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Web Tools User Guide

Part Number: AA-RQ6GA-TE

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This document provides information on the following topics:
overview of Web Tools, installing Web Tools, configuring and using
Web Tools in Fabric view, Configuring and using Web Tools in
Switch view, and Configuring and using Web Tools in Port view.

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Web Tools User Guide
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About this Guide

This User Guide provides information to help you:

- Install the Web Tools optionally-licensed software.
- Configure and use the Web Tools software:
 - Fabric view
 - Switch view
 - 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:

- *StorageWorks*[™] Fibre Channel SAN Switches by Compaq.
- Fabric Operating System V3.0 or later

Related Documentation

In addition to this guide, Compaq provides corresponding information:

- Fabric Operating System Reference Guide—AA-RQ6FA-TE
- MIB Reference Guide—AA-RQ6HA-TE
- Zoning User Guide—AA-RQ6YA-TE
- Fabric Operating System Procedures User Guide—AA-RQ6EA-TE
- ISL Trunking User Guide—AA-RR82A-TE
- Advanced Performance Monitor User Guide—AA-RR7UA-TE
- QuickLoop User Guide—AA-RR7LA-TE
- Extended Fabric User Guide—AA-RR7QA-TE
- Fabric Watch User Guide—AA-RR7YA-TE

Prerequisites

Before you install configure, or use the Web Tools software, make sure you consider the items in the Document Conventions section that follows.

Document Conventions

The conventions included in Table 1 apply in most cases.

Table 1: Document Conventions

| Element | Convention |
|---|---|
| Key names, menu items, buttons, and dialog box titles | Bold |
| File names and application names | <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 (http://www.compaq.com) |

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.

Symbols on Equipment



Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.



Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.



Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.



Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Rack Stability



WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
 - The full weight of the rack rests on the leveling jacks.
 - In single rack installations, the stabilizing feet are attached to the rack.
 - In multiple rack installations, the racks are coupled.
 - Only one rack component is extended at any time. A rack may become unstable if more than one rack component is extended for any reason.
-

Getting Help

If you still have a question after reading this guide, contact service representatives or visit our website.

Compaq Technical Support

In North America, call Compaq technical support at 1-800-OK-COMPAQ, available 24 hours a day, 7 days a week.

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

Outside North America, call Compaq technical support at the nearest location. Telephone numbers for worldwide technical support are listed on the Compaq website: <http://www.compaq.com>.

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

Compaq Website

The Compaq website has the latest information on this product, as well as the latest drivers. Access the Compaq website at: <http://www.compaq.com/storage>. From this website, select the appropriate product or solution.

Compaq Authorized Reseller

For the name of your nearest Compaq Authorized Reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the Compaq website for locations and telephone numbers.

Introducing Web Tools

Web Tools 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. Web Tools is an optional-licensed product that runs on Fabric Operating System V3.0.

All switches in the fabric are displayed in the Web Tools main window, including switches that do not have a Web Tools license. However, only switches that have a Web Tools license installed can be managed through Web Tools (other switches must be managed through telnet).

This chapter provides the following information:

- Advantages of Web Tools on page 1-1
- Capabilities of Web Tools on page 1-2
- Web Tools Main Views on page 1-3

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.

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 simultaneously with telnet commands. Simply open a second window and you can take advantage of the benefits of both interfaces at the same time.
- Web Tools can help you find the appropriate telnet command to perform a desired function. For instance, you can perform a function using Web Tools, and watch in a second window as the telnet commands are displayed.

- 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 tediously type out IP 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 and capabilities:

- Monitoring and managing the entire fabric.
- Monitoring and managing individual switches.
- Monitoring and managing individual ports.

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

Table 1–1: Capabilities of Web Tools

| To... | Go To... |
|---|---|
| View the status of all the switches in the fabric. | Fabric View Introduction on page 3-1. |
| Access event logs for entire fabric. | Fabric Events View on page 3-6. |
| Configure and manage Zoning functions (requires an option license). | Zone Administration View on page 3-12. |
| Access to the Name Server Table. | Name Server Table on page 3-9. |
| Access telnet functions. | Telnet Interface on page 4-78. |
| Use switch beaconing for rapid identification in large fabric environments. | Beacon on page 4-4. |
| Name and zone QuickLoops (requires an option license). | Loop Tab on page 5-9 or the QuickLoop Tab on page 4-63. |

Table 1–1: Capabilities of Web Tools (Continued)

| To... | Go To... |
|---|--|
| View summary information about individual switches. | Config Tab on page 3-58. |
| View event logs for individual switches. | Switch Events View on page 4-5. |
| Perform switch configuration and administration. | Administrative Interface on page 4-49 Switch Settings Tab on page 4-51 Current Settings Tab on page 4-16 |
| Use the ability to upgrade Fabric OS and license key administration. | Firmware/Configuration File Administration Tab on page 4-55. |
| Use report capability for switch configuration information. | Report Tab on page 4-77. |
| View the port status. | See PortStats Tab on page 5-4. |
| View information about GBIC (Gigabit Interface Converter) Serial IDs. | See GBIC Tab on page 5-6. |
| View and manage loop information. | Loop Tab on page 5-9 QuickLoop Tab on page 4-63 Name Server Table Fields on page 3-10. |
| View port performance, including frame counts (frames in, frames out) and error counts. | Current Settings Tab on page 4-16. |

Web Tools Main Views

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

The main views available through Web Tools are:

1. Fabric view
2. Switch view
3. Port Information view

Descriptions of the Web Tools main views are contained in the following sections.

Fabric View

The Fabric view displays a control panel that provides:

- Access to fabric-wide options
- A panel for each switch in the fabric
- 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 legend provided in the window).

NOTE: Switch status is calculated approximately once per second; however the initial calculation 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."

For all statuses that are based on errors per time interval, any errors will cause the status to show faulty until the entire sample interval has passed.

The Fabric View Control Panel is shown in Figure 1–1.

For information about the functions that are accessible through Fabric View, see Fabric View Introduction on page 3-1.

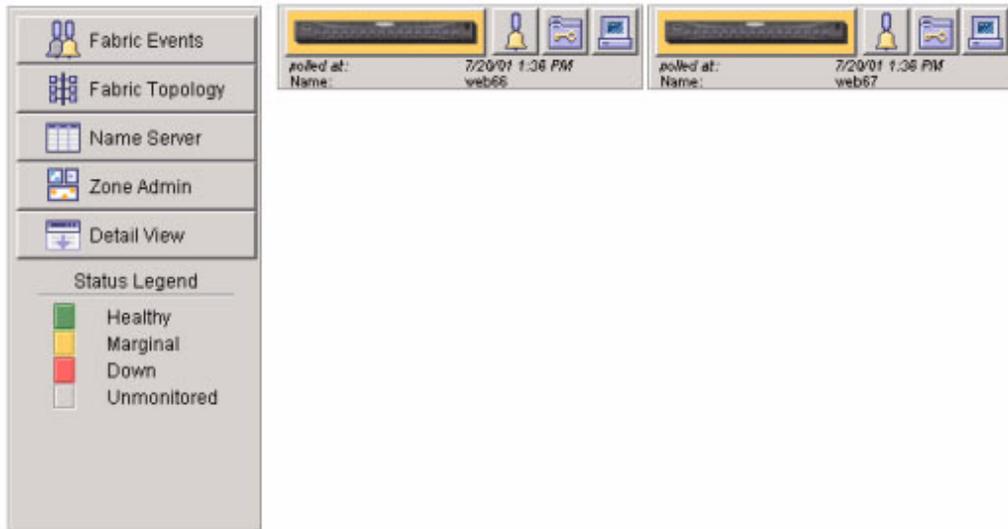


Figure 1–1: Fabric view

Switch

The 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 icons that display the status of the switch fans, temperature monitors, and beacon.

The Switch view is shown in Figure 1–2. For information about the functions that are accessible through the Switch view, see Switch View on page 4-1.



Figure 1–2: Switch view

Port Information

The Port information view displays statistics and status for the selected port, GBIC, or loop. Accessed by selecting the icon for the relevant port in Switch view.

The Port Information view screen is shown in Figure 1–3. For information about the functions that are accessible through the Port view, see on page 5-1.

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 Fabric View Introduction on page 3-1, Chapter 4 Switch View on page 4-1, or Chapter 5 Port Information View on page 5-1.

