b>Rename Cfg</b>	Click to rename a configuration.
<b>Zone/QLoop/FA Zone Selection List</b>	A list of Zone/QuickLoop members available to add to the configuration.
<b>[Config] Members</b>	A list of the members that belong to the Configuration currently selected in the Cfg Name field. The name of this list depends on the name of the configuration selected. If a configuration is not selected, the name displays as “Null Members.”
<b>&lt; Search Mem</b>	Click to search for a switch name, WWN, alias, zone, QLoop, or FA Zone in the Member Selection List based on the type of objects displayed in that list.
<b>Add Mem &gt;</b>	Click to add a member from the Zone Selection list into the Config Member list.
<b>&lt; Remove Mem</b>	Click to remove a member from the Config Members list into the Zone Selection list.
<b>Analyze Config</b>	Click to analyze the configuration that is selected along with its member zones and aliases, and come up with a zoning error screen (see Figure 3-13) in the event of a conflict.
<b>Refresh Fabric</b>	Click to refresh the fabric view with the latest Domain/Port and WWN changes.
<b>Enable Config</b>	If this option is checked, and the Apply button pressed, the selected config would be used for zoning the fabric.
<b>Disable Zoning</b>	Select this option and press the Apply button to disable the selected zoning configuration.
<b>Save Config</b>	Select to save the configuration without enabling or disabling.

**Table 3–44: Config Tab Fields (Continued)**

<b>Ref Zone</b>	Click to reload the local zoning database copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client.
<b>A/D WWN</b>	Click to add or delete a WWN to or from all the aliases, zones, and FA zones defined.
<b>Rpl WWN</b>	Click to replace a WWN with another one in all aliases, zones, and FA zones defined.
<b>OK</b>	Applies the changes to the switch and exits the window.
<b>Apply</b>	Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied.
<b>Close</b>	Click to exit the window without making any changes to the switch.
<b>Clr All</b>	Select to clear the zoning database, disable the effective configuration (if there is one), and then commit to the switch.



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## Switch View

This chapter describes the views and interfaces available through Switch View, as follows:

- Switch Events View on page 4–6
- Fabric Watch View V3.0.x (Optional Software) on page 4–8
- Fabric Watch View V4.0.x (Optional Software) on page 4–19
- Performance Monitor on page 4–26
- Administrative Interface V3.0.x on page 4–61
- Administrative Interface 4.0.x on Administrative Interface 4.0.x on page 4–93
- Telnet Interface on page 4–130
- High Availability on page 4–131

### Switch View

Switch View represents the front panel of the switch, and displays when you click a Switch icon in Fabric View. This view provides information about the overall status of the switch and the status of the individual elements in the switch. The information displayed is as close as possible to a real-time view of switch status. If the switch is not functioning properly, a message explains the problem detected.

**NOTE:** Switch status is stored as the variable *switchStatus*, and is updated approximately once every 15 seconds; however, the initial display does not occur until 30-60 seconds after the switch is booted.

### Accessing Switch View

1. Launch Web Tools, displaying Fabric View.
2. Click a Switch icon.

The Switch View displays, as shown in Figure 4–1 and Figure 4–2.

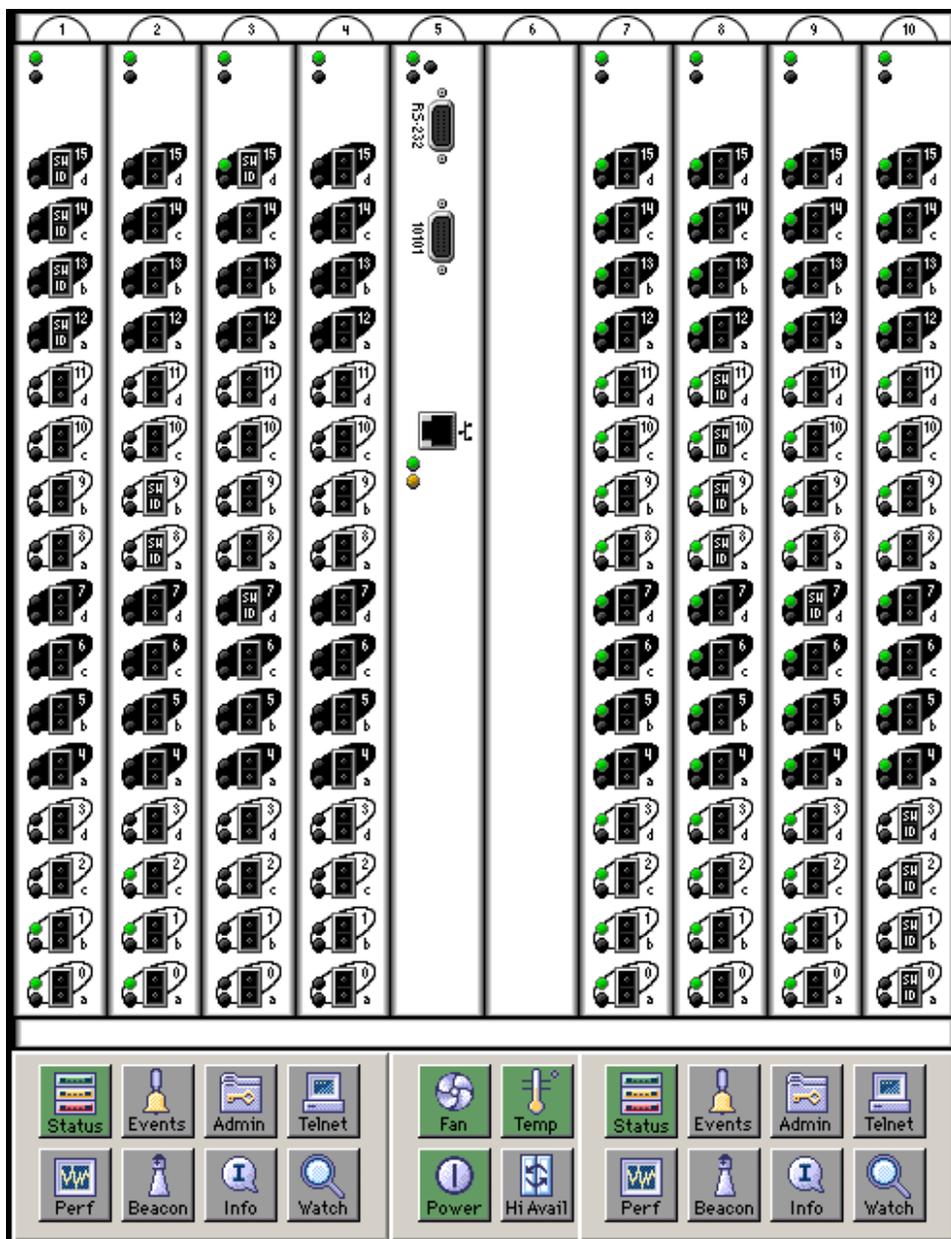


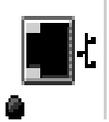
Figure 4-1: The Switch View of StorageWorks Core switch series switch

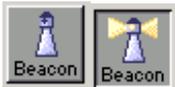


**Figure 4–2: Switch View of StorageWorks 2 Gb SAN switch series**

Following is a description of the items and information available in Switch View.

<p><b>Port icons</b></p>  	<p>The letters in the Port icon indicate the SFP (Small form factor pluggable) type, as follows:</p> <ul style="list-style-type: none"> <li>blank - no SFP present</li> <li>SW - Short wave SFP</li> <li>LW - Long wave SFP</li> <li>CU - Copper SFP</li> <li>SWID - Short wave serial ID SFP</li> <li>LWID - Long wave serial ID SFP</li> <li>CUID - Copper serial ID SFP</li> </ul> <p>A yellow outline around a port icon indicates port failure. For detailed port information, click the Port icon to see “Port Information View.”</p>
<p><b>Port numbers (Upper right of each port)</b></p>	<p>The number of the port.</p>

<p><b>Speed LED (Upper)</b>  <b>Green=2G</b>  <b>Black=1G</b>  <b>(round light next to each port)</b></p>	<p>Displays the status LED color, which indicates the status of the port.</p> <p>No light - No device attached.</p> <p>Steady yellow - Receiving light, but not online; check cable connections.</p> <p>Slowly flashing yellow - Disabled (diagnostics or portDisable command).</p>
<p><b>Status LED (Lower)</b>  <b>(round light next to each port)</b></p>	<p>Rapidly flashing yellow - Error, fault with port.</p> <p>Steady green - Online (connected with device by cable).</p> <p>Slowly flashing green - Online but segmented (loopback cable or incompatible switch).</p> <p>Rapidly flashing green - internal loopback (diagnostic)</p> <p>Flickering green - Online and transmitting/receiving frames.</p> <p>Yellow green - Bypass</p>
<p><b>Connector Icon</b></p> 	<p>Displays RS-232 Connector.</p>
<p><b>Connector Icon</b></p> 	<p>Displays Serial Port Connector.</p>
<p><b>Connector Icon</b></p> 	<p>Displays Ethernet Connector.</p>

<p><b>Status</b></p> 	<p>View or click button to display the switch's health status.</p> <ul style="list-style-type: none"> <li>• The background color of the button displays the real-time status of the switch. See "Buttons and Icons" on page 3–4 for the status legend that describes the meaning of the background colors.</li> <li>• Displays the real-time status of the switch in text in a display window.</li> </ul>
<p><b>Events</b></p> 	<p>Click to access Switch Events View.</p>
<p><b>Admin</b></p> 	<p>Click to display the Administrative Interface where you can perform switch management functions.</p>
<p><b>Telnet</b></p> 	<p>Click to launch a Telnet session.</p>
<p><b>Perf</b></p> 	<p>Click to display the Performance Monitor where you can monitor switch performance.</p>
<p><b>Beacon</b></p> 	<p>Click to turn on the beaconing function. If on, this icon shows beams of light. The beaconing function helps to physically locate a switch by sending a signal to the specified switch, resulting in an LED light pattern running from one blade to another on the switch.</p>
<p><b>Info</b></p> 	<p>Click to display fundamental switch information, such as the WWN, State, and Ethernet IP address.</p>

<p><b>Fabric Watch</b> (optional software)</p> 	<p>Click to access Fabric Watch, if a license is installed.</p>
<p><b>Fan</b></p> 	<p>Click to display the fan status. The background color of the button indicates the overall status of the fans:</p> <ul style="list-style-type: none"> <li>Green - Healthy</li> <li>Yellow - Marginal (mix of good and faulty readings)</li> <li>Red - Down (more than two faulty readings)</li> <li>Gray - Unknown or unmonitored</li> </ul>
<p><b>Temp</b></p> 	<p>Click to display temperature readings from all switch thermal sensors. The background color of the button indicates the overall temperature status:</p> <ul style="list-style-type: none"> <li>Green - Healthy</li> <li>Yellow - Marginal (mix of good and faulty readings)</li> <li>Red - Down (more than two faulty readings)</li> <li>Gray - Unknown or unmonitored</li> </ul>
<p><b>Power</b></p> 	<p>Click to display power status. The background color of the button indicates the overall status of the power:</p> <ul style="list-style-type: none"> <li>Green - Healthy</li> <li>Yellow - Marginal (mix of good and faulty readings)</li> <li>Red - Down (more than two faulty readings)</li> <li>Gray - Unknown or unmonitored</li> </ul>
<p><b>Hi Availability</b></p> 	<p>Select to display the Hi Availability window. Available for 4.0.x only.</p>

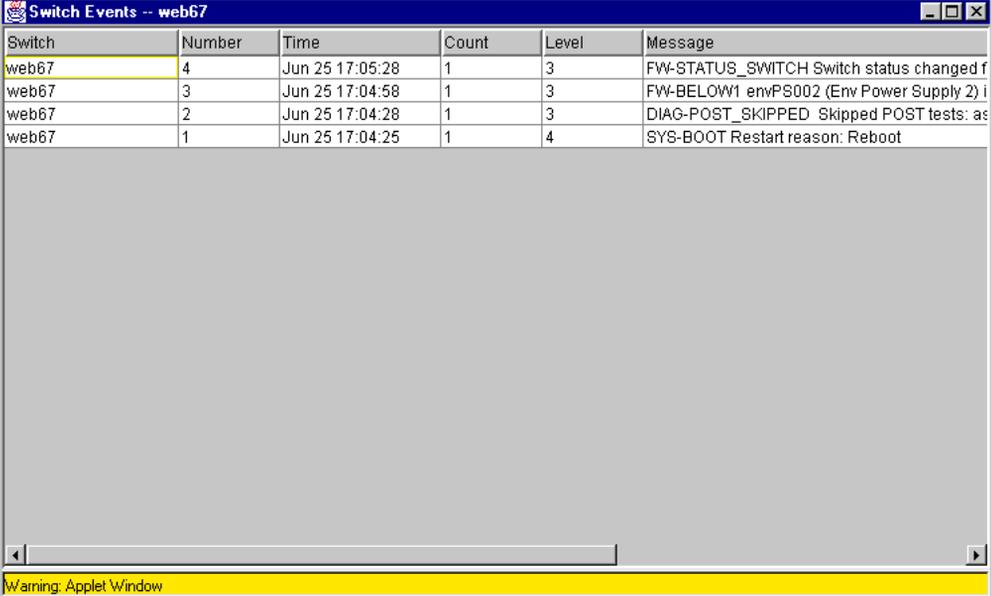
## Switch Events View

The Switch Events View displays a running log of events for the selected switch.

## Accessing Switch Events View

1. Launch Web Tools, displaying Fabric View.
2. Select a Switch icon.  
The Switch View displays.
3. Select the Events icon.

The Switch Events View displays as shown in Figure 4–3.



Switch	Number	Time	Count	Level	Message
web67	4	Jun 25 17:05:28	1	3	FW-STATUS_SWITCH Switch status changed f
web67	3	Jun 25 17:04:58	1	3	FW-BELOW1 envPS002 (Env Power Supply 2) i
web67	2	Jun 25 17:04:28	1	3	DIAG-POST_SKIPPED Skipped POST tests: as
web67	1	Jun 25 17:04:25	1	4	SYS-BOOT Restart reason: Reboot

Warning: Applet Window

**Figure 4–3: Switch Events view**

**NOTE:** To sort the events by a particular column, click the column header. To resize a column, drag the column divider.

Table 4–1 provides a description of the columns in Switch Events View.

**Table 4–1: Switch Events View Fields**

<b>Switch</b>	Displays the name of switch.
<b>Number</b>	Displays the event number.
<b>Time</b>	Displays the time of event.
<b>Count</b>	Displays the number of back-to-back occurrences of same event.
<b>Level</b>	Displays the severity level of event: 0 panic (switch reboots) 1 critical 2 error 3 warning 4 information 5 debug
<b>Message</b>	Displays the description of event.

## Fabric Watch View V3.0.x (Optional Software)

You can use Fabric Watch View to monitor fabric elements for potential problem conditions. This feature requires an active Fabric Watch license. For detailed information about Fabric Watch, refer to the *HP StorageWorks Fabric Watch Version 3.0.x/4.0.x User Guide*.

For information regarding Fabric Watch 4.0.x in Web Tools, see “Fabric Watch View V4.0.x (Optional Software)” on page 4–19.

### Accessing Fabric Watch View

1. Launch the web browser.
2. Enter the switch name or IP address in the Location/Address field and click **Enter**.

For example: <http://switch name>

Web Tools launches, displaying Fabric View.

3. Click the **Switch** icon.

The Switch View displays.

4. Click the **Watch** icon.

The Fabric Watch View displays, with the Alarm Notifications tab (described in the following section) selected by default.

Fabric Watch View contains the following tabs:

- Alarm Notifications
- Configure Thresholds
- Current Settings

In addition, an organizational tree appears on the left, showing all the Fabric Watch areas regardless of which tab is selected. To expand or contract a folder in the tree, double-click the folder.

## Alarm Notifications Tab

Use the Alarm Notifications tab to view the information for all elements of the Fabric Watch, Fabric, or Performance Monitor classes. The information displayed includes:

- Threshold name
- Current value
- Last event type
- Last event time
- Last event value
- Last event state

The Alarm Notification will refresh the displayed information according to the threshold configuration.

The Alarm Notifications tab is shown in Figure 4–4.

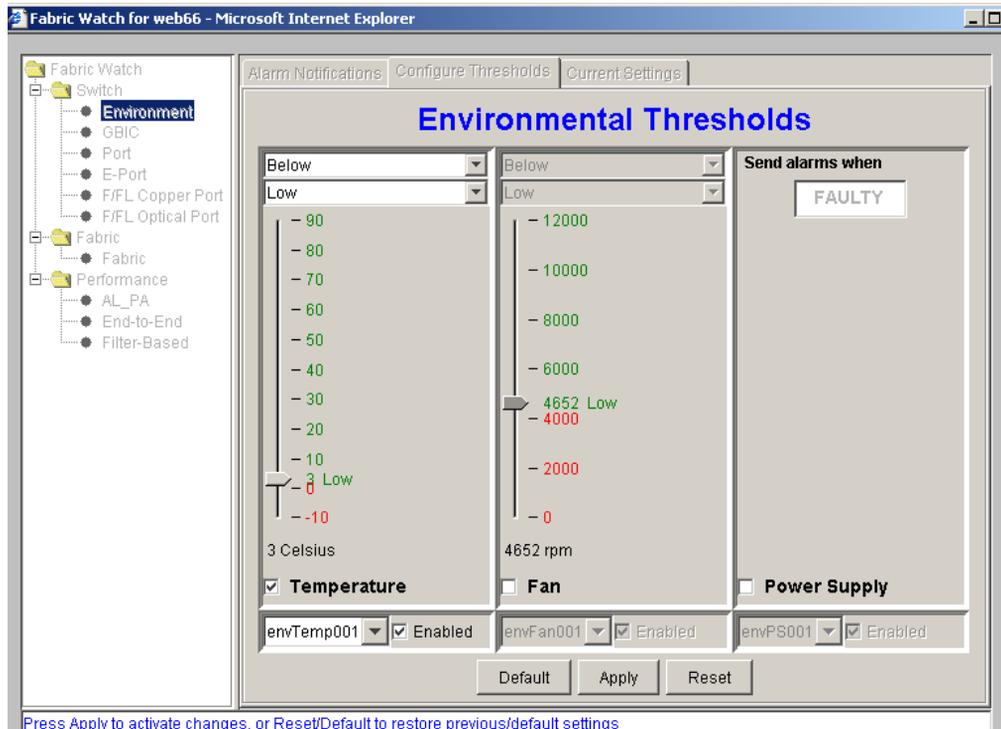
The screenshot shows the 'Fabric Watch for web66' interface in Microsoft Internet Explorer. The left-hand navigation pane is expanded to show the 'Switch' category, with 'Environment' selected. The main content area has three tabs: 'Alarm Notifications', 'Configure Thresholds', and 'Current Settings'. The 'Alarm Notifications' tab is active, displaying a table with the following data:

Name	State	Reason	Old Value	New Value	Time
envTemp001	Informative	Started	0	37	14:08:05 on 07/20/2001
envTemp002	Informative	Started	0	26	14:08:05 on 07/20/2001
envTemp003	Informative	Started	0	28	14:08:05 on 07/20/2001
envFan001	Faulty	Below	0	0	14:08:06 on 07/20/2001
envFan002	Informative	Started	0	9660	14:08:05 on 07/20/2001
envFan003	Informative	Started	0	9420	14:08:05 on 07/20/2001
envFan004	Informative	Started	0	9330	14:08:05 on 07/20/2001
envPS001	Normal	Above	1	1	14:08:06 on 07/20/2001
envPS002	Faulty	Below	0	0	14:08:06 on 07/20/2001

Figure 4-4: The Alarm Notifications tab in the Fabric Watch view

## Configure Thresholds

Use the Configure Thresholds tab to view and configure Fabric Watch thresholds for the Fabric Watch class currently selected in the organizational tree on the left side of the window. The Configure Thresholds tab is shown in Figure 4–5.



**Figure 4–5: The Configure Thresholds tab with the Environment Class selected in the Fabric Watch view**

The Configure Thresholds display changes according to the Class and Area selected in the organizational tree. However, the Configure Thresholds tab always contains the buttons shown in Table 4–2.

**Table 4–2: Configure Thresholds Tab Buttons**

<b>Default</b>	Click to return settings to default values.
<b>Apply</b>	<p>Click to apply the values specified in the current display. When Apply is clicked after a change, the Alarm Mechanism dialog displays as shown in Figure 4–6. This dialog box is used to specify alarm delivery mechanisms by checking the appropriate boxes.</p> <p>When Email is chosen as one of the alarm delivery mechanisms, the text fields are enabled in the “Mail Server”, “Domain Name”, “Mail From” and “Mail To” information to configure the Email Alert by Fabric Watch Daemon function. If Email is not chosen as one of the delivery mechanisms, the text fields are grayed out.</p> <p>When RAN is chosen, changes apply to the API application, but not regular usage.</p>  <p><b>Figure 4–6: The Alarm Mechanism dialog box</b></p> <p>To continue, select the type of alarm you want and click Apply.</p> <p><b>NOTE:</b> Changes made within this window will apply to <i>all</i> areas within the class you are working.</p>
<b>Reset</b>	Click to undo the last changes.

## Thresholds for the Environmental Classes

The Environmental classes are displayed by selecting the Environmental file from the separate column left of the Configure Thresholds tab.

**Table 4-3: Environmental Classes Thresholds**

<b>The columns for the Temperature, RX Power, TX Power and current areas contain the following items:</b>	
<b>Threshold Type drop-down list</b>	Select the threshold type (exceeded, above, in-between, below, changed).
<b>High/Low drop-down list</b>	Select to enter the high and low settings for the threshold type selected in the Threshold Type drop-down list (not available for all areas).
<b>Area Select checkbox</b>	Select a Fabric Watch area to configure. Only one area can be selected at a time.
<b>Thresh element drop-down list</b>	Check or uncheck to specify if you want this element to be monitored.
<b>The column for the Power Supply area contains the following item:</b>	
<b>“Send alarms when” box</b>	Use this text box to specify whether you want to be notified when the area is in the acceptable range (OK) or is faulty (FAULTY).

## Thresholds for the SFP Classes

The SFP classes are displayed by selecting the SFP file from the separate column left of the Configure Thresholds tab.

**Table 4-4: SFP Classes Thresholds**

<b>The columns for the Temperature, RX Power, TX Power and current areas contain the following items:</b>	
<b>Threshold Type drop-down list</b>	Select the threshold type (exceeded, above, in-between, below, changed).
<b>High/Low drop-down list</b>	Select to enter the high and low settings for the threshold type selected in the Threshold Type drop-down list (not available for all areas).
<b>Scale</b>	Specify the point at which you want to set the specified threshold.

**Table 4–4: SFP Classes Thresholds (Continued)**

<b>Area Select checkbox</b>	Select a Fabric Watch area to configure. Only one area can be selected at a time.
<b>Thresh element drop-down list</b>	Check or uncheck to specify if you want this element to be monitored.
<b>The column for the Current area contains the following item:</b>	
<b>“Send alarms when” box</b>	Use this text box to specify whether you want to be notified when the area is in the acceptable range (OK) or is faulty (FAULTY).

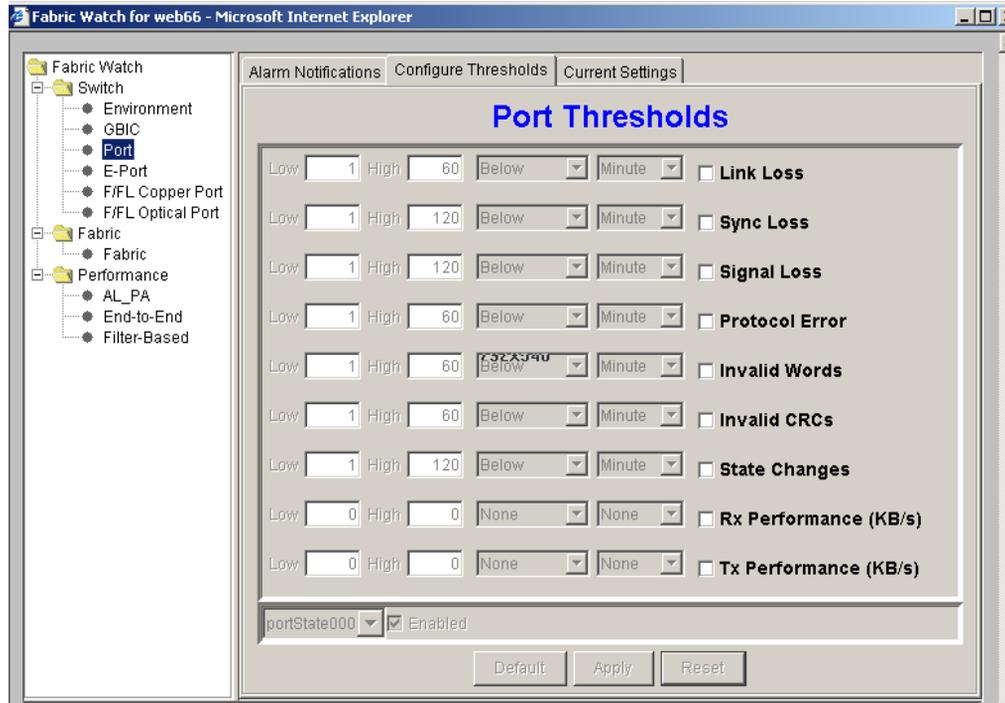
### Thresholds for the Remaining Classes

The Port, E\_Port, F/FL Copper Port, and F/FL Optical Port classes display the following fields for each area (Link Loss, Sync Loss, Signal Loss, Protocol Error, Invalid Words, Invalid CRCs, State Changes, RX Performance, TX Performance):

**Table 4–5: Remaining Classes Thresholds**

<b>Low text box</b>	Enter the low threshold boundary.
<b>High text box</b>	Enter the high threshold boundary.
<b>Threshold Type drop-down list</b>	Select the type of threshold.
<b>Time period drop-down list</b>	Select the time period for which you want a time-based count to be measured.

The thresholds for the Port class are displayed as shown in Figure 4–7.

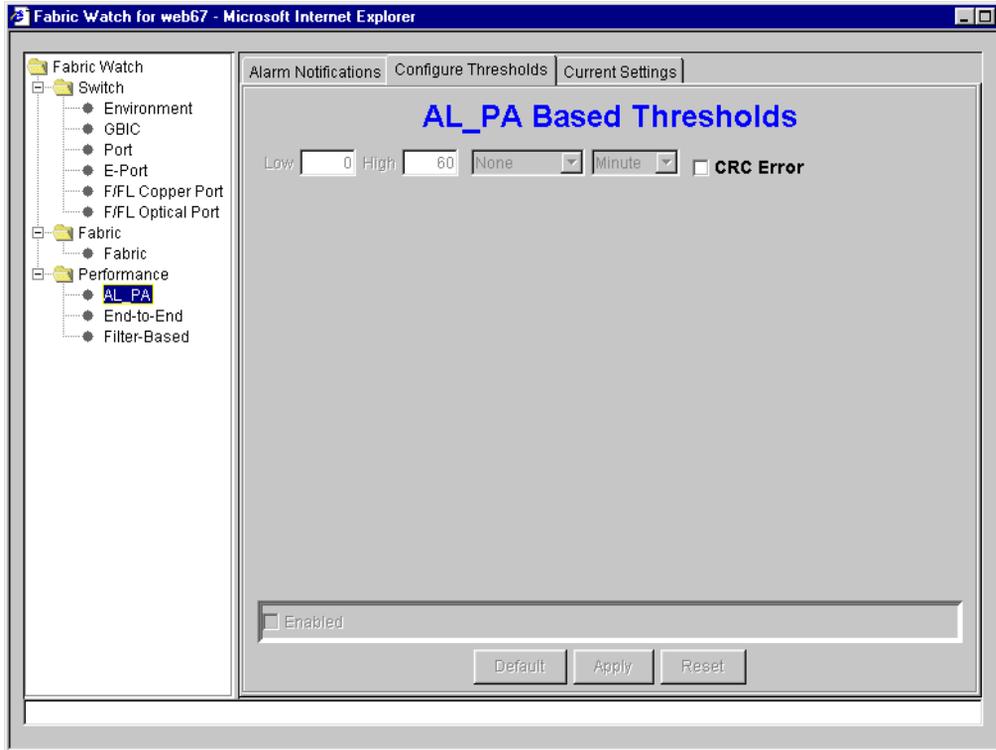


**Figure 4–7: The Configure Thresholds tab with the Port Class selected in Fabric Watch view**

Use the Configure Thresholds tab to view and configure AL\_PA thresholds for the Performance class currently selected in the organizational tree on the left side of the window.

**NOTE:** The Configure Threshold tab applies only to L-Ports.

The Configure Threshold tab is shown in Figure 4–8.

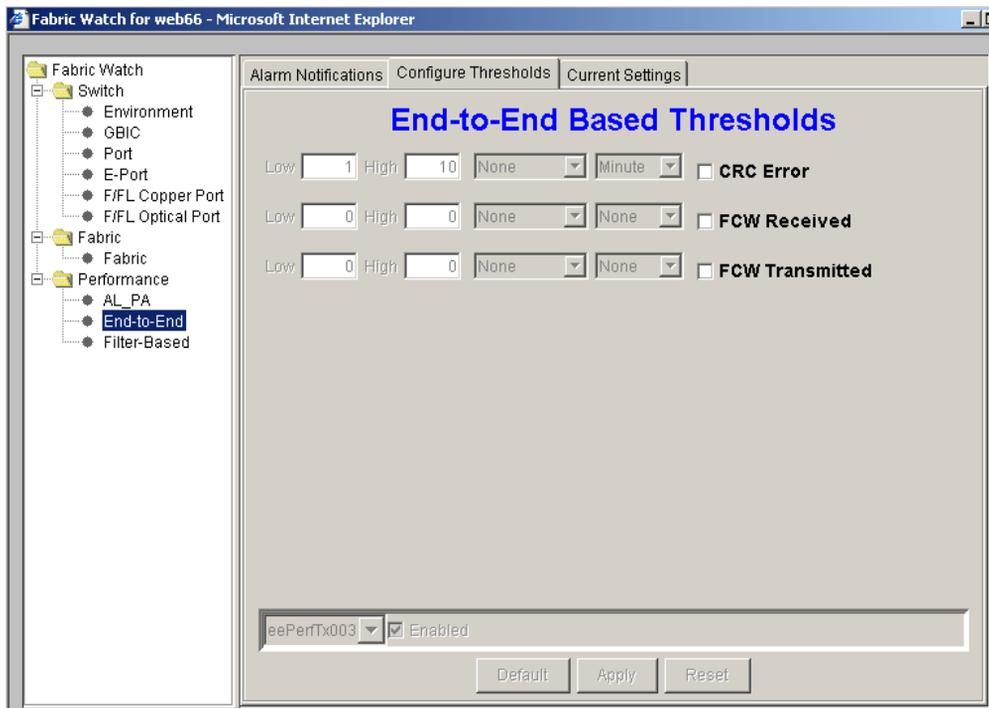


**Figure 4–8: Configure Threshold tab with AL\_PA Class selected in Performance view**

Use the Configure Thresholds tab to view and configure End-to-End thresholds for the Performance class currently selected in the organizational tree on the left side of the window.

**NOTE:** You must define the SID/DID pair through the Performance Monitor before you can monitor the threshold in the End-to-End class. For more information on the Performance Monitor, see “Performance Monitor” on page 4–26 of this document, or the *HP StorageWorks Advanced Performance Monitoring Version 3.0.x/4.0.x User Guide*.

The **Configure Thresholds** tab for End-to-End Thresholds is shown in Figure 4–9.

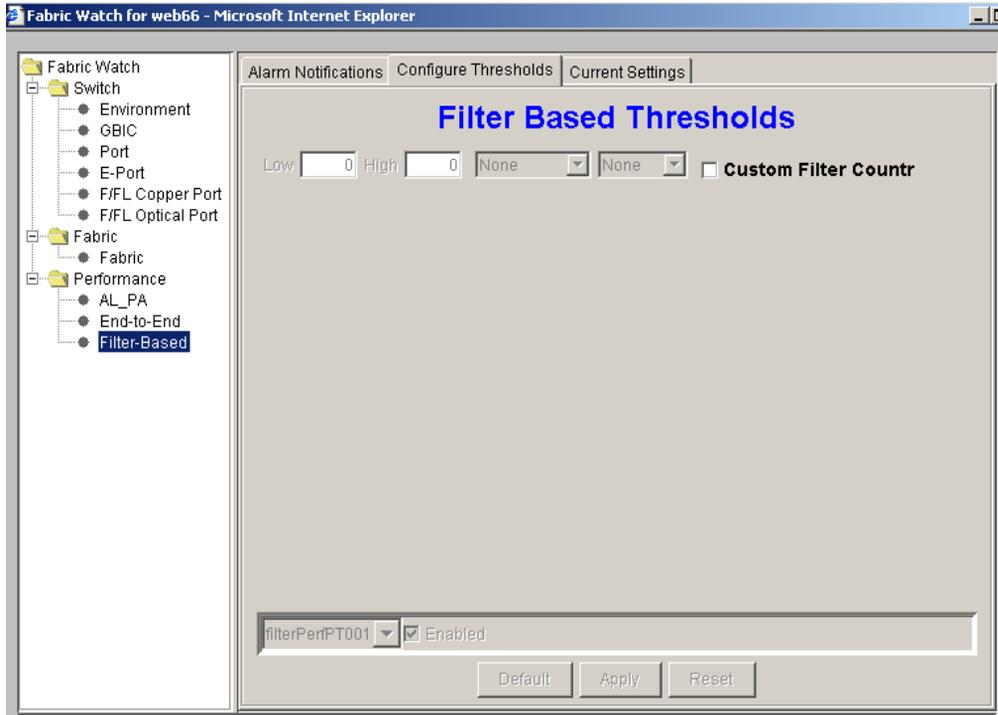


**Figure 4–9: Configure Threshold tab with End-to-End class selected in Performance view**

Use the Configure Thresholds tab to view and configure Filter-based thresholds for the Performance class currently selected in the organizational tree on the left side of the window.

**NOTE:** The filter type must be predefined in the Performance Monitor before you can use the Filter-Based thresholds. For more information on the Performance Monitor, see “Performance Monitor” on page 4–26 of this document, or the *HP StorageWorks Advanced Performance Monitoring Version 3.0.x/4.0.x User Guide*.

The Configure Thresholds tab is shown in Figure 4–10.



**Figure 4–10: Configure Threshold tab with Filter-Based Class selected in Performance view**

## Current Settings Tab

Use the Current Settings tab to view the current Fabric Watch threshold parameters for the area selected in the Fabric Watch tree.

The Current Settings tab is shown in Figure 4–11.

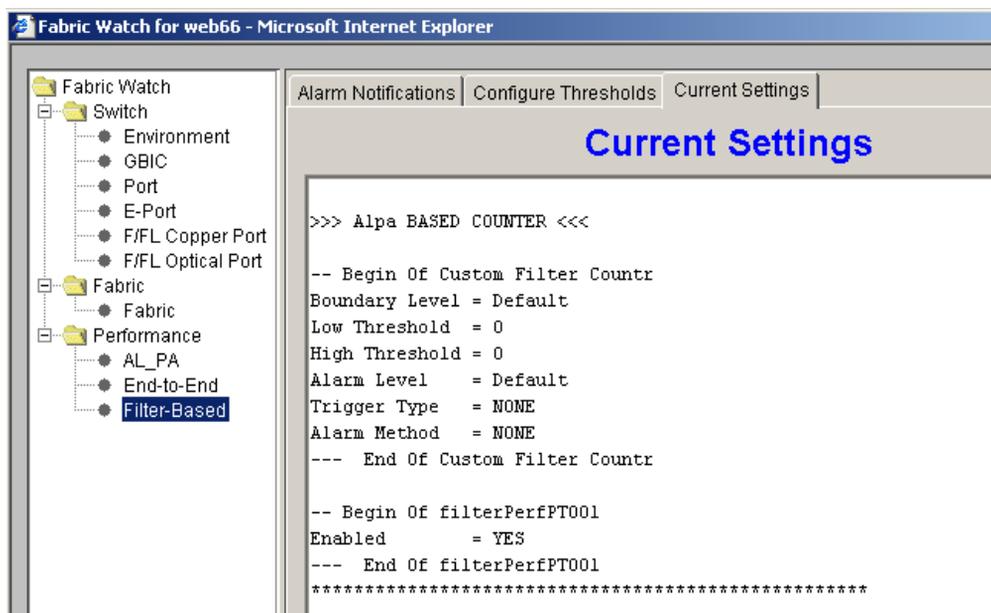


Figure 4–11: Current Settings tab in the Fabric Watch view

## Fabric Watch View V4.0.x (Optional Software)

Use Fabric Watch View to monitor fabric elements for potential problem conditions. This feature requires an active Fabric Watch license. The Fabric Watch View requires the user to have administrative privileges. For detailed information about Fabric Watch, refer to the *HP StorageWorks Fabric Watch Version 3.0.x/4.0.x User Guide*.

For information regarding Fabric Watch V3.0.x in Web Tools, see “Fabric Watch View V3.0.x (Optional Software)” on page 4–8.

### Accessing Fabric Watch View

1. Launch Web Tools, displaying Fabric View.
2. Select a Switch icon.  
The Switch View displays.
3. Select the Watch icon.

The Enter Network Password window displays. Login may not be required if the user has previously logged in elsewhere.

4. Type in Administrative Username and Password.

The Fabric Watch View displays, with the Alarm Notifications tab (described in the following section) selected by default.

## Fabric Watch View Tabs

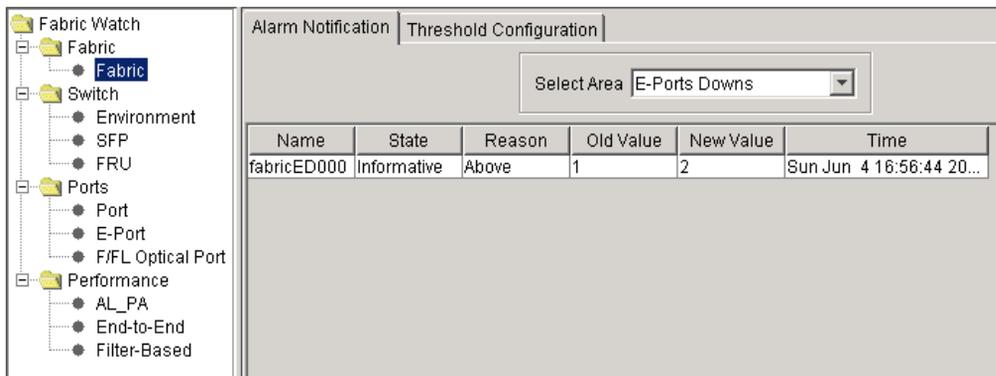
- Alarm Notifications
- Threshold Configuration

In addition, an organizational tree appears on the left, showing all the Fabric Watch classes regardless of which tab is selected. To expand or contract a folder in the tree, double-click the folder.

## Alarm Notifications Tab

Use the Alarm Notifications tab to view the Fabric Watch notifications.

The Alarm Notifications tab is shown in Figure 4–12.



**Figure 4–12: The Alarm Notifications tab in the Fabric Watch view**

Table 4–6 describes the fields available in the Alarm Notifications tab.

**Table 4–6: Alarm Notifications Tab Fields**

<b>Name</b>	Displays the name of the alarm. The name of the alarm is a combination of the <ul style="list-style-type: none"> <li>• Class</li> <li>• Area</li> <li>• Index number</li> </ul> of the fabric element whose behavior set off the alarm.
<b>State</b>	Displays the severity of the alarm that governs what kind of traps Fabric Watch employs in response to an event. The State of the alarm can be Informative, Normal, or Faulty.
<b>Reason</b>	Displays the reason that an alarm notification was sent, such as Started, Changed, Exceeded, Below, Above, or In between.
<b>Old Value</b>	Displays the value of a counter (behavior variable) prior to the alarm.
<b>New Value</b>	Displays the value of the counter (behavior variable) that set off the alarms.
<b>Time</b>	Displays the time and date the notification was sent from the switch.

## Threshold Configurations

Use the Thresholds Configurations tab to view and configure Fabric Watch thresholds for the Fabric Watch class currently selected in the organizational tree on the left side of the window.

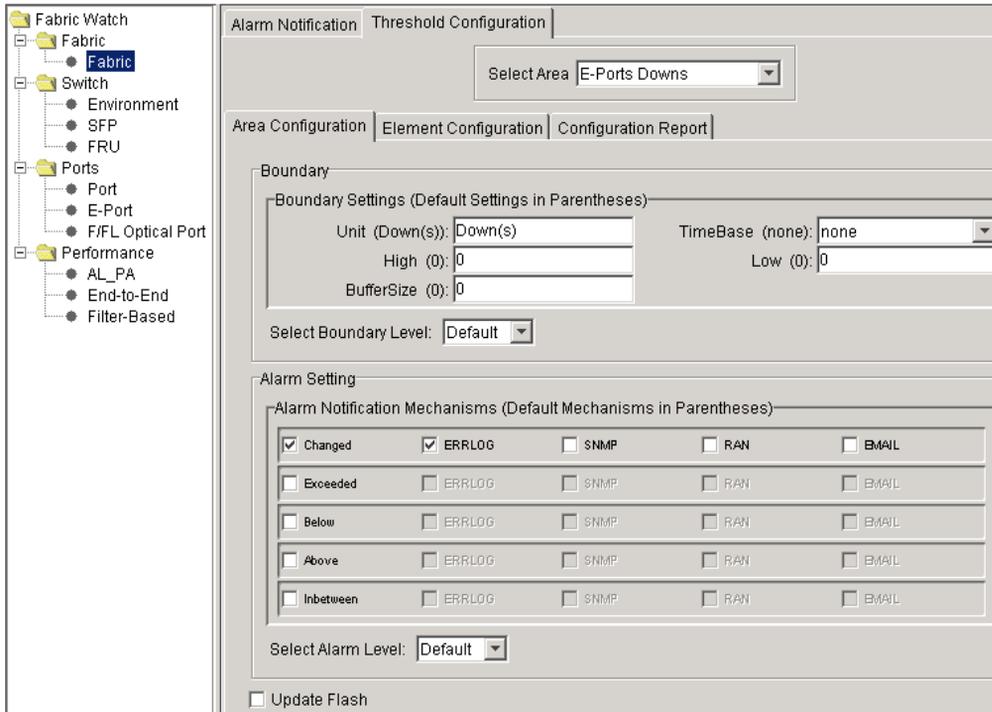
### Threshold Configuration Tabs

The following sub-tabs are available through the **Fabric Watch > Threshold Configuration** tab:

- Area Configuration
- Element Configuration
- Configuration Report

## Area Configuration Tab

The Area Configuration tab of the Fabric Watch window is shown in Figure 4–13.



**Figure 4–13: The Threshold Configuration tab with the Area Configuration selected in the Fabric Watch view**

The Threshold Configuration display changes according to the Class and Area selected in the organizational tree.

Values displayed in parenthesis are default values.

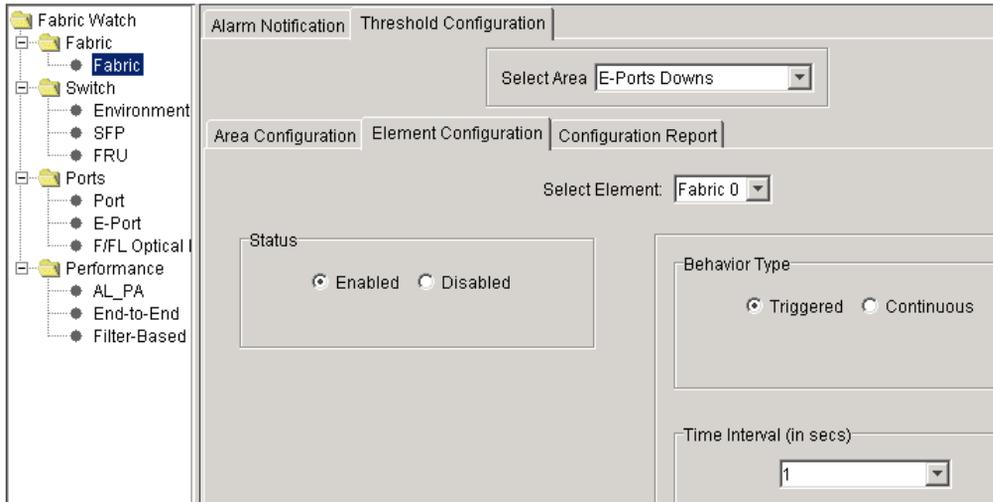
Table 4–7 describes the fields available in the Area Configuration area of the Configure Thresholds tab.

**Table 4–7: Configure Threshold Tab > Area Configuration Fields**

<b>Boundary - Custom Boundary Data</b>	
<b>Unit:</b>	Displays a number of units for the chosen area. Depending on the area of interest, this is figured in units of “downs, reconfigs, changes, logins”, etc.
<b>Time Base</b>	Displays the basic unit of time in which events are recorded for the selected area. The units available from the drop-down menu are: none, second, minute, hour, or day.
<b>High</b>	Displays the number of high boundaries (the highest limit at which an element will not trigger an event) for the selected area.
<b>Low</b>	Displays the number of low boundaries (the lowest limit at which an element will not trigger an event) for the selected area.
<b>Buffer Size</b>	Displays the threshold boundary buffer size of the selected area.
<b>Select Boundary Level</b>	Select either a custom or default setting for the boundary levels from the drop-down menu.
<b>Alarm Setting</b>	
<b>Custom Alarm Setting Data</b>	Select Alarm settings for Errorlog, SNMP, RAN, and Email to be active on switch side.
<b>Select Alarm Level</b>	Select either a custom or default setting for the alarm levels to be active on the switch side from the drop-down menu.
<b>Update Flash</b>	Check box to update Flash Memory.
<b>Apply</b>	Select to apply Fabric Watch area threshold and alarm setting configuration. Changes will be lost if the Apply button is not chosen before another you move to another tab.
<b>Reset</b>	Select to return fields to previous settings.

## Element Configuration Tab

The Element Configuration tab of the **Fabric Watch > Threshold Config** window is shown in Figure 4–14.



**Figure 4–14: Element Configuration tab of the Threshold Configuration window**

Table 4–8 describes the fields available in the Element Thresholds tab.

**Table 4–8: Element Thresholds Tab Fields**

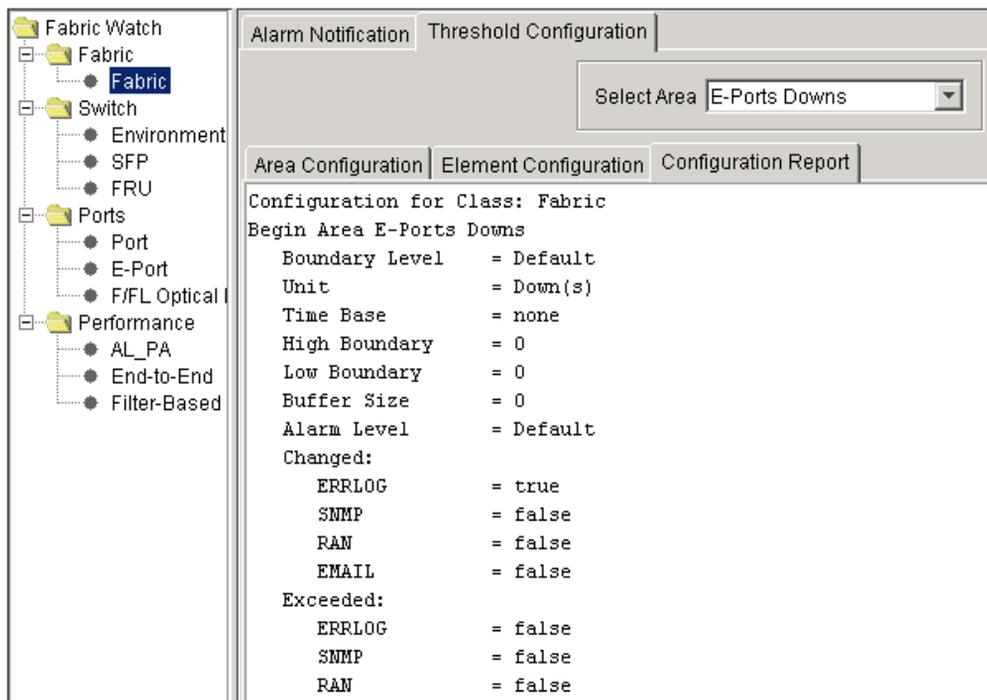
<b>Select Element</b>	Select the element of interest from the drop-down menu.
<b>Status</b>	
<b>Enable/Disable</b>	Select appropriate radio button to Enable or Disable the status of the selected element.
<b>Behavior Type</b>	
<b>Trigger/Continuous</b>	<p>Select the appropriate radio button to select a behavior mode.</p> <p>In Triggered Behavior mode, Fabric Watch only registers an event when a variable exceeds a threshold. An event will not be triggered again until the variable falls and exceeds the threshold again.</p> <p>In Continuous mode, Fabric Watch registers an event when a variable exceeds a threshold and continues to register an event for every time interval.</p>

**Table 4–8: Element Thresholds Tab Fields (Continued)**

<b>Time Interval (in secs)</b>	Select the amount of time (in seconds) that you want Fabric Watch to search for a new event.
<b>Apply More</b>	Select to apply one configuration to multiple elements.
<b>Apply</b>	Select to apply Fabric Watch area threshold and alarm setting configuration. Changes will be lost if the Apply button is not chosen before another you move to another tab.
<b>Reset</b>	Select to return fields to previous settings.

## Configuration Report Tab

The Configuration Report tab of the **Fabric Watch > Threshold Config** window is shown in Figure 4–15.

**Figure 4–15: The Configuration Report tab of the Threshold Configuration tab**

## Performance Monitor

The Performance Monitor graphically displays throughput (megabytes per second) for each port and for the entire switch. “Port throughput” is the number of bytes received at a port plus the number of bytes transmitted. “Switch throughput” is the sum of the throughput for all the ports. The Performance Monitor also allows the graphing of traffic based on the Source ID and the Destination ID hardware filtering mechanism.

**NOTE:** For more information about the Performance Monitor, refer to the *HP StorageWorks Advanced Performance Monitoring Version 3.0.x/4.0.x User Guide*.

### Accessing the Performance Monitor

1. Launch Web Tools, displaying the Fabric View.

2. Click the Switch icon.

The Switch View displays.

3. Click the Performance icon.

For more information, see “Buttons and Icons” on page 3–4.

The Performance Monitor displays, as shown in Figure 4–16.



**Figure 4–16: Performance Monitor**

The Performance Monitor contains a collection of graphs on the display panel, or “canvas.” The graphs are sized based on the number of graphs loaded on the canvas. Double-clicking on graphs expands the graph to the size of the display.

Figure 4–17 is an example of the Performance Monitor after graphs have been added to the canvas.

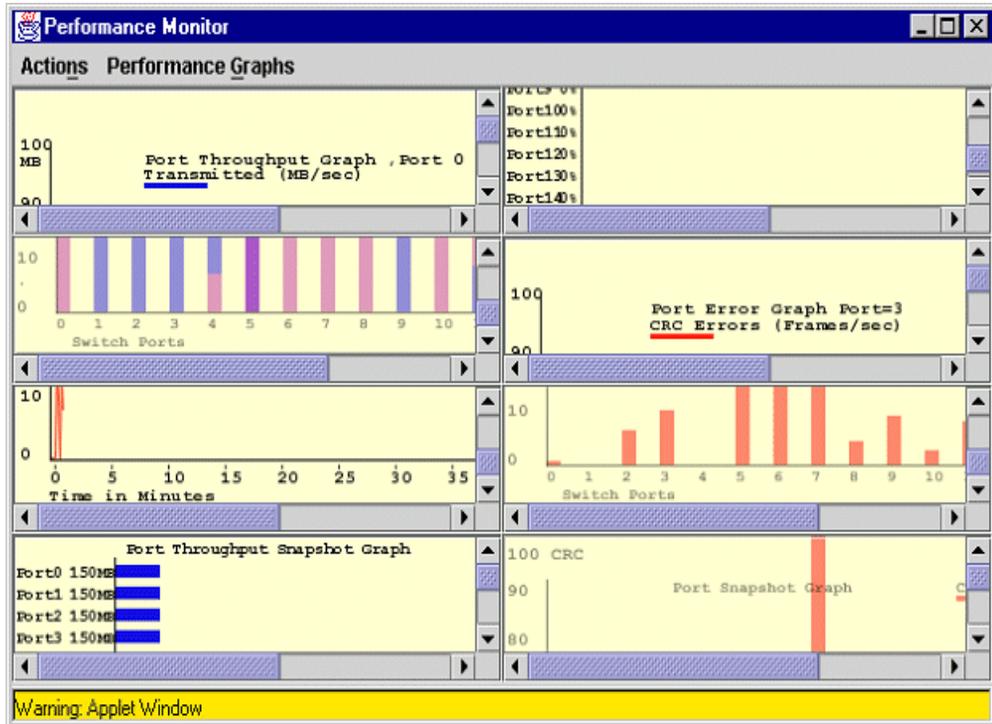


Figure 4–17: Performance Monitor with graphs

## Features

Some of the features available in the Performance Monitor include:

- An existing report can be selected from a list of reports that are predefined. In some cases, you can supply the object to be monitored and graphed (such as port number, SID/DID pair, AL\_PA, or switch domain number).

- Graphs are displayed on a canvas, which can hold a maximum of eight graphs simultaneously. An individual graph can be maximized to occupy the entire canvas. The size of the graphs on the canvas is determined by the number of graphs being displayed. The window does not need to be scrolled to view all the selected graphs.
- The collection of graphs in the canvas can be stored for later retrieval on the switch. Up to 100 individual canvases can be saved. Each canvas is saved with its name, a brief description, and the graphs which comprise the canvas.
- Any graph can “Zoom In,” or be magnified and detached from the main canvas or “Removed” from the main canvas using a pop-up menu. The pop-up menu is displayed by pointing the mouse at any graph on the main canvas and clicking the right mouse button. To re-attach the (Zoomed Out) detached graph back to the main canvas, you can point the mouse to the detached graph, click the right button and select “Zoom Out.”
- Each graph can be printed to a printer of choice.

## Graph Types

Figure 4–18 through Figure 4–20 show the types of graphs used to display port and switch information. Table 4–11 and Table 4–12 describe the graphs that can be displayed on a canvas. All graphs are real-time. Each graph is updated either every 5 seconds or every 15 seconds.

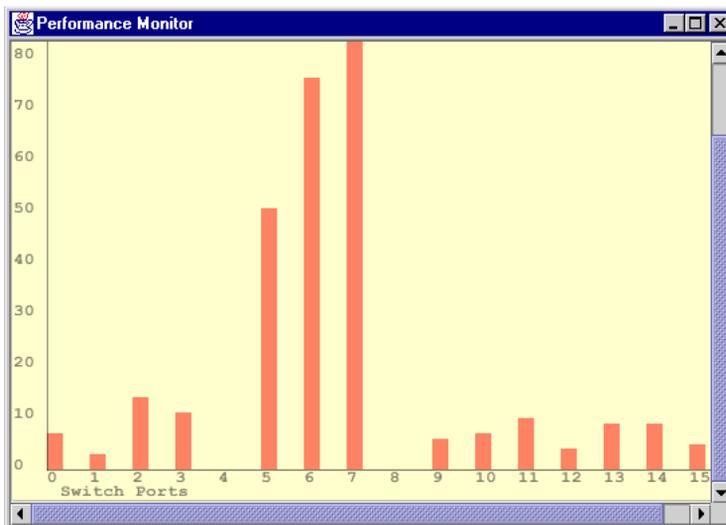


Figure 4–18: Vertical Bar chart example

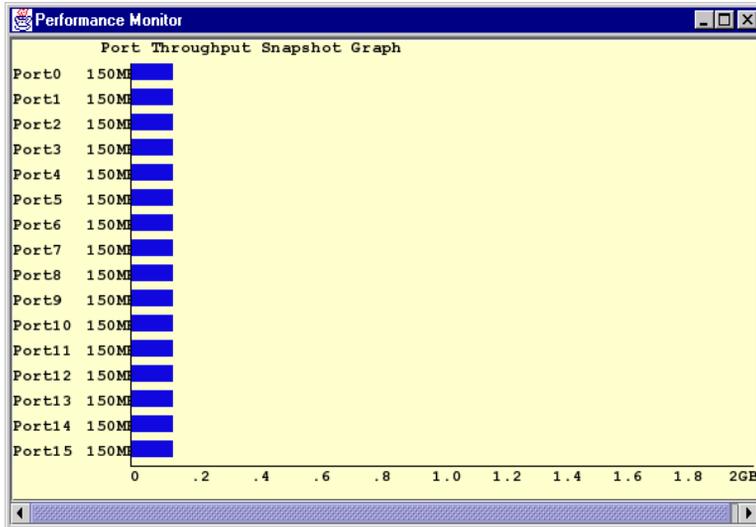


Figure 4–19: Horizontal Bar Chart example

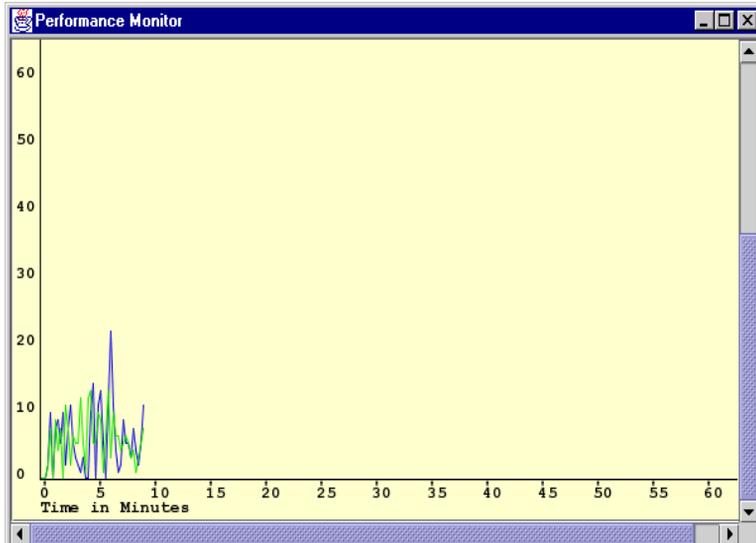


Figure 4–20: Line Chart example

## Performance Monitor Menus

The Performance Monitor is made up of the following main menus:

- Actions Menu on page 4–30
- Performance Graphs Menu on page 4–37

### Actions Menu

The Actions menu (of the Performance Monitor feature) contains the following sub-menus:

- Display Canvas Configurations
- Save Current Canvas Configuration
- Display Resource Usage
- Print All Graphs

### Display Canvas Configurations

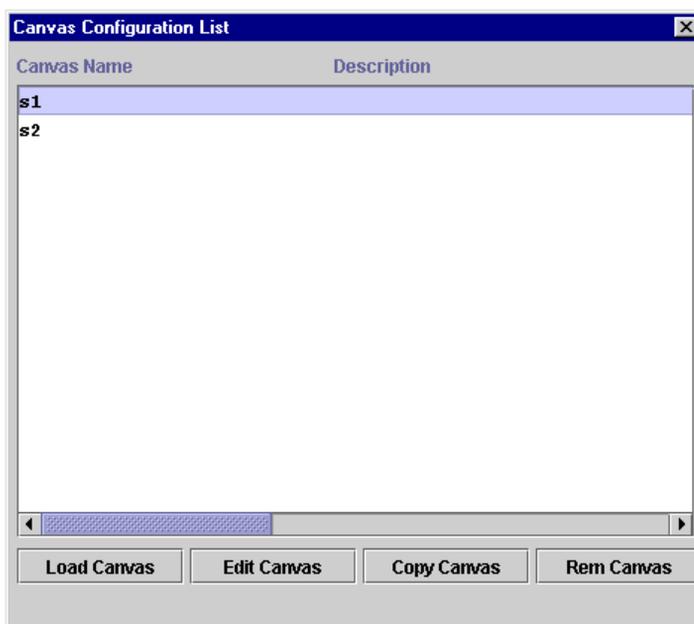
The Display Canvas Configurations option is used to view all the canvas configurations that have been saved on the switch.

To access the Display Canvas Configuration window:

1. Select the Performance icon (from the Fabric view)
2. Select the Actions menu
3. Select the Display Canvas Configurations option

The Canvas Configuration List window appears.

Each canvas has a name and a brief description. The Canvas Configuration List window is shown in Figure 4–21.



**Figure 4–21: Canvas Configuration List window**

Table 4–9 contains descriptions of the fields available using Display Canvas Configurations.

**Table 4–9: Display Canvas Configurations Fields**

Available in Canvas Configuration List:	
<b>Load Canvas</b>	Select to load a canvas of 1 to 8 graphs onto the Performance Monitor facility by choosing the highlighted canvas name.
<b>Edit Canvas</b>	Select to make changes to a canvas or change configurations. A list of graphs which comprise the highlighted canvas will appear.
<b>Copy Canvas</b>	Select to copy the highlighted canvas configuration from the list to the switch flash. You will be prompted to type in the name and description of the canvas to which you want to copy your chosen graph.
<b>Rem Canvas</b>	Select to remove a highlighted canvas from the list and the switch flash. You will be prompted with a warning that you are going to delete the selected canvas.

**Table 4–9: Display Canvas Configurations Fields (Continued)**

<b>Close</b>	Select to close the canvas configuration list.
<b>Available in Edit Canvas Window:</b>	
<b>Save</b>	Select to save an edited canvas.
<b>Edit</b>	Select to make changes to a graph on a canvas. A data entry frame will appear.
<b>Add</b>	Select to add a graph to a canvas. A pop-up menu of available graphs will display. Use this option to select the type of graph to add. For more information, see the “Basic Monitoring and Advanced Monitoring” sections of this chapter.
<b>Remove</b>	Select to delete a graph. The graph currently highlighted will be removed.
<b>Cancel</b>	Select to exit the window without making any changes.
<b>Available in Copy Canvas List:</b>	
<b>Name field</b>	Type in the name of the canvas to which you want to copy the graph.
<b>Description field</b>	Type in a description of the graph to be copied.
<b>Copy Canvas</b>	Select to copy the selected graph to another canvas.
<b>Cancel</b>	Select to exit the window without making a copy.

Figure 4–22 is an example of the data entry frame that displays when the Edit Canvas button is selected.



**Figure 4–22: Edit Port Throughput window**

To choose the port to be graphed or configured:

1. Double-click on the folder in the Port Selection List window.  
A drop-down list of ports will appear.
2. Select the port that you want to monitor or change by using *one* of the following methods:
  - Type the slot and port number in the Enter /Drag slot/port window.
  - Drag the port “file” from the Port Selection window to the Enter/Drag Port Number window.
3. Select OK.

## Save Current Canvas Configuration

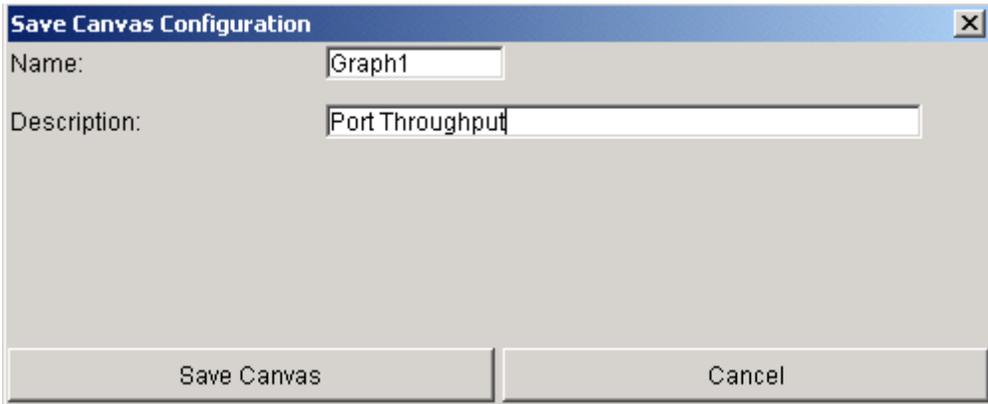
The Save Current Canvas Configuration menu saves the currently configured canvas to the switch. It uses a canvas name and a brief description to save the canvas.

To access the Save Current Canvas Configuration menu:

1. Select the Performance icon (from the Switch View).

2. Select the Actions menu.
3. Select the Save Current Canvas Configurations option.

The Save Configuration window appears, as shown in Figure 4–23.



**Figure 4–23: Save Current Canvas Configuration window**

If the canvas already exists, the Confirm Override Canvas confirmation screen pops up.

Use the override option when you need to update an existing canvas.

## Resource Usage Display

The Resource Usage Display window allows you to view the resources that are allocated for end-to-end use as well as providing filter-based monitoring for each port.

To access the Resource Usage Display window:

1. Select the Performance icon (from the Switch View)
2. Select the Actions pull-down menu.
3. Select the Resource Usage Display option. The Resource Usage Display window appears, as shown in Figure 4–24.

PORT	EE0	EE1	EE2	EE3	EE4	EE5	EE6
Port0	Free						
Port1	Free						
Port2	Free						
Port3	WEBT: InUse						
Port4	WEBT: InUse	Free	Free	Free	Free	Free	Free
Port5	Free						
Port6	Free						
Port7	Free						
Port8	Free						
Port9	Free						
Port10	Free						
Port11	Free						
Port12	Free						
Port13	Free						
Port14	Free						
Port15	Free						

**Figure 4–24: Resource Usage Display window of the Actions pull-down menu**

Table 4–10 provides a description of the fields available in the Resource Usage Display window.

**Table 4–10: Resource Usage Display Fields**

Refresh	Select to reload the window immediately.
Cancel	Select to close the window.

## Print All Graphs

The Print All Graphs option is used to print all the graphs on a selected canvas.

To access the Print All Graphs window:

1. Select the Performance icon (from the Switch View).
2. Select the Actions pull-down menu.
3. Select the Print All Graphs option.

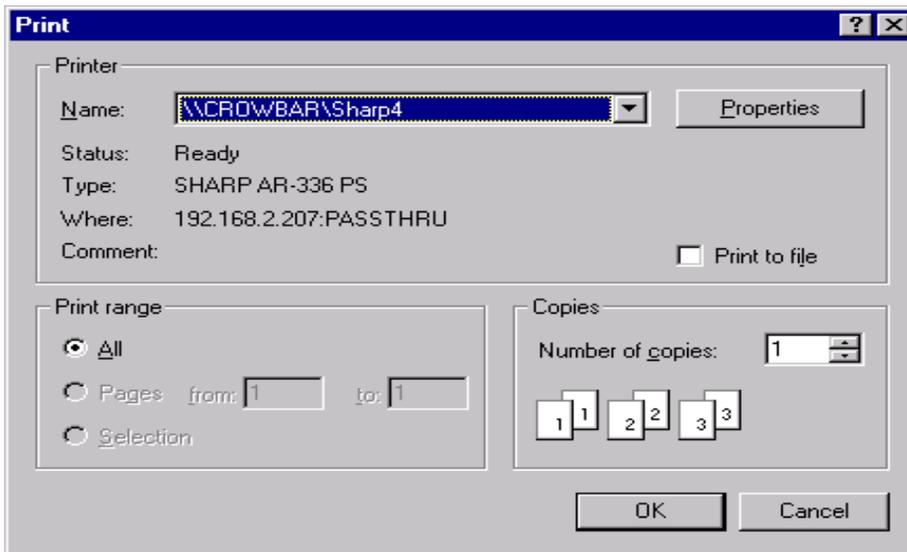
A dialog box appears, as shown in Figure 4–25.



**Figure 4–25: Applet dialog box**

4. Click Yes to accept.

The Print Dialog Box appears, as shown in Figure 4–26. Select print options such as printer choice, printing to a file, print properties, and the number of pages to print.



**Figure 4–26: Print dialog box**

5. Select OK.

The report prints.

## Performance Graphs Menu

The Performance Graphs menu of the Performance Monitor feature is made up of the following sub-menus:

- Basic Monitoring
- Advanced Monitoring (Optional Software)

### Basic Monitoring

The Basic Monitoring sub-menu allows the creation of graphs that monitor the functionality of switches and ports, such as performance and traffic. Unlike the Advanced graphs, Basic graphs do not display device-specific information.

To access the Basic Monitoring pull-down menu:

1. Select the Performance icon (from the Switch View).
2. Select the Performance Graphs pull-down menu.
3. Select the Basic Monitoring option.

Table 4–11 describes the types of graphs that are available through the Basic Monitoring menu.

**Table 4–11: Graphs Displayed on a Basic Canvas**

Scope	Graph Name	Type	Description
Port	Port Throughput Graph	Line	Displays the performance of a port based on four-byte frames received and transmitted. See Figure 4–27.
Switch	Switch Aggregate Throughput Graph	Line	Displays the aggregate performance of all ports of a switch. See Figure 4–28.
Switch	Blade Aggregate Throughput Graph Available only on an StorageWorks Core switch series switch.	Line	Displays the aggregate performance of the switch blade. See Figure 4–29.
Switch	Switch Throughput Utilization Graph	Horizontal Bar	Displays the port throughput at the time the sample is taken. See Figure 4–30.

Table 4–11: Graphs Displayed on a Basic Canvas (Continued)

Scope	Graph Name	Type	Description
Port	Port Error Graph	Line	Displays a line of CRC errors for a given port. See Figure 4–32.
Switch	Switch Percent Utilization Graph	Horizontal Bar	Displays the percentage of usage of a chosen switch at the time the sample is taken. See Figure 4–33.
Switch	Ports SnapShot Error Graph	Vertical Bar	Displays the CRC error count between sampling periods for all the ports on a switch. See Figure 4–34.

## Port Throughput Graph

An example of a Port Throughput Graph, monitoring bytes transmitted and received, is shown in Figure 4–27.