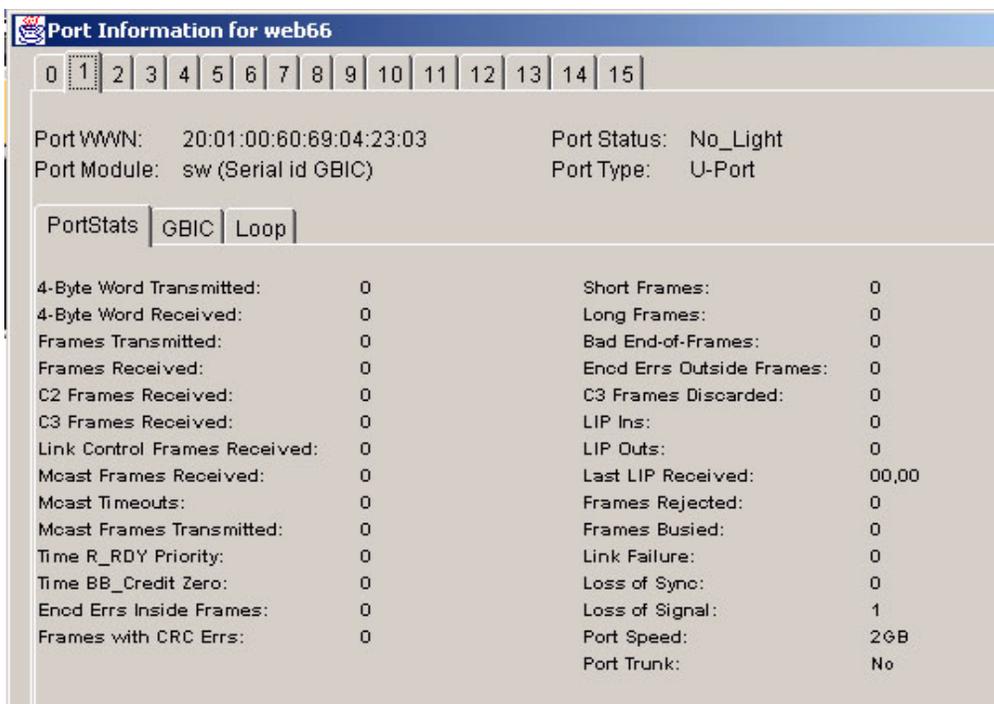


Figure 1–3: Port Information view screen

Installing Web Tools

This chapter provides the following information regarding Web Tools:

- Installation Requirements on page 2-1
- Installation on page 2-2
- Launching Web Tools on page 2-8

Installation Requirements

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

Switch Requirements

Web Tools 3.0 can be used to manage switches that meet the following requirements:

- All of the Compaq StorageWorks Fibre Channel SAN Switches. The Compaq StorageWorks IS/32 or IS/64 switches can be managed individually, but not as a group.
- Fabric Operating System V3.0 or later installed.

Workstation Requirements

The following items are required for the correct installation and operation of Web Tools:

- One of the following operating systems:
 - Solaris 2.61 or later
 - Windows 98, or 2000
 - Windows NT 4.0
- Adequate RAM (required for Windows operating systems only):

- 128 MB for fabrics of 21 switches or less
- 256 MB for fabrics containing more than 21 switches
- 5 MB of free disk space
- One of the following web browsers:
 - Netscape Communicator 4.6x or later.
 - Internet Explorer 4.01 or later.

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 2-2.

- The correct version of the Java Plug-in for the operating system:
 - Windows 98, NT, or 2000: Java Plug-in up to the 1.2.2-008 version.
 - Solaris: Java Plug-in version 1.2.2-02 for Solaris, including the Java Plug-in patch created by Sun for Solaris.

Installation

Preparing to use Web Tools to manage your fabric requires the following steps:

- Installation of one of the supported web browsers on the workstation, if not already installed.
- Configuration of the web browser for use with Web Tools.
- Installation of the required Java Plug-in on the workstation, if not already installed.
- Installation of a Web Tools license on each switch to be managed from Web Tools.

Installing a Web Browser

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

- Netscape Communicator 4.6x or later (available at <http://www.netscape.com>).
- Internet Explorer 4.01 or later (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 Operating System V3.0. 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 left text box to expand it, then click **Cache**.
3. On the Cache panel, click **Clear Memory Cache**.
4. On the Cache panel, 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 Operating System V3.0. 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.

Remove cached files from Internet Explorer:

1. Select **Internet Options** from the **View** menu if using Internet Explorer 4.x, or from the **Tools** menu if using 5.x.
2. Select the **General** tab.
3. Click **Delete Files...** (under “Temporary Internet Files”).
4. 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:

1. Select **Internet Options** from the **View** menu if using Internet Explorer 4.x, or from the **Tools** menu if using 5.x.
2. Select the **General** tab and click **Settings** (under “Temporary Internet Files”).
3. 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:

1. Select **View >Internet Options** if using Internet Explorer 4.x, or **Tools >Internet Options** if using Internet Explorer 5.x.
2. Select the **Advanced** tab and click to expand the Browsing category.
3. Under “Browsing,” select “Browse in a new process” (Internet Explorer 4.x), or “Launch browser windows in a separate process” (Internet Explorer 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 the patch created by Sun Microsystems, Inc. for use with the Java Plug-in on Solaris. To install the Java Plug-in on Solaris:

1. Locate the Java Plug-in on the internet, such as at the Sun Microsystems web site.
2. Follow the instructions to install the Java Plug-in for Solaris.
3. Open the .cshrc file and set the path to the Java Plug-in executable file. For example, the following could be added to the .cshrc file:

```
NPX_PLUG-IN_PATH=/opt/NSCPcom/plugin  
export NPX_PLUG-IN_PATH
```

Install the software patch on Solaris:

1. Go to the web site at:

`http://access1.sun.com`

2. use the SEARCH option, and enter the string:

`"108593" <Enter>`

3. Follow the link to download the patch, and exit the browser when done.
4. Install the patch and reboot the system.
5. Relaunch the browser and enter the switch's IP Address.

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.

Use the following procedure 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 Operating System 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 towards a switch running Fabric Operating System V3.0, follow the link to the Sun Microsystems web site, 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 Operating System V3.0 or later, follow the link to the Sun Microsystems web site, and download the new Java Plug-in.

Installing Web Tools on the Switch

Web Tools can be installed either through Telnet or over the web. Installation of Web Tools involves the installation of a license on each switch that will be managed from Web Tools.

To determine whether a license is already installed on a switch, follow the instructions provided under *Launching Web Tools* on page 2-8. If a license is not installed, contact your switch supplier to obtain a license key.

Installing Web Tools Using Telnet Commands

To install Web Tools using Telnet:

1. Log onto the switch by Telnet (see the *Fabric Operating System Procedures User Guide* for more information), using an account that has administrative privileges.
2. To determine whether a Web Tools license is already installed on the switch, type `licenseShow` on the Telnet command line.

A list displays, showing all the licenses currently installed on the switch:

```
admin> licenseShow
1A1AaAaaaAAAA1a:
Release v2.2
Zoning license
SES license
QuickLoop license
```

If the Web Tools license is not included in the list or is incorrect, continue with step [3].

3. Enter the following on the command line:

```
licenseAdd "key"
```

where "key" is the license key (do not include the double quotes). The license key value is case-sensitive, and must be entered exactly as given.

4. Verify the license was added by entering the following on the command line:

```
licenseShow
```

If the Web Tools license is listed, the feature is available. If the license is not listed, repeat step [3].

NOTE: The Java Plug-in must also be installed on the client machine to access Web Tools.

Installing Web Tools Using Web Tools

If none of the switches in the fabric have a Web Tools license, a license dialog automatically displays when you access any of the switches over the web. If the fabric already contains at least one licensed switch, you can use Web Tools to view and license other switches from the licensed switch.

To install the first license through the web:

1. Launch the web browser, enter the switch name or IP address in the **Location/Address** field and press **Enter**. For example:

```
http://111.222.33.1)
```

If a license is already installed on the switch, Web Tools launches. If no license is installed, a license dialog displays.

2. If the license dialog displays, follow the instructions provided.

To install additional licenses through the web:

1. Launch the web browser and enter the name or IP address of the licensed switch in the **Location/Address** field, and press **Enter**. For example:

```
http://111.222.33.1)
```

Web Tools opens, displaying the Fabric view.

2. Click the icon for the switch you want to license.

A licensing window displays.

3. Follow the instructions provided.

Launching Web Tools

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

Launch Web Tools:

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 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 View Introduction on page 3-1
- Fabric Events View on page 3-6
- Fabric Topology View on page 3-7
- Name Server Table on page 3-9
- Zone Administration View on page 3-12

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.

Fabric View Introduction

The Fabric view is the first web page that displays when you connect to a switch, and it provides access to specific information about each switch, in addition to other options and a legend explaining the colors used to indicate switch status. Every switch in the fabric, including any unlicensed switches, is represented by a switch panel in Fabric view. However, only switches with a Web Tools license can be managed from Web Tools. To add a license for an unlicensed switch, select the corresponding **Switch** icon in Fabric view, and a license window automatically displays.

To 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/
```

NOTE: This switch is assumed to be the local domain. For information specific to a QuickLoop to be available, the QuickLoop switch must be the host domain.

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

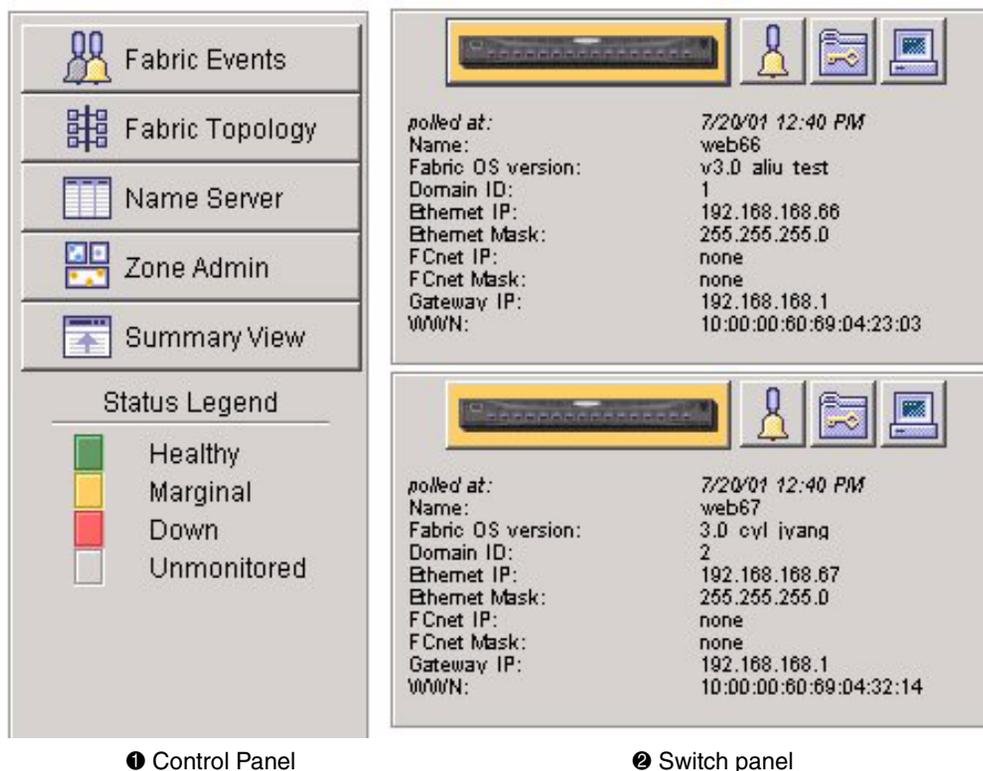


Figure 3–1: Detailed Fabric view

To see the summary view of the fabric view, select the **Summary View** button on the left side of the fabric view interface.

The selected summary view with the Control Panel (1), and the Switch Panel (2) is displayed as shown in Figure 3–2.

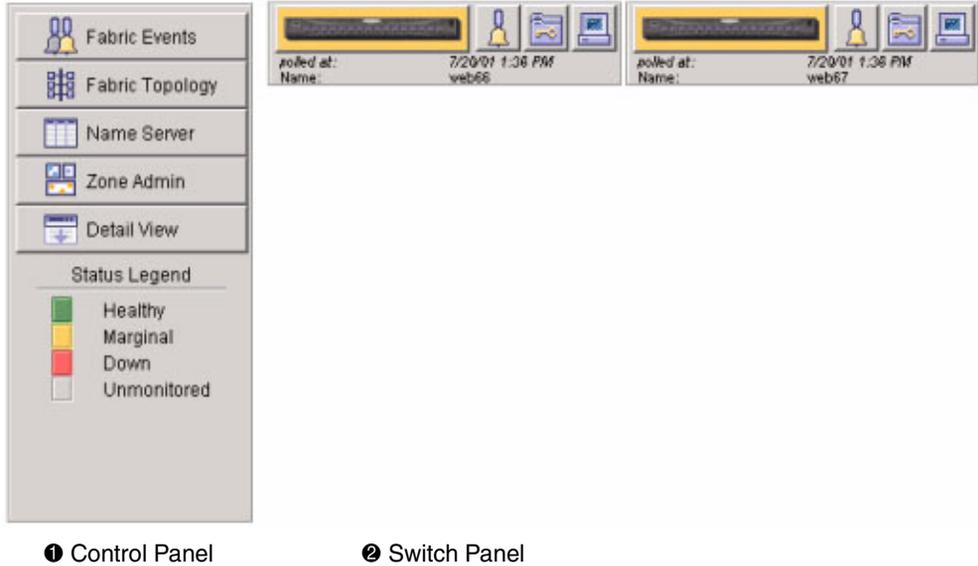


Figure 3–2: Fabric View summary

The buttons and fields that appear in Fabric view are described in Table 3–1.

Table 3–1: Fabric View Buttons and Fields

| Control Panel Buttons (left side of Figure 3–1) | |
|--|--|
| <p>Fabric Events</p>  | <p>The Fabric Events view provides a running log of events in the fabric. Select to open Fabric Events view (for additional information, refer to the <i>Fabric Events View</i> on page 3-6 in this document).</p> |
| <p>Fabric Topology</p>  | <p>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). Select to open Fabric Topology view (for additional information, refer to the Fabric Topology View on page 3-7 in this document).</p> |

Table 3–1: Fabric View Buttons and Fields (Continued)

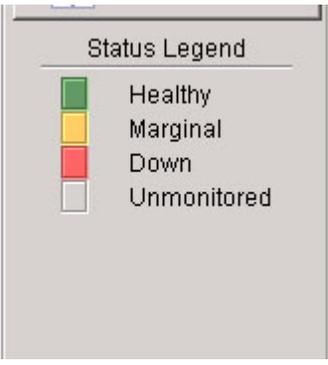
| | |
|--|--|
| <p>Name Server</p>  | <p>The Name Server Table view provides the name server entries listed in the Simple Name Server database. Select to open Name Server Table view (for additional information, refer to the Name Server Table on page 3-9 in this document).</p> |
| <p>Zone Admin</p>  | <p>Select to open Zone Administration view. This view is available only if a Zoning license is installed (for additional information, refer to the Zone Administration View on page 3-12 in this document).</p> |
| <p>Summary/Detail View</p>  | <p>Toggle to view either the Summary or Detail version of Fabric view. The Summary version shows abbreviated switch panels (see Figure). The default view is Detail.</p> |
| <p>Status legend</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"> • Green—Healthy • Yellow—Marginal (mix of good and faulty readings) • Red—Down (more than two faulty readings) • Gray—Unknown or unmonitored <p>If no data is available from a switch, the most recent background color remains displayed.</p> <p>For all statuses that are based on errors per time interval, any errors will cause the status to show faulty until the entire sample interval has passed.</p> |

Table 3–1: Fabric View Buttons and Fields (Continued)

| Switch Panel (right side of Figure 3–1) | |
|---|---|
| Switch  | 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 (for information about this view, see Switch View on page 4-1). |
| Events  | Select to open switch Events view to display the switch events log (for information about this view, see Switch Events View on page 4-5). |
| Admin  | Select to open Switch Administration view (for information about this view, see Administrative Interface on page 4-49). |
| Telnet  | Select to launch the Telnet interface for the switch (for information about this view, see Telnet Interface on page 4-78). |
| <i>polled at: or unreachable since:</i> | Time of the last status check, or if currently unavailable, the time of the last successful status check. |
| Name: | The name of the switch. |
| Fabric OS version: | Fabric Operating System version installed. |
| Domain ID: | A number that uniquely identifies the switch within the fabric. |
| Ethernet IP: | Ethernet IP address. |
| Ethernet Mask: | Ethernet subnetmask. |
| FCnet IP: | Fibre channel IP address. |
| FCnet Mask: | Fibre channel subnetmask. |
| Gateway IP: | Gateway IP address. |
| WWN: | 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.

To access Fabric Events 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/
```

Web Tools launches, displaying Fabric view.

3. Select **Fabric Events**.

The Fabric Events view displays as shown in Figure 3–3.

| Switch | Number | Time | Count | Level | Message |
|--------|--------|-----------------|-------|-------|--|
| web67 | 4 | Jun 25 17:05:27 | 1 | 3 | FW-STATUS_SWITCH Switch status changed from HEALTHY/O |
| web67 | 3 | Jun 25 17:04:57 | 1 | 3 | FW-BELOW1 envPS002 (Env Power Supply 2) is below low bou |
| web67 | 2 | Jun 25 17:04:27 | 1 | 3 | DIAG-POST_SKIPPED Skipped POST tests: assuming all ports |
| web67 | 1 | Jun 25 17:04:24 | 1 | 4 | SYS-BOOT Restart reason: Reboot |

Figure 3–3: 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 Columns Description

| Column Name | Description |
|-----------------|--|
| Switch | Name of switch. |
| Num... (number) | Event number for affected switch. |
| Time | Time of event. |
| Count | Number of consecutive occurrences of same event. |
| Level | Severity level of event: 0—panic (switch reboots) 1—critical 2—error 3—warning 4—information 5—debug |
| Message | 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.