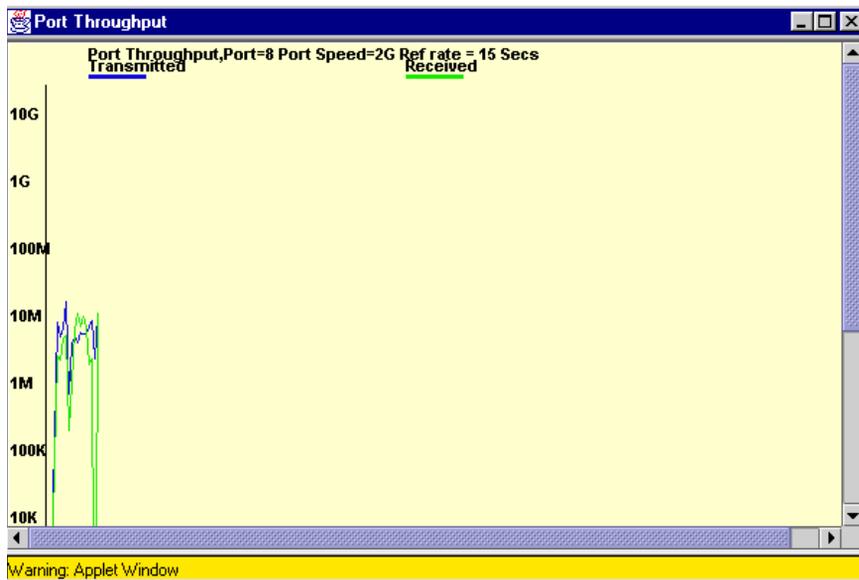


Figure 4–27: Port Throughput graph example

## Setting up a Port Throughput Graph

1. Select the Switch icon.  
Switch View is displayed.
2. Select the Performance Monitor icon.  
The Performance Monitor is displayed.
3. Select the Performance Graphs drop-down menu.
4. Select Basic Monitoring.
5. Select the Port Throughput Graph.  
The Port Throughput set-up window is displayed.
6. Type the selected switch and port number in the window.

## Switch Aggregate Throughput Graph

An example of a Switch Aggregate Throughput Graph, displaying the aggregate performance of all ports of a switch, is shown in Figure 4–28.

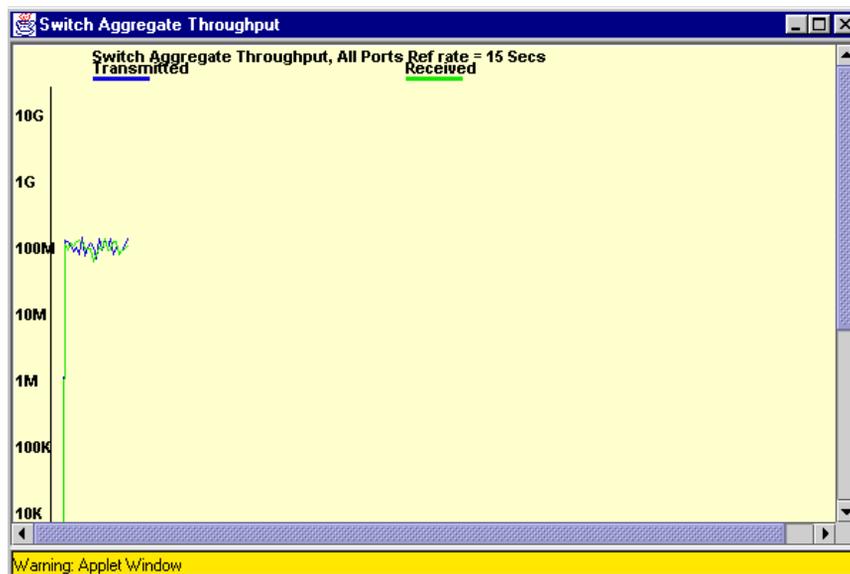
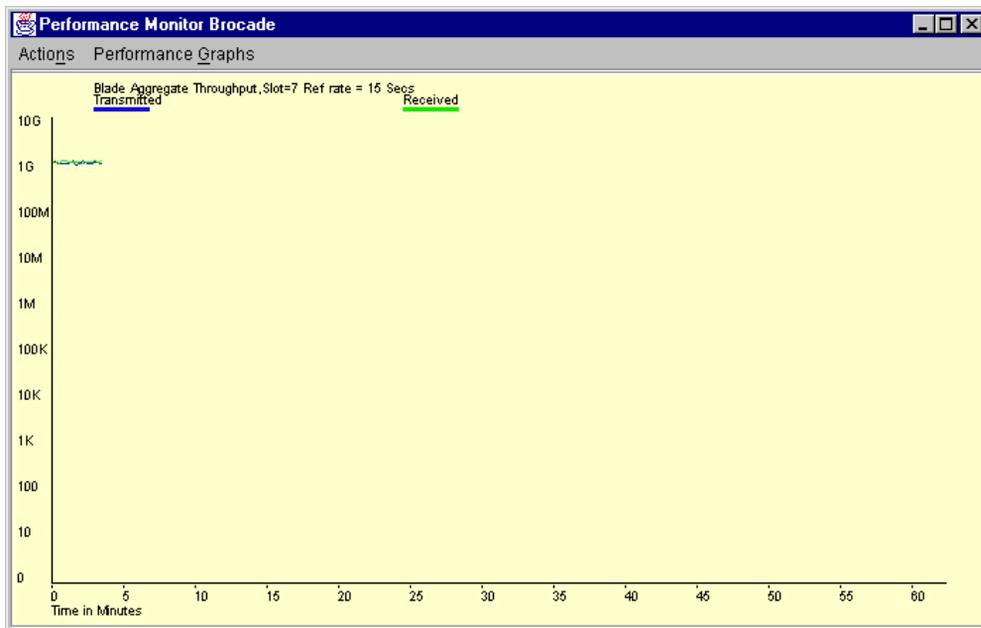


Figure 4–28: Switch Aggregate Throughput graph example

## Blade Aggregate Throughput Graph

An example of a Blade Aggregate Throughput Graph, displaying the aggregate performance of a blade, is shown in Figure 4–29.

**NOTE:** The Blade Aggregate Throughput Graph is only available on an StorageWorks Core switch series switch.



**Figure 4–29: Blade Aggregate Throughput graph example**

## Switch Throughput Utilization Graph

An example of a Switch Throughput Utilization Graph, displaying a sample of the port throughput, is shown in Figure 4–30.

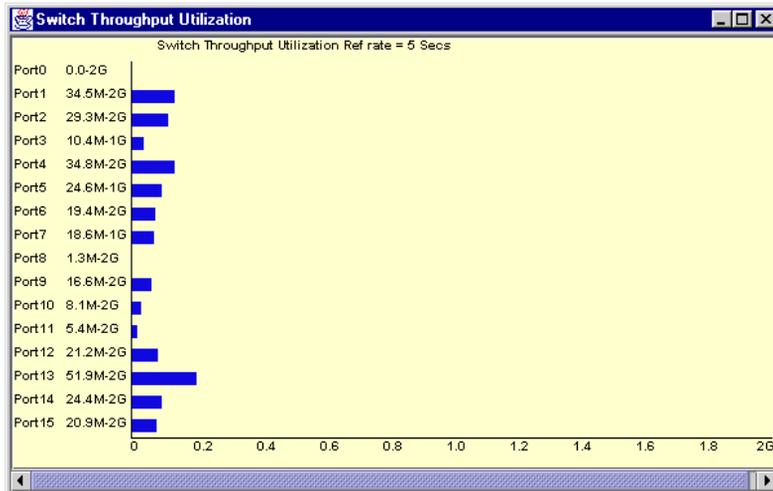


Figure 4–30: Switch Throughput Utilization graph example

## Port Error Graph

When you select the Port Error Graph, you will be prompted to choose the port that you want to monitor for CRC errors. Figure 4–31 is an example of the data entry window that you will see when you create a Port Error Graph.

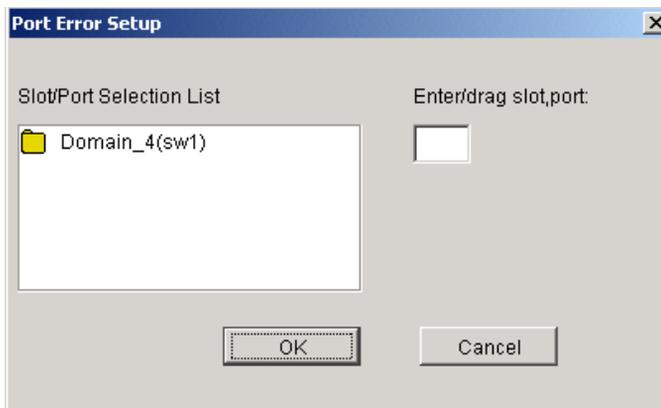


Figure 4–31: Port Error Setup window

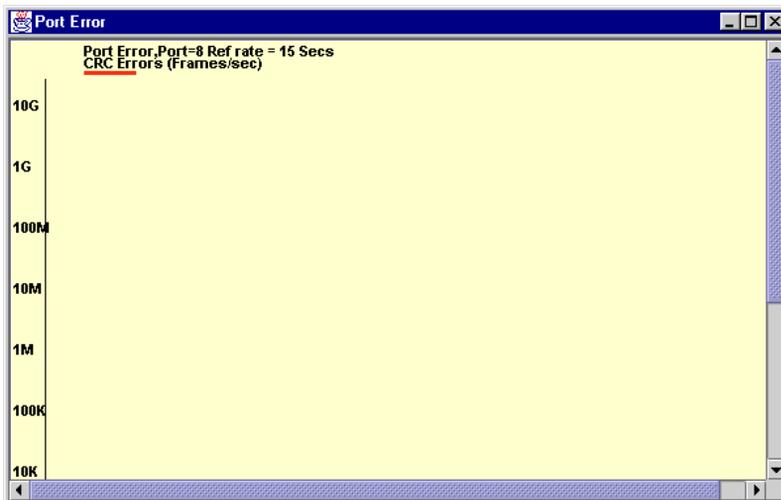
To choose the port that you want to graph:

1. Double-click on the folder in the Port Selection List window.  
A drop-down list of ports appears.
2. Select the port that you want to monitor or change by using one of the following methods:
  - Type the port number in the Enter /Drag Port Numbers window.
  - Drag the port “file” from the Port Selection window to the Enter/Drag Port Number window.
3. Select OK.

**NOTE:** For 4.0.x, it is required that the slot/port combination is entered.

A graph displaying the CRC errors for the chosen port will be displayed.

An example of a Port Error Graph, displaying a line of CRC errors for a given port, is shown in Figure 4–32.



**Figure 4–32: Port Error graph example**

## Switch Percent Utilization Graph

An example of a Switch Percent Utilization Graph, displaying a sample of the percentage of utilization of a chosen switch, is shown in Figure 4–33.

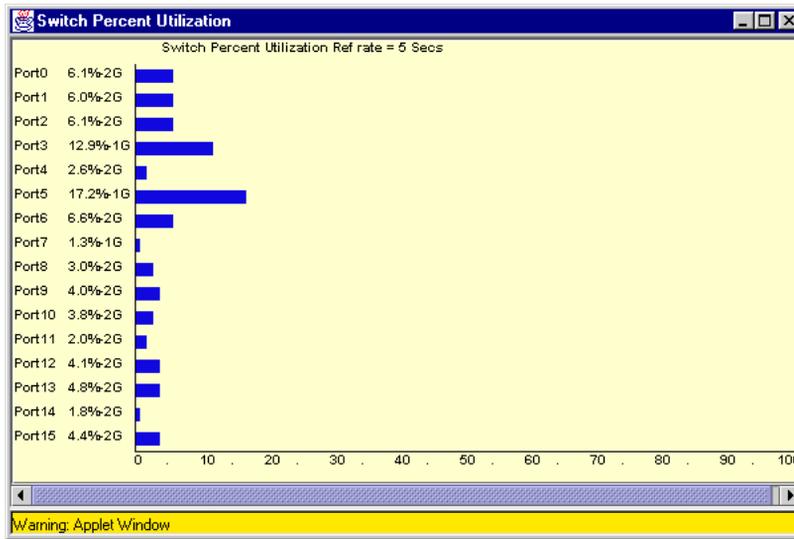


Figure 4–33: Switch Percent Utilization graph example

## Ports Snapshot Error Graph

An example of a Ports Snapshot Error Graph, displaying the CRC error count between sampling periods, is shown in Figure 4–34.

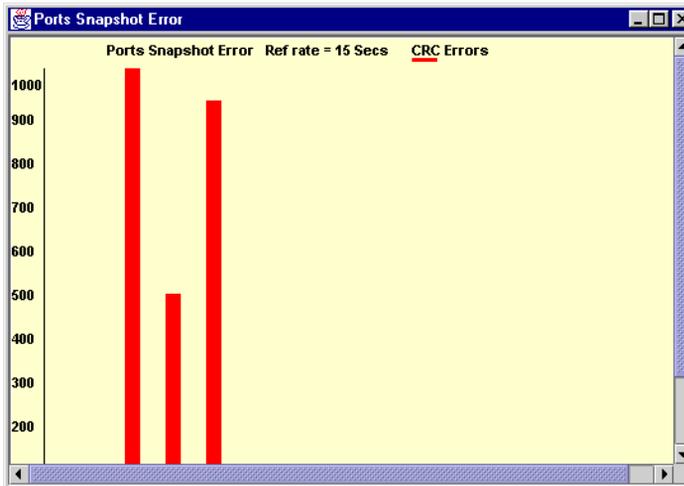


Figure 4–34: Ports Snapshot Error graph

## Advanced Monitoring V3.0.x (Optional Software)

The Advanced Monitoring is an optionally licensed software. The Advanced Monitoring sub-menu allows you to create graphs that monitor switch and port functionality, such as traffic and performance, that is device-specific.

**NOTE:** For information specific to Advanced Monitoring for 4.0.x, see “Advanced Monitoring V4.0.x (Optional Software)” on page 4–52.

Table 4–12 describes the types of graphs that are available through the Advanced Monitoring menu.

Table 4–12: 3.0.x Graphs Displayed on an Advanced Canvas

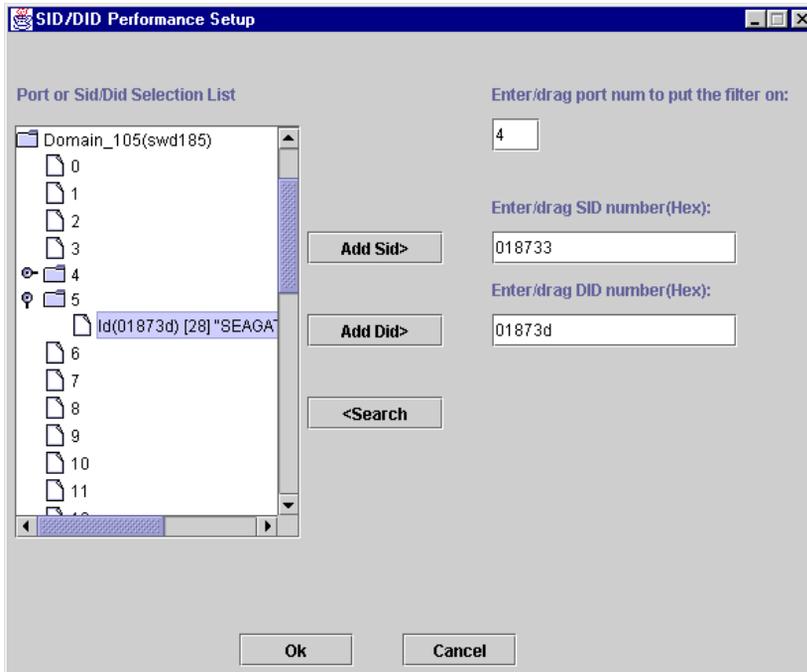
Scope	Graph Name	Type	Description
Switch	SID/DID Performance Graph	Line	This graph charts the traffic between a SID (or WWN) and a DID (or WWN) pair on the switch being managed. See Figure 4–35.

**Table 4–12: 3.0.x Graphs Displayed on an Advanced Canvas (Continued)**

Scope	Graph Name	Type	Description
Switch	SCSI Commands Graph	Line	<p>The total number of Read/Write commands on a given port to a specific LUN.</p> <p>Provides the following choices:</p> <ul style="list-style-type: none"> <li>• SCSI Read/Write on a LUN per port.</li> <li>• SCSI Read on a LUN per port.</li> <li>• SCSI Write on a LUN per port.</li> <li>• SCSI Read/Write per port.</li> <li>• SCSI Read per port.</li> <li>• SCSI Write per port.</li> </ul> <p>See Figure 4–38.</p>
Switch	SCSI vs IP Graph	Vertical Bar	Shows percentage of SCSI versus IP frame traffic on each individual port. See Figure 4–39.
Switch	AL_PA Error Graph	Line	Displays CRC errors for a given port and a given AL_PA. See Figure 4–41.

## SID/DID Performance Graph

When you select the SID/DID Performance Graph, you will be prompted with a data entry window where you will choose the SID and DID to be charted. Figure 4–35 is an example of the data entry window that you will see when you choose to create a SID/DID Performance Graph.



**Figure 4–35: SID/DID Performance Setup data entry window**

To choose the port and SID/DID that you want to graph:

1. Double-click on a folder in the Port Selection List window.  
A drop-down list of ports will appear.
2. Select the port that you want to monitor or change by using one of the following methods:
  - Type the port number in the Enter /Drag Port Numbers window.
  - Drag the port “folder” from the Port Selection window to the Enter/Drag Port Number window.

3. Select the port “folder”, or the small icon that appears next to it. A drop-down list of SID/DID files will appear.
4. Select the SID/DID numbers that you want to graph by using *one* of the following methods:
  - Type the SID number in the Enter /drag SID Numbers window. Repeat for the DID number.
  - Drag the SID “file” from the Port Selection window to the Enter/drag SID Number window. Repeat for the DID number.
5. Select OK.

A graph displaying the CRC errors for the chosen port will be displayed.

An example of an SID/DID graph, displaying the traffic between a SID and a DID pair, is shown in Figure 4–36.

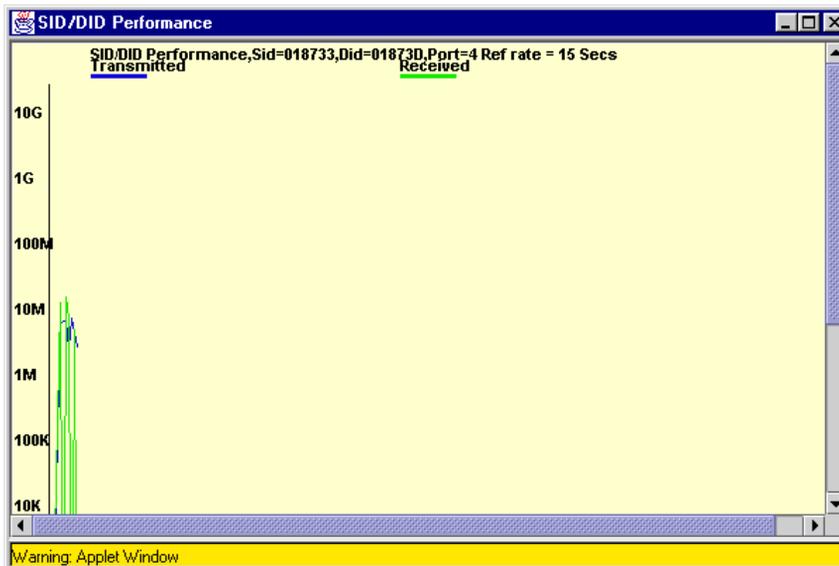


Figure 4–36: SID/DID Performance graph example

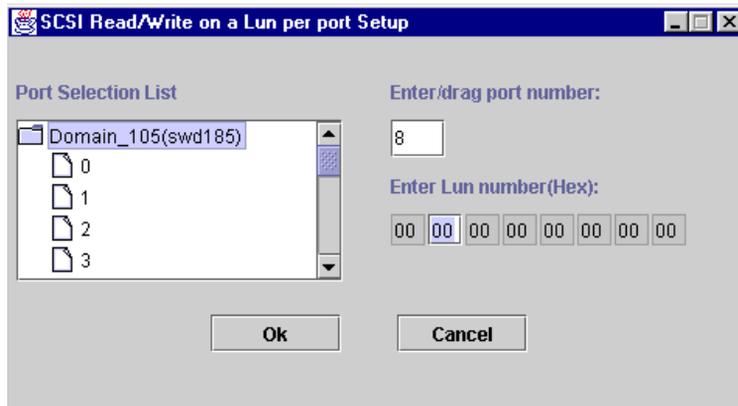
## SCSI Commands Graph

When you select the SCSI graph, the following options will be displayed in a pull-down menu:

- SCSI Read/Write on a LUN per port.

- SCSI Read on a LUN per port.
- SCSI Write on a LUN per port.
- SCSI Read/Write per port.
- SCSI Read per port.
- SCSI Write per port.

Each graph will prompt you with a data entry window to select the port and LUN to be monitored, as shown in Figure 4–37.



**Figure 4–37: SCSI graph data entry window**

To select the port and LUN to monitor:

1. Double-click on the folder in the Port Selection List window.  
A drop-down list of ports will appear.
2. Select the port that you want to monitor or change by using one of the following methods:
  - Type the port number in the Enter/Drag Port Numbers window.
  - Drag the port “file” from the Port Selection window to the Enter/Drag Port Number window.
3. Enter a LUN number in the Enter LUN Number (Hex) window.

You can enter only four LUN numbers at a time.

**NOTE:** If you try to enter more than four LUN masks, a warning window will appear.

4. Select OK.

A graph displaying the total number of Read and/or Write commands on a given port to a specific LUN will be displayed.

An example of a SCSI graph, using the Write on a LUN per port option, is shown in Figure 4–38.

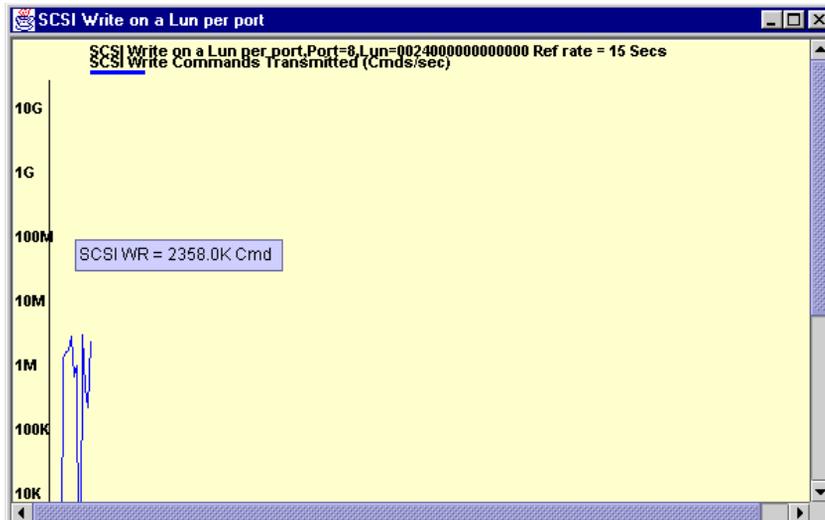


Figure 4–38: SCSI Write on a LUN per port graph example

## SCSI versus IP Graph

An example of a SCSI versus IP graph, displaying the percentage of SCSI versus IP frame traffic, is shown in Figure 4–39.

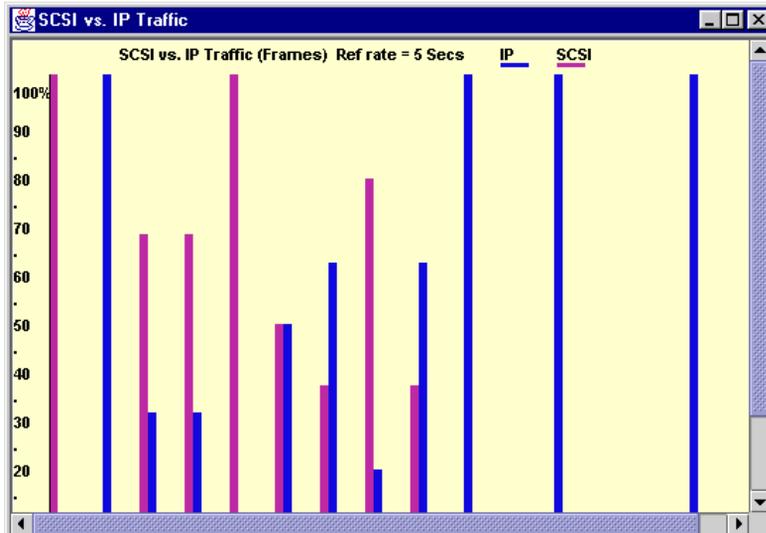


Figure 4–39: SCSI versus IP graph example

## ALPA Error Graph

When you select an ALPA Error Graph, you will be prompted to choose the port that you want to monitor for various errors. Figure 4–40 is an example of the data entry window that you will see when you choose to create a ALPA Error Graph.

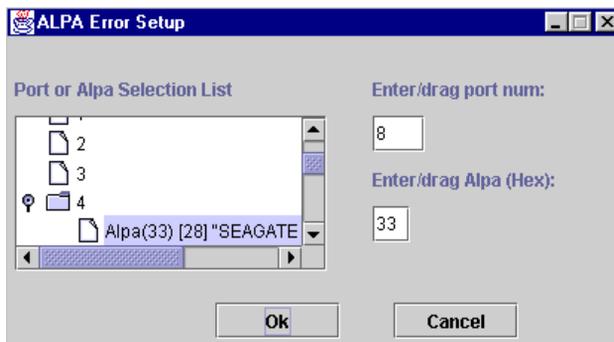


Figure 4–40: ALPA Error Setup data entry window

To choose the port and ALPA that you want to graph:

1. Double-click on the folder in the Port Selection List window.  
A drop-down list of ports will appear.
2. Select the port that you want to monitor or change by using one of the following methods:
  - Type the port number in the Enter /Drag Port Numbers window.
  - Drag the port “folder” from the Port Selection window to the Enter/Drag Port Number window.
3. Select the port “folder”, or the small icon that appears next to it. A drop-down list of SID/DID files will appear.
4. Select the ALPA number that you want to graph by using *one* of the following methods:
  - Type the ALPA number in the Enter /drag SID Numbers window.
  - Drag the ALPA “file” from the Port Selection window to the Enter/drag ALPA Number window.
5. Select OK.

An ALPA Error graph will be displayed.

An example of an ALPA Error graph, displaying CRC errors for a given port and a given ALPA, is shown in Figure 4–41.

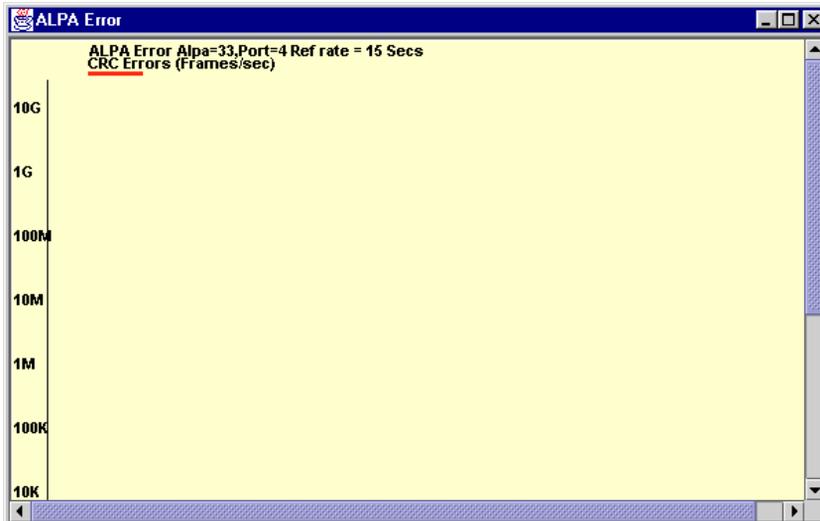


Figure 4–41: ALPA Error graph example

## Advanced Monitoring V4.0.x (Optional Software)

Advanced Monitoring is optional licensed software. The Advanced Monitoring sub-menu allows you to create graphs that monitor switch and port functionality such as traffic and performance that is device-specific.

For information specific to Advanced Monitoring V3.0.x, see “Advanced Monitoring V3.0.x (Optional Software)” on page 4–44.

Table 4–13 describes the types of graphs that are available through the Advanced Monitoring menu.

**Table 4–13: 4.0.x Graphs Displayed on an Advanced Monitoring Canvas**

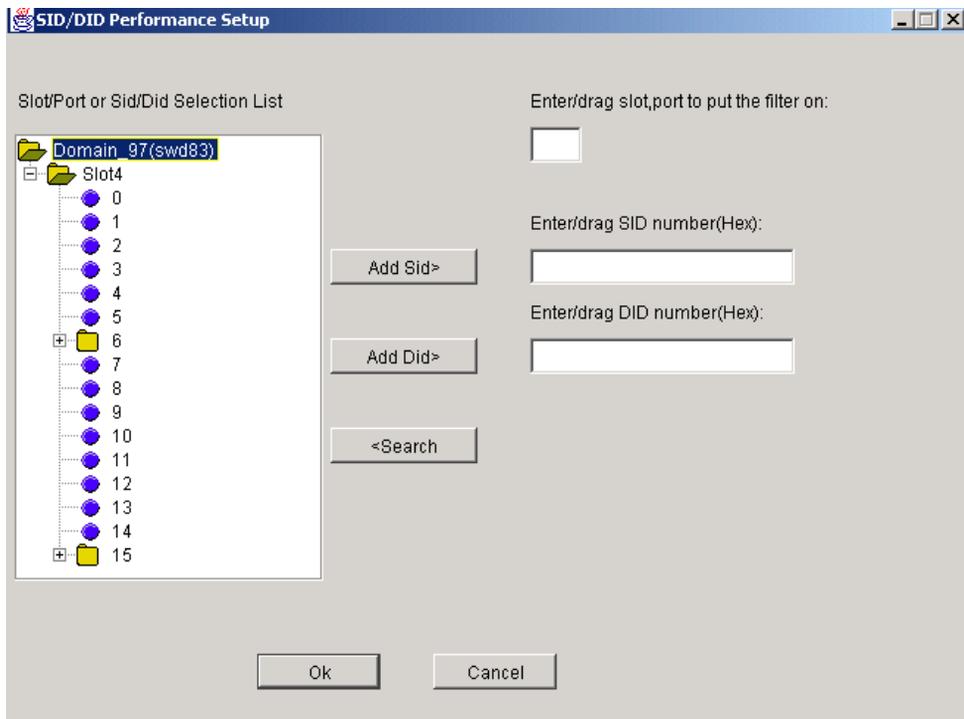
Scope	Graph Name	Type	Description
Switch	SID/DID Performance Graph	Line	This graph charts the traffic between a SID and a DID pair on the switch being managed. See Figure 4–42.

**Table 4–13: 4.0.x Graphs Displayed on an Advanced Monitoring Canvas (Continued)**

Scope	Graph Name	Type	Description
Port	SCSI Commands Graph	Line	The total number of Read/Write commands on a given port to a specific LUN. Provides the following choices: SCSI Read/Write on a LUN per port. SCSI Read on a LUN per port. SCSI Write on a LUN per port. SCSI Read/Write per port. SCSI Read per port. SCSI Write per port. See Figure 4–45.
Switch	SCSI vs. IP Graph	Vertical Bar	Shows percentage of SCSI versus IP frame traffic on each individual port. See Figure 4–46.
Port	ALPA Error Graph	Line	Displays CRC errors for a given port and a given AL_PA. See Figure 4–47.

## SID/DID Performance Graph

When you select the SID/DID Performance Graph, you are prompted with a data entry window where you will chose the SID and DID to be charted. Figure 4–42 is an example of the data entry window that you will see when you choose to create a SID/DID Performance Graph.



**Figure 4–42: SID/DID Performance Setup data entry window**

To choose the port and SID/DID that you want to graph:

1. Double-click on a folder in the Slot/Port Selection List window.  
A drop-down list of slot/ports appears.
2. Select the slot/port that you want to monitor or change by using one of the following methods:
  - Type the slot/port number in the Enter /Drag Slot, Port Numbers window.
  - Drag the slot/port “folder” from the Port Selection window to the Enter/Drag Slot, Port Number window.
3. Select the slot/port “folder”, or the small icon that appears next to it. A drop-down list of SID/DID files appears.
4. Select the SID/DID numbers that you want to graph by using *one* of the following methods:

- Type the SID number in the Enter /drag SID Numbers window. Repeat for the DID number.
  - Type the SID number and select Add SID. Repeat for DID.
  - Drag the SID “file” from the Slot/Port Selection window to the Enter/drag SID Number window. Repeat for the DID number.
5. Select OK.

A graph displaying the CRC errors for the chosen port will be displayed.

An example of an SID/DID graph, displaying the traffic between an SID and a DID pair, is shown in Figure 4–43.

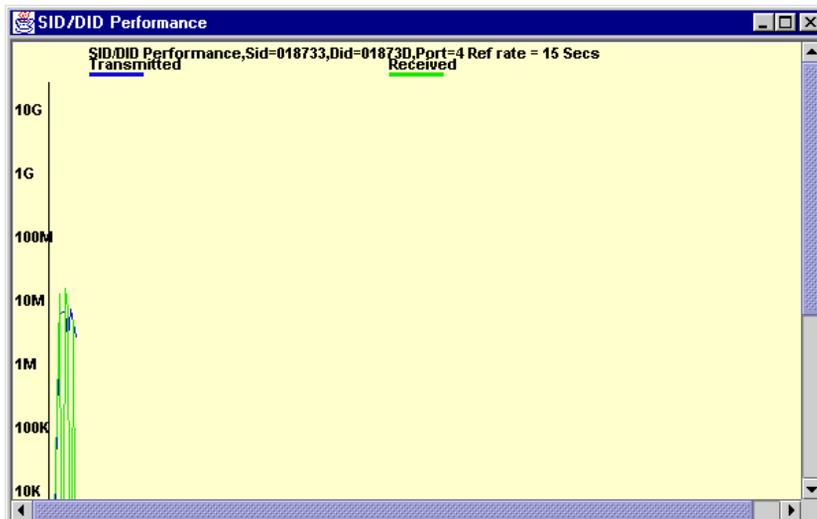


Figure 4–43: SID/DID Performance graph example

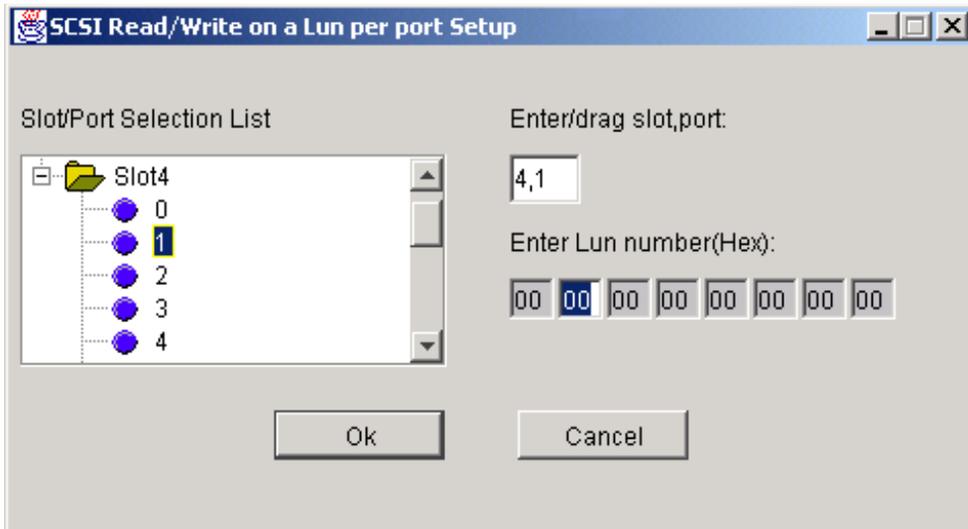
## SCSI Commands Graph

When you select the SCSI graph, the following options are displayed in a pull-down menu:

- SCSI Read/Write on a LUN per port
- SCSI Read on a LUN per port
- SCSI Write on a LUN per port
- SCSI Read/Write per port

- SCSI Read per port
- SCSI Write per port

Each graph will prompt you with a data entry window to select the port and LUN to be monitored, as shown in Figure 4–44.



**Figure 4–44: SCSI graph data entry window**

To choose the port and LUN to monitor:

1. Double-click on the folder in the Port Selection List window.  
A drop-down list of ports appears.
2. Select the Slot/Port that you want to monitor or change by using one of the following methods:
  - Type the port number in the Enter/Drag Slot/Port Numbers window.
  - Drag the Slot/Port “file” from the Port Selection window to the Enter/Drag Slot/Port Number window.
3. Enter a LUN number in the Enter LUN Number (Hex) window.

**NOTE:** You can only enter four LUN numbers at a time. If you try to enter more than four LUN masks, a warning window will appear.

4. Select OK.

A graph displaying the total number of Read and/or Write commands on a given port to a specific LUN will be displayed.

An example of a SCSI graph, using the Write on a LUN per port option, is shown in Figure 4-45.

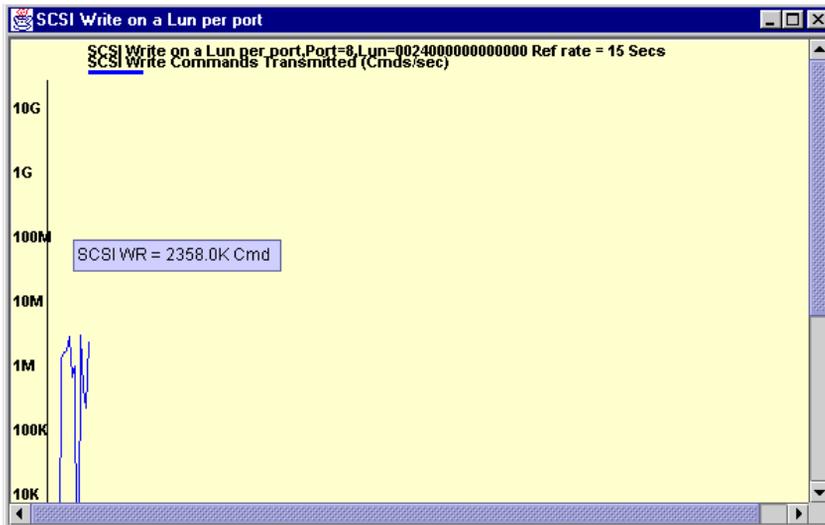


Figure 4-45: SCSI Write on a LUN per port graph example

## SCSI vs. IP Graph

An example of a SCSI versus IP graph, displaying the percentage of SCSI versus IP frame traffic, is shown in Figure 4–46.

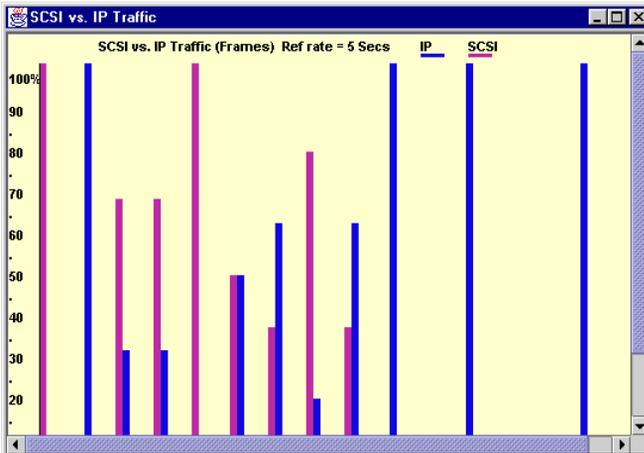


Figure 4–46: SCSI versus IP graph example

## ALPA Error Graph

When you select an ALPA Error Graph, you will be prompted to choose the port that you want to monitor for various errors. Figure 4–47 is an example of the data entry window that you will see when you choose to create an ALPA Error Graph.

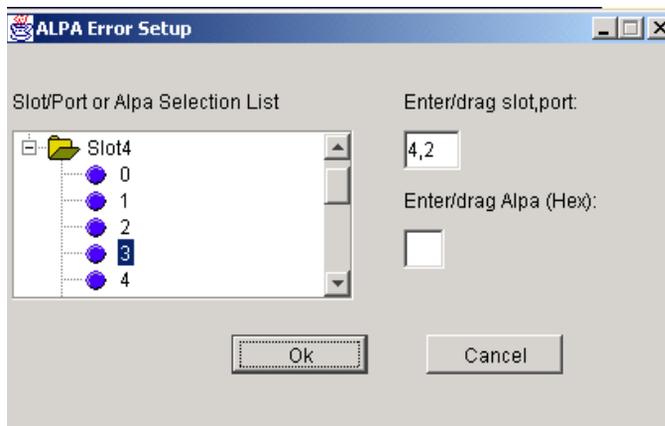


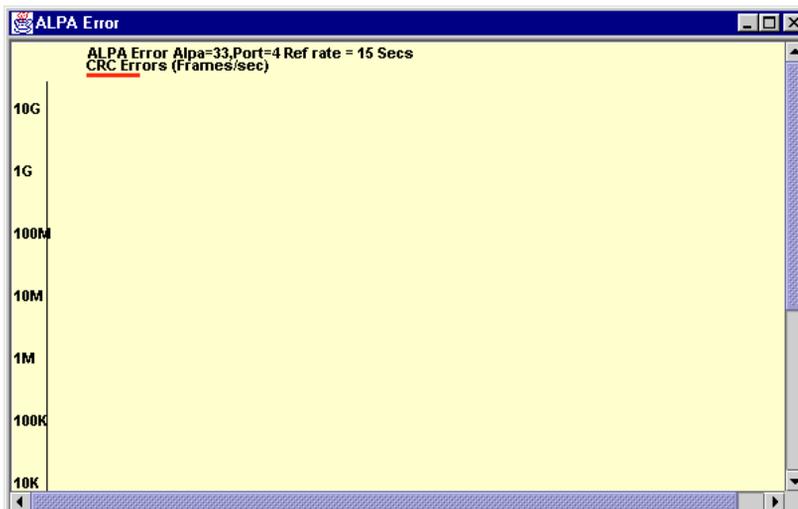
Figure 4–47: ALPA Error Setup data entry window

To choose the slot/port and ALPA that you want to graph:

1. Double-click on the folder in the Slot/Port Selection List window.  
A drop-down list of slots/ports appears.
2. Select the Slot/Port that you want to monitor or change by using *one* of the following methods:
  - Type the Slot/Port number in the Enter/Drag slot,port window.
  - Drag the Slot/Port “folder” from the Slot/Port Selection window to the Enter/Drag slot,port window.
3. Select the ALPA number that you want to graph by using *one* of the following methods:
  - Type the ALPA number in the Enter/drag Alpa window.
  - Drag the ALPA “file” from the Port Selection window to the Enter/drag ALPA window.
4. Select OK.

An ALPA Error graph will be displayed.

An example of an ALPA Error graph, displaying CRC errors for a given port and a given ALPA, is shown in Figure 4–48.



**Figure 4–48: ALPA Error graph example**

## Additional Options

The graphs available in the Performance Monitor feature provide additional options by using the following methods:

- Right-clicking on a graph
- Tools Tips

These options are available by rolling over a graph with your mouse pointer.

## Right-Click Options

Each graph contains a variety of options that are available by pointing to a graph and right-clicking your mouse.

Table 4–14 provides a list of all the possible options that are available by right-clicking the mouse in a particular graph.

**NOTE:** Not all graphs will have all options available, but every graph supports at least one of the following options.

**Table 4–14: Options Available by Right-Clicking in a Graph**

<b>Zoom In/Zoom Out</b>	Select “Zoom In”, to magnify a single graph, rather than viewing multiple graphs on one canvas. Select “Zoom Out” to replace a “Zoomed In” graph onto a canvas.
<b>Remove</b>	Select to delete any graph from the canvas.
<b>Print</b>	Select to print any graph.
<b>Show Tx/Rx</b>	Displays number of bytes being both transmitted and received.
<b>Show Tx</b>	Displays number of bytes being transmitted.
<b>Show Rx</b>	Displays number of bytes being received.
<b>Show Crc</b>	Displays number of frames being transmitted with CRC errors.

## Tools Tips

Each graph provides additional information when you roll the mouse-pointer over a graph.

Table 4–15 provides a list of all the possible Tools Tips information that is available by rolling over a graph with the mouse pointer.

**NOTE:** Not all graphs will have all options available, but nearly every graph supports at least one of the following Tools Tips.

**Table 4–15: Tool Tips Information Available by Rolling Mouse Over Graph**

<b>Top 5 busiest port(s)</b>	Displays the five ports that are transmitting and receiving the most bytes.
<b>Tx=0.0, Rx=0.0</b>	Displays the number of bytes being transmitted and received.
<b>CRC=0</b>	Displays the number of frames with Cyclic Redundancy Errors being transmitted on a port.
<b>SCSI RW=0</b>	Displays the number of SCSI commands being read or written on a port or on a given port to a specific LUN.
<b>SCSI RD=0</b>	Displays the number of SCSI commands being read on a port or on a given port to a specific LUN.
<b>SCSI WR=0</b>	Displays the number of SCSI commands being written on a port or on a given port to a specific LUN.

## Administrative Interface V3.0.x

For information specific to Administrative Interfaces 4.0.x, see “Administrative Interface 4.0.x” on page 4–93.

The V3.0.x Administrative Interface provides access to administrative functions through the following tabs:

- Switch Settings tab
- User Admin tab

- Firmware/Configuration File Administration tab
- SNMP Admin tab
- License Admin tab
- Remote Switch tab (Optional Software)
- QuickLoop tab (Optional Software)
- Configuration tab
- Extended Fabric tab (Optional Software)
- Routing tab
- Network Config tab
- Report tab
- Port Settings tab
- Trunk Information tab

**NOTE:** The Administrative Interface requires administrative privileges. Once an administrative login is entered, administrative privileges remain available until the web browser is closed.

## Accessing the Administrative Interface

1. Launch the Web browser.
2. Enter the switch name or IP address in the Location/Address field and press **Enter**.

For example: <http://switch name>

Web Tools launches, displaying Fabric View.

3. Click the Admin icon on the switch panel.

The Enter Network Password dialog displays, as shown in Figure 4–49.



**Figure 4–49: The Enter Network Password dialog box**

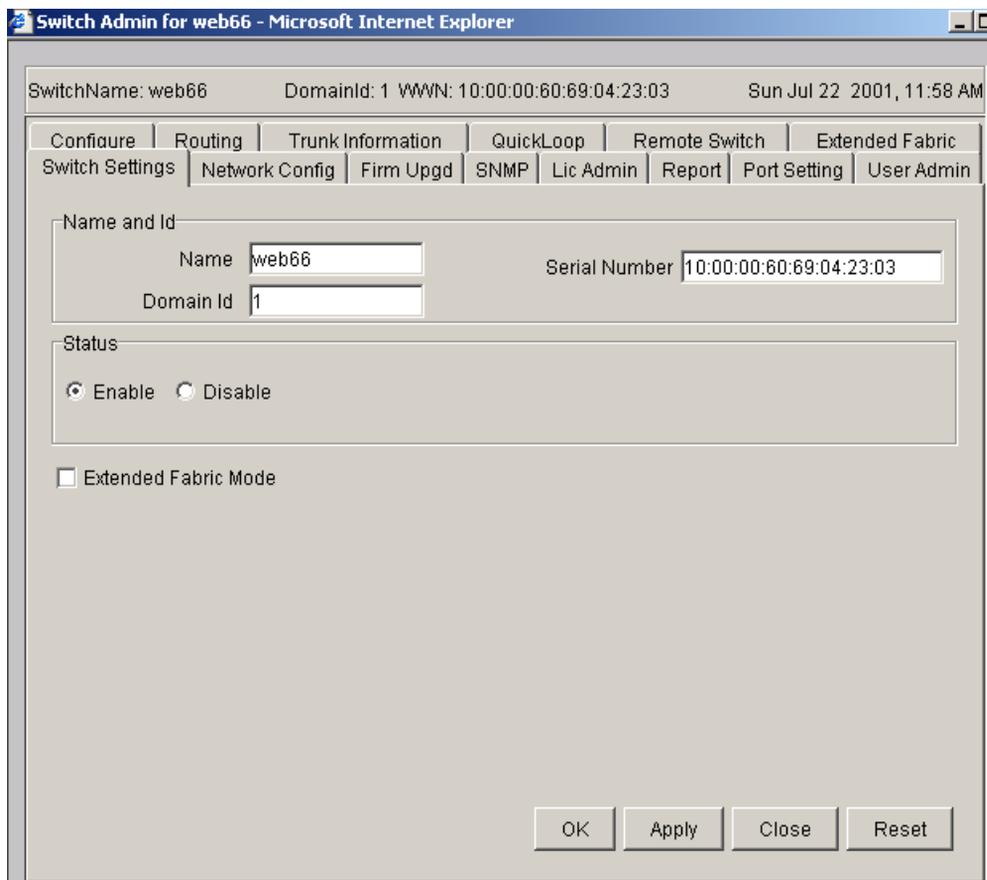
4. Enter your user name and password. The logon account must have administrative privileges.
5. Click OK.

The Administrative Interface displays, with the Switch Settings tab selected by default, as shown in Figure 4–50.

For each tab at the top of the Administrative Interface, a message area at the bottom of the Administrative Interface reveals the status of the changes applied to the switch. (Expand/contract the message area by clicking on the up/down arrows in the upper-left corner of the message area)

## Switch Settings Tab

Use the Switch Settings tab to manage basic switch setup for items such as switch name, switch domain ID and enabling and disabling the switch and compatibility modes. The Switch Settings tab is shown in Figure 4–50.



The screenshot shows a web browser window titled "Switch Admin for web66 - Microsoft Internet Explorer". The main content area displays the "Switch Settings" tab for a switch named "web66". At the top, it shows "SwitchName: web66", "DomainId: 1", "WWN: 10:00:00:60:69:04:23:03", and the date/time "Sun Jul 22 2001, 11:58 AM". Below this is a navigation menu with tabs: "Configure", "Routing", "Trunk Information", "QuickLoop", "Remote Switch", "Extended Fabric", "Switch Settings", "Network Config", "Firm Upgd", "SNMP", "Lic Admin", "Report", "Port Setting", and "User Admin". The "Switch Settings" tab is active. It contains a "Name and Id" section with input fields for "Name" (web66), "Serial Number" (10:00:00:60:69:04:23:03), and "Domain Id" (1). Below this is a "Status" section with radio buttons for "Enable" (selected) and "Disable". At the bottom, there is a checkbox for "Extended Fabric Mode" which is unchecked. At the very bottom of the form are four buttons: "OK", "Apply", "Close", and "Reset".

Figure 4–50: Switch Settings tab

Table 4–16 provides a description of the fields on the Switch Settings tab:

**Table 4–16: Switch Settings Tab Fields**

<b>Name</b>	Enter data for the switch name. Enter a new name to change a name in this field.
<b>Domain ID</b>	Displays or sets switch domain ID. Domain IDs must be unique within a fabric.  To change domain ID, enter 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 StorageWorks switches operating at firmware version 2.x or above).
<b>Serial Number</b>	Displays the serial number of the switch.
<b>Extended Fabric Mode</b>	Click on the box to allow ports to be configured for long distance, or uncheck to turn the option off.
<b>(Status) Enabled</b>	Click on the radio button to enable the switch.
<b>(Status) Disabled</b>	Click on the radio button to disable the switch.
<b>OK</b>	Click and exit Administrative View to save any changes.
<b>Apply</b>	Click to save any changes made to this tab and remain in the current tab. Additional changes can be made and the Apply button clicked when making changes incrementally.
<b>Close</b>	Click to exit the Switch Admin view. If changes have been made and not committed by clicking the Apply button, a dialog box is presented. It allows the changes to be committed or deleted.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## User Admin Tab

You can use the User Admin tab to change the switch User and Admin account names and passwords. The User Admin tab is shown in Figure 4–51.

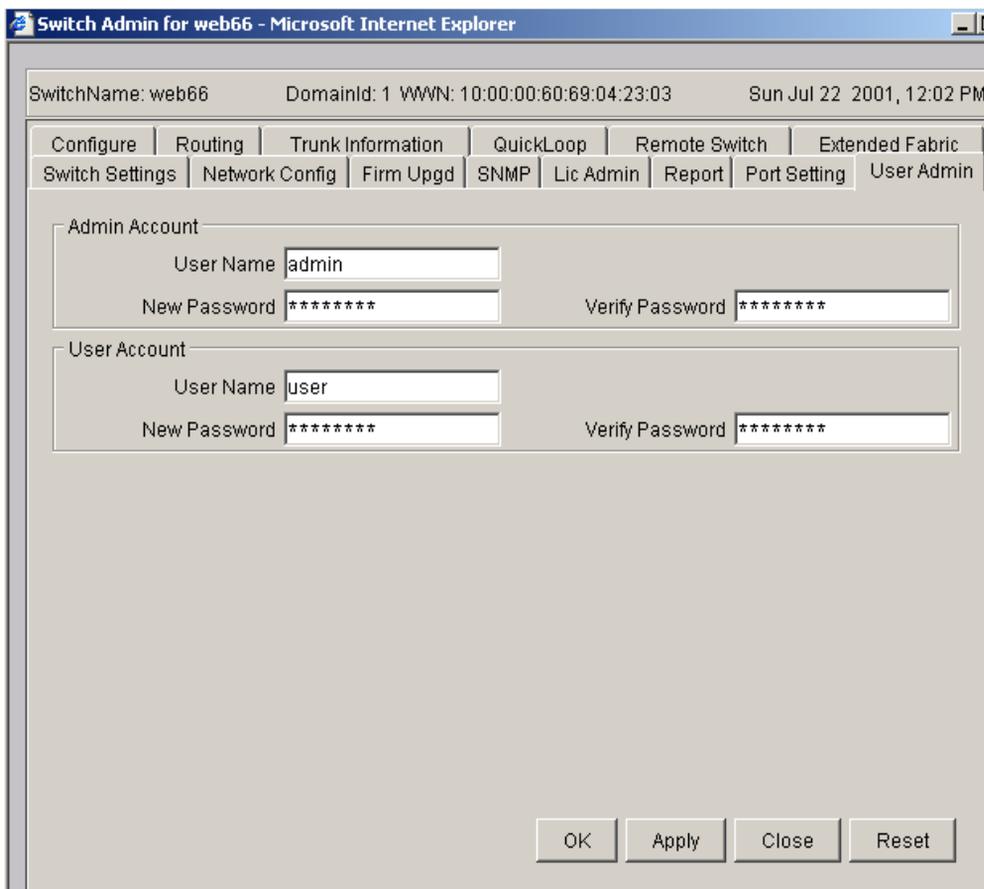


Figure 4–51: User Admin tab

Table 4–17 provides a description of the fields on the User Admin tab.

**Table 4–17: User Admin Tab Fields**

<b>User Name</b>	<p>Enter new user name or modify the existing user name.</p> <p><b>NOTE:</b> You cannot change a new user name to one that is already being used. Doing so will cause the following dialog box to appear:</p> 
<b>New Password</b>	Enter new password or modify the existing password.
<b>Verify Password</b>	Re-enter password to verify.
<b>OK</b>	Click to save the changes made to the tab and exit the Switch Administrative view.
<b>Apply</b>	Click to save the changes made to this tab. Additional changes can be made and the Apply button clicked when making changes incrementally.
<b>Close</b>	Click to exit the Switch Administration view. If changes have been made but not committed by clicking the Apply button, a dialog box displays to ask the user if they want to save the changes before exiting the view.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

**NOTE:** A user can *only* log into the User Admin tab if they have admin privileges. A user does not gain access to the User Interface with the User ID and Password created in this tab.

## Firmware/Configuration File Administration Tab

Use the Firmware/Configuration File Administration tab to complete tasks such as:

- Download firmware
- Boot the switch
- Upload a configuration file to the host
- Download the configuration from a file to the switch
- Reset the configuration to the default value
- Select the protocol of downloading (FTP or RSH).
- Select the location and authorization information and switch reboot directions.

You must provide host information for all the tasks listed above, except booting the switch.

The Firmware/Configuration File Administration tab is shown in Figure 4–52.

Switch Admin for web66 - Microsoft Internet Explorer

SwitchName: web66    DomainId: 1    WWN: 10:00:00:60:69:04:23:03    Sun Jul 22 2001, 12:09 PM

Configure | Routing | Trunk Information | QuickLoop | Remote Switch | Extended Fabric  
 Switch Settings | Network Config | Firm Upgd | SNMP | Lic Admin | Report | Port Setting | User Admin

Function

Firmware Download     Boot Switch

Config Upload     Config Download     Config Default

Host Details

Protocol:     User Name:     Host IP:   
 Filename:

Boot Options

FastBoot     ReBoot     Power On Self Test     Reboot After Download

OK    Apply    Close    Reset

Switch Commit Messages

**Figure 4–52: Firmware/Configuration File Administration tab**

Table 4–18 contains a description of the fields on the Firmware/Configuration File Administration tab.

**Table 4–18: Firmware/Configuration File Administration Tab Fields**

Available in the Function section:	
<b>Firmware Download</b>	Select the radio button to download firmware.

**Table 4–18: Firmware/Configuration File Administration Tab Fields (Continued)**

<b>Bootswitch</b>	Select the radio button to boot the switch.
<b>Config Upload</b>	Select the radio button to upload the configuration file to the specified host. This allows for saving of the configuration file to the switch using the specified filename (full path). The User and Password must be valid for the specified host, and the file path must be read-write capable by the user.
<b>Config Download</b>	Select the radio button to download the firmware.
<b>Config Default</b>	Select the radio button to reset the configuration to the default value.
<b>Available in the Host Details section:</b>	
<b>Protocol</b>	Select the pull-down menu to chose the downloading protocol.
<b>User name</b>	Enter the User Name.
<b>Host IP</b>	Enter the IP address of the host.
<b>Filename</b>	Enter the filename to be downloaded.
<b>Available in the Boot Options section:</b>	
<b>FastBoot</b>	Select the radio button to do a Fastboot on the switch. This will allow the switch to skip over the POST test.
<b>Reboot</b>	Select the radio button to reboot the switch.
<b>Power on Self-Test</b>	Check the box to have the switch do a POST test when it reboots or uncheck the box to skip POST test for next reboot.
<b>Reboot After Download</b>	Check the box to have the switch reboot automatically after the firmware download.
<b>OK</b>	Select and exit the tab to save any changes made.
<b>Apply</b>	Select to save any changes made to this tab and remain in the tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Select to exit the Firmware/Configuration file tab. If changes have been made and not committed, a dialog box will display asking if you want to save the changes.
<b>Reset</b>	Select to reset the tab to the last set of saved changes.

## SNMP Tab

Use the SNMP tab for administration of the SNMP subsystem. From the SNMP tab you can specify the switch community string, location, trap level and trap recipients. The SNMP tab is shown in Figure 4–53.

**NOTE:** In order for the switches to send SNMP traps, you must first enter the Telnet command `snmpMibCapSet`. This enables the MIBs on all switches to be monitored.

Switch Admin for web66 - Microsoft Internet Explorer

SwitchName: web66    DomainId: 1    WWN: 10:00:00:60:69:04:23:03    Sun Jul 22 2001, 12:13 PM

Configure | Routing | Trunk Information | QuickLoop | Remote Switch | Extended Fabric  
 Switch Settings | Network Config | Firm Upgd | **SNMP** | Lic Admin | Report | Port Setting | User Admin

SNMP Information

Name:     Description:   
 Location:     Trap Level:

Enable Authentication Trap

Community And Trap Recipient Configuration

Community String	Recipient	Access Control List
public	0.0.0.0	READ ONLY
common	0.0.0.0	READ ONLY
FibreChannel	0.0.0.0	READ ONLY
Secret C0de	0.0.0.0	READ WRITE

Access Control List Configuration

Access Host	Access Control List
0.0.0.0	1 - READWRITE

OK    Apply    Close    Reset

**Figure 4–53: SNMP tab**

Table 4–19 contains a description of the fields on the SNMP tab.

**Table 4–19: SNMP Tab Fields**

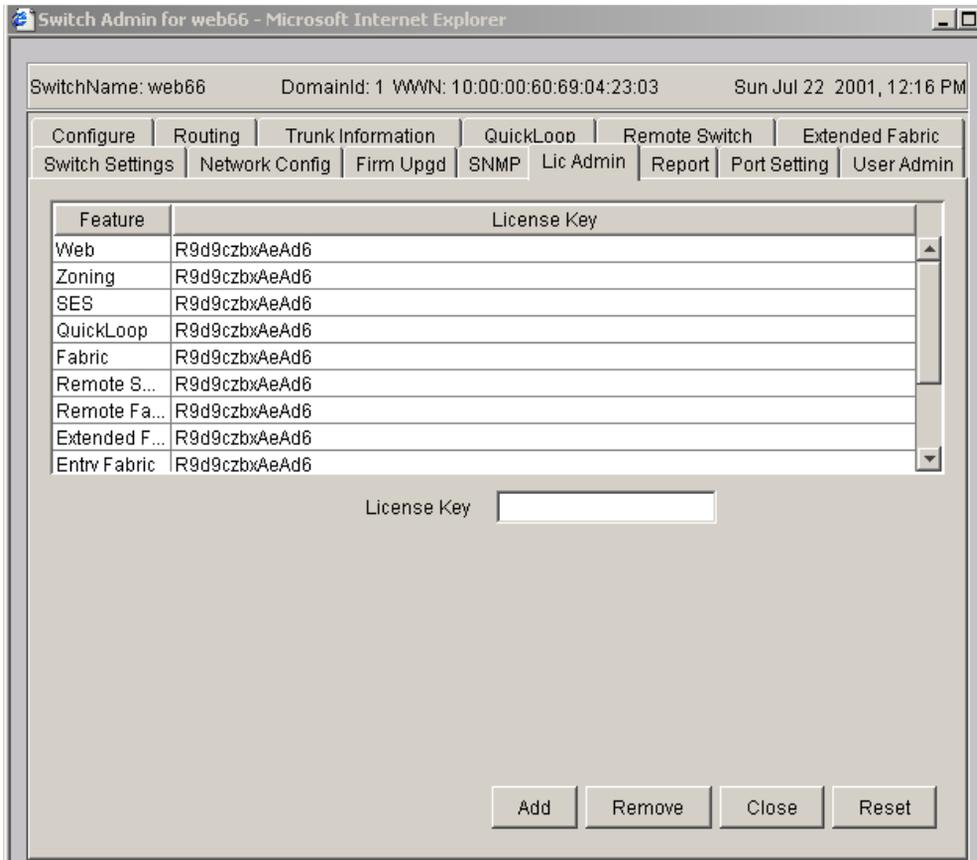
<b>Name</b>	Displays or sets contact information for switch. Default is Field Support.
<b>Location</b>	Displays or sets the location of switch. Default is End User Premise.
<b>Description</b>	Displays or sets system description. Default is Fibre Channel Switch.
<b>Trap Level</b>	Sets severity level of switch events that prompt SNMP traps. Default is 0.
<b>Enable Authentication Trap</b>	Check to enable authentication traps; uncheck to disable (recommended).
<b>Community And Trap Recipient Configuration</b>	
<b>Community String</b>	Displays the community strings that are available to use. A community refers to a relationship between a group of SNMP managers and an SNMP agent, in which authentication, access control, and proxy characteristics are defined. A maximum of six community strings can be saved to the switch.
<b>Recipient</b>	Displays the IP address of the Trap Recipient. A trap recipient receives the message sent by an SNMP agent to inform the SNMP management station of a critical error.
<b>Access Control List</b>	Displays the Read/Write access of a particular community string. Read only access means that a member of a community string has the right to view, but cannot make changes. Read/Write access means that a member of a community string can both view and make changes.
<b>Access Control List Configuration</b>	
<b>Access Host</b>	Displays the IP address of the host of the access list.
<b>Access Control List</b>	Displays the Read/Write access of a particular access list. Read only access means that a member of an access list has the right to view, but cannot make changes. Read/Write access means that a member of an access list can both view and make changes.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.

**Table 4–19: SNMP Tab Fields (Continued)**

<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## License Administration Tab

You can use the License Administration tab to install license keys that are provided. You can use the table within the License Administration tab to remove a listed license from the switch. The License Administration tab is shown in Figure 4–54.



**Figure 4–54: License Administration tab**

Table 4–20 contains a description of the fields on the License Administration tab.

**Table 4–20: License Administration Tab Fields**

<b>Feature</b>	A list of the licenses installed on the switch.
<b>License Key</b>	Enter license key to be added or removed.
<b>Add</b>	Check to add the specified license.

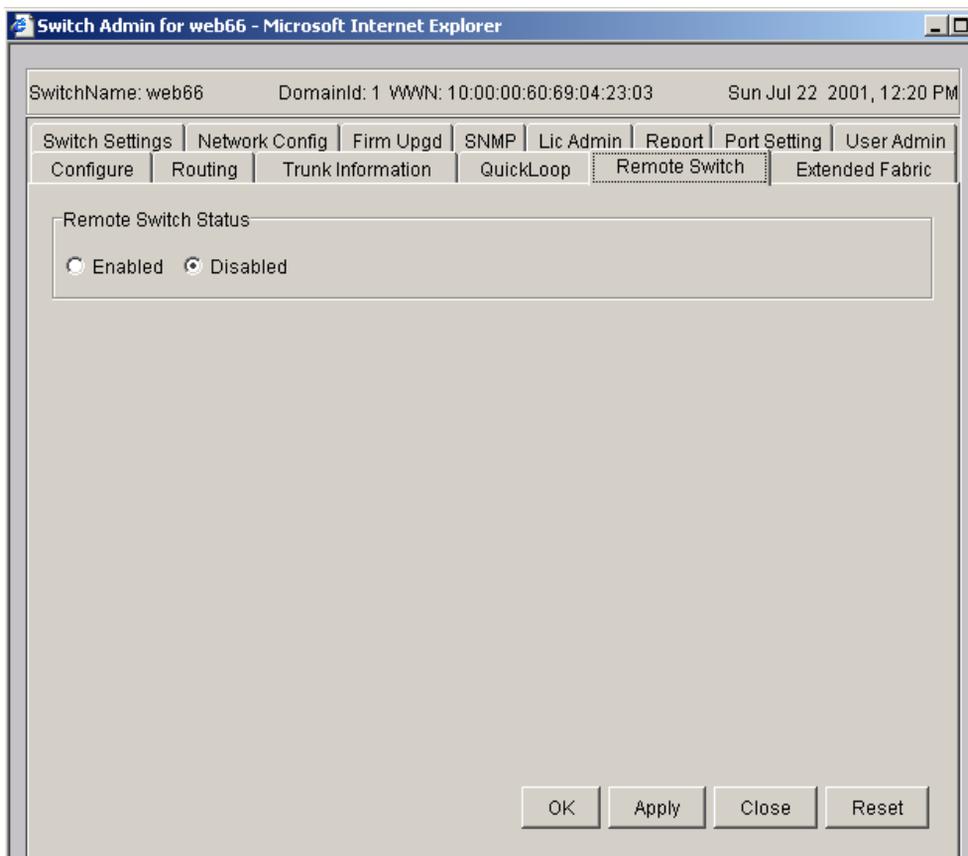
**Table 4–20: License Administration Tab Fields (Continued)**

<b>Remove</b>	Check to remove the specified license.
<b>Close</b>	Check to exit the current tab. Any license key data that has been entered but not saved by clicking either the Add or Remove button will be lost.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## Remote Switch Tab (Optional Software)

Use the Remote Switch feature to configure a pair of switches to operate over an extended WAN interface so that they can communicate across an ATM network by using a compatible Fibre Channel-to-ATM gateway. This feature requires an active Remote Switch license in both switches. For detailed information on the Remote Switch feature, refer to the *HP StorageWorks Extended Fabric Version 3.0.x/4.0.x User Guide*.

Use the Remote Switch tab to manage the Remote Switch option. This tab displays only when the Remote Switch is installed. The Remote Switch tab is shown in Figure 4–55.



**Figure 4–55: Remote Switch tab**

Table 4–21 contains a description of the fields on the Remote Switch tab.

**Table 4–21: Remote Switch Tab Fields**

Remote Switch Status Section	
<b>Enabled</b>	Click on radio button to enable the Remote Switch feature, or uncheck to disable it.
<b>Disabled</b>	Click on radio button to disable the Remote Switch feature, or uncheck to disable it.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.

**Table 4–21: Remote Switch Tab Fields (Continued)**

<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the APPLY button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the APPLY button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the APPLY button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## QuickLoop Tab (Optional Software)

Use the QuickLoop tab to manage QuickLoop configurations. For information about managing the features available when QuickLoop and Zoning are used together, see “Zone Administration View V3.0.x (Optional Software)” on page 3–13. For detailed information about the QuickLoop feature, refer to the *HP StorageWorks QuickLoop Fabric Assist Version 3.0.x/4.0.x User Guide*.

The QuickLoop tab is displayed only when the QuickLoop license is installed.

**NOTE:** The QuickLoop feature is not supported by Fabric OS V4.0.x.

The QuickLoop tab is shown in Figure 4–56.

SwitchName: web66      DomainId: 1 WWN: 10:00:00:60:69:04:23:03      Sun Jul 22 2001, 12:24 PM

Switch Settings | Network Config | Firm Upgd | SNMP | Lic Admin | Report | Port Setting | User Admin  
 Configure | Routing | Trunk Information | **QuickLoop** | Remote Switch | Extended Fabric

Quick Loop Partner

Current Name:       New Partner:

World Wide Name:

Quick Loop Status

Enable     Disable

Port	Enabled
0	<input checked="" type="checkbox"/>
1	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>

Local Switch

Port	AL_PAS
0	0
1	0
2	0

Partner Switch

Port	AL_PAS
0	0
1	0
2	0

OK    Apply    Close    Reset

**Figure 4–56: QuickLoop tab**

Table 4–22 provides a description of the fields on the QuickLoop tab.

**Table 4–22: QuickLoop Tab Fields**

QuickLoop Partner section:	
<b>Current Name</b>	Displays the current name of the remote switch.
<b>World Wide Name</b>	Displays the World Wide Name of the remote switch.
<b>New Partner</b>	Displays the current partner switch name of a dual-switch QuickLoop.