To access Fabric Topology 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/
```

NOTE: The switch entered into the web browser is identified by Web Tools as the local domain.

Web Tools launches, displaying Fabric view.

3. Select **Fabric Topology**.

The Fabric Topology view displays as shown in Figure 3–4.

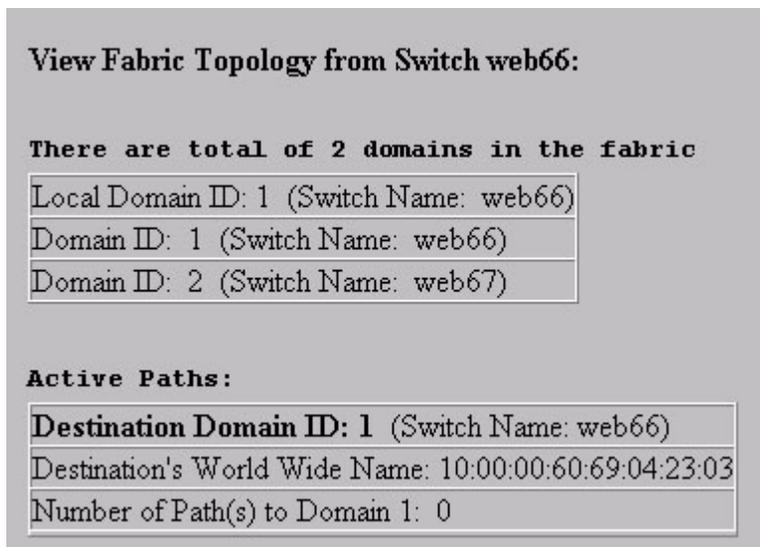


Figure 3–4: Fabric Topology view

Table 3–3 contains a description of the fields that appear in the Fabric Topology view.

Table 3–3: Fabric Topology View Fields Description

| Field Name | Description |
|--|---|
| View Fabric Topology from Switch [<i>switch name</i>]: | Lists the switch in the domain that is assumed to be the local domain. |
| There are a total of [<i>n</i>] domains in the fabric. | The number of domains in the fabric. |
| Local domain ID: | A number that uniquely identifies the local switch within the fabric, and the name of the switch. |
| Domain ID: (may be more than one) | A number that uniquely identifies the switch within the fabric, and the name of the switch. |
| Active Paths: | This line is followed by information about each destination domain, including information about each of the paths between that domain and the local domain. |

Table 3–3: Fabric Topology View Fields Description (Continued)

| Field Name | Description |
|-------------------------------|--|
| Destination Domain ID: | 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. |
| Destination's Worldwide Name: | The WWN of the destination domain. |
| Number of Paths: | The number of active paths between the destination domain and the local domain. |

Name Server Table

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.

To access the Name Server Table:

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. Select **Name Server**.

The Name Server Table Show screen displays as shown in Figure .

| Domain # | Port # | Port ID | Port Type | Port WWN | Node WWN | Symbolic Name |
|----------|--------|---------|-----------|-------------------------|-------------------------|------------------------------|
| 19 | 1 | 131121 | N | 10:00:00:00:c9:22:29:8c | 00:00:00:00:00:00:00 | NULL |
| 19 | 2 | 1312ef | NL | 21:00:00:e0:8b:01:57:f8 | 20:00:00:e0:8b:01:57:f8 | NULL |
| 19 | 3 | 131321 | N | 21:00:00:e0:8b:01:e6:ad | 20:00:00:e0:8b:01:e6:ad | NULL |
| 222 | 0 | de1021 | N | 10:00:00:e0:69:f0:15:1c | 10:00:00:e0:69:f0:15:1c | NULL |
| 222 | 7 | de1721 | N | 21:00:00:e0:8b:01:e1:ad | 20:00:00:e0:8b:01:e1:ad | NULL |
| 2 | 7 | 0217e1 | NL | 21:00:00:20:37:11:17:ab | 20:00:00:20:37:11:17:ab | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217e2 | NL | 21:00:00:20:37:11:d:6f | 20:00:00:20:37:11:d:6f | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217e4 | NL | 21:00:00:20:37:11:12:05 | 20:00:00:20:37:11:12:05 | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217e8 | NL | 21:00:00:20:37:11:b:54 | 20:00:00:20:37:11:b:54 | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217ef | NL | 21:00:00:20:37:11:a:8a | 20:00:00:20:37:11:a:8a | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217d6 | NL | 21:00:00:20:37:11:d:47 | 20:00:00:20:37:11:d:47 | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217d9 | NL | 21:00:00:20:37:11:19:58 | 20:00:00:20:37:11:19:58 | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217da | NL | 21:00:00:20:37:11:d:39 | 20:00:00:20:37:11:d:39 | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217dc | NL | 21:00:00:20:37:11:d:7c | 20:00:00:20:37:11:d:7c | [28]"SEAGATE ST118273 CLAR18 |
| 2 | 7 | 0217e0 | NL | 21:00:00:20:37:11:c:0c | 20:00:00:20:37:11:c:0c | [28]"SEAGATE ST118273 CLAR18 |
| 10 | 7 | 0a17e4 | NL | 22:00:00:20:37:00:b5:ba | 20:00:00:20:37:00:b5:ba | [28]"SEAGATE ST39102FC F3 |

Figure 3–5: Name Server Table Show screen

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

Table 3–4 contains a description of the fields that are included in the Name Server Table Show screen.

Table 3–4: Name Server Table Fields

| Field Name | Description |
|-----------------------|---|
| Auto Refresh | Check to enable Auto Refresh or uncheck to disable. |
| Auto Refresh Interval | If Auto Refresh is checked, enter the number of seconds for the refresh interval. |
| Refresh | Select to refresh the window immediately. |
| Done | Select to close the window. |

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

Table 3–5: Additional Name Server Table Columns

| Column Name | Description |
|--------------------|--|
| Domain # | The domain ID of the switch to which the device is connected. |
| Port # | The number of the switch port to which the device is connected. |
| Port ID | The port ID of the device (24-bit hexadecimal value). |
| Port Type | The port type of the device (N for fabric direct attached port or NL for fabric direct attached loop port). |
| Port WWN | The worldwide name of the device port. |
| Node WWN | The worldwide name of the device node. |
| Symbolic Name | The symbolic name of the device assigned through the SCSI INQUIRY command. |
| FC4 Types | The fibre channel FC4 layer types supported by the device, such as IP or FCP. |
| COS | The fibre channel classes of service supported by the device. |
| Fabric Port Name | The name of the fabric port in use by the device. |
| Port IP Address | The IP address of the fabric port. |
| Hard Address | The hard address of the fabric port. |
| Member of Zones | 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

A Zoning license and administrative privileges are required to access this view (optional software). 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 specifically. For more detailed information about Zoning, see the *Zoning User Guide*.

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.

To access the Zone Administration 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/
```

This switch is assumed to be the local domain. Web Tools launches, displaying Fabric view.

3. Select **Zone Admin**.

A Enter Network Password screen displays requesting User Name and Password (Figure 3–6).

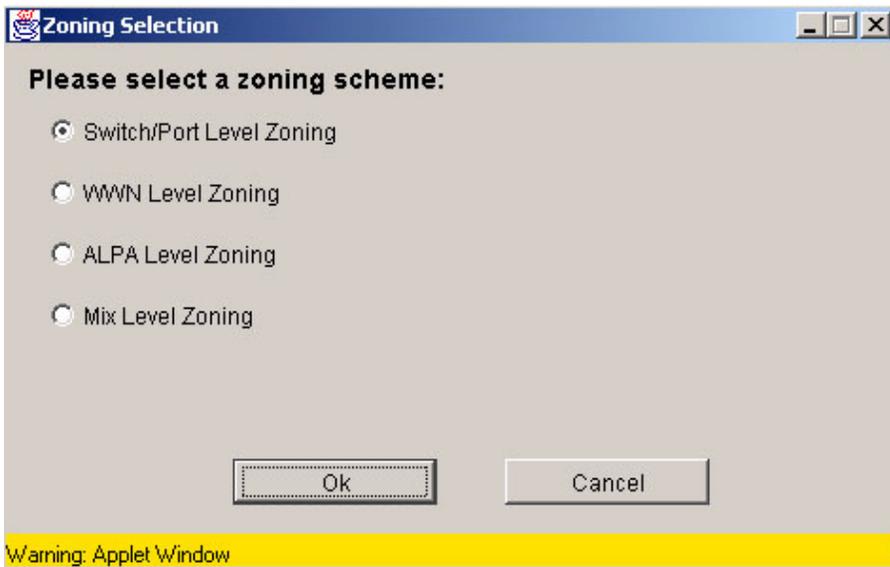
4. Enter User Name and Password.
5. Click **OK**. The Zoning Selection menu displays, as shown in Figure 3–7.



The dialog box titled "Enter Network Password" contains a key icon and the instruction "Please type your user name and password." It displays the site "web67" and realm "FC Switch Administration'Secure Realm". The "User Name" field is filled with "admin" and the "Password" field is masked with "xxxxxxx". There is an unchecked checkbox for "Save this password in your password list" and "OK" and "Cancel" buttons at the bottom.

Figure 3–6: Enter Network Password screen

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



The dialog box titled "Zoning Selection" asks the user to "Please select a zoning scheme:". It features four radio button options: "Switch/Port Level Zoning" (selected), "WWN Level Zoning", "ALPA Level Zoning", and "Mix Level Zoning". "Ok" and "Cancel" buttons are at the bottom. A yellow warning bar at the bottom of the dialog reads "Warning: Applet Window".

Figure 3–7: Zoning Selection menu

A brief description of each of the zoning scheme selections is described in Table 3–6, and a detailed description of the schemes is contained in the following sections..

Table 3–6: Zoning Schemes

| Scheme Name | Description |
|--------------------------|---|
| Switch/Port Level Zoning | 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. |
| WWN Level Zoning | 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. |
| AL_PA Level Zoning | 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. |
| Mixed Level Zoning | In this mode, any object can be selected to be a member of a zone, alias or configuration file. |

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 displayed as shown in Figure 3–8.

The Switch/Port Level Zoning menu contains the following tabs:

- Port Alias Tab on page 3-15
- Port Zone Tab on page 3-17
- QuickLoop Tab on page 3-20
- Port Fabric Assist Tab on page 3-22
- Port Config Tab on page 3-24

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 3–8.



Figure 3–8: Switch/Port Level Zoning menu Port Alias tab

Table 3–7 contains a description of the fields on the Port Alias tab.

Table 3–7: Port Alias Tab Fields Description

| Field Name | Description |
|--------------------------|--|
| Alias Name | Select an existing alias name to be modified. |
| Create Alias | 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. |
| Delete Alias | Select to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones. |
| Rename Alias | 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. |
| Member Selection List | This field contains a list of potential alias members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| [Alias] Members | 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.” |
| Search Mem | Select to search for a Switch name, WWN, Alias, Zone, QuickLoop in the Member Selection List based on the type of objects displayed in that list. |
| Add FA Host | Add a Fabric Assist Host by highlighting a member from the list on the right and moving it to the left. |
| Add Mem | 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. |
| Remove Mem | Select to remove the member selected from the Alias Name Members Selection list. |
| Add Sw/Port | Select to add a switch/port combination that currently is not part of the fabric. |
| Add Switch/ Port Host | Select to add a switch/port host combination that currently is not part of the fabric and therefore not available in the Member Selection List. |

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

| Field Name | Description |
|------------|---|
| Ref Zone | Select to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Select to add or delete a WWN to or from all the Aliases, Zones defined. |
| Rpl WWN | Select to replace a WWN with another one in all Aliases, Zones defined. |
| OK | Applies the changes to the switch and exits the frame. |
| Apply | 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. |
| Close | Select to exit the frame without making any changes to the switch. |
| Clr All | Select to clear all Aliases, Zones, Configs locally on 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 3–9.