Table 4–22: QuickLoop Tab Fields (Continued)

QuickLoop Status section:	
<b>Enable</b>	Click the radio button to enable the switch for QuickLoop.
<b>Disable</b>	Click the radio button to disable the switch for QuickLoop.
<b>Port</b>	Displays the port numbers.
<b>Enabled</b>	Check box to enable a port for QuickLoop, or uncheck to disable the port for QuickLoop.
<b>Local Switch Port</b>	Lists the ports connected to the local switch.
<b>Local Switch AL_PAs</b>	Lists the AL_PAs of devices connected to the local switch.
<b>Partner Switch Port</b>	Lists the ports connected to a remote switch.
<b>Partner Switch AL_PAs</b>	Lists the AL_PAs of devices connected to a remote switch. This information displays if a partner is configured.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## Configure Tab

The Configure tab provides the same functionality as the command-line command `configure`. The following actions are controllable from the Configure tab: Fabric Parameters, Virtual Channel Parameters, Arbitrated Loop Parameters and Systems Services. The valid values for each editable field are provided in the *HP StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide* description of the `configure` command. The Configure tab is shown in Figure 4–57.

Switch Admin for web66 - Microsoft Internet Explorer

SwitchName: web66      DomainId: 1      WWN: 10:00:00:60:69:04:23:03      Sun Jul 22 2001, 12:27 PM

Switch Settings | Network Config | Firm Upgd | SNMP | Lic Admin | Report | Port Setting | User Admin  
 Configure | Routing | Trunk Information | QuickLoop | Remote Switch | Extended Fabric

Fabric Parameters

BB Credit     R\_A\_TOV     E\_D\_TOV     Data Size

Sequence Switching     Disable Device Probing     Per-Frame Routing Priority

VC Encoded Address Mode     Suppress Class F Traffic

Virtual Channel Parameters

VC Priority 2     VC Priority 3     VC Priority 4   
 VC Priority 5     VC Priority 6     VC Priority 7

Arbitrated Loop Parameters

Send Fan Frames  
 Always Send RSCN  
 Do Not Allow AL\_PA 0x00

System Services

rstatd     rapid  
 rusersd     RLS Probing

OK    Apply    Close    Reset

**Figure 4–57: Configure tab**

Table 4–23 provides a description of the fields on the Configure tab.

**Table 4–23: Configure Tab Fields**

<b>BB Credit</b>	Displays the number of buffers that are available to attached devices for frame receipt.
<b>R_A_TOV</b>	Displays the Resource Allocation Time Out Value in milliseconds. This variable works with the E_D_TOV to determine switch actions when presented with an error condition.

Table 4–23: Configure Tab Fields (Continued)

<b>E_D_TOV</b>	Displays the Error Detect Time Out Value in milliseconds. This timer is used to flag a potential error condition when an expected response is not received within the set time.
<b>Data Size</b>	Specifies in bytes, the largest possible data field size.
<b>Sequence Level Switching</b>	Select check box to enable frames of the same sequence from a particular group to be transmitted together. When this option is not selected, frames are transmitted interleaved among multiple sequences. Under normal circumstances, sequence level switching should be disabled for better performance. However, some host adapters have issues when receiving interleaved frames among multiple sequences.
<b>Disable Device Probing</b>	When set, devices that do not register with the Name Server are not present in the Name Server database. Set this mode only if the switch N_Port discovery process (PLOGI, PRLI, INQUIRY) causes an attached device to fail.
<b>Per-Frame Routing Priority</b>	When set, the virtual channel ID is used in conjunction with a frame header to form the final virtual channel ID.
<b>VC Encoded Address Mode</b>	When checked, the frame source and destination address use an address format that is compatible with StorageWorks Fibre Channel 8 or 16 switches. Enable this mode only if the fabric includes this type of switch.
<b>Suppress Class F Traffic</b>	Only applies if VC Encoded Address Mode is also set. When set, translative addressing is disabled.
<b>Virtual Channel Parameters</b>	Enables fine tuning for a specific application by configuring the parameters for eight virtual channels.
<b>Send Fan Frames</b>	Specifies that Fabric Access Notification frames be sent to public loop devices to notify them of their node ID and address.
<b>Always Send RSCH</b>	Issues a Remote State Change notification, following the completion of loop initialization, when FL_Ports detect the presence of new devices or the absence of preexisting devices.
<b>Do Not Allow AL_PA 0x00</b>	Check box to specify that AL_PA is not allowed.

**Table 4–23: Configure Tab Fields (Continued)**

<b>rstatd</b>	Check box to dynamically enable a server that returns information about system operation information through remote procedure calls (RPC). Uncheck box to disable <b>rstatd</b> .
<b>rapid</b>	Check box to enable rapid system service.
<b>rusersd</b>	Dynamically enables or disables a server that returns information about the user who is logged into the system through remote procedure calls.
<b>RLS Probing</b>	Check to enable RLS Probing services of AL_PAs.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## Extended Fabric Tab (Optional Software)

Use the Extended Fabric tab to manage the Extended Fabric feature. From the Extended Fabric tab you can specify which ports are to be configured for distance and at what level. The Extended Fabric tab appears only when the Extended License is installed on the switch. For ports that are disabled, the rows appear grayed-out in the table within the Extended Fabric tab. The Extended Fabric tab is shown in Figure 4–58.

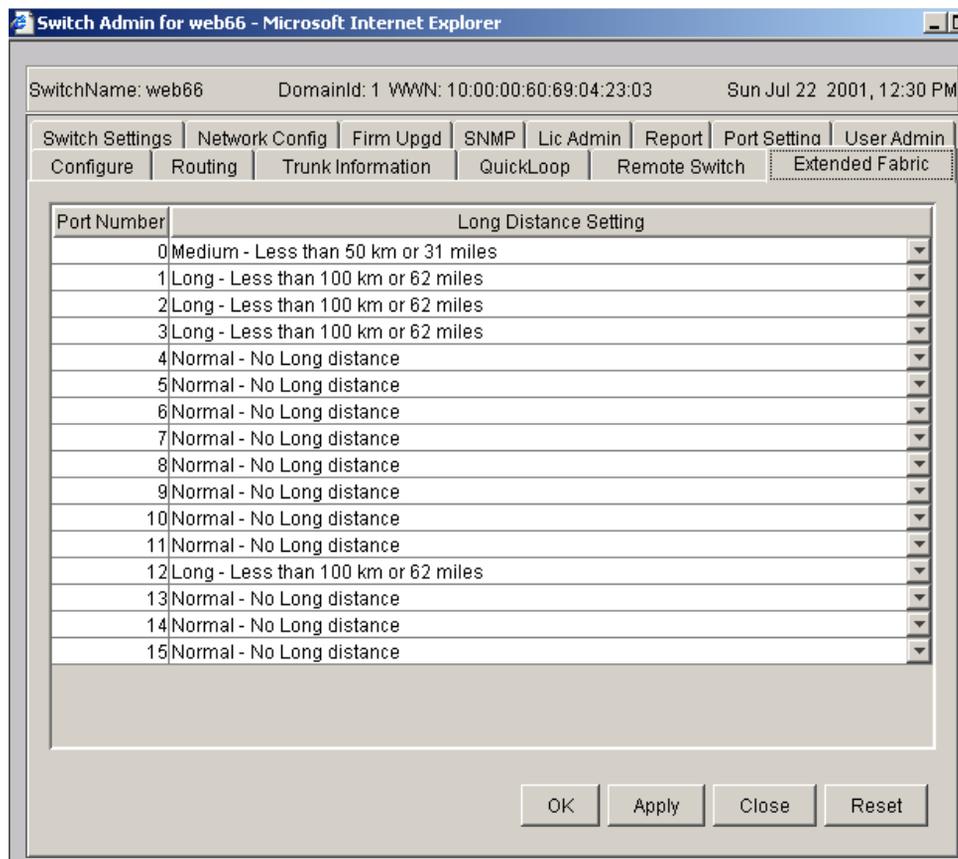


Figure 4–58: Extended Fabric tab

Table 4–24 provides a description of the fields on the Extended Fabric tab.

**Table 4–24: Extended Fabric Tab Fields**

<b>Port Number</b>	Port Number being used for the Extended Fabric.
<b>Long Distance Setting</b>	Click to view Long Distance settings.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## Network Configuration Tab

Use the Network Configuration tab to manage the IP networking functionality of the switch. Both Ethernet and FC IP networking are configured and the SYSLOG daemon message recipients are specified. The Network Configuration tab is shown in Figure 4–59.

The screenshot shows a web browser window titled "Switch Admin for web66 - Microsoft Internet Explorer". The main content area displays the "Network Config" tab, which is part of a larger configuration interface. At the top, it shows "SwitchName: web66", "DomainId: 1", "WWN: 10:00:00:60:69:04:23:03", and the date/time "Sun Jul 22 2001, 12:34 PM". Below this is a navigation menu with tabs: "Configure", "Routing", "Trunk Information", "QuickLoop", "Remote Switch", "Extended Fabric", "Switch Settings", "Network Config", "Firm Upgd", "SNMP", "Lic Admin", "Report", "Port Setting", and "User Admin". The "Network Config" tab is active, showing fields for "Ethernet IP" (192.168.168.66), "Ethernet SubnetMask" (255.255.255.0), and "Gateway IP" (192.168.168.1). To the right, there are fields for "Fibre Channel IP" (none) and "Fibre Channel Subnet..." (none). Below these are six "Syslog IP" fields, all currently empty. At the bottom right, there are four buttons: "OK", "Apply", "Close", and "Reset".

Figure 4–59: Network Configuration tab

Table 4–25 provides a description of the fields on the Network Configuration tab.

**Table 4–25: Network Configuration Tab Fields**

<b>Ethernet IP</b>	Displays the Ethernet IP address.
<b>Ethernet SubnetMask</b>	Displays the Ethernet SubnetMask address.
<b>Gateway IP</b>	Displays the Gateway IP address.
<b>Fibre Channel IP</b>	Displays the Fiber Channel IP address.
<b>Fibre Channel SubnetMask</b>	Displays the Fiber Channel SubnetMask address.
<b>Syslog IP/~6</b>	Displays six Syslog IP addresses for a user to configure.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## Port Settings Tab

Use the Port Settings tab to disable/enable ports on the switch. This tab is also used to set port speed to 1GB/2GB Autosense as well as enable/disable Trunking. The Port Settings tab is shown in Figure 4–60.

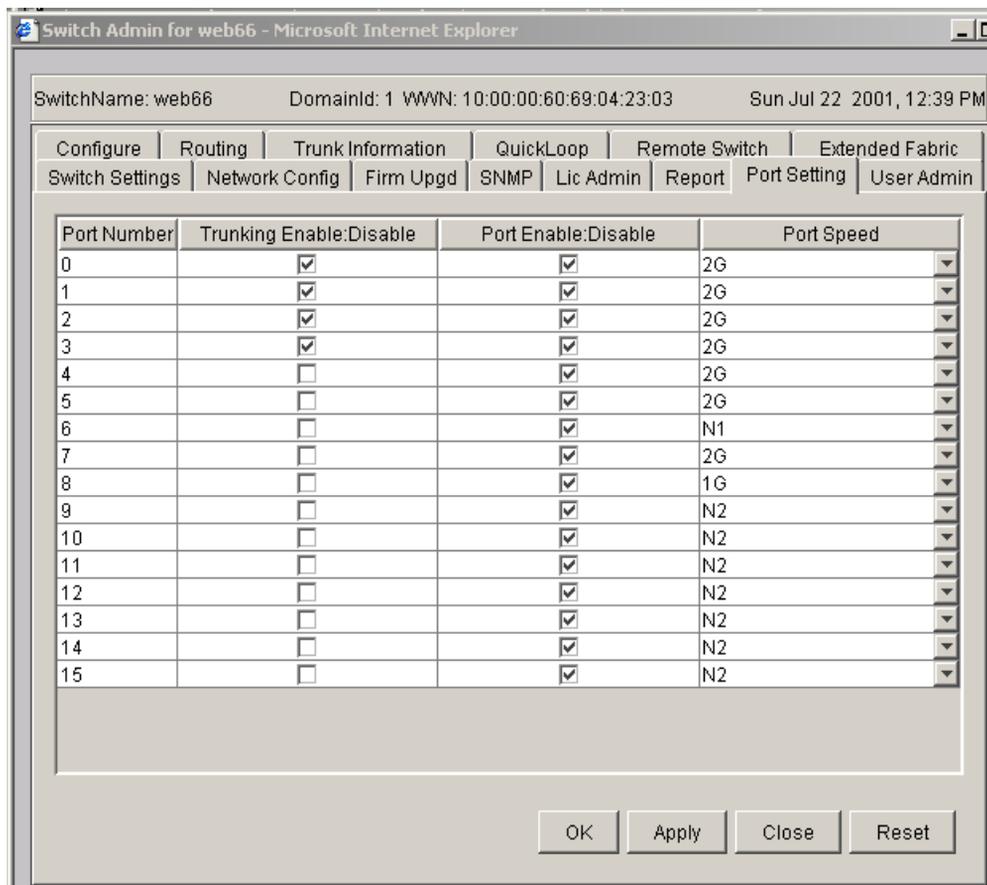


Figure 4–60: Port Settings tab

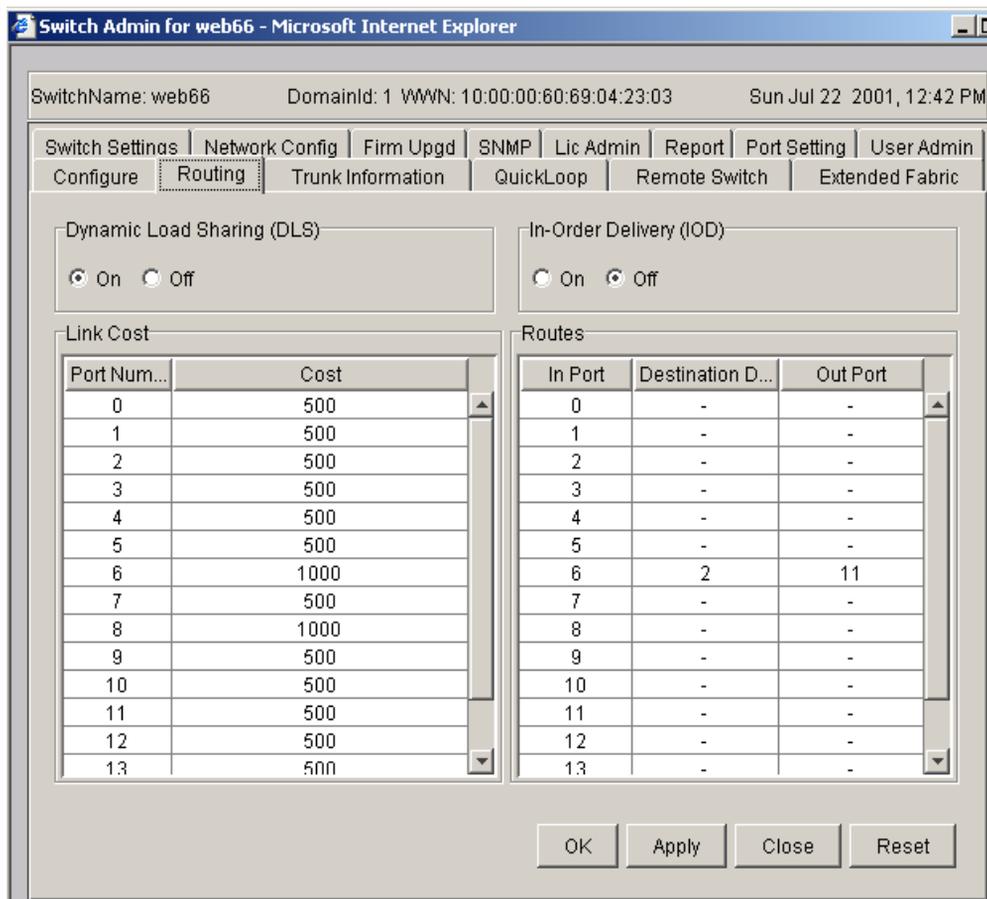
Table 4–26 provides a description of the fields on the Port Settings tab.

**Table 4–26: Port Settings Tab Fields**

<b>Port Number</b>	Port Number.
<b>Trunking Enabled</b>	Check to enable or uncheck to disable trunking. Four trunk ports form a group, with one of them in the role of master port, and the group can have member ports.
<b>Port Enabled</b>	Check to enable or uncheck to disable ports on the switch.
<b>Current Port Speed</b>	Click to display the current port speed. Port speed can be fixed to 1Gbps, 2Gbps, or negotiate 1Gbps (N1G) or negotiate 2Gbps (N2G). If the speed is set to negotiate, the speed will depend on the negotiated result.
<b>Change Port Speed</b>	Click the drop-down menu to change the port speed. Port speed can be changed to 1Gbps, 2Gbps, or negotiate. If the speed is set to negotiate, the speed will depend on the negotiated result.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## Routing Tab

The Routing tab is used to set the link cost for the selected ports and static route. The Routing tab is shown in Figure 4–61.



**Figure 4–61: Routing tab**

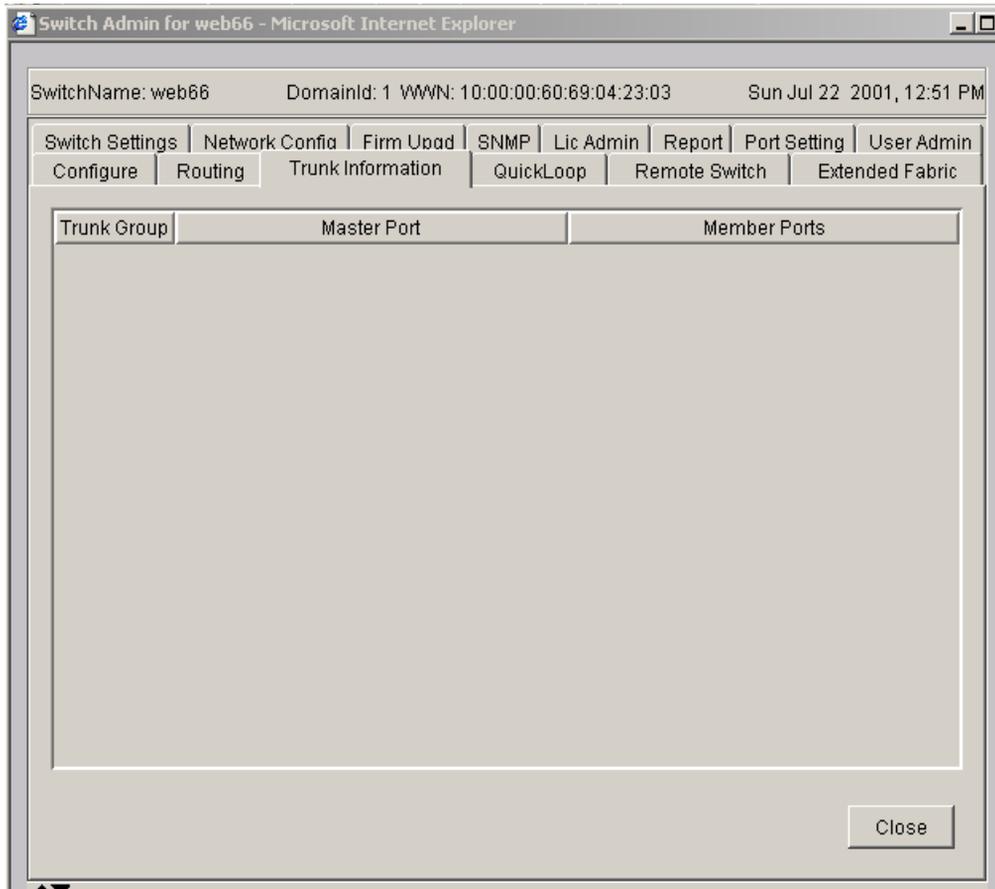
Table 4–27 provides a description of the fields on the Routing tab.

**Table 4–27: Routing Tab Fields**

<b>Dynamic Load Sharing (DLS)</b>	Click the radio button to turn Dynamic Load Sharing on or off.
<b>In-Order Delivery (IOD)</b>	Click the radio button to turn In-Order Delivery on or off.
<b>Port Number</b>	Displays Port Number.
<b>Cost</b>	Use the Cost field to change the link cost for a particular port.
<b>In Port</b>	Displays In Port number.
<b>Destination</b>	Displays the destination domain ID for the “comma-separated” participating static routes for a particular inport. The destination domain IDs match the outports in the cell.
<b>Out Port</b>	Enter the out port. It should be within the range of ports that are available for static routes for the current domain. More than one out port can be used for any In port with a different domain ID. Each domain ID requires an out port.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

## Trunk Information Tab

The Trunk Information tab is a read-only tab and, has only the Close button function. The Trunk Information tab is shown in Figure 4–62.



**Figure 4–62: Trunking tab**

Following is a description of the field on the Trunk Information tab:

<b>Close</b>	Click to exit the current tab.
--------------	--------------------------------

## Report Tab

Use the Report tab to display the printed report from the switch configuration. The Switch Information Report can be generated by clicking on the corresponding link on the Configure tab in the Switch Administrative window. This report provides information about all the switches, interswitch links and ports in the Fabric. The Report tab is shown in Figure 4–63.

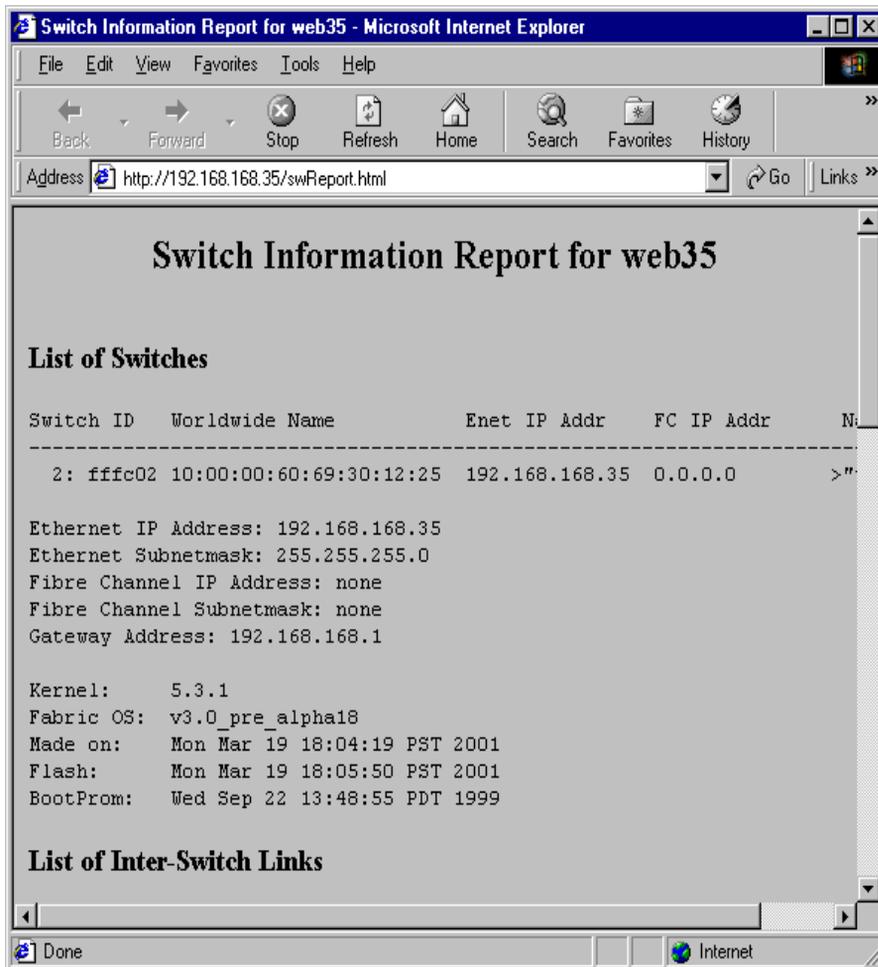


Figure 4–63: Report tab

## Administrative Interface 4.0.x

For information specific to Administrative Interfaces V3.0.x, see “Administrative Interface V3.0.x” on page 4–61.

The 4.0.x Administrative Interface provides access to the administrative functions through the following tabs:

- Switch Settings tab
- Network Config tab
- Upload/Download
- SNMP Admin tab
- License Admin tab
- Report tab
- Port Settings tab
- Configure tab
- Routing tab
- Remote Switch tab (Optional Software)
- Extended Fabric tab
- Trunk Information tab (Optional Software)

**NOTE:** The Administrative Interface requires administrative privileges. Once an administrative login is entered, administrative privileges remain available until the web browser is closed.

## Accessing the Administrative Interface

To access the administrative interface, perform the following steps:

1. Launch Web Tools, displaying Fabric View.
2. Select a Switch icon from the switch panel of the Fabric View.

For more information, see “Buttons and Icons” on page 3–4.

3. Click the Admin icon on the switch panel.

For more information, see “Switch View” on page 4–1.

The Enter Network Password dialog displays.

4. Enter your user name and password. The logon account must have administrative privileges.
5. Click OK.

The Administrative Interface displays, with the Switch Settings tab selected by default, as shown in Figure 4–64.

For each tab at the top of the Administrative Interface, a message area at the bottom of the Administrative Interface reveals the status of the changes applied to the switch. (Expand/Contract the message area by clicking on the up/down arrows in the upper-left corner of the message area).

## Switch Settings Tab

Use the Switch Settings tab to manage basic switch setup for items such as switch name, switch domain ID, and enabling and disabling the switch and Extended Fabric Mode. The Switch Settings tab is shown in Figure 4–64.

SwitchName: sw1    DomainId: 4    WWN: 10:00:00:60:69:80:04:15    Thu Jan 31 2002, 11:41 AM

Port Setting	Configure	Routing	Extended Fabric	Trunk Information	Remote Switch
Switch Settings	Network Config	Upload/Download	SNMP	License Admin	Report

Name and Id

Name     Serial Number

Domain Id

Status

Enable    Disable

Extended Fabric Mode

OK   Apply   Close   Reset   Refresh

[ SwitchAdmin started: Thu Jan 31 2002, 10:36 AM ]

done

**Figure 4–64: Switch Settings tab**

Table 4–28 provides a description of the fields on the Switch Settings tab.

**Table 4–28: Switch Settings Tab Fields**

<b>Name</b>	Enter data for the switch name or make a change to the existing name.
<b>Domain ID</b>	Displays or sets switch domain ID. Domain IDs must be unique within a fabric. The switch must be disabled to change domain ID. To change domain ID, enter new domain ID in this field. Use a number from 1 to 239 for normal operating mode (FCSW compatible) Use a number from 0 to 31 for VC encoded address format mode (backward compatible to StorageWorks Fibre Channel 8 or 16 series switches). Use a number from 97 - 127 for Interop mode.
<b>Serial Number</b>	Displays the serial number of the switch. (Read only)
<b>(Status) Enabled</b>	Select the radio button to enable the switch.
<b>(Status) Disabled</b>	Select the radio button to disable the switch.
<b>Extended Fabric Mode</b>	Check the box to allow ports to be configured for long distance, or uncheck to turn the option off.
<b>OK</b>	Select to exit Administrative View after any changes have been saved.
<b>Apply</b>	Select to save any changes made to this tab and remain in the current tab. Additional changes can be made and the Apply button clicked when making changes incrementally.
<b>Close</b>	Select to exit the Switch Admin view. If changes have been made and not committed by clicking the Apply button, a dialog box is presented. It allows the changes to be committed or deleted.
<b>Reset</b>	Select to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Select to receive the latest switch setting information.

**Table 4–28: Switch Settings Tab Fields (Continued)**

<b>Log Area</b>	Displays coded messages: Successful changes to settings are logged in italics. Error messages are indicated in red. Warning messages are indicated in orange. Additional information is indicated in magenta.
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch is enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Network Config Tab

Use the Network Config tab to manage the IP networking functionality of the switch. Both Ethernet and FC IP networking are configured and the SYSLOG daemon message recipients are specified. The Network Configuration tab is shown in Figure 4–65.

SwitchName: sw1    DomainId: 4    WWN: 10:00:00:60:69:80:04:15    Thu Jan 31 2002, 11:43 AM

Port Setting | Configure | Routing | Extended Fabric | Trunk Information | Remote Switch  
Switch Settings | **Network Config** | Upload/Download | SNMP | License Admin | Report

Ethernet IP:     Fibre Channel IP:

Ethernet SubnetMask:     Fibre Channel Subnet...:

Gateway IP:    

Syslog IP's

Syslog IP	Current Value
1	10.10.10.1
2	10.10.10.2
3	10.10.10.3

Syslog IP:

```
[ SwitchAdmin started: Thu Jan 31 2002, 10:36 AM ]
```

done ■

**Figure 4–65: Network Configuration tab**

Table 4–29 provides a description of the fields on the Network Configuration tab.

**Table 4–29: Network Configuration Tab Fields**

<b>Ethernet IP</b>	Displays the Ethernet IP address.
<b>Ethernet SubnetMask</b>	Displays the Ethernet SubnetMask address.
<b>Gateway IP</b>	Displays the Gateway IP address.
<b>Fibre Channel IP</b>	Displays the Fibre Channel IP address.
<b>Advanced</b>	Click to view pop-up window. Displays Network Element (CP) and associated IP address. Allows for configuration of chassis IP address and subnet masks (for both CP0 and CP1).
<b>Syslog IPs</b>	Displays the Syslog IP address for a user to configure.
<b>Current Value</b>	Displays the current value of the Syslog IP.
<b>Syslog IP field</b>	Enter a Syslog IP address to be added, removed, or cleared from the display. The Syslog IP represents the IP address of the server that is running the syslogd process. Syslog daemon reads and forwards system messages to the appropriate log files and/or users, depending on the system configuration. When one or more IP addresses are configured, the switch forwards all error log entries to the syslogd on the specified server(s). Up to six servers are supported.
<b>Add</b>	Select to add a Syslog IP address.
<b>Remove</b>	Select to remove a Syslog IP address.
<b>Clear All</b>	Select to remove Syslog IPs from the display list.
<b>Ok</b>	Select to save the changes made to the tab and to exit the view.
<b>Apply</b>	Select to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Select to exit the current view.
<b>Reset</b>	Select to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

**Table 4–29: Network Configuration Tab Fields (Continued)**

<b>Refresh</b>	Select to view the most current information available from the switch.
<b>Log Area</b>	Displays coded messages: Successful changes to settings are logged in italics. Error messages are indicated in red. Warning messages are indicated in orange. Additional information is indicated in magenta.
<b>QuickHelp Status bar</b>	Displays a one-line description about entry fields or a tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Upload/Download Tab

Use the Upload/Download tab to complete tasks such as

- Download firmware
- Upload a configuration file to the host
- Download the configuration from a file to the switch
- Select the protocol of downloading (FTP).
- Select the location and authorization information.

You must provide host information for all the tasks listed above.

The Upload/Download tab is shown in Figure 4–66.

SwitchName: sw0      DomainId: 1      WWN: 10:00:00:60:69:80:04:14      Fri Feb 1 2002, 11:36 AM

Port Setting    Configure    Routing    Extended Fabric    Trunk Information    Remote Switch  
Switch Settings    Network Config    Upload/Download    SNMP    License Admin    Report

Function  
 Firmware Download       Config Upload to Host       Config Download to Switch

Host Details  
Protocol **ftp**    Force Installation     Reboot after download     AutoCommit

User Name       Host IP   
Password       Filename

Download/Upload Status:

OK    Apply    Close    Reset

[ SwitchAdmin started: Fri Feb 1 2002, 11:25 AM ]

done

**Figure 4–66: Upload/Download tab of the Administration view**

Table 4–30 provides a description of the fields on the Upload/Download tab.

**Table 4–30: Upload/Download Tab Fields**

<b>Available in the Function section:</b>	
<b>Firmware Download</b>	Select the radio button to download firmware. When the Firmware Download option is chosen on a switch with dual CPs and HA enabled, all options (force install, reboot, autocommit) will be greyed out and internally forced to true.
<b>Config Upload to Host</b>	Select the radio button to upload the configuration file to the specified host. This allows for saving of the configuration file to the switch using the specified filename (full path). The Username and Password must be valid for the specified host, and the file path must be read-write capable by the user.
<b>Config Download to Switch</b>	Select the radio button to download the configuration file to the switch. The Config Download option requires that the switch first be disabled.
<b>Available in the Host Details section:</b>	
<b>Protocol</b>	Displays the supported downloading protocol: FTP.
<b>Force Installation</b>	Select to override firmware files during firmware download. Activated when Config Download option is selected; causes the switch to be disabled during config download, and enabled when it is completed.
<b>Reboot After Download</b>	Select to automatically boot the switch after the firmware download is complete.
<b>Auto Commit</b>	Select to automatically commit firmware to the secondary partition.
<b>User name</b>	Enter the User Name.
<b>Host IP</b>	Enter the IP address of the host.
<b>Password</b>	Enter the Administration Password.
<b>Filename</b>	Enter the filename to be downloaded.
<b>Download/Upload Status</b>	Displays the status of the current firmware upload or download. If any activity in the Config Download tab takes longer than the expected time, the progress bar is reset automatically. A warning message is printed in the log area that indicates transfer activity may still be in progress.

**Table 4–30: Upload/Download Tab Fields (Continued)**

<b>Ok</b>	Select to save the changes made to the tab and to exit the view.
<b>Apply</b>	Select to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Select to exit the current view.
<b>Reset</b>	Select to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Log Area</b>	Displays coded messages: <ul style="list-style-type: none"><li>• Successful changes to settings are logged in italics.</li><li>• Error messages are indicated in red.</li><li>• Warning messages are indicated in orange.</li><li>• Additional information is indicated in magenta.</li></ul>
<b>QuickHelp Status bar</b>	Displays a one-line description about entry fields or a tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## SNMP Tab

Use the SNMP tab for administration of the SNMP subsystem. From the SNMP tab you can specify the switch community string, location, trap level, and trap recipients. The SNMP tab is shown in Figure 4–67.

**NOTE:** In order for the switches to send SNMP traps, you must first enter the Telnet command `snmpMibCapSet`. This enables the MIBs on all switches to be monitored.

SwitchName: sw0      DomainId: 1      WWN: 10:00:00:60:69:80:04:14      Fri Feb 1 2002, 11:37 AM

Port Setting | Configure | Routing | Extended Fabric | Trunk Information | Remote Switch  
 Switch Settings | Network Config | Upload/Download | **SNMP** | License Admin | Report

SNMP Information

Name       Description   
 Location       Trap Level

Enable Authentication Trap

Community/Trap Recipient

Community St...	Recipient	Access Control
Secret C0de	0.0.0.0	Read Write
OrigEquipMfr	0.0.0.0	Read Write
private	0.0.0.0	Read Write
public	0.0.0.0	Read Only
common	0.0.0.0	Read Only
FibreChannel	0.0.0.0	Read Only

Access Control List

Access Host	Access Control List
10.10.10.1	Read Only
0.0.0.0	Read Write

OK    Apply    Close    Reset    Refresh

[ SwitchAdmin started: Fri Feb 1 2002, 11:25 AM ]

done

**Figure 4–67: SNMP tab**

Table 4–31 provides a description of the fields on the SNMP tab.

**Table 4–31: SNMP Tab Fields**

<b>SNMP Information:</b>	
<b>Name</b>	Displays or sets contact information for switch. Default is Field Support.
<b>Location</b>	Displays or sets the location of switch. Default is End User Premise.
<b>Description</b>	Displays or sets system description. Default is Fibre Channel Switch.
<b>Trap Level</b>	Sets severity level of switch events that prompt SNMP traps. Default is 0.
<b>Enable Authentication Trap</b>	Check box to enable authentication traps; uncheck box to disable (recommended).
<b>Community/Trap Recipient Configuration:</b>	
<b>Community String</b>	Displays the community strings that are available to use. A community refers to a relationship between a group of SNMP managers and an SNMP agent, in which authentication, access control, and proxy characteristics are defined. A maximum of six community strings can be saved to the switch.
<b>Recipient</b>	Displays the IP address of the Trap Recipient. A trap recipient receives the message sent by an SNMP agent to inform the SNMP management station of a critical error.
<b>Access Control List</b>	Displays the Read/Write access of a particular community string. Read only access means that a member of a community string has the right to view, but cannot make changes. Read/Write access means that a member of a community string can both view and make changes.
<b>Access Control List Configuration:</b>	
<b>Access Host</b>	Displays the IP address of the host of the access list.
<b>Access Control List</b>	Displays the Read/Write access of a particular access list. Read only access means that a member of an access list has the right to view, but cannot make changes. Read/Write access means that a member of an access list can both view and make changes.

**Table 4–31: SNMP Tab Fields (Continued)**

<b>Ok</b>	Select to save the changes made to the tab and to exit the view.
<b>Apply</b>	Select to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Select to exit the current view.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Click to view the most current SNMP information.
<b>Log Area</b>	Displays coded messages: <ul style="list-style-type: none"><li>• Successful changes to settings are logged in italics.</li><li>• Error messages are indicated in red.</li><li>• Warning messages are indicated in orange.</li><li>• Additional information is indicated in magenta.</li></ul>
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## License Administration Tab

You can use the License Administration tab to install license keys that are provided. You can use the table within the License Administration tab to remove a listed license from the switch. Double-click on any row to select the key. The License Administration tab is shown in Figure 4–68.

SwitchName: sw0      DomainId: 1      WWN: 10:00:00:60:69:80:04:14      Fri Feb 1 2002, 11:37 AM

Port Setting    Configure    Routing    Extended Fabric    Trunk Information    Remote Switch

Switch Settings    Network Config    Upload/Download    SNMP    License Admin    Report

LicenseKey	Feature(s)
R9yeyR9SQaAzfzz	Trunking
bSdeQRzRezcTefR3	Extended Fabric
Sdzyz9zQzeje0z0Y	SES,Fabric,Remote Switch,Remote Fabric,Exten...
R9yeyR9SQUAzfzt	Fabric Watch
bQQScddeBScRRtd2	QuickLoop
beQdRyQbcQcfReSY	Web
R9yeyR9SQWazfzy	Performance Monitor
cdRShrededeStc?	Zoning

License Key

Add    Remove    Close    Refresh

[ SwitchAdmin started: Fri Feb 1 2002, 11:25 AM ]

done

**Figure 4–68: License Administration tab**

Table 4–32 provides a description of the fields on the License Administration tab.

**Table 4–32: License Administration Tab Fields**

<b>LicenseKey</b>	Lists available licenses. Enter license key to be added or removed in the LicenseKey field.
<b>Feature(s)</b>	Displays a list of the feature names associated with the license keys installed on the switch.
<b>License Key field</b>	Enter license key to be added or removed.
<b>Add</b>	Click to add the specified license.
<b>Remove</b>	Click to remove the specified license.
<b>Close</b>	Click to exit the current view.
<b>Refresh</b>	Click to view the most current License Key information.
<b>Log Area</b>	Displays coded messages: Successful changes to settings are logged in italics. Error messages are indicated in red. Warning messages are indicated in orange. Additional information is indicated in magenta.
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Report Tab

Use the Report tab to display the printed report from the switch configuration. A Switch Information Report can be generated by clicking on the corresponding link on the Report tab in the Switch Administrative window. This report provides information about all the switches, interswitch links, and ports in the fabric. The Report tab is shown in Figure 4–69.

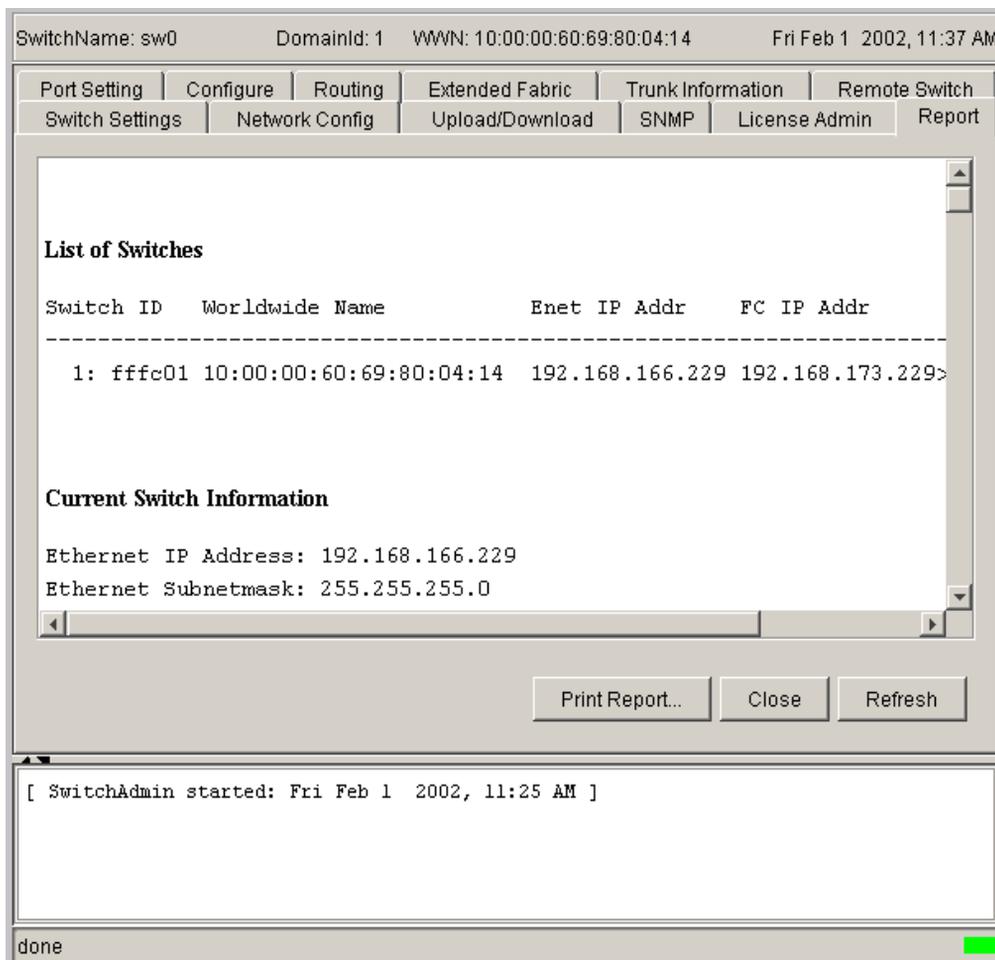


Figure 4–69: Report tab

Table 4–33 provides a description of the fields on the Report tab.

**Table 4–33: Report Tab Fields**

<b>List of Switches</b>	Displays a list of switches that form a fabric.
<b>Current Switch Information</b>	Displays information for the current switch, such as the IP address and the Ethernet Subnetmask.
<b>List of Inter-Switch Links</b>	Displays a list of direct physical links that are attached to the current switch.
<b>List of Blades and Ports</b>	Displays a list of blades and ports for the current switch.
<b>Name Server</b>	Displays the Name Server information that is available in the switch. For more information about the Name Server, see “Name Server Table View” on page 3–11.
<b>Zoning</b>	Displays a report of Zoning information for the switch. For more information regarding Zoning, see “Zone Administration View V3.0.x (Optional Software)” on page 3–13.
<b>SFP Serial ID Information</b>	Displays SFP information for each port on the switch. For more information, see “SFP Tab” on page 5–7.
<b>Print Report</b>	Select to print a switch report.
<b>Close</b>	Click to exit the current view.
<b>Refresh</b>	Click to view the most current Report information.
<b>Log Area</b>	Displays coded messages: Successful changes to settings are logged in italics. Error messages are indicated in red. Warning messages are indicated in orange. Additional information is indicated in magenta.
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Port Setting Tab

Use the Port Setting tab to disable/enable ports on the switch. This tab is also used to set port speed to 1GB/2GB/Negotiate as well as enable/disable Trunking. The Port Setting tab is shown in Figure 4–70.

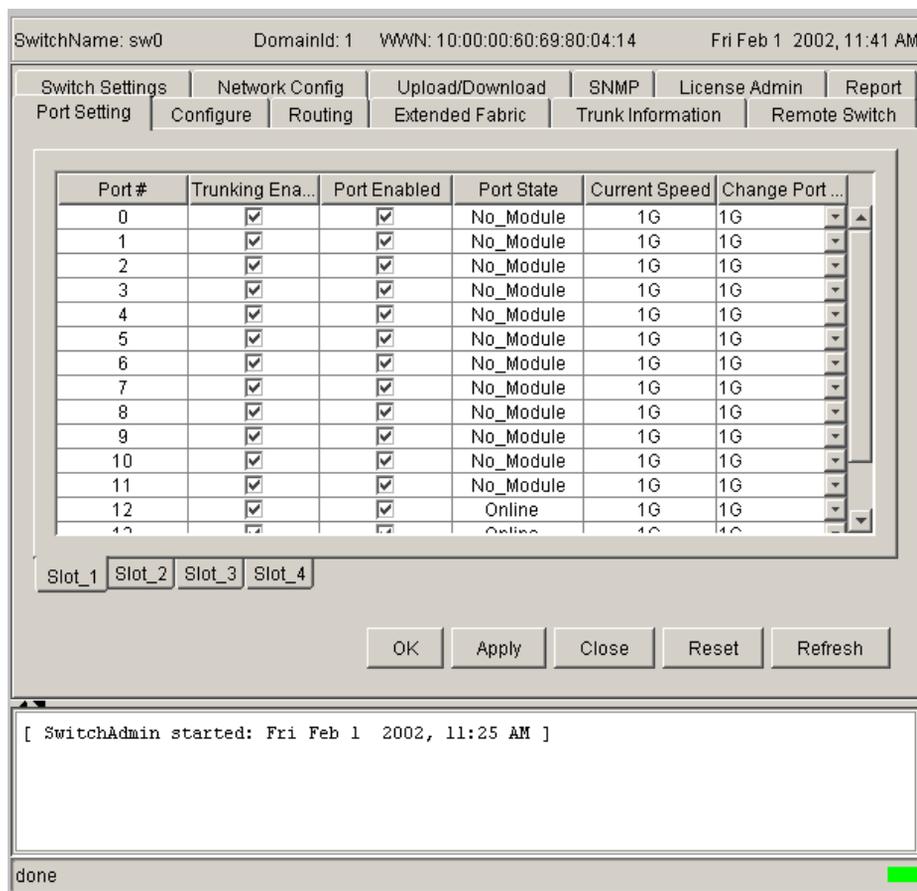


Figure 4–70: Port Setting tab

Table 4–34 provides a description of the fields on the Port Setting tab.

**Table 4–34: Port Setting Tab Fields**

<b>Port Number</b>	Displays the Port Number.
<b>Trunking Enable:Disable</b>	Check to enable or uncheck to disable trunking. A maximum of four trunk ports form a group, with one of them in the role of master port, and the rest are member ports. The Trunking column will only be displayed if the switch has a Trunking License.
<b>Port Enable:Disable</b>	Check to enable or uncheck to disable ports on the switch.
<b>Port State</b>	Displays the state of the port, such as Online, No Light or No Module.
<b>Current Speed</b>	Displays port speed. Port speed can be fixed to 1G, 2G, or negotiate. If the speed is set to negotiate, the speed will depend on the negotiated result.
<b>Change Port Speed</b>	Click the drop-down menu to change the port speed. Port speed can be changed to 1G, 2G, or negotiate. If the speed is set to negotiate, the speed will depend on the negotiated result.
<b>Slot Number tabs</b>	Click to view a specific slot. The slot tabs will only appear when viewing an StorageWorks Core switch series switch.
<b>OK</b>	Click to save the changes made to the tab and to exit the view.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current view.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Click to view the most current port settings information.

**Table 4–34: Port Setting Tab Fields (Continued)**

<b>Log Area</b>	Displays coded messages: <ul style="list-style-type: none"> <li>• Successful changes to settings are logged in italics.</li> <li>• Error messages are indicated in red.</li> <li>• Warning messages are indicated in orange.</li> <li>• Additional information is indicated in magenta.</li> </ul>
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Configure Tab

The Configure tab provides the same functionality as the command-line command `configure`. The following actions are controllable from the Configure tab:

- Fabric Parameters
- Virtual Channel Parameters
- Arbitrated Loop Parameters
- Systems Services

The valid values for each editable field are provided in the *HP StorageWorks Fabric OS Version 3.0.x/4.0.x Reference Guide* description of the `configure` command. The switch must be disabled to configure any parameters in this tab.



Table 4–35 to Table 4–38 provide descriptions of the fields on the Configure tab.

**Table 4–35: Configure Tab, Fabric Sub-tab Fields**

<b>Fabric Sub-tab</b>	
<b>BB Credit</b>	Displays the number of buffers that are available to attached devices for frame receipt.
<b>R_A_TOV</b>	Displays the Resource Allocation Time Out Value in milliseconds. This variable works with the E_D_TOV to determine switch actions when presented with an error condition.
<b>E_D_TOV</b>	Displays the Error Detect Time Out Value in milliseconds. This timer is used to flag a potential error condition when an expected response is not received within the set time.
<b>Datafield Size</b>	Specifies, in bytes, the largest possible data field size.
<b>Sequence Level Switching</b>	Click box to enable frames of the same sequence from a particular group to be transmitted together. When this option is not selected, frames are transmitted interleaved among multiple sequences. Under normal circumstances, sequence level switching should be disabled for better performance. However, some host adapters have issues when receiving interleaved frames among multiple sequences.
<b>Disable Device Probing</b>	Set this mode only if the switch N_Port discovery process (PLOGI, PRLI, INQUIRY) causes an attached device to fail. When set, devices that do not register with the Name Server are not present in the Name Server database. Set this mode only if the switch N_Port discovery process (PLOGI, PRLI, INQUIRY) causes an attached device to fail.
<b>Per-Frame Routing Priority</b>	Choose to select or deselect Per-Frame Routing Priority. When set, the virtual channel ID is used in conjunction with a frame header to form the final virtual channel ID.
<b>VC Encoded Address Mode</b>	Set this mode only if the fabric includes a StorageWorks Fibre Channel 8 or 16 switch. When set, the frame source and destination address use an address format that is compatible with StorageWorks Fibre Channel 8 or 16 switches. This option is greyed out if the switch is in Interop Mode.

**Table 4–35: Configure Tab, Fabric Sub-tab Fields (Continued)**

<b>Suppress Class F Traffic</b>	Apply only if VC Encoded Address Mode is also set. When set, translative addressing is disabled.
<b>OK</b>	Select to save the changes made to the tab and to exit the view.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current view.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Click to view the most current configuration information.
<b>Log Area</b>	The log area is coded. Successful changes to settings are logged in italics. Error messages are indicated in red. Warning messages are indicated in orange. Additional information is indicated in magenta.
<b>QuickHelp Status bar</b>	Displays a one-line description about entry fields or a tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

**Table 4–36: Configure Tab, Virtual Channel Sub-tab Fields**

<b>Virtual Channel Sub-tab</b>	
<b>VC Priority [number]</b>	Click to enable fine tuning for a specific application by configuring the parameters for eight virtual channels.
<b>OK</b>	Click to save the changes made to the tab and to exit the view.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current view.

**Table 4–36: Configure Tab, Virtual Channel Sub-tab Fields (Continued)**

<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Click to view the most current configuration information.
<b>Log Area</b>	Displays coded messages: Successful changes to settings are logged in italics. Error messages are indicated in red. Warning messages are indicated in orange. Additional information is indicated in magenta.
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

**Table 4–37: Configure Tab, Arbitrated Loop Sub-tab Fields**

<b>Arbitrated Loop Sub-tab</b>	
<b>Send Fan Frames</b>	Click that Fabric Access Notification frames be sent to public loop devices to notify them of their node ID and address.
<b>Always Send RSCN</b>	Click a Remote State Change notification, following the completion of loop initialization, when FL_Ports detect the presence of new devices or the absence of preexisting devices.
<b>Do Not Allow AL_PA 0x00</b>	Click box to specify that AL_PA value 0x00 is not allowed.
<b>OK</b>	Click to save the changes made to the tab and to exit the view.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current view.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.

**Table 4–37: Configure Tab, Arbitrated Loop Sub-tab Fields (Continued)**

<b>Refresh</b>	Click to view the most current configuration information.
<b>Log Area</b>	Displays coded messages: <ul style="list-style-type: none"> <li>• Successful changes to settings are logged in italics.</li> <li>• Error messages are indicated in red.</li> <li>• Warning messages are indicated in orange.</li> <li>• Additional information is indicated in magenta.</li> </ul>
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch is enabled; a red icon is displayed when the switch is disabled using the Admin tool.

**Table 4–38: Configure Tab, System Services Sub-tab Fields**

<b>System Services Sub-tab</b>	
<b>rstatd</b>	Select to dynamically enable or disable a server that returns information about system operation information through remote procedure calls.
<b>rapid</b>	Check box to enable rapid system service.
<b>rusersd</b>	Select to dynamically enable or disable a server that returns information about the user who is logged into the system through remote procedure calls.
<b>Disable RLS Probing</b>	Check box to disable Read Link Status probing of AL_PAs.
<b>OK</b>	Select to save the changes made to the tab and to exit the view.
<b>Apply</b>	Select to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Select to exit the current view.
<b>Reset</b>	Select to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Select to view the most current configuration information.

**Table 4–38: Configure Tab, System Services Sub-tab Fields (Continued)**

<b>Log Area</b>	Displays coded messages: <ul style="list-style-type: none"><li>• Successful changes to settings are logged in italics.</li><li>• Error messages are indicated in red.</li><li>• Warning messages are indicated in orange.</li></ul> Additional information is indicated in magenta.
<b>QuickHelp Status bar</b>	Displays a one-line description about entry fields or a tool tip on any modifiable component. A green icon indicates that a switch is enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Routing Tab

The Routing tab is used to set the link cost for the selected ports and static route. The Routing tab is shown in Figure 4–72.

SwitchName: sw0    DomainId: 1    WWN: 10:00:00:60:69:80:04:14    Fri Feb 1 2002, 11:40 AM

Switch Settings | Network Config | Upload/Download | SNMP | License Admin | Report  
 Port Setting | Configure | **Routing** | Extended Fabric | Trunk Information | Remote Switch

Dynamic Load Sharing (DLS)    In-Order Delivery (IOD)

On    Off     On    Off

Link Cost    Routes

Port Number	Cost
0	1000
1	5555
2	1000
3	6666
4	1000
5	1000
6	1000
7	1000
8	1000
...	...

In Port	Destination ...	Out Port
0	-	-
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
-	-	-

Slot\_1   Slot\_2   Slot\_3   Slot\_4

OK   Apply   Close   Reset   Refresh

[ SwitchAdmin started: Fri Feb 1 2002, 11:25 AM ]

done ■

**Figure 4–72: Routing tab**

Table 4–39 provides a description of the fields on the Routing tab.

**Table 4–39: Routing Tab Fields**

<b>Dynamic Load Sharing (DLS)</b>	Click the radio button to turn Dynamic Load Sharing on or off.
<b>In-Order Delivery (IOD)</b>	Click the radio button to turn In-Order Delivery on or off.
<b>Port Number</b>	Displays Port Number.
<b>Cost</b>	Use the Cost field to change the link cost for a particular port.
<b>In Port</b>	Displays In Port number.
<b>Destination Domain</b>	Displays the destination domain ID for the “comma-separated” participating static routes for a particular in port. The destination domain IDs match the out ports in the cell.
<b>Out Port</b>	Enter the out port. It should be within the range of ports that are available for static routes for the current domain. More than one out port can be used for any In port with a different domain ID. Each domain ID requires an out port.
<b>Slot Number tabs</b>	Click to view a specific slot. Available only when viewing an StorageWorks Core switch series switch.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Click to view the most current information available from the switch.

**Table 4–39: Routing Tab Fields (Continued)**

<b>Log Area</b>	Displays coded messages: Successful changes to settings are logged in italics. Error messages are indicated in red. Warning messages are indicated in orange. Additional information is indicated in magenta.
<b>QuickHelp Status bar</b>	Displays a one-line description about entry fields or a tool tip on any modifiable component. A green icon indicates that a switch is enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Remote Switch Tab (Optional Software)

Use the Remote Switch feature to configure a pair of switches to operate over an extended WAN interface so that they can communicate across an ATM network by using a compatible Fibre Channel to ATM gateway. This feature requires an active Remote Switch license in both switches.

For detailed information on the Remote Switch feature, refer to the *HP StorageWorks Extended Fabric Version 3.0.x/4.0.x User Guide*.

Use the Remote Switch tab to manage the Remote Switch option. This tab displays only when the Remote Switch is installed. The Remote Switch tab is shown in Figure 4–73.

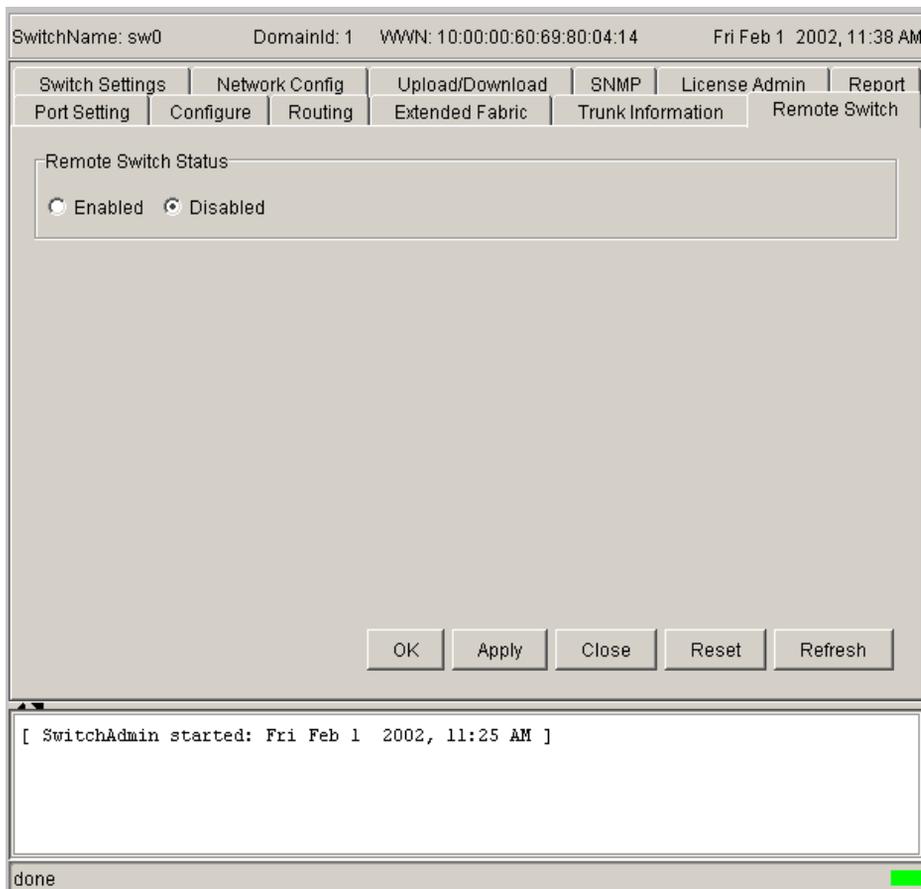


Figure 4–73: Remote Switch tab

Table 4–40 provides a description of the fields on the Remote Switch tab.

**Table 4–40: Remote Switch Tab Fields**

<b>Remote Switch Status Section:</b>	
<b>Enabled</b>	Click on box to enable the Remote Switch feature.
<b>Disabled</b>	Click on box to disable the Remote Switch feature.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Click to view the most current Remote Switch information.
<b>Log Area</b>	Displays coded messages: <ul style="list-style-type: none"> <li>• Successful changes to settings are logged in italics.</li> <li>• Error messages are indicated in red.</li> <li>• Warning messages are indicated in orange.</li> <li>• Additional information is indicated in magenta.</li> </ul>
<b>QuickHelp Status bar</b>	Displays a one-line description about entry fields or a tool tip on any modifiable component. A green icon indicates that a switch is enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Extended Fabric Tab

Use the Extended Fabric tab to manage the Extended Fabric feature. From the Extended Fabric tab you can specify which ports to be configured for distance and at what level. All switches come with L0 and LE (extended normal) settings. An Extended Fabric license allows additional settings of L1 and L2. For ports that are disabled, the rows appear grayed-out in the table within the Extended Fabric tab. The Extended Fabric is shown in Figure 4–74.

SwitchName: sw0      DomainId: 1      WWN: 10:00:00:60:69:80:04:14      Fri Feb 1 2002, 11:39 AM

Switch Settings    Network Config    Upload/Download    SNMP    License Admin    Report  
 Port Setting    Configure    Routing    Extended Fabric    Trunk Information    Remote Switch

Port Number	Current Value	Long Distance Setting
0	L0	L0: Normal - No Long dist...
1	L0	L0: Normal - No Long dist...
2	L0	L0: Normal - No Long dist...
3	L0	L0: Normal - No Long dist...
4	L0	L0: Normal - No Long dist...
5	L0	L0: Normal - No Long dist...
6	L0	L0: Normal - No Long dist...
7	L0	L0: Normal - No Long dist...
8	L0	L0: Normal - No Long dist...
9	L0	L0: Normal - No Long dist...
10	L0	L0: Normal - No Long dist...
11	L0	L0: Normal - No Long dist...
12	L0	L0: Normal - No Long dist...
13	L0	L0: Normal - No Long dist...

Slot\_1   Slot\_2   Slot\_3   Slot\_4

OK    Apply    Close    Reset    Refresh

[ SwitchAdmin started: Fri Feb 1 2002, 11:25 AM ]

done

**Figure 4–74: Extended Fabric tab**

Table 4–41 provides a description of the fields on the Extended Fabric tab.

**Table 4–41: Extended Fabric Tab Fields**

<b>Port Number</b>	Port Number being used for the Extended Fabric.
<b>Current Value</b>	Displays the current value for the Long Distance Setting on a port. L0 No long distance setting enabled L1 (Optionally licensed software.) Medium long distance setting enabled - less than 50 km or 31 miles. L2 (Optionally licensed software.) Long distance setting enabled - less than 100 km or 62 miles. LE Extended Normal setting enabled - less than 10 km or 6 miles.
<b>Long Distance Setting</b>	Click to view or set Long Distance settings. Change long distance settings by selecting from the choices in the drop-down menu.
<b>Slot Number tabs</b>	Click to view a specific slot. Slot tabs will only appear when viewing an StorageWorks Core switch series switch.
<b>OK</b>	Click to save the changes made to the tab and to exit the tab.
<b>Apply</b>	Click to save the changes made to this tab and to stay in the current tab. Additional changes can be made and the Apply button pressed when making changes incrementally.
<b>Close</b>	Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays.
<b>Reset</b>	Click to reset the tab to the last set of committed changes. If the Apply button has not been pressed on this tab, the parameters are returned to the original values the tab had when it was initially displayed.
<b>Refresh</b>	Click to view the most current information available from the switch.

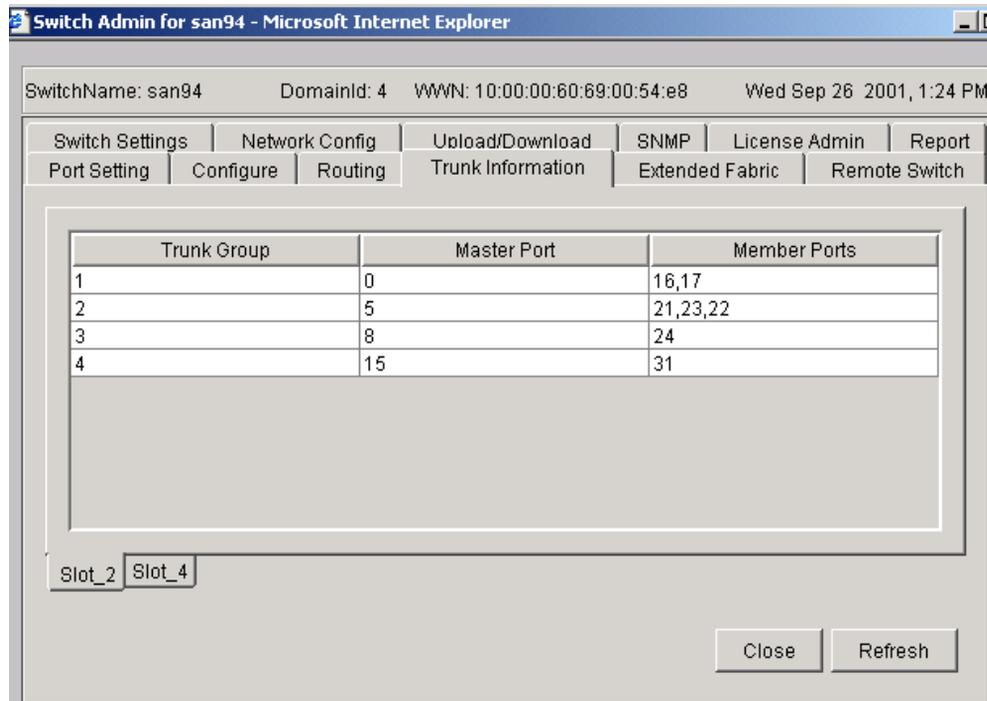
**Table 4–41: Extended Fabric Tab Fields (Continued)**

<b>Log Area</b>	Displays coded messages: <ul style="list-style-type: none"><li>• Successful changes to settings are logged in italics.</li><li>• Error messages are indicated in red.</li><li>• Warning messages are indicated in orange.</li><li>• Additional information is indicated in magenta.</li></ul>
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Trunk Information Tab (Optional Software)

The Trunk Information tab is a read-only tab and has only the Close and Refresh button functions. For more information regarding Trunking, refer to the *HP StorageWorks ISL Trunking Version 3.0.x/4.0.x User Guide*.

The Trunk Information tab is shown in Figure 4–75.



**Figure 4–75: Trunking tab**

Table 4–42 provides a description of the fields on the Trunk Information tab.

**Table 4–42: Trunk Information Tab Fields**

<b>Trunk Group</b>	Displays the Trunk Group number.
<b>Master Port</b>	Displays the Master Port number.
<b>Member Ports</b>	Display a list of Member Ports.

**Table 4–42: Trunk Information Tab Fields (Continued)**

<b>Slot Number tabs</b>	Select to view a specific slot. Available only when viewing a StorageWorks Core switch series switch.
<b>Close</b>	Click to exit the current tab.
<b>Refresh</b>	Click to view the most current information available from the switch.
<b>Log Area</b>	Displays coded messages: <ul style="list-style-type: none"><li>• Successful changes to settings are logged in italics.</li><li>• Error messages are indicated in red.</li><li>• Warning messages are indicated in orange.</li><li>• Additional information is indicated in magenta.</li></ul>
<b>QuickHelp Status bar</b>	Displays one-line description about entry fields or tool tip on any modifiable component. A green icon indicates that a switch enabled; a red icon is displayed when the switch is disabled using the Admin tool.

## Telnet Interface

### Accessing the Telnet Interface

1. Launch the web browser.
2. Enter the switch name or IP address in the **Location/Address** field and press **Enter**.

Example: <http://switch name>

Web Tools launches, displaying Fabric View.

3. Click the Telnet icon on the switch panel.

The Telnet Interface displays, as shown in Figure 4–76.

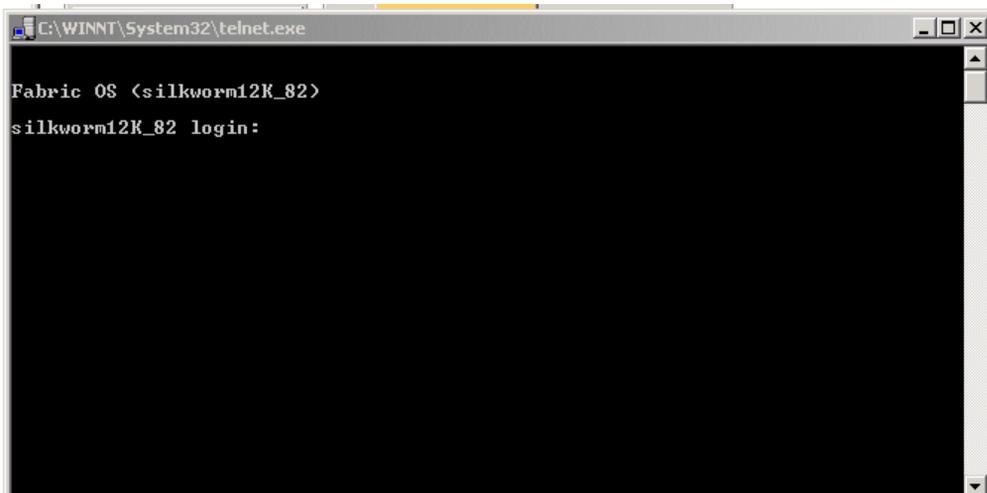


Figure 4–76: The Telnet Interface

### Using the Telnet Interface

Up to 14 Telnet sessions can be running simultaneously on a 4.0.x chassis:

- Four sessions for Root
- Four sessions for Factory
- Two sessions for Admin
- Four sessions for User

## High Availability

Use the High Availability interface to display information about the High Availability configuration on a chosen switch.

### Accessing the High Availability Interface

1. Launch the web browser.
2. Enter the switch name or IP address in the **Location/Address** field and press **Enter**.

Example: <http://switch name>

Web Tools launches, displaying Fabric View.

3. Click the Hi Avail icon on the switch panel.

The High Availability window appears, as shown in Figure 4–77.

HA Detail Info for swd83						
HA Role	CP #	Slot #	Health	A/F Enabled	HA Enabled	Redundant
ACTIVE	1	6	NORMAL	FALSE	FALSE	FALSE

Refresh

Message

[2002:01:18 01:02:44 PM] Fail to get STANDBY CP status, No heart beat.

**Figure 4–77: High Availability window**

Table 4–43 provides a description of the fields in the High Availability Window.

**Table 4–43: High Availability Window Fields**

<b>HA Role</b>	Displays the High Availability status of the selected CP as ACTIVE or INACTIVE.
<b>CP #</b>	Displays the number of the CP being viewed.
<b>Slot #</b>	Displays the slot number that is being viewed.
<b>Health</b>	Displays the health status of the selected CP.
<b>A/F Enabled</b>	Displays whether or not Auto Failover is enabled.
<b>HA Enabled</b>	Displays whether or not High Availability is enabled.

**Table 4–43: High Availability Window Fields (Continued)**

<b>Redundant</b>	Displays whether or not a redundant CP is available for Failover.
<b>Refresh</b>	Select to view the most current information available from the switch.