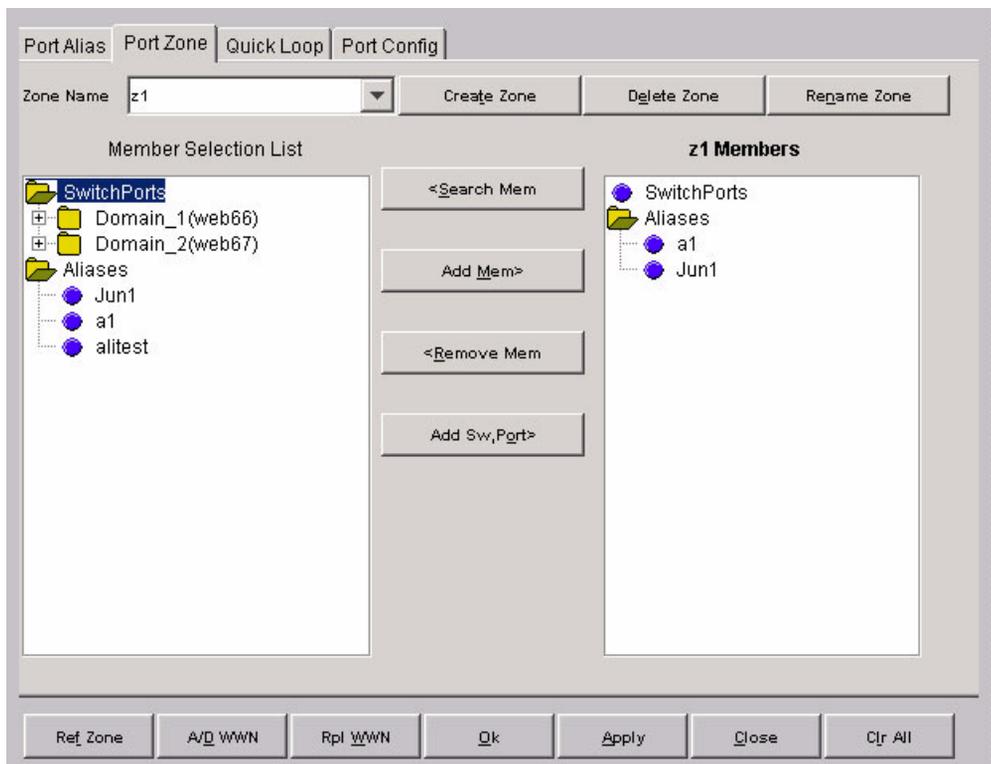


Figure 3–9: Switch/Port Level Zoning menu Port Zone tab

Table 3–8 contains a description of the fields on the Port Zone tab.

Table 3–8: Port Zone Tab Fields Description

| Field Name | Description |
|-------------|---|
| Zone Name | To modify an existing zone, select a zone name. |
| Create Zone | 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. |
| Delete Zone | Select to delete the zone selected in the Zone Name field. Deleting a zone automatically removes it from all zone configurations. |

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

| Field Name | Description |
|-----------------------|--|
| Rename Zone | 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. |
| Search Mem | Select to search the list of potential zone members. |
| Member Selection List | A list of potential zone members, including switches, ports, WWNs, aliases, and QuickLoop AL_PAs, and Fabric Assists. |
| Add Mem | 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). |
| Remove Mem | Select to remove the selected member from the Zone name Members list. |
| [Zone name] Members | 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”. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the Aliases, Zones defined. |
| Rpl WWN | Click to replace a WWN with another one in all Aliases, Zones defined. |
| OK | Applies the changes to the switch and exits the frame. |
| Apply | 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. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all Aliases, Zones, Configs locally on 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 on page 4-63.

The QuickLoop tab is shown in Figure 3–10.

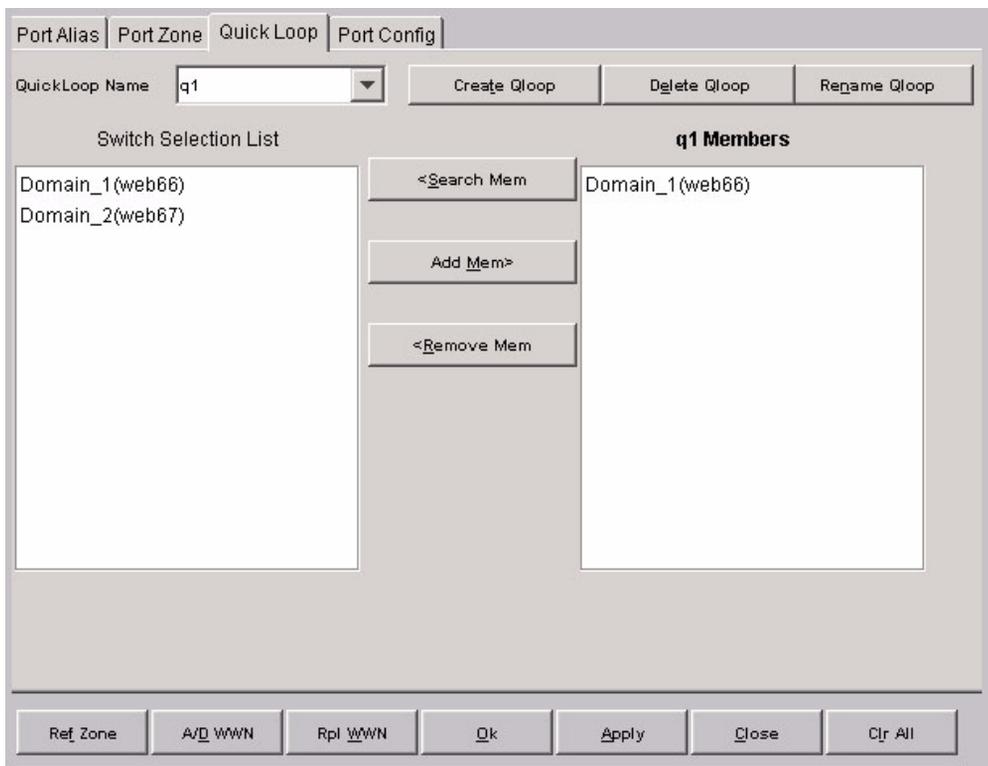


Figure 3–10: Switch/Port Level Zoning menu QuickLoop tab

Table 3–9 contains a description of the fields on the QuickLoop tab.

Table 3–9: QuickLoop Tab Fields Description

| Field Name | Description |
|--------------------------|--|
| QuickLoop Name | To modify an existing QuickLoop, select a QuickLoop name. |
| Create Qloop | 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. |
| Delete Qloop | 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. |
| Rename Qloop | 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. |
| Switch Selection List | A list of the switches available to add to the QuickLoop. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop in the Switch Selection List based on the type of objects displayed in that list. |
| Add Mem | Click to add the switch selected in the Switch Selection List to the QuickLoop Members list. |
| Remove Mem | Click to remove the selected member from the QuickLoop Name list. |
| [QuickLoop name] Members | 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”. |
| Apply | 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. |
| Close | Click to cancel all changes since the changes were last applied and to exit Zone Administration. Changes cannot be cancelled once they are applied. |
| Clr All | Click to apply all changes made since the Zone Administration view was opened and to exit the Zone Administration view. |

Port Fabric Assist Tab

Use the Port Fabric Assist tab to create and manage Fabric Assists id used in conjunction with Zoning. The Port Fabric Assist tab is shown in Figure 3–11.

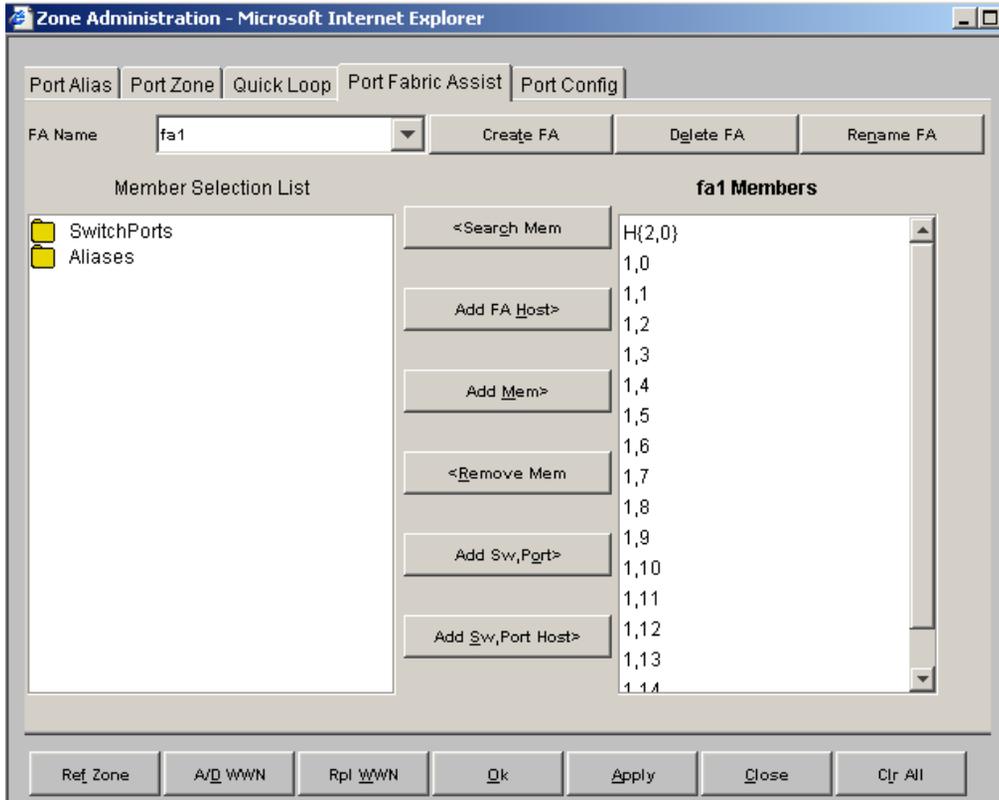


Figure 3–11: The Port Fabric Assist tab of the Switch/Port Level Zoning menu

Table 3–10 contains a description of the fields on the Port Fabric Assist tab.

Table 3–10: Port Fabric Assist Tab Fields Description

| Field Name | Description |
|------------------------------|---|
| FA Name | Select the existing Port Fabric Assist name to be modified. |
| Create FA | 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. |
| Delete FA | 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. |
| Rename FA | Click to edit the name of the Port Fabric Assist selected in the FA Name field. |
| Member Selection List | This field displays a list of members available to add to the Port Fabric Assist list. |
| Add FA Host | 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. |
| Add Mem | Click to add the member selected in the Member Selection List to the Port Fabric Assist name list. |
| Remove Mem | Click to remove the selected member from the Port Fabric Assist name list. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, FA Zone in the Member Selection List based on the type of objects displayed in that list. |
| Add Switch/Port | Click to add a switch/port combination that is not currently part of the fabric. |
| Add Switch/Port Host | Click to add a switch/port/host combination that currently is not part of the fabric. |
| [Fabric Assist name] Members | 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”. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |

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

| Field Name | Description |
|-------------------|---|
| A/D WWN | Click to add or delete a WWN to or from all the Aliases, Zones, FA Zones defined. |
| Rpl WWN | Click to replace a WWN with another one in all Aliases, Zones, FA Zones defined. |
| Apply | 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. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all Aliases, Zones, Configs, 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 3–12.

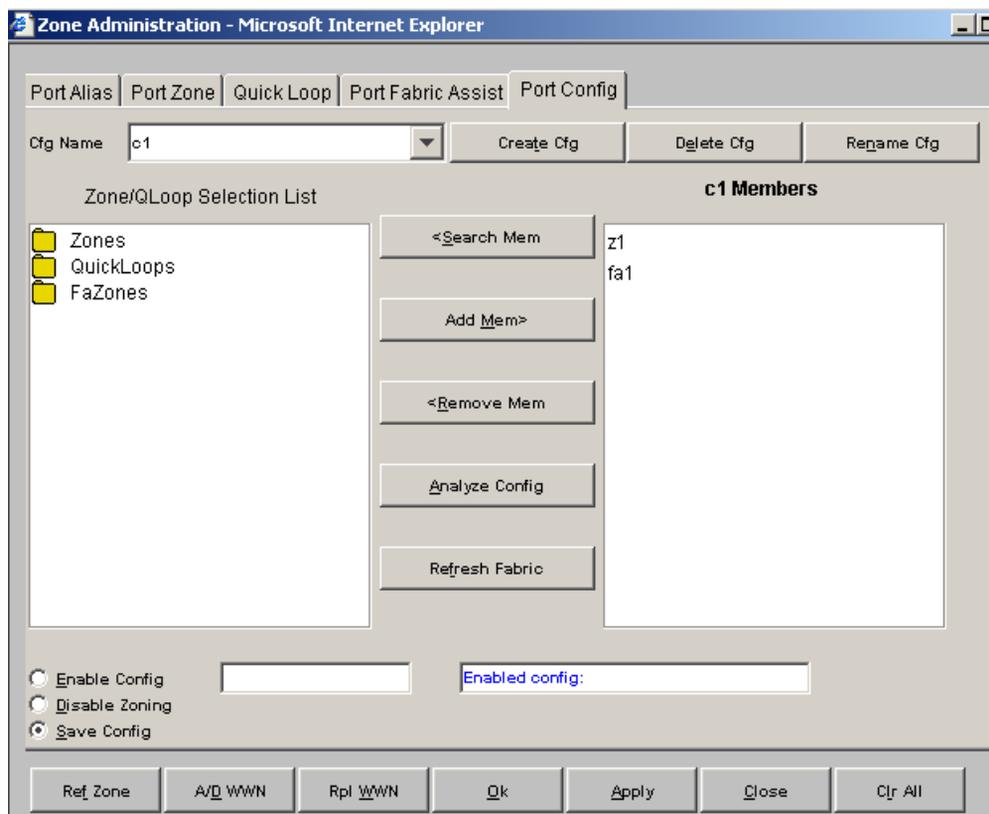


Figure 3–12: Switch/Port Level Zoning menu Port Config tab

Table 3–11 contains a description of the fields and buttons of the Port Config tab.

Table 3–11: Port Config Tab Fields Description

| Field Name | Description |
|------------|--|
| Cfg Name | Select an existing configuration to modify. |
| Create Cfg | 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. |
| Delete Cfg | Click to delete the configuration selected in the Cfg Name field. |

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

| Field Name | Description |
|---------------------------|--|
| Rename Cfg | Click to edit the name of the configuration selected in the Cfg Name field. |
| Zone/QLoop Selection List | This field provides a list of the zones and QuickLoops available to add to the configuration. |
| Add Mem | Click to add the switch selected in the Zone/QLoop Selection List to the Config Members list. |
| Remove Mem | Click to remove the selected member from the Config Members list. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop in the Member Selection List based on the type of objects displayed in that list. |
| Config Members | 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. |
| Enable Config | Check to enable the configuration selected in the Cfg Name field, or uncheck to disable it. |
| Disable Zoning | Check to disable zoning. |
| Analyze Config | Analyzes the configuration that is selected along with its member zones and aliases. A zoning configuration error screen (See Figure 3–12) appears in the event of a conflict. |
| Refresh Fabric | Click to refresh the fabric view with the latest Domain/Port and WWN changes. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the Aliases, Zones defined. |
| Rpl WWN | Click to replace a WWN with another one in all Aliases, Zones defined. |
| Apply | 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. |

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

| Field Name | Description |
|------------|--|
| Close | Click to exit the window without making any changes to the switch. |
| Ok | Applies the changes to the switch and exits the window. |
| Clr All | Click to clear all Aliases, Zones, Configs locally on the window. |

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. This screen is obtained by way of the **Analyze Config** filed of the Port Confi Tabs. 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 3–13.

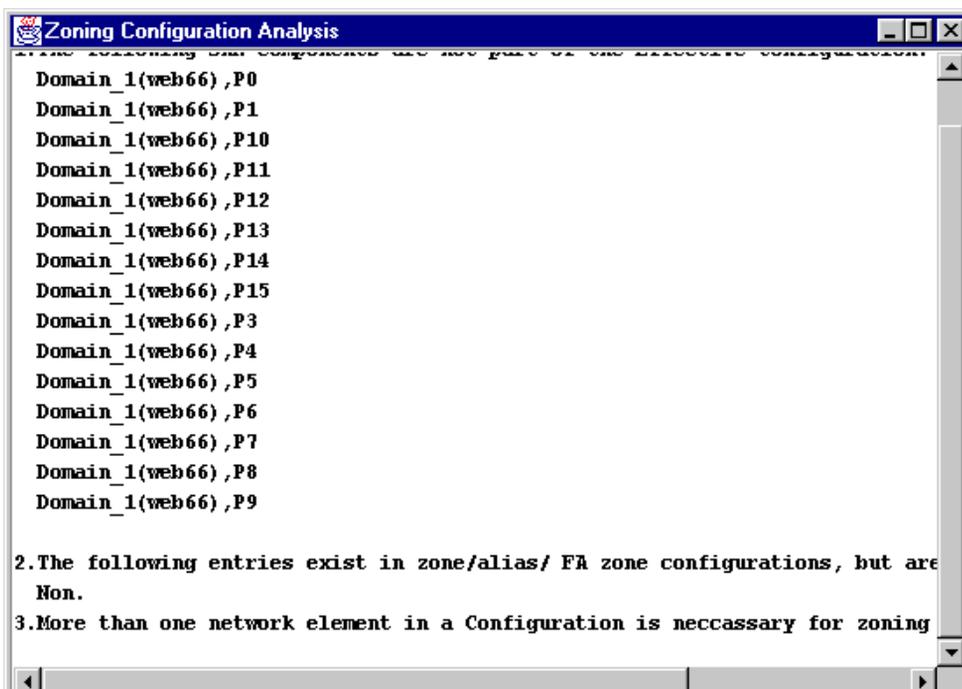
Figure 3–13: Zoning Configuration Analysis screen

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 Tab on page 3-28
- WWN Zone on page 3-31
- QuickLoop on page 3-33
- WWN Fabric Assist on page 3-35
- WWN Config Tab on page 3-37



WWN Alias Tab

Use the WWN Alias tab to configure WWN Aliases. Figure 3–14 shows the WWN Alias tab.