---

## Port View

This chapter describes the views and interfaces available through the Port View in Web Tools:

- Port Information View V3.0.x on page 5–1
- Port Information View 4.0.x on page 5–11

**NOTE:** Switches can be accessed through different methods, such as through the Front Panel, Telnet, SNMP, and the web, any of which can occur simultaneously. To verify that modifications are correctly applied, ensure that the switch is modified from only one connection at a time.

### Port Information View V3.0.x

The Port Information View displays statistics for the selected port. This information is automatically updated when the view is opened, and is also refreshed periodically while the view remains open.

#### Accessing Port Information View

1. Launch Web Tools, displaying Fabric View.
2. Click the Switch icon in Fabric View.

The Switch View displays.

3. Click a Port icon.

The Port Information View displays, as shown in Figure 5–1.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

Port WWN: 20:06:00:60:69:50:0a:a8      Port Status: No\_Module  
 Port Module: --      Port Type: U-Port

4-Byte Word Transmitted:	0	Short Frames:	0
4-Byte Word Received:	0	Long Frames:	0
Frames Transmitted:	0	Bad End-of-Frames:	0
Frames Received:	0	End Errs Outside Frames:	3
C2 Frames Received:	0	C3 Frames Discarded:	0
C3 Frames Received:	0	LIP Ins:	0
Link Control Frames Received:	0	LIP Outs:	0
Mcast Frames Received:	0	Last LIP Received:	00,00
Mcast Timeouts:	0	Frames Rejected:	0
Mcast Frames Transmitted:	0	Frames Busied:	0
Time R_RDY Priority:	0	Link Failure:	0
Time BB_Credit Zero:	0	Loss of Sync:	0
End Errs Inside Frames:	0	Loss of Signal:	0
Frames with CRC Errs:	0	Port Speed:	N2GB
		Port Trunk:	No

**Figure 5–1: Port Information view**

The following tabs are available in Port Information View:

- PortStats tab
- GBIC/SFP tab
- Loop tab

Table 5–1 provides a description of the fields that are visible in Port Information View, regardless of which tab is selected.

**Table 5–1: Port Information View Fields**

<b>Numbered Tabs</b>	Select to view information on a specific port.	
<b>Port World Wide Name</b>	Displays the World Wide Name (WWN) of this port.	
<b>Port Module</b>	The SFP type, as follows:	
	--	No SFP present
	SW	Short wave SFP
	LW	Long wave SFP
	CU	Copper SFP
	SWID	Long wave serial ID SFP
	LWID	Long wave serial ID SFP
	CUID	Copper serial ID SFP
<b>Port Status</b>	Displays the current status of the port, as follows:	
	No_Module	No SFP module is in this port.
	No_Light	Module is not receiving light.
	No_Sync	Module is receiving light but out of sync.
	In_Sync	Module is receiving light and in sync.
	Laser_Flt	Module signaling a laser fault (defective SFP).
	Port_Flt	Port is marked faulty (defective SFP, cable, or device).
	Diag_Flt	Port failed diagnostics.
	Online	Port is up and running.
	Lock_Ref	Port is locking to reference signal.

**Table 5–1: Port Information View Fields (Continued)**

<b>NOTE:</b> Removing a cable from an E_Port temporarily generates errors, causing the status to show as faulty. The status returns to healthy when the sample interval has passed (the default interval is 1 minute).		
<b>Port Type</b>	Displays the port types, as follows:	
	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

The PortStats tab provides information about transmission speed, reception speed, and the volume of traffic through the selected port. The PortStats tab is shown in Figure 5–2.

Port Information															
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Port WWN:	20:06:00:60:69:50:0a:a8					Port Status:	No_Module								
Port Module:	--					Port Type:	U-Port								
PortStats				SFP		Loop									
4-Byte Word Transmitted:	0					Short Frames:	0								
4-Byte Word Received:	0					Long Frames:	0								
Frames Transmitted:	0					Bad End-of-Frames:	0								
Frames Received:	0					End Errs Outside Frames:	3								
C2 Frames Received:	0					C3 Frames Discarded:	0								
C3 Frames Received:	0					LIP Ins:	0								
Link Control Frames Received:	0					LIP Outs:	0								
Mcast Frames Received:	0					Last LIP Received:	00,00								
Mcast Timeouts:	0					Frames Rejected:	0								
Mcast Frames Transmitted:	0					Frames Busied:	0								
Time R_RDY Priority:	0					Link Failure:	0								
Time BB_Credit Zero:	0					Loss of Sync:	0								
End Errs Inside Frames:	0					Loss of Signal:	0								
Frames with CRC Errs:	0					Port Speed:	N2GB								
						Port Trunk:	No								

**Figure 5–2: The PortStats tab in the Port Information view**

Table 5–2 provides a description of the fields on the PortStats tab.

**Table 5–2: PortStats Tab Fields**

<b>4-Byte Word Transmitted</b>	Displays the number of four-byte words transmitted.
<b>4-Byte Word Received</b>	Displays the number of four-byte words received.
<b>Frames Transmitted</b>	Displays the number of frames transmitted.
<b>Frames Received</b>	Displays the number of frames received.
<b>C2 Frames Received</b>	Displays the number of class 2 frames received.
<b>C3 Frames Received</b>	Displays the number of class 3 frames received.

**Table 5–2: PortStats Tab Fields (Continued)**

<b>Link Control Frames Received</b>	Displays the number of link control frames received.
<b>Mcast Frames Received</b>	Displays the number of multicast frames received.
<b>Mcast Time-outs</b>	Displays the number of multicast timeouts.
<b>Mcast Frames Transmitted</b>	Displays the number of multicast frames transmitted.
<b>Time R_RDY Priority</b>	Displays the number of times R_RDY has priority over frames to be sent.
<b>Time BB_Credit Zero</b>	Displays the number of times BB_Credit went to zero.
<b>Encd Errs Inside Frames</b>	Displays the number of encoding errors inside frames.
<b>Frames with CRC Errs</b>	Displays the number of frames with CRC errors.
<b>Short Frames</b>	Displays the number of frames shorter than minimum.
<b>Long Frames</b>	Displays the number of frames longer than maximum.
<b>Bad End-of-Frames</b>	Displays the number of frames with faulty end-of-frames.
<b>Encd Errs Outside Frames</b>	Displays the number of frames with encoding errors outside frames.
<b>C3 Frames Discarded</b>	Displays the number of class 3 frames discarded.
<b>LIP Ins</b>	Displays the number of LIPs received.
<b>LIP Outs</b>	Displays the number of times loop initialized by FL_Port.
<b>Last LIP Received</b>	Displays the last LIP received: AL_PD, AL_PS.
<b>Frames Rejected</b>	Displays the number of F_RJTs sent.
<b>Frames Busied</b>	Displays the number of F_BSYs sent.
<b>Link Failure</b>	Displays the number of times NOS received/sent.
<b>Loss of Sync</b>	Displays the number of times loss of sync occurred.
<b>Loss of Signal</b>	Displays the number of times loss of signal occurred.

## SFP Tab

The SFP tab provides information about the Small form factor pluggable (SFP) installed in the selected port. The information displayed depends on the type of SFP installed. The SFP tab is shown in Figure 5–3. The following SFPs are supported:

- Standard: Module type (short wave, long wave, copper, etc.).
- Serial ID: Module type, plus extended information about capabilities, interfaces, and manufacturer.
- Smart Finisar: All of the above information, plus SFP active status.

If the port does not contain a SFP, the following information displays: “Not a serial ID SFP. No SFP info available.”

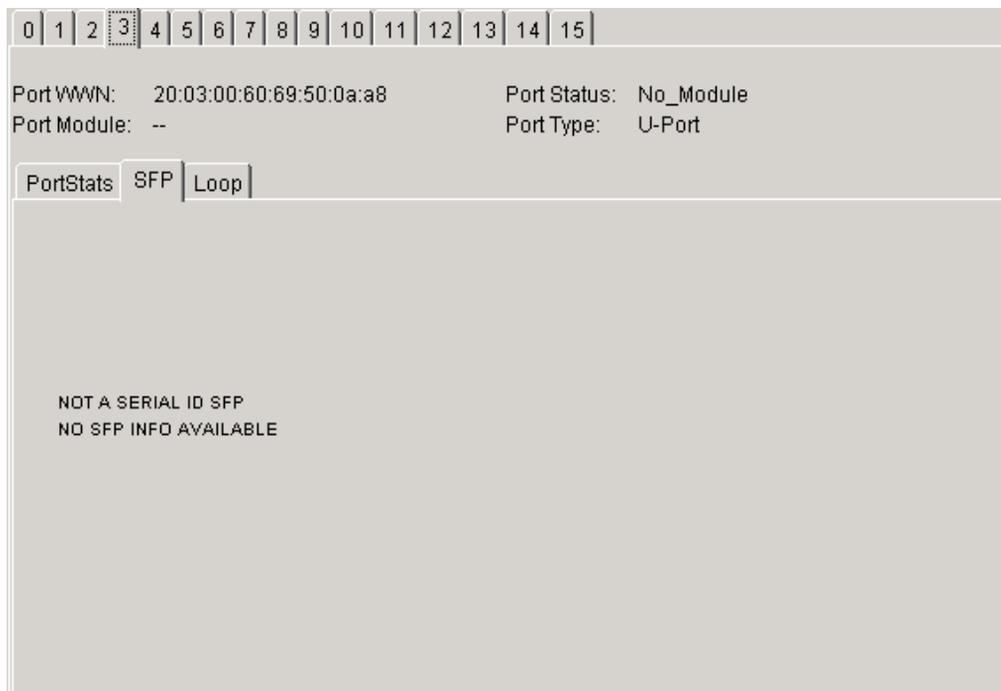


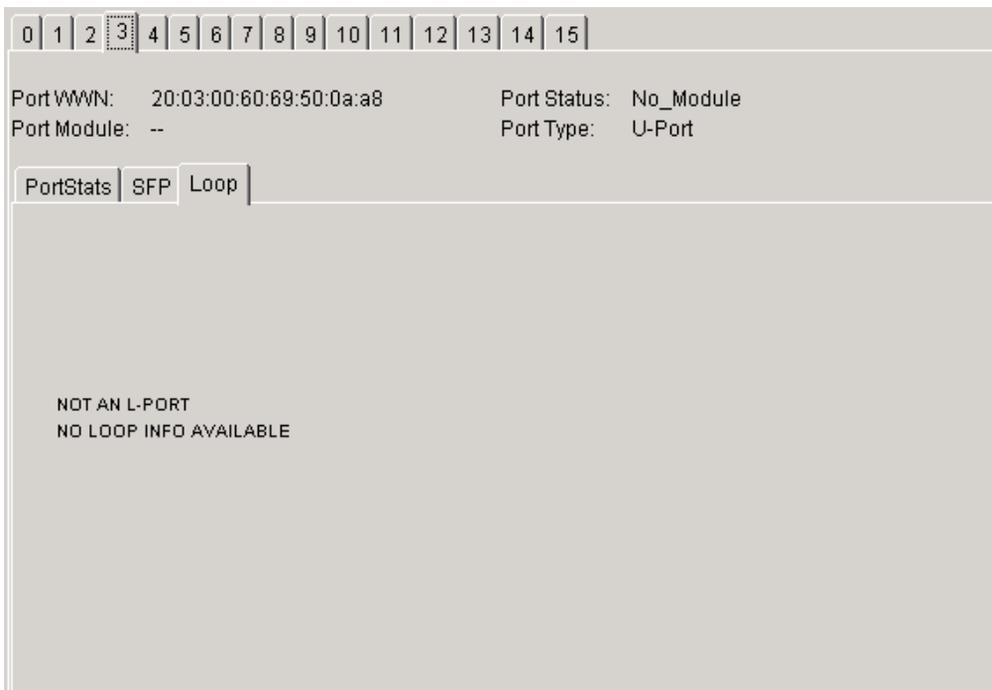
Figure 5–3: The SFP tab in the Port Information view

## Loop Tab

The Loop tab provides information about any loop on the port, including the following:

- Loop statistics
- Local AL\_PA statistics
- QuickLoop looplet statistics (if a QuickLoop license is available and the port is a member of the QuickLoop)
- QuickLoop statistics (if a QuickLoop license is available and the port is a member of the QuickLoop)

If the port is not a loop-enabled port, the following information displays: “Not an L\_Port. No loop info available.” The Loop tab is shown in Figure 5–4.



**Figure 5–4: The Loop tab in the Port Information view**

Table 5–3 provides a description of the fields available on the Loop tab.

**Table 5–3: Loop Tab Fields**

<b>FL Port Transfer</b>	Displays number of times FL_Port used transfer state.
<b>FL Tenancies</b>	Displays the number of times FL_Port opens loop tenancy.
<b>NL Tenancies</b>	Displays the number of times NL_Port opens loop tenancy.
<b>QL/Zone Inits Caused</b>	Displays number of times looplet has caused QuickLoop to be initialized.
<b>Successful QL/Zones Inits</b>	Displays number of times looplet has successfully initialized.
<b>Number of Failed QL/Zone Inits</b>	Displays number of times looplet failed to successfully initialize.
<b>Times Being Bypassed</b>	Displays number of times looplet was not included as part of QuickLoop.
<b>Last Time bypassed</b>	Displays time that looplet was last bypassed.
<b>Local AL_PA List</b>	Displays list of AL_PAs associated with devices connected to loop.
<b>QL Init Attempts</b>	Displays number of times QuickLoop attempted initialization.
<b>Successful QL Inits</b>	Displays number of time QuickLoop successfully initialized.
<b>Times in Single Switch Mode</b>	Displays number of times switch reverted to single switch mode.
<b>Times in Dual Switch Mode</b>	Displays number of times switch operated in dual switch mode.
<b>Time of Last QL Init</b>	Displays time of latest QuickLoop initialization.
<b>Switch, Port Caused the Last Init</b>	Displays number of switch, port that caused the latest initialization.
<b>Diag</b>	Click to open the Loop Diagnostics dialog box, which allows you to run loop diagnostics (requires password). For more information, see “Loop Diagnostics Dialog Box” on page 5–11.

**Table 5-3: Loop Tab Fields (Continued)**

<b>LIP</b>	Click to open the LIP dialog box, which allows you to initialize the loop (requires password).
<b>Bypass</b>	Click to open the Bypass dialog box, which allows you to bypass a specified looplet (requires password).
<b>Enable</b>	Click to open the Enable dialog box, which allows you to enable an AL_PA on a specified looplet (requires password).

## Loop Diagnostics Dialog Box

The Loop Diagnostics Dialog Box dialog appears when you click **DIAG** on the Loop tab of the Port Information View. You can use the Loop Diagnostics option to identify faulty devices on a loop.

## Port Information View 4.0.x

The Port Information View displays statistics for the selected port. This information is automatically updated when the view is opened, and is also refreshed periodically while the view remains open.

## Accessing Port Information View

1. Launch Web Tools, displaying Fabric View.
2. Click the Switch icon in Fabric View.

The Switch View displays.

3. Click a Port icon.

The Port Information View displays, as shown in Figure 5–5.

The screenshot shows the Port Information View interface. At the top, there are tabs for Slot 7, Slot 8, Slot 9, and Slot 10. Below these is a row of buttons numbered 0 through 15. The main area displays port information:

Port WWN: 20:00:00:60:69:80:04:15      Port Status: No\_Module  
 Port Module: --      Port Type: U-Port

Below this is a section for PortStats with tabs for SFP and Loop. The Loop tab is selected, showing the following statistics:

4-Byte Word Transmitted:	0	Short Frames:	0
4-Byte Word Received:	0	Long Frames:	0
Frames Transmitted:	0	Bad End-of-Frames:	0
Frames Received:	0	End Errs Outside Frames:	0
C2 Frames Received:	0	C3 Frames Discarded:	0
C3 Frames Received:	0	LIP Ins:	0
Link Control Frames Received:	0	LIP Outs:	0
Mcast Frames Received:	0	Last LIP Received:	00,00
Mcast Timeouts:	0	Frames Rejected:	0
Mcast Frames Transmitted:	0	Frames Busy:	0
Time R_RDY Priority:	0	Link Failure:	0
Time BB_Credit Zero:	0	Loss of Sync:	0
End Errs Inside Frames:	0	Loss of Signal:	0
Frames with CRC Errs:	0	Port Speed:	2
		Port Trunked:	No

Figure 5–5: Port Information view

The following tabs are available in Port Information View:

- PortStats tab
- SFP tab
- Loop tab

Table 5–4 provides a description of the fields that are visible in Port Information View, regardless of which tab is selected.

**Table 5–4: Port Information View Fields**

<b>Slot Tabs</b>	Select to view information on a specific slot. This option is only visible on StorageWorks Core switch series switches.	
<b>Numbered Tabs</b>	Select to view information on a specific port.	
<b>Port World Wide Name</b>	Displays the World Wide Name (WWN) of this port.	
<b>Port Module</b>	The SFP type, as follows:	
	--	No SFP present
	SW	Short wave SFP
	LW	Long wave SFP
	CU	Copper SFP
	SWID	Long wave serial ID SFP
	LWID	Long wave serial ID SFP
	CUID	Copper serial ID SFP
<b>Port Status</b>	Displays the current status of the port, as follows:	
	No_Module	No SFP module is in this port.
	No_Light	Module is not receiving light.

**Table 5–4: Port Information View Fields (Continued)**

	No_Sync	Module is receiving light but out of sync.
	In_Sync	Module is receiving light and in sync.
	Laser_Flt	Module signaling a laser fault (defective SFP).
	Port_Flt	Port is marked faulty (defective SFP, cable, or device).
	Diag_Flt	Port failed diagnostics.
	Online	Port is up and running.
	Lock_Ref	Port is locking to reference signal.
<b>NOTE:</b> Removing a cable from an E_Port temporarily generates errors, causing the status to show as faulty. The status returns to healthy when the sample interval has passed (the default interval is 1 minute).		
<b>Port Type</b>	Displays the port types, as follows:	
	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

The PortStats tab provides information about transmission speed, reception speed, and the volume of traffic through the selected port. The PortStats tab is shown in Figure 5–6.



**Figure 5–6: The PortStats tab in the Port Information view**

Table 5–5 provides a description of the fields on the PortStats tab.

**Table 5–5: PortStats Tab Fields**

<b>4-Byte Word Transmitted</b>	Displays the number of four-byte words transmitted.
<b>4-Byte Word Received</b>	Displays the number of four-byte words received.
<b>Frames Transmitted</b>	Displays the number of frames transmitted.
<b>Frames Received</b>	Displays the number of frames received.
<b>C2 Frames Received</b>	Displays the number of class 2 frames received.
<b>C3 Frames Received</b>	Displays the number of class 3 frames received.

Table 5-5: PortStats Tab Fields (Continued)

<b>Link Control Frames Received</b>	Displays the number of link control frames received.
<b>Mcast Frames Received</b>	Displays the number of multicast frames received.
<b>Mcast Time-outs</b>	Displays the number of multicast timeouts.
<b>Mcast Frames Transmitted</b>	Displays the number of multicast frames transmitted.
<b>Time R_RDY Priority</b>	Displays the number of times R_RDY has priority over frames to be sent.
<b>Time BB_Credit Zero</b>	Displays the number of times BB_Credit went to zero.
<b>Encd Errs Inside Frames</b>	Displays the number of encoding errors inside frames.
<b>Frames with CRC Errs</b>	Displays the number of frames with CRC errors.
<b>Short Frames</b>	Displays the number of frames shorter than minimum.
<b>Long Frames</b>	Displays the number of frames longer than maximum.
<b>Bad End-of-Frames</b>	Displays the number of frames with faulty end-of-frames.
<b>Encd Errs Outside Frames</b>	Displays the number of frames with encoding errors outside frames.
<b>C3 Frames Discarded</b>	Displays the number of class 3 frames discarded.
<b>LIP Ins</b>	Displays the number of LIPs received.
<b>LIP Outs</b>	Displays the number of times loop initialized by FL_Port.
<b>Last LIP Received</b>	Displays the last LIP received: AL_PD, AL_PS.
<b>Frames Rejected</b>	Displays the number of F_RJTs sent.
<b>Frames Busied</b>	Displays the number of F_BSYs sent.
<b>Link Failure</b>	Displays the number of times NOS received/sent.
<b>Loss of Sync</b>	Displays the number of times loss of sync occurred.
<b>Loss of Signal</b>	Displays the number of times loss of signal occurred.

**Table 5-5: PortStats Tab Fields (Continued)**

<b>Port Speed</b>	Displays the speed of the selected port.
<b>Port Trunked</b>	Displays the trunking configuration of the selected port.

## SFP Tab

The SFP tab provides information about the SFP (Small form factor pluggable) installed in the selected port. The information displayed depends on the type of SFP installed. The SFP tab is shown in Figure 5–7. The following SFPs are supported:

- Standard: Module type (short wave, long wave, copper, etc.).
- Serial ID: Module type, plus extended information about capabilities, interfaces, and manufacturer.
- Smart Finisar: All of the above information, plus SFP active status.

If the port does not contain a SFP, the following information displays: “Not a serial ID SFP. No SFP info available.”

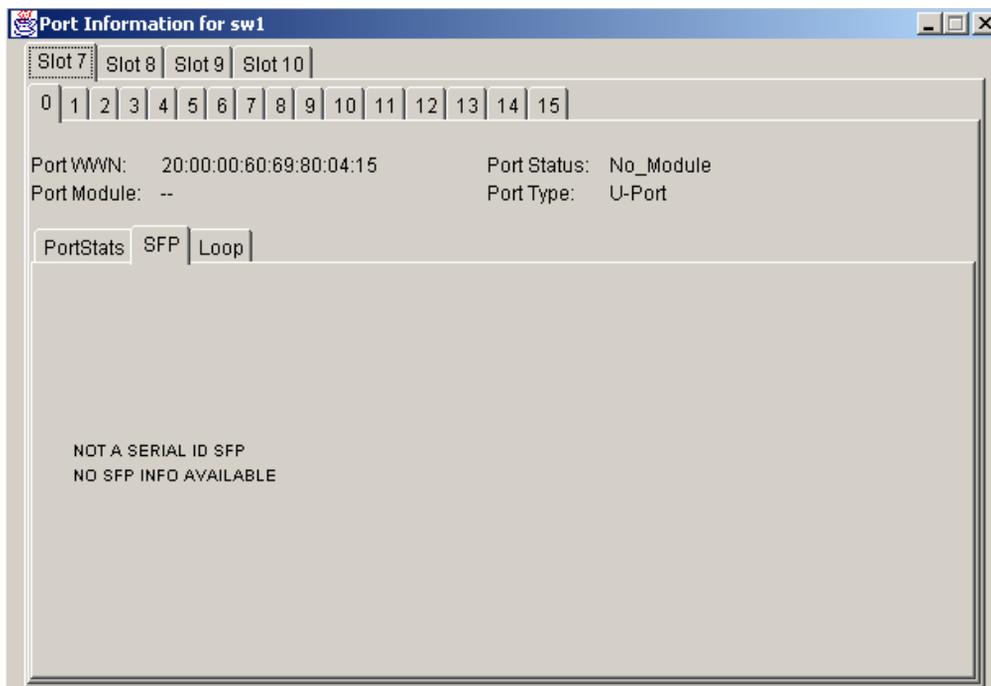


Figure 5–7: The SFP tab in the Port Information view

Table 5–6 provides a description of the fields on the SFP tab.

**Table 5–6: SFP Tab Fields**

<b>Identifier</b>	Indicates the type of serial transceiver, which can be SFP or on-board.
<b>Connector</b>	Indicates the external connector type, which will be the following: <ul style="list-style-type: none"> <li>• SC</li> </ul>
<b>ID Name</b>	Indicates the SFP module type: <ul style="list-style-type: none"> <li>-- - No SFP present</li> <li>sw - Short wave SFP</li> <li>lw - Long wave SFP</li> <li>cu - Copper SFP</li> <li>swid - Short wave serial ID SFP</li> <li>lwid - Short wave serial ID SFP</li> <li>cuid - Short wave serial ID SFP</li> </ul>
<b>SFP Speed</b>	Indicates the SFP speed, which can be 100, 200, or 400 MB/sec.
<b>SFP Media</b>	Indicates the transmission media, which can be: <ul style="list-style-type: none"> <li>SM - single mode</li> <li>M5 - multi-mode, 50u</li> <li>M6 - multi-mode, 62.5u</li> <li>TV - video coax</li> <li>MI - miniature coax</li> <li>TP - shielded twisted pair</li> <li>TW - twin axial pair</li> </ul>
<b>SFP Distance</b>	Indicates the length of the Fibre Channel link, which can be long distance, intermediate distance, or short distance.
<b>Encoding</b>	Indicates the serial encoding mechanism, which can be 8B10B, 4B5B, NRZ, or Manchester.
<b>Baud Rate</b>	Indicates the nominal baud rate in units of 100 Megabyte.
<b>BR Max</b>	Indicates the upper limit at which SFP meets its specifications (in units of 1 percent above nominal baud rate).

**Table 5–6: SFP Tab Fields (Continued)**

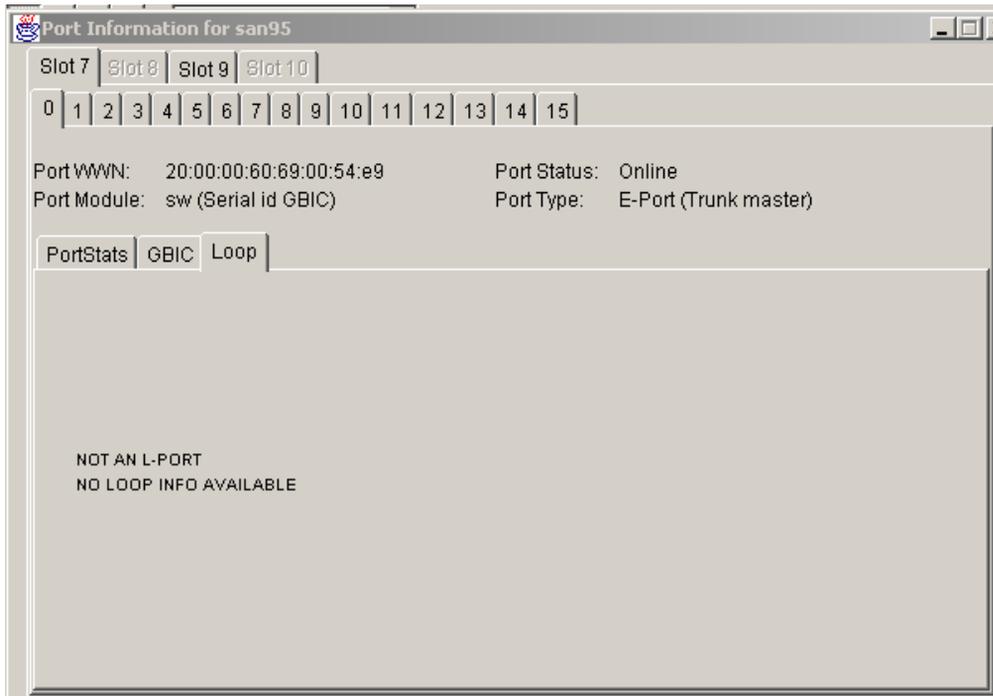
<b>BR Min</b>	Indicates the lower limit at which SFP meets its specifications (in units of 1 percent below nominal baud rate).
<b>Options</b>	May indicate any of the following: <ul style="list-style-type: none"> <li>• Loss of Signal</li> <li>• Loss of Signal Inverted</li> <li>• Transmission Fault</li> <li>• Transmission Disable</li> </ul>
<b>Length 9u</b>	Indicates the length of link using single mode fiber cable.
<b>Length 50u</b>	Indicates the length of link using 50um multi-mode fiber cable.
<b>Length 625u</b>	Indicates the length of link using 62.5um multi-mode fiber cable.
<b>Length Cu</b>	Indicates the minimum length of link using copper cable.
<b>Vendor Name</b>	Displays the name of the SFP vendor.
<b>Vendor OUI</b>	Displays the unique identifier for the SFP vendor.
<b>Vendor P/N</b>	Displays the SFP vendor part number.
<b>Vendor Rev</b>	Displays the vendor revision number.
<b>Serial No.</b>	Displays the vendor serial number.
<b>Date Code</b>	Displays the vendor date code.
<b>Smart SFP Data (only displays if a smart SFP is present):</b>	
<b>Temperature</b>	Displays the module temperature (in Centigrade).
<b>Rx Power</b>	Displays the received optical power in microwatts.
<b>Tx Power</b>	Displays the transmitted optical power in microwatts (longwave only).
<b>Current</b>	Displays the laser diode drive current in mAmps.

## Loop Tab

The Loop tab provides information about any loop on the port, including the following:

- Loop statistics
- Local AL\_PA statistics

If the port is not a loop-enabled port, the following information displays: “Not an L\_Port. No loop info available.” The Loop tab is shown in Figure 5–8.



**Figure 5–8: The Loop tab in the Port Information view**

Table 5–7 provides a description of the fields available on the Loop tab.

**Table 5–7: Loop Tab Fields**

<b>FL Port Transfer</b>	Displays number of times FL_Port used transfer state.
<b>FL Tenancies</b>	Displays the number of times FL_Port opens loop tenancy.
<b>NL Tenancies</b>	Displays the number of times NL_Port opens loop tenancy.
<b>Local AL_PA List</b>	Displays list of AL_PAs associated with devices connected to loop.



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# Glossary

This glossary defines terms used in this guide or related to this product and is not a comprehensive glossary of computer terms.

## **16-port card**

The Fibre Channel port card provided with the StorageWorks Core switch. Contains 16 Fibre Channel ports and the corresponding LEDs indicating port status and speed.

*See also* port card.

## **8b/10b Encoding**

An encoding scheme that converts each 8-bit byte into 10 bits. Used to balance ones and zeros in high-speed transports.

## **Access Control List**

Enables an organization to bind a specific WWN to a specific switch port or set of ports, preventing a port in another physical location from assuming the identity of a real WWN. May also refer to a list of the Read/Write access of a particular community string.

*See also* device connection controls.

## **Account Level Switches**

Refers to switches that have four login accounts into the operating system (in descending order): root, factory, admin, and user.

*See also* root account, factory account, admin account, and user account.

## **Address Identifier**

A 24-bit or 8-bit value used to identify the source or destination of a frame.

## **Admin Account**

A login account intended for use by the customer to control switch operation.

*See also* account level switches.

**AL\_PA**

Arbitrated Loop Physical Address. A unique 8-bit value assigned during loop initialization to a port in an arbitrated loop.

**Alias**

An alternate name for an element or group of elements in the fabric. Aliases can be used to simplify the entry of port numbers and WWNs when creating zones.

**Alias Address Identifier**

An address identifier recognized by a port in addition to its standard identifier. An alias address identifier may be shared by multiple ports.

*See also* alias.

**Alias AL\_PA**

An AL\_PA value recognized by an L\_Port in addition to the AL\_PA assigned to the port.

*See also* AL\_PA.

**Alias Server**

A fabric software facility that supports multicast group management.

**ANSI**

American National Standards Institute. The governing body for Fibre Channel standards in the U.S.A.

**API**

Application Programming Interface. Defined protocol that allows applications to interface with a set of services.

**Arbitrated Loop**

A shared 100 or 200 MBps Fibre Channel transport structured as a loop. Can support up to 126 devices and one fabric attachment.

*See also* topology.

**Arbitrating State**

The state in which a port has become the loop master. This state is only available from the Open state.

**Area Number**

A number assigned to each potential port location in the StorageWorks Core switch. Used to distinguish StorageWorks Core switch ports that have the same port number but are on different port Blades.

**ASIC**

Application Specific Integrated Circuit.

**ATM**

Asynchronous Transfer Mode. A transport used for transmitting data over LANs or WANs that transmit fixed-length units of data. Provides any-to-any connectivity, and allows nodes to transmit simultaneously.

**Auto-negotiate Speed**

Process that allows two devices at either end of a link segment to negotiate common features, speed (e.g., 1 or 2 Gbps) and functions.

**Autosense**

Process during which a network device automatically senses the speed of another device.

**AW\_TOV**

Arbitration Wait Time-out Value. The minimum time an arbitrating L\_Port waits for a response before beginning loop initialization.

**Backup FCS Switch**

Backup fabric configuration server switch. The switch or switches assigned as backup in case the primary FCS switch fails.

*See also* FCS switch, primary FCS switch.

**Bandwidth**

The total transmission capacity of a cable, link, or system. Usually measured in bps (bits per second). May also refer to the range of transmission frequencies available to a network.

*See also* throughput.

**BB\_Credit**

Buffer-to-buffer credit. The number of frames that can be transmitted to a directly connected recipient or within an arbitrated loop. Determined by the number of receive buffers available.

*See also* Buffer-to-buffer Flow Control, EE\_Credit.

**Beacon**

When all the port LEDs on a switch are set to flash from one side of the switch to the other, to enable identification of an individual switch in a large fabric. A switch can be set to beacon by telnet command or through Web Tools.

**Beaconing**

The state of the switches LEDs when the switch is set to Beacon.

*See also* Beacon.

**Beginning Running Disparity**

The disparity at the transmitter or receiver when the special character associated with an ordered set is encoded or decoded.

*See also* disparity.

**BER**

Bit Error Rate. The rate at which bits are expected to be received in error. Expressed as the ratio of error bits to total bits transmitted.

*See also* error.

**Bit Synchronization**

*See* BER.

**Blade**

*See* 16-port card.

**Blind-mate Connector**

A two-way connector used in some switches to provide a connection between the motherboard and the power supply.

**Block**

As applies to Fibre Channel, upper-level application data that is transferred in a single sequence.

**Blower Assembly**

A fan that prevents a switch (or individual elements within a switch) from overheating.

**Boot Flash**

Flash memory that stores the boot code and boot parameters. The processor executes its first instructions from boot flash. Data is cached in RAM.

**Boot Monitor**

Code used to initialize the CP (control processor) environment after powering on. Identifies the amount of memory available and how to access it, and retrieves information about system buses.

**Broadcast**

The transmission of data from a single source to all devices in the fabric, regardless of zoning.

*See also* multicast, unicast.

**Buffer-to-buffer Flow Control**

Management of the frame transmission rate in either a point-to-point topology or in an arbitrated loop.

*See also* BB\_Credit.

**Cascade**

Two or more interconnected Fibre Channel switches. StorageWorks 1 Gb SAN switches (running Fabric OS V2) and later can be cascaded up to 239 switches, with a recommended maximum of seven interswitch links (no path longer than eight switches).

*See also* fabric, ISL.

**Chassis**

The metal frame in which the switch and switch components are mounted.

**Circuit**

An established communication path between two ports. Consists of two virtual circuits capable of transmitting in opposite directions.

*See also* link.

**Class 1**

Service that provides a dedicated connection between two ports (also called connection-oriented service), with notification of delivery or nondelivery.

**Class 2**

Service that provides multiplex and connectionless frame switching service between two ports, with notification of delivery or nondelivery.

**Class 3**

Service that provides a connectionless frame switching service between two ports, without notification of delivery or nondelivery of data. This service can also be used to provide a multicast connection between the originator and recipients, with notification of delivery or nondelivery.

**Class F**

Connectionless service for control traffic between switches, with notification of delivery or nondelivery of data between the E\_Ports.

**Class of Service**

A specified set of delivery characteristics and attributes for frame delivery.

**CLI**

Command line interface. Interface that depends entirely on the use of commands, such as through telnet or SNMP, and does not involve a Graphic User Interface (GUI).

**CLS**

Close Primitive Signal. Only in an Arbitrated Loop; sent by an L\_Port that is currently communicating on the loop, to close communication to an other L\_Port.

**Comma**

A unique pattern (either 1100000 or 0011111) used in 8b/10b encoding to specify character alignment within a data stream.

*See also* K28.5.

**Community (SNMP)**

A relationship between a group of SNMP managers and an SNMP agent, in which authentication, access control, and proxy characteristics are defined.

*See also* SNMP.

**Compact Flash**

Flash memory that stores the run-time operating system and is used like hard disk storage. Not visible within the processor's memory space. Data is stored in file system format.

**Configuration**

How a system is set up. May refer to hardware or software.

- **Hardware:** The number, type, and arrangement of components that make up a system or network.
- **Software:** The set of parameters that guide switch operation. May include general system parameters, IP address information, domain ID, and other information. Modifiable by any login with administrative privileges.

May also refer to a set of zones.

*See also* zone configuration.

**Connection Initiator**

A port that has originated a Class 1 dedicated connection and received a response from the recipient.

**Connection Recipient**

A port that has received a Class 1 dedicated connection request and transmitted a response to the originator.

**Control Panel**

Refers to the left-side panel of Web Tools, which accesses fabric-wide functions such as Zoning and Events.

**Core Switch**

A switch whose main task is to interconnect other switches.

*See also* SAN switch.

**CP Card**

Control Processor Card. The central processing unit of the StorageWorks Core switch, which contains two CP Card slots to provide redundancy. Provides Ethernet, serial, and modem ports with the corresponding LEDs.

**CRC**

Cyclic Redundancy Check. A check for transmission errors included in every data frame.

**Credit**

As applies to Fibre Channel, the number of receive buffers available for transmission of frames between ports.

*See also* BB\_Credit, EE\_Credit.

**CT\_HDR**

Common Transport Header. A header that conforms to the Fibre Channel Common Transport (FC\_CT) protocol.

**CT\_IU**

Common Transport Information Unit. An information unit that conforms to the Fibre Channel Common Transport (FC\_CT) protocol.

**Current Fill Word**

The fill word currently selected by the LPSM.

*See also* fill word, LPSM.

**Cut-through**

A switching technique that allows the route for a frame to be selected as soon as the destination address is received.

*See also* route.

**Data Word**

Type of transmission word that occurs within frames. The frame header, data field, and CRC all consist of data words.

*See also* frame, ordered set, transmission word.

**DB-9 connector**

A 9-pin version of the RS-232C port interface. May be either the male or female interface.

*See also* RS-232 port.

**dBm**

Logarithmic unit of power used in electronics. Indicates signal strength in decibels above the reference level, which is 1 milliwatt for dBm. An increase of 10 dBm or represents a 10-fold increase in power.

**DCE port**

A data communications equipment port capable of interfacing between a DTE (data terminal equipment) port and a transmission circuit. DTE devices with an RS-232 (or EIA-232) port interface transmit on pin 3, and receive on pin 2.

*See also* DTE port, RS-232 port.

**Defined Zone Configuration**

The set of all zone objects defined in the fabric. May include multiple zone configurations.

*See also* enabled zone configuration, zone configuration.

**Device Connection Controls**

Enables organizations to bind an individual device port to a set of one or more switch ports. Device ports are specified by a WWN and typically represent HBAs (servers).

*See also* access control lists.

**Device**

A disk, a RAID, or an HBA.

**Disparity**

The relationship of ones and zeros in an encoded character. “Neutral disparity” means an equal number of each, “positive disparity” means a majority of ones, and “negative disparity” means a majority of zeros.

**DLS**

Dynamic Load Sharing. Dynamic distribution of traffic over available paths. Allows for recomputing of routes when an Fx\_Port or E\_Port changes status.

**Domain ID**

As applies to HP StorageWorks switches, a unique number between 1 and 239 that identifies the switch to the fabric and is used in routing frames. Usually automatically assigned by the switch, but can be manually assigned.

**DTE port**

A data terminal equipment port capable of interfacing to a transmission circuit through a connection to a DCE (data communications equipment) port. DTE devices with an RS-232 (or EIA-232) port interface transmit on pin 3, and receive on pin 2 in a 9-pin connector (reversed in 25-pin connectors).

*See also* DCE port, RS-232 port.

**DWDM**

Dense Wavelength Multiplexing. A means to concurrently transmit more than one stream of data through a single fiber by modulating each stream of data onto a different wavelength of light.

**E\_D\_TOV**

Error Detect Time-out Value. The minimum amount of time a target waits for a sequence to complete before initiating recovery. Can also be defined as the maximum time allowed for a round-trip transmission before an error condition is declared.

*See also* R\_A\_TOV, RR\_TOV.

**E\_Port**

Expansion Port. A type of switch port that can be connected to an E\_Port on another switch to create an ISL.

*See also* ISL.

**EE\_Credit**

End-to-end Credit. The number of receive buffers allocated by a recipient port to an originating port. Used by Class 1 and 2 services to manage the exchange of frames across the fabric between source and destination.

*See also* End-to-end Flow Control, BB\_Credit.

**EIA Rack**

A storage rack that meets the standards set by the Electronics Industry Association.

**ELWL**

Extra Long Wave Length. Laser light with a periodic length greater than 1300 nm (e.g., 1420 or 1550). ELWL lasers are used to transmit Fibre Channel data over distances greater than 10 Km.

*Also known as* XLWL.

**Enabled Zone Configuration**

The currently enabled zone configuration. Only one configuration can be enabled at a time.

*See also* defined zone configuration, zone configuration.

**End-to-end Flow Control**

Governs flow of class 1 and 2 frames between N\_Ports.

*See also* EE\_Credit.

**Entry Fabric**

Basic HP license that allows one E\_Port per switch. Not supported by StorageWorks Core switches.

**Error**

As applies to Fibre Channel, a missing or corrupted frame, time-out, loss of synchronization, or loss of signal (link errors).

*See also* loop failure.

**ESD**

Electrostatic Discharge.

**Exchange**

The highest level Fibre Channel mechanism used for communication between N\_Ports. Composed of one or more related sequences, and can work in either one or both directions.

**Extended Fabric**

An HP product that runs on Fabric OS and allows creation of a Fibre Channel fabric interconnected over distances of up to 100 kilometers.

Extended Fabric is a means of allowing the implementation and management of SANs over extended distances. This is achieved by adjusting the Buffer-to-Buffer Credits to guaranteed allocation of buffers to specific ports.

**F\_Port**

Fabric Port. A port that is able to transmit under fabric protocol and interface over links. Can be used to connect an N\_Port to a switch.

*See also* FL\_Port, Fx\_Port.

**Fabric**

A Fibre Channel network containing two or more interconnected switches in addition to hosts and devices. May also be referred to as a switched fabric.

*See also* topology, SAN, cascade.

**Fabric Access**

An HP product that consists of a set of APIs that allow third party applications to interface with Fabric OS.

Fabric Access allows the application to control the fabric directly for functions such as discovery, access (zoning), management, performance, and switch control. Consists of a host-based library that interfaces the application to switches in the fabric over an out-of-band TCP/IP connection or in-band using an IP-capable Host Bus Adapter (HBA).

**Fabric Assist**

An HP feature that enables private and public hosts to access public targets anywhere on the fabric, provided they are in the same Fabric Assist zone. This feature is available only when both QuickLoop and Zoning are installed on the switch.

Fabric Assist is a means of allowing private hosts to communicate with public targets across a switched fabric. Fabric Assist also allows private hosts to communicate with private targets that are not resident on the same switch across a switched fabric.

*See also* QuickLoop.

**Fabric Configuration Server**

One or more designated HP switches that store and manage the configuration parameters for all other switches in the fabric. These switches are designated by WWN, and the list of designated switches is known fabric-wide.

**Fabric Manager**

An HP product that works in conjunction with Web Tools to provide a graphical user interface for managing switch groups (such as the SAN Switch Integrated/32) as a single unit, instead of as separate switches. Fabric Manager is installed on and run from a computer workstation.

**Fabric Name**

The unique identifier assigned to a fabric and communicated during login and port discovery.

**Fabric OS**

The proprietary operating system on HP StorageWorks switches.

**Fabric Watch**

An HP product that runs on Fabric OS and allows monitoring and configuration of fabric and switch elements.

Allows the SAN manager to monitor key fabric and switch elements, making it easy to quickly identify and escalate potential problems. It monitors each element for out-of-boundary values or counters and provides notification when defined boundaries are exceeded. The SAN manager can configure which elements, such as error, status, and performance counters, are monitored within an HP switch.

*See also* Fabric Manager.

**Factory Account**

A login used during manufacturing to initialize and test a switch and is not intended for customer use.

*See also* account level switches.

**Failover**

The act that causes control to pass from one redundant unit to another. In the StorageWorks Core switch one may failover from the currently Active Control Processor (CP) to the Standby CP.

**FAN**

Fabric access notification. Retains the AL\_PA and fabric address when loop re-initializes (if the switch supports FAN).

**FC-AL-3**

The Fibre Channel Arbitrated Loop standard defined by ANSI. Defined on top of the FC-PH standards.

**FC-FLA**

The Fibre Channel Fabric Loop Attach standard defined by ANSI.

**FCIA**

Fibre Channel Industry Association. An international organization of Fibre Channel industry professionals. Among other things, provides oversight of ANSI and industry developed standards.

**FCP**

Fibre Channel Protocol. Mapping of protocols onto the Fibre Channel standard protocols. For example, SCSI FCP maps SCSI-3 onto Fibre Channel.

**FC-PH-1, 2, 3**

The Fibre Channel Physical and Signaling Interface standards defined by ANSI.

**FC-PI**

The Fibre Channel Physical Interface standard defined by ANSI.

**FC-PLDA**

The Fibre Channel Private Loop Direct Attach standard defined by ANSI. Applies to the operation of peripheral devices on a private loop.

**FCS switch**

Fabric configuration server switch. One or more designated HP switches that store and manage the configuration parameters for all switches in the fabric. FCS switches are designated by WWN, and the list of designated switches is communicated fabric-wide.

*See also* backup FCS switch, primary FCS switch.

**FC-SW-2**

The second generation of the Fibre Channel Switch Fabric standard defined by ANSI. Specifies tools and algorithms for the interconnection and initialization of Fibre Channel switches in order to create a multi-switch Fibre Channel fabric.

**Fibre Channel Transport**

A protocol service that supports communication between Fibre Channel service providers.

*See also* FSP.

**FIFO**

First In, First Out. May also refer to a data buffer that follows the first in, first out rule.

**Fill Word**

An IDLE or ARB ordered set that is transmitted during breaks between data frames to keep the Fibre Channel link active.

**Firmware Download**

Loading firmware down from a server into a switch.

**Firmware**

The basic operating system provided with the hardware.

**FL\_Port**

Fabric Loop Port. A port that is able to transmit under fabric protocol and also has arbitrated loop capabilities. Can be used to connect an NL\_Port to a switch.

*See also* F\_Port, Fx\_Port.

**Flash Partition**

Two redundant usable areas, called “partitions,” into which firmware can be downloaded in the StorageWorks Core switch.

**Flash**

Programmable NVRAM memory that maintains its contents.

**FLOGI**

Fabric Login. The process by which an N\_Port determines whether a fabric is present, and if so, exchanges service parameters with it.

*See also* PLOGI.

**Frame**

The Fibre Channel structure used to transmit data between ports. Consists of a start-of-frame delimiter, header, any optional headers, the data payload, a cyclic redundancy check (CRC), and an end-of-frame delimiter. There are two types of frames: Link control frames (transmission acknowledgements, etc.) and data frames.

*See also* Data Word.

**FRU**

Field Replaceable Unit. A component that can be replaced on site.

**FS\_ACC**

Fibre Channel Services Accept. The information unit used to indicate acceptance of a request for a Fibre Channel service.

**FS\_IU**

Fibre Channel Services Information Unit. An information unit that has been defined by a Fibre Channel service.

**FS\_REQ**

Fibre Channel Services Request. A request for a Fibre Channel services function, or notification of a fabric condition or event.

**FS\_RJT**

Fibre Channel Services Reject. An indication that a request for Fibre Channel services could not be processed.

**FS**

Fibre Channel Service. A service that is defined by Fibre Channel standards and exists at a well-known address. For example, the Simple Name Server is a Fibre Channel service.

*See also* FSP.

**FSPF**

Fabric Shortest Path First. HP routing protocol for Fibre Channel switches.

**FSP**

Fibre Channel Service Protocol. The common protocol for all fabric services, transparent to the fabric type or topology.

*See also* FS.

**Full Fabric**

The HP license that allows multiple E\_Ports on a switch, making it possible to create multiple ISL links.

**Full-duplex**

A mode of communication that allows the same port to simultaneously transmit and receive frames.

*See also* half-duplex.

**Fx\_Port**

A fabric port that can operate as either an F\_Port or FL\_Port.

*See also* F\_Port, FL\_Port.

**G\_Port**

Generic Port. A port that can operate as either an E\_Port or F\_Port. A port is defined as a G\_Port when it is not yet connected or has not yet assumed a specific function in the fabric.

**Gateway**

Hardware that connects incompatible networks by providing translation for both hardware and software. For example, an ATM gateway can be used to connect a Fibre Channel link to an ATM connection.

**GBIC**

Gigabit interface converter. A removable serial transceiver module that allows gigabaud physical-level transport for Fibre Channel and gigabit Ethernet. Typically refers only to the SC-form factor transceivers.

*See also* SFP.

**Gbps**

Gigabits per second (1,062,500,000 bits/second).

**GBps**

Gigabytes per second (1,062,500,000 bytes/second).

**Half-duplex**

A mode of communication that allows a port to either transmit or receive frames at any time, but not simultaneously (with the exception of link control frames, which can be transmitted at any time).

*See also* full-duplex.

**Hard Address**

The AL\_PA that an NL\_Port attempts to acquire during loop initialization.

**Hardware Translative Mode**

A method for achieving address translation. The following two hardware translative modes are available to a QuickLoop-enabled switch:

- Standard Translative Mode: Allows public devices to communicate with private devices that are directly connected to the fabric.
- QuickLoop Mode: Allows initiator devices to communicate with private or public devices that are not in the same loop.

**HBA**

Host Bus Adapter. The interface card between a server or workstation bus and the Fibre Channel network.

**High Availability**

An attribute of equipment that identifies it as being capable of conducting customer operations well in excess of 99% of the time. Typically High Availability is identified by the number of nines in that percentage. “Five Nines” means the equipment is rated as being capable of conducting customer operations 99.999% of the time without failure.

**Host**

A computer that accesses storage devices over the fabric. May also be referred to as a server.

*See also* workstation.

**Hot Pluggable**

A FRU capability that indicates it may be extracted or installed while customer data is otherwise flowing in the chassis.

**Hub**

A Fibre Channel wiring concentrator that collapses a loop topology into a physical star topology. Nodes are automatically added to the loop when active and removed when inactive.

**IBTA**

The InfiniBand Trade Association (IBTA). The IBTA is an industry consortium of more than 200 companies working together to develop a new common I/O specification designed to bring greater scalability and performance to server I/O. InfiniBand defines a new channel based, switched-fabric technology for server-to-server and server-to-I/O interconnection that is expected to improve scalability and performance over existing PCI Bus technologies.

**Idle**

Continuous transmission of an ordered set over a Fibre Channel link when no data is being transmitted, to keep the link active and maintain bit, byte, and word synchronization.

**Infiniband**

*See* IBTA.

**Initiator**

A server or workstation on a Fibre Channel network that initiates communications with storage devices.

*See also* Target.

**Integrated Fabric**

The fabric created by a SAN Switch Integrated/32 and SAN Switch Integrated/64, consisting of six SAN Switch 16-EL switches cabled together and configured to handle traffic as a seamless group.

**IOD**

In-order Delivery. A parameter that, when set, guarantees that frames are either delivered in order or dropped.

**IPA**

Initial Process Associator. An identifier associated with a process at an N\_Port.

**Isolated E\_Port**

An E\_Port that is online but not operational due to overlapping domain IDs or nonidentical parameters (such as E\_D\_TOVs).

*See also* E\_Port.

**ISL**

Interswitch Link. a Fibre Channel link from the E\_Port of one switch to the E\_Port of another.

*See also* E\_Port, cascade, ISL trunking.

**ISL Trunking**

An HP feature that enables distribution of traffic over the combined bandwidth of up to four ISLs (between adjacent switches), while preserving in-order delivery. A set of trunked ISLs is called a trunking group; each port employed in a trunking group is called a trunking port.

*See also* Master Port.

**IU**

Information Unit. A set of information as defined by either upper-level process protocol definition or upper-level protocol mapping.

**JBOD**

Just a Bunch Of Disks. Indicates a number of disks connected in a single chassis to one or more controllers.

*See also* RAID.

**K28.5**

A special 10-bit character used to indicate the beginning of a transmission word that performs Fibre Channel control and signaling functions. The first seven bits of the character are the comma pattern.

*See also* comma.

**Kernel Flash**

Flash memory that stores the bootable kernel code and is visible within the processor's memory space. Data is stored as raw bits.

**Key Pair**

In public key cryptography, a pair of keys consisting of an entity's public and private key. The public key can be publicized, but the private key must be kept secret.

**L\_Port**

Loop Port. A node port (NL\_Port) or fabric port (FL\_Port) that has arbitrated loop capabilities. An L\_Port can be in one of two modes:

- *Fabric mode.* Connected to a port that is not loop capable, and using fabric protocol.
- *Loop mode.* In an arbitrated loop and using loop protocol. An L\_Port in loop mode can also be in participating mode or non-participating mode.

*See also* Non-participating Mode, Participating Mode.

**Latency**

The period of time required to transmit a frame, from the time it is sent until it arrives. Together, latency and bandwidth define the speed and capacity of a link or system.

**LED**

Light Emitting Diode. Used on HP switches to indicate the status of various switch elements.

**Link Services**

A protocol for link-related actions.

**Link**

As applies to Fibre Channel, a physical connection between two ports, consisting of both transmit and receive fibers.

*See also* Circuit.

**LIP**

Loop Initialization Primitive. The signal used to begin initialization in a loop. Indicates either loop failure or resetting of a node.

**LIS\_HOLD\_TIME**

Loop Initialization Sequence Hold Time. The maximum period of time for a node to forward a loop initialization sequence.

**LM\_TOV**

Loop Master Time-out Value. The minimum time that the loop master waits for a loop initialization sequence to return.

**Login BB\_Credit**

The number of receive buffers a receiving L\_Port has available when a circuit is first established.

*See also* BB\_Credit.

**Loop Circuit**

A temporary bidirectional communication path established between L\_Ports.

**Loop Failure**

Loss of signal within a loop for any period of time, or loss of synchronization for longer than the time-out value.

*See also* error.

**Loop Initialization**

The logical procedure used by an L\_Port to discover its environment. Can be used to assign AL\_PA addresses, detect loop failure, or reset a node.

**Loop\_ID**

A hex value representing one of the 127 possible AL\_PA values in an arbitrated loop.

**Looplet**

A set of devices connected in a loop to a port that is a member of another loop.

**LPSM**

Loop Port State Machine. The logical entity that performs arbitrated loop protocols and defines the behavior of L\_Ports when they require access to an arbitrated loop.

**LWL**

Long Wavelength. A type of fiber optic cabling that is based on 1300-nm lasers and supports link speeds of 1.0625 Gbps. May also refer to the type of GBIC or SFP.

*See also* SWL.

**Master Port**

As relates to trunking, the port that determines the routing paths for all traffic flowing through the trunking group. One of the ports in the first ISL in the trunking group is designated as the master port for that group.

*See also* ISL Trunking.

**Media**

*See* transceiver.

**MIB**

Management Information Base. An SNMP structure to help with device management, providing configuration and device information.

**Modem Serial Port**

The upper serial port on the CP Card of the StorageWorks Core switch. Can be used to connect the CP Card to a modem with a standard 9-pin modem cable. Consists of a DB-9 connector wired as a RS-232 device, and can be connected by serial cable to a DCE device. A Hayes-compatible modem or Hayes-emulation is required. The device name is ttyS1.

*See also* DB-9 connector, DCE port, terminal serial port.

**Monitoring State**

The state in which a port is monitoring the flow of information for data relevant to the port.

**Multicast**

The transmission of data from a single source to multiple specified N\_Ports (as opposed to all the ports on the network).

*See also* broadcast, unicast.

**Multimode**

A fiber optic cabling specification that allows up to 500 meters between devices for 1 Gb, or 300 meters between devices for 2 Gb.

**N\_Port**

Node Port. A port on a node that can connect to a Fibre Channel port or to another N\_Port in a point-to-point connection.

*See also* NL\_Port, Nx\_Port.

**NAA**

Network Address Authority. An identifier that indicates the format of a network address.

**Name Server**

Frequently used to indicate Simple Name Server.

*See also* SNS.

**Native Address Identifier**

A unique, 64-bit address is assigned to each port, and is referred to as its World-Wide Name (WWN). If a port connects to an arbitrated loop, it will also be assigned a dynamic 8-bit address, referred to as its arbitrated loop physical address, or AL\_PA. If it connects to a fabric, it will be assigned a dynamic 24-bit address, referred to as its Native Address Identifier.

**Negotiate**

*See* auto-negotiate speed and autosense.

**NL\_Port**

Node Loop Port. A node port that has arbitrated loop capabilities. Used to connect an equipment port to the fabric in a loop configuration through an FL\_Port.

*See also* N\_Port, Nx\_Port.

**Node Name**

The unique identifier for a node, communicated during login and port discovery.

**Node**

A Fibre Channel device that contains an N\_Port or NL\_Port.

**Non-participating Mode**

A mode in which an L\_Port in a loop is inactive and cannot arbitrate or send frames, but can retransmit any received transmissions. This mode is entered if there are more than 127 devices in a loop and an AL\_PA cannot be acquired.

*See also* L\_Port, Participating Mode.

**Nx\_Port**

A node port that can operate as either an N\_Port or NL\_Port.

**Open Originator**

The L\_Port that wins arbitration in an arbitrated loop and sends an OPN ordered set to the destination port, then enters the Open state.

**Open Recipient**

The L\_Port that receives the OPN ordered set from the open originator, and then enters the Open state.

**Open State**

The state in which a port can establish a circuit with another port. A port must be in the Open state before it can arbitrate.

**OPN**

Open Primitive Signal.

**Ordered Set**

A transmission word that uses 8B/10B mapping and begins with the K28.5 character. Ordered sets occur outside of frames, and include the following items:

- *Frame delimiters.* Mark frame boundaries and describe frame contents.
- *Primitive signals.* Indicate events.
- *Primitive sequences.* Indicate or initiate port states.

Ordered sets are used to differentiate Fibre Channel control information from data frames and to manage the transport of frames.

**Packet**

A set of information transmitted across a network.

*See also* Frame.

**Participating Mode**

A mode in which an L\_Port in a loop has a valid AL\_PA and can arbitrate, send frames, and retransmit received transmissions.

*See also* L\_Port, Non-participating Mode.

**Path Selection**

The selection of a transmission path through the fabric. HP StorageWorks switches use the FSPF protocol.

**Performance Monitor**

Comprehensive HP tool for monitoring the performance of networked storage resources.

**Performance Monitoring**

An HP product that provides error and performance information to the administrator and end user for use in storage management.

**Phantom Address**

An AL\_PA value that is assigned to an device that is not physically in the loop.

*Also known as* phantom AL\_PA.

**Phantom Device**

A device that is not physically in an arbitrated loop, but is logically included through the use of a phantom address.

**PLOGI**

Port Login. The port-to-port login process by which initiators establish sessions with targets.

*See also* FLOGI.

**Point-to-point**

A Fibre Channel topology that employs direct links between each pair of communicating entities.

*See also* topology.

**Port Cage**

The metal casing extending out of the optical port on the switch, and in which the SFP can be inserted.

**Port Card**

A Fibre Channel card that contains optical or copper port interfaces, and acts like a switch module.

*See also* 16-port card.

**Port Module**

A collection of ports in a switch.

**Port\_Name**

The unique identifier assigned to a Fibre Channel port. Communicated during login and port discovery.

**POST**

Power On Self-Test. A series of tests run by a switch after it is turned on.

**Primary FCS Switch**

Primary fabric configuration server switch. The switch that actively manages the configuration parameters for all switches in the fabric.

*See also* backup FCS switch, FCS switch.

**Private Device**

A device that supports arbitrated loop protocol and can interpret 8-bit addresses, but cannot log into the fabric.

**Private Loop**

An arbitrated loop that does not include a participating FL\_Port.

**Private NL\_Port**

An NL\_Port that communicates only with other private NL\_Ports in the same loop and does not log into the fabric.

**Protocol**

A defined method and a set of standards for communication.

**PSU**

Power Supply Unit.

**Public Device**

A device that supports arbitrated loop protocol, can interpret 8-bit addresses, and can log into the fabric.

**Public Loop**

An arbitrated loop that includes a participating FL\_Port, and may contain both public and private NL\_Ports.

**Public NL\_Port**

An NL\_Port that logs into the fabric, can function within either a public or a private loop, and can communicate with either private or public NL\_Ports.

**Quad**

A group of four adjacent ports that share a common pool of frame buffers.

**QuickLoop**

An HP StorageWorks product that makes it possible to allow private devices within loops to communicate with public and private devices across the fabric through the creation of a larger loop.

May also refer to the arbitrated loop created using this software. A QuickLoop can contain a number of devices or looplets; all devices in the same QuickLoop share a single AL\_PA space.

A means of allowing private hosts to communicate with private targets across a switched fabric.

The QuickLoop/Fabric Assist feature also allows:

- private hosts to communicate with public targets across a switched fabric.
- private hosts to communicate with private targets that are not resident on the same switch across a switched fabric.

*See also* Fabric Access, fabric assist, and translative mode.

**QuickLoop Zoning**

Protects devices from disruption by unrelated devices during critical processes; for example, during a tape backup session.

**R\_A\_TOV**

Resource Allocation Time-out Value. The maximum time a frame can be delayed in the fabric and still be delivered.

*See also* E\_D\_TOV, RR\_TOV.

**R\_RDY**

Receiver ready. A primitive signal indicating that the port is ready to receive a frame.

**RAID**

Redundant Array of Independent Disks. A collection of disk drives that appear as a single volume to the server and are fault tolerant through mirroring or parity checking.

*See also* JBOD.

**Remote Fabric**

A fabric that spans across WANs by using protocol translation (a process also known as tunneling) such as Fibre Channel over ATM or Fibre Channel over IP.

**Remote Switch**

Bridges two switches into a SAN as large as 3000KM or more through protocol encapsulation in ATM networks via the Computer Network Technologies (CNT) UltraNet Open Systems Gateway.

**Request Rate**

The rate at which requests arrive at a servicing entity.

*See also* service rate.

**RLS Probing**

Read link status of the AL\_PAs.

**Root Account**

A login used for debugging purposes by HP engineers and is not intended for customer use.

*See also* account level switches.

**Route**

As applies to a fabric, the communication path between two switches. May also apply to the specific path taken by an individual frame, from source to destination.

*See also* FSPF.

**Routing**

The assignment of frames to specific switch ports, according to frame destination.

**RR\_TOV**

Resource Recovery Time-out Value. The minimum time a target device in a loop waits after a LIP before logging out a SCSI initiator.

*See also* E\_D\_TOV, R\_A\_TOV.

**RS-232 port**

A port that conforms to a set of Electrical Industries Association (EIA) standards. Used to connect DTE and DCE devices for communication between computers, terminals, and modems.

*See also* DCE port, DTE port.

**RSCN**

Registered State Change Notification. A switch function that allows notification of fabric changes to be sent from the switch to specified nodes.

**RX\_ID**

Responder Exchange Identifier. A 2-byte field in the frame header used by the responder of the Exchange to identify frames as being part of a particular exchange.

**SAN**

Storage Area Network. A network of systems and storage devices that communicate using Fibre Channel protocols.

*See also* fabric.

**SAN Switch**

A switch whose main task is to connect nodes into the fabric.

*See also* core switch.

**SCSI**

Small Computer Systems Interface. A parallel bus architecture and protocol for transmitting large data blocks to a distance of 15 - 25 meters.

**SDRAM**

Synchronous Dynamic Random Access Memory. The main memory for the switch. Used for volatile storage during switch operation.

*See also* flash.

**Sequence**

A group of related frames transmitted in the same direction between two N\_Ports.

**Service Rate**

The rate at which an entity can service requests.

*See also* request rate.

**SFF**

Small Form Factor.

**SFP Cable**

The latest innovation in high-speed copper cabling for Fibre Channel and InfiniBand. It incorporates the SFP module directly onto the cable assembly, eliminating the need for a separate SFP copper module and an HSSDC2 cable assembly.

**SFP**

Small form factor pluggable. A transceiver used on 2 Gbps switches that replaces the GBIC. Refers to the LC-form factor transceiver.

*See also* GBIC.

**SID/DID**

Source identifier/Destination identifier. S\_ID is a 3-byte field in the frame header that is used to indicate the address identifier of the N\_Port from which the frame was sent.

**Single Mode**

The fiber optic cabling standard that, when used in conjunction with a 1300 nm laser light, can transfer data up to 10 km between devices. When used in conjunction with a 1550 nm laser light, single mode cabling can transfer data over 10 km.

*See also* multimode, LWL, ELWL, and XLWL.

**SI**

Sequence Initiative.

**SNMP**

Simple Network Management Protocol. An internet management protocol that uses either IP for network-level functions and UDP for transport-level functions, or TCP/IP for both. Can be made available over other protocols, such as UDP/IP, because it does not rely on the underlying communication protocols.

*See also* Community (SNMP).

**SNMPv1**

The original SNMP, now labeled v1.

**SNS**

Simple Name Server. A switch service that stores names, addresses, and attributes for up to 15 minutes, and provides them as required to other devices in the fabric. SNS is defined by Fibre Channel standards and exists at a well-known address. May also be referred to as directory service.

*See also* FS.

**StorageWorks SAN switch**

The brand name for the HP family of switches.

**Switch Name**

The arbitrary name assigned to a switch.

**Switch Port**

A port on a switch. Switch ports can be E\_Ports, F\_Ports, or FL\_Ports.

**Switch**

Hardware that routes frames according to Fibre Channel protocol and is controlled by software.

**SWL**

Short Wavelength. A type of fiber optic cabling that is based on 850-nm lasers and supports 1.0625-Gbps link speeds. May also refer to the type of GBIC or SFP.

*See also* LWL.

**Tachyon**

A chip developed by Hewlett-Packard, and used in various devices. This chip has FC-0 through FC-2 on one chip.

**Target**

A storage device on a Fibre Channel network.

*See also* Initiator.

**Tenancy**

The time from when a port wins arbitration in a loop until the same port returns to the monitoring state. Also referred to as loop tenancy.

**Terminal Serial Port**

May also be referred to as the console port. The lower serial port on the CP Card of the StorageWorks Core switch. This port sends switch information messages and can receive commands. Can be used to connect the CP Card to a computer terminal. Has an RS-232 connector wired as a DTE device, and can be connected by serial cable to a DCE device. The connector pins two and three are swapped so that a straight-through cable can be used to connect to a terminal. The device name is ttyS0.

*See also* DCE port, modem serial port.

**Throughput**

The rate of data flow achieved within a cable, link, or system. Usually measured in bps (bits per second).

*See also* bandwidth.

**Topology**

As applies to Fibre Channel, the configuration of the Fibre Channel network and the resulting communication paths allowed. There are three possible topologies:

- Point to point—A direct link between two communication ports.
- Switched fabric—Multiple N\_Ports linked to a switch by F\_Ports.
- Arbitrated loop—Multiple NL\_Ports connected in a loop.

**Transceiver**

Device that converts one form of signaling to another for transmission and reception; in fiber optics, it refers to optical and electrical.

**Transfer State**

The state in which a port can establish circuits with multiple ports without reentering the arbitration cycle for each circuit. This state can only be accessed by an L\_Port in the Open state.

**Translative Mode**

A mode in which private devices can communicate with public devices across the fabric.

**Transmission Character**

A 10-bit character encoded according to the rules of the 8B/10B algorithm.

**Transmission Word**

A group of four transmission characters.

*See also* data word.

**Trap (SNMP)**

The message sent by an SNMP agent to inform the SNMP management station of a critical error.

*See also* SNMP.

**Trunking**

*See* ISL Trunking.

**Tunneling**

A technique for enabling two networks to communicate when the source and destination hosts are both on the same type of network, but are connected by a different type of network.

**U\_Port**

Universal Port. A switch port that can operate as a G\_Port, E\_Port, F\_Port, or FL\_Port. A port is defined as a U\_Port when it is not connected or has not yet assumed a specific function in the fabric.

**UDP**

User Datagram Protocol. A protocol that runs on top of IP and provides port multiplexing for upper-level protocols.

**ULP\_TOV**

Upper-level Time-out Value. The minimum time that a SCSI ULP process waits for SCSI status before initiating ULP recovery.

**ULP**

Upper-level Protocol. The protocol that runs on top of Fibre Channel. Typical upper-level protocols are SCSI, IP, HIPPI, and IPI.

**Unicast**

The transmission of data from a single source to a single destination.

*See also* broadcast, multicast.

**user account**

A login intended for use by the customer to monitor, but not control, switch operation.

*See also* account level switches.

**VC**

Virtual circuit. A one-way path between N\_Ports that allows fractional bandwidth.

**Web Tools**

An HP product that runs on Fabric OS and provides a graphical interface to allow monitoring and management of individual switches or entire fabrics from a standard workstation running a browser.

**Well-known Address**

As pertaining to Fibre Channel, a logical address defined by the Fibre Channel standards as assigned to a specific function, and stored on the switch.

**Workstation**

A computer used to access and manage the fabric. May also be referred to as a management station or host.

**WWN**

World-Wide Name. An identifier that is unique worldwide. Each entity in a fabric has a separate WWN.

**XLWL**

Xtra Long Wave Length. Laser light with a periodic length greater than 1300 nm (e.g., 1420 or 1550). XLWL lasers are used to transmit Fibre Channel data over distances greater than 10 Km.

*Also known as ELWL.*

**Xmitted Close State**

The state in which an L\_Port cannot send messages, but can retransmit messages within the loop. A port in the XMITTED CLOSE state cannot attempt to arbitrate.

**Zone**

A set of devices and hosts attached to the same fabric and configured as being in the same zone. Devices and hosts within the same zone have access permission to others in the zone, but are not visible to any outside the zone.

*See also Zoning.*

**Zone Alias**

A name assigned to a device or group of devices in a zone. Aliases can greatly simplify the zone administrative process.

*See also alias.*

**Zone Configuration**

A specified set of zones. Enabling a configuration enables all zones in that configuration.

*See also* defined zone configuration, enabled zone configuration.

**Zone Member**

A port, node, WWN, or alias, which is part of a zone.

**Zone Schemes**

The level of zoning granularity selected. For example, zoning may be done by switch/port, WWN, AL\_PA, or a mixture.

*See also* zone configuration.

**Zone Set**

*See* zone configuration.

**Zoning**

An HP product that runs on Fabric OS and allows partitioning of the fabric into logical groupings of devices. Devices in a zone can only access and be accessed by devices in the same zone.

*See also* zone.

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