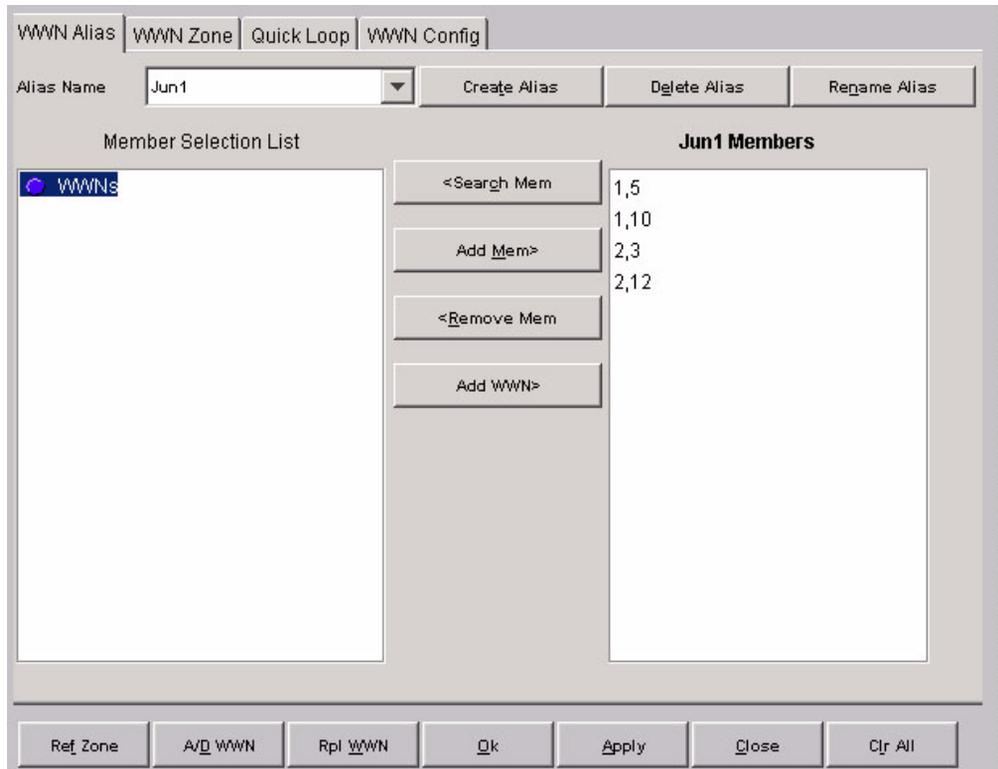


Figure 3–14: WWN Level Zoning menu WWN Alias tab

Table 3–12 contains a description of the fields on the WWN Alias tab.

Table 3–12: WWN Alias Tab Fields Description

| Field Name | Description |
|--------------|--|
| Alias Name | Select an existing alias to modify. |
| Create Alias | 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. |
| Delete Alias | Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones. |

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

| Field Name | Description |
|-----------------------|---|
| Rename Alias | 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. |
| Member Selection List | A list of potential alias members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| Alias Members | 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.” |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, in the Member Selection List based on the type of objects displayed in that list. |
| Add FA Host | 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. |
| Add Mem | 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. |
| Remove Mem | Click to remove the selected member from the Configuration name list. |
| Add WWN | Click to add a WWN that currently is not part of the Fabric. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined. |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the window. |

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

| Field Name | Description |
|------------|--|
| Apply | Click to apply the changes to the switch. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all aliases, zones, configs locally on 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 3–15.

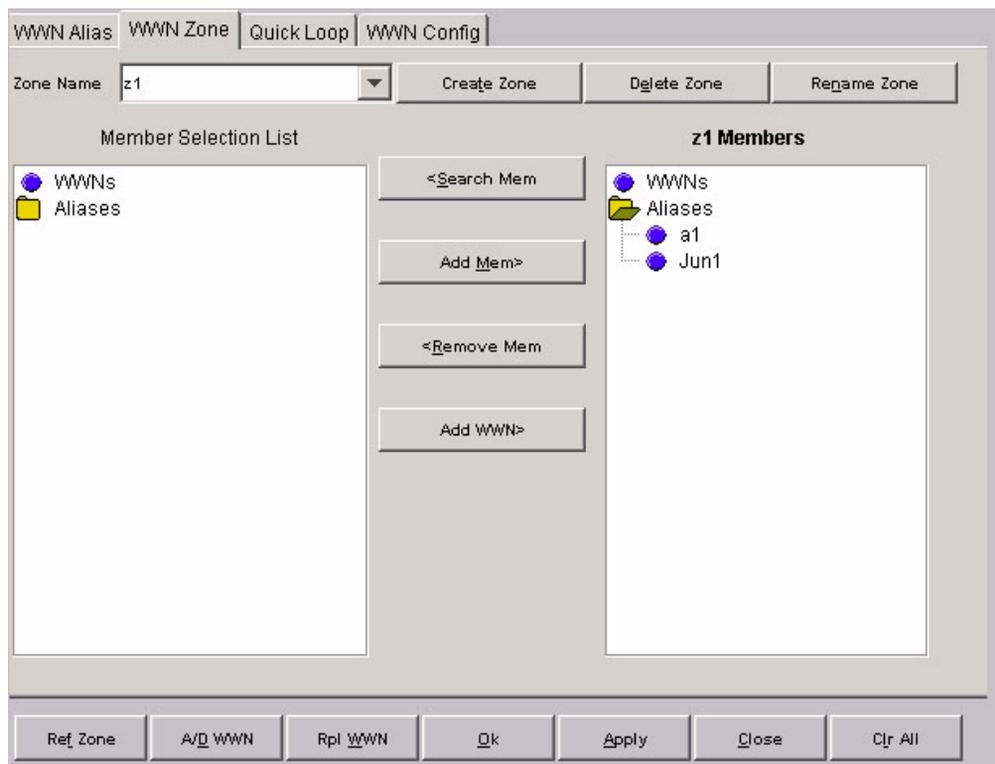
**Figure 3–15: WWN Level Zoning menu WWN Zone tab**

Table 3–13 contains a description of the fields on the WWN Zone tab.

Table 3–13: WWN Zone Tab Fields Description

| Field Name | Description |
|-----------------------|--|
| Zone Name | Select an existing zone member to modify. |
| Create Zone | Click to create a new zone member. |
| Delete Zone | Click to delete a zone member. |
| Rename Zone | Click to rename a zone member. |
| Member Selection List | This field displays a list of potential zone members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| Zone Members | 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”. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, in the Member Selection List based on the type of objects displayed in that list. |
| Add Mem | Click to add a member from the Member Selection list into the Zone Member contents. |
| Remove Mem | Click to remove a member from the Zone Member list. |
| Add WWN | Click to add a WWN that is not currently part of the Fabric. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the switch. |
| Apply | Click to apply the changes to the switch. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all aliases, zones, configs locally on 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 QuickLoop Tab on page 3-20 in this document.

The QuickLoop tab is shown in Figure 3–16.

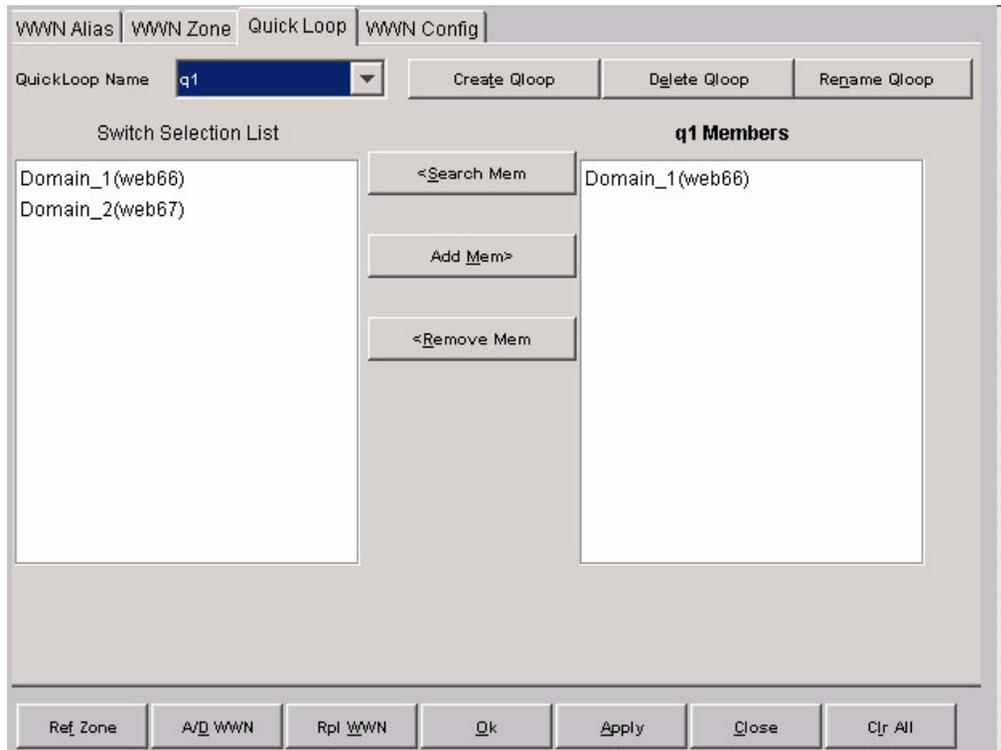


Figure 3–16: WWN Level Zoning menu QuickLoop tab

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

Table 3–14: QuickLoop Tab Fields Description

| Field Name | Description |
|-----------------------|---|
| QuickLoop Name | Select an existing QuickLoop member to modify. |
| Create Qloop | Click to create a new QuickLoop member. |
| Delete Qloop | Click to delete a QuickLoop member. |
| Rename Qloop | Click to rename a QuickLoop member. |
| Switch Selection List | This field displays a list of potential QuickLoop members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| QuickLoop Members | 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”. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop in the Member Selection List based on the type of objects displayed in that list. |
| Add Mem | Click to add a member from the member selection list into the QuickLoop member contents. |
| Remove Mem | Click to remove a member from the QuickLoop member list when selected. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined. |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the switch. |
| Apply | Click to apply the changes to the switch. |
| Close | 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 3-17.

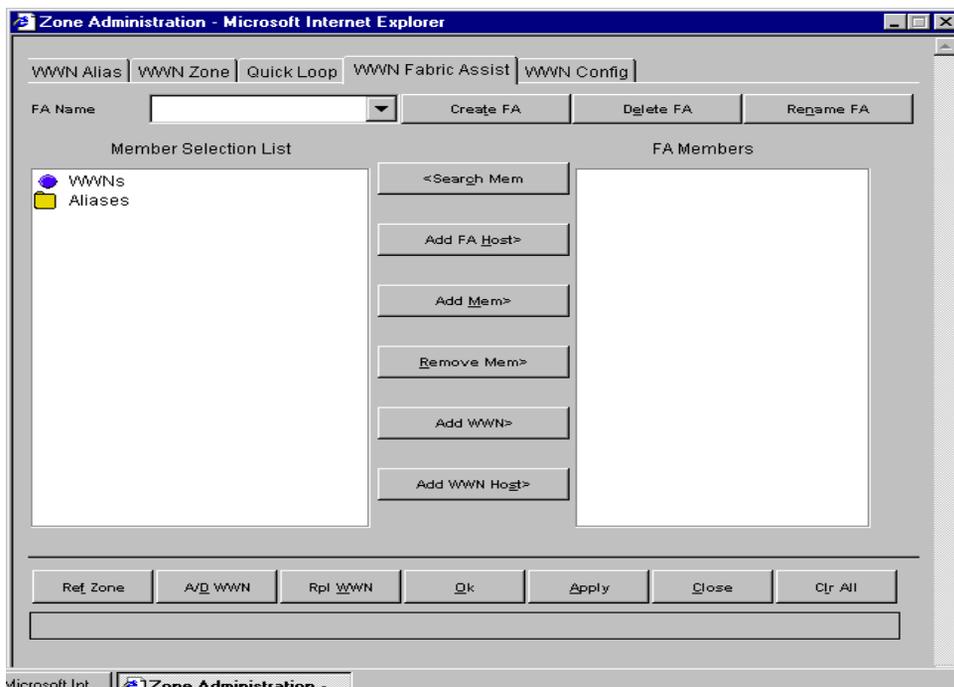


Figure 3–17: WWN Fabric Assist tab of the WWN Level Zoning menu

Table 3–15 contains a description of the fields on the WWN Fabric Assist tab.

Table 3–15: WWN Fabric Assist Tab Fields Description

| Field Name | Description |
|------------|--|
| FA Name | Select an existing WWN Fabric Assist name to modify. |
| Create FA | 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. |

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

| Field Name | Description |
|-------------------------------------|--|
| Delete FA | 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. |
| Rename FA | Click to edit the name of the WWN Fabric Assist selected in the FA Name field. |
| Member Selection List | This field displays a list of members available to add to the WWN Fabric Assist. |
| Add FA Host | 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. |
| Add Mem | Click to add the member selected in the Member Selection List to the WWN Fabric Assist name list. |
| Remove Mem | Click to remove the selected member from the WWN Fabric Assist name list. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, FA Zone in the Member Selection List based on the type of objects displayed in that list. |
| [WWN Fabric Assist name] FA Members | 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”. |
| Ref Zone | Click to refresh the local zoning data base copy from the switch. This button would automatically flash red/gray if the fabric zoning data is changed by another client. |
| Add WWN | Click to add a WWN that is not currently part of the Fabric. |
| Add WWN Host | Click to add a WWN Host that is not currently part of the Fabric. |
| A/D WWN | Click to add/delete a WWN to/from all the Aliases, Zones, FA Zones defined. |
| Rpl WWN | Click to replace a WWN with another one in all Aliases, Zones, FA Zones defined. |
| OK | Select OK to the changes to the switch and exit the window. |

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

| Field Name | Description |
|------------|--|
| Apply | Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all Aliases, Zones, Configs, FA Zones locally on the client. |

WWN Config Tab

Use the WWN Config tab to specify which zones comprise a WWN Zone Configuration file. The WWN Config tab is shown in Figure 3–18.

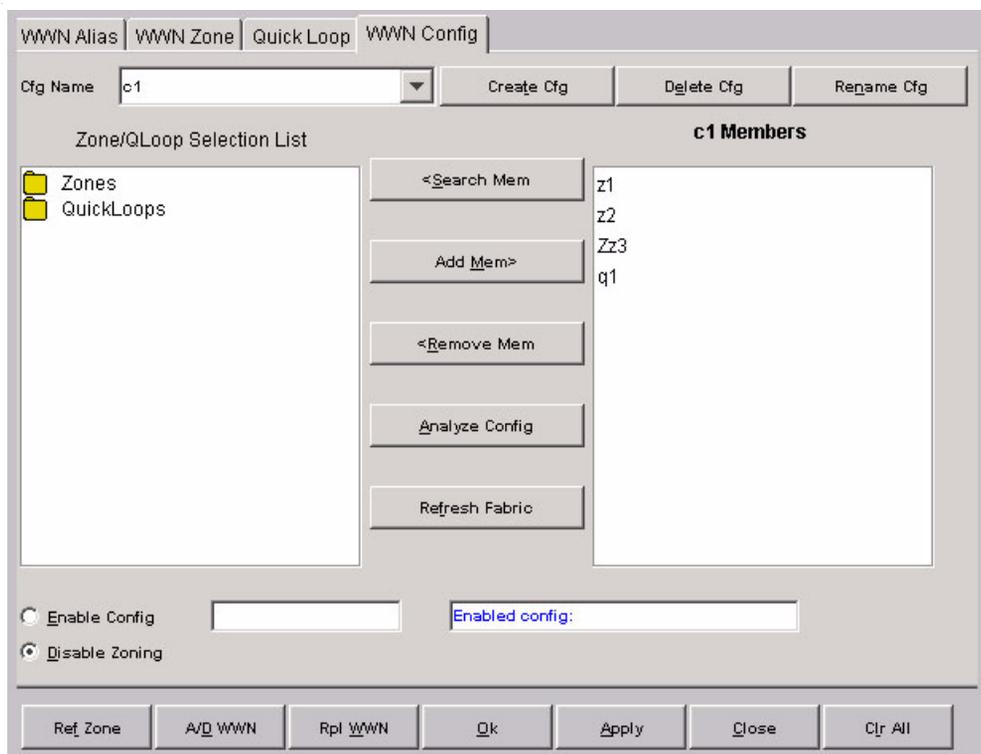


Figure 3–18: WWN Level Zoning menu WWN Config tab

Table 3–16 contains a description of the fields on the WWN Config tab.

Table 3–16: WWN Config Tab Fields Description

| Field Name | Description |
|---------------------------|---|
| Cfg Name | Select to modify an existing WWN configuration name to be modified. |
| Create Cfg | Click to create a new WWN configuration. |
| Delete Cfg | Click to delete a WWN configuration. |
| Rename Cfg | Click to rename a WWN configuration. |
| Zone/QLoop Selection List | This field displays a list of Zone and QuickLoop members available to add to the WWN configuration. |

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

| Field Name | Description |
|----------------|--|
| Add Mem | Click to add a member from the config members list into the zone selection list. |
| Remove Mem | Click to remove a member from the zone selection list into the Config Member list. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, Qloop in the Zone Selection List based on the type of objects displayed in that list. |
| Config Members | 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”. |
| Analyze Config | Click to analyze the configuration that is selected along with its member zones and aliases. A zoning error screen (see Figure 3–13) appears in the event of a conflict. |
| Enable Config | If this option is checked, and the Apply button pressed, the selected configuration would be used for zoning the fabric. |
| Disable Config | Click the Disable Config radio button to disable the selected WWN Zone configuration. |
| Refresh Fabric | Click to refresh the fabric view with the latest Domain/Port and WWN changes. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add/delete a WWN to/from all the Aliases, Zones defined. |
| Rpl WWN | Click to replace a WWN with another one in all Aliases, Zones defined. |
| OK | Applies the changes to the switch and exits the switch. |
| Apply | Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied. |

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

| Field Name | Description |
|------------|--|
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all Aliases, Zones, Configs locally on 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 3–19 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:

- AL_PA Device Alias on page 3-40
- AL_PA Device Zone on page 3-43
- QuickLoop on page 3-45
- AL_PA Device Config on page 3-47

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 3–19.



Figure 3–19: AL_PA Level Zoning menu AL_PA Device Alias tab

Table 3–17 contains a description of the fields on the AL_PA Device Alias tab.

Table 3–17: AL_PA Device Alias Tab Fields Description

| Field Name | Description |
|--------------|--|
| Alias Name | Select an existing alias name to modify. |
| Create Alias | 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. |
| Delete Alias | Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones. |

Table 3–17: AL_PA Device Alias Tab Fields Description (Continued)

| Field Name | Description |
|-----------------------|---|
| Rename Alias | 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. |
| Member Selection List | This field displays a list of potential alias members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| Alias Members | 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.” |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, Qloop in the Member Selection List based on the type of objects displayed in that list. |
| Add FA Host | 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. |
| Add Mem | Click to add a member from the Member Selection List to the Alias Members list. |
| Add Device | Click to allow adding a device that currently is not part of the fabric. |
| Remove Mem | Click to remove the selected member from the Alias Members list. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined. |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the switch. |
| Apply | Click to apply the changes to the switch. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all aliases, zones, configs locally on 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 3–20.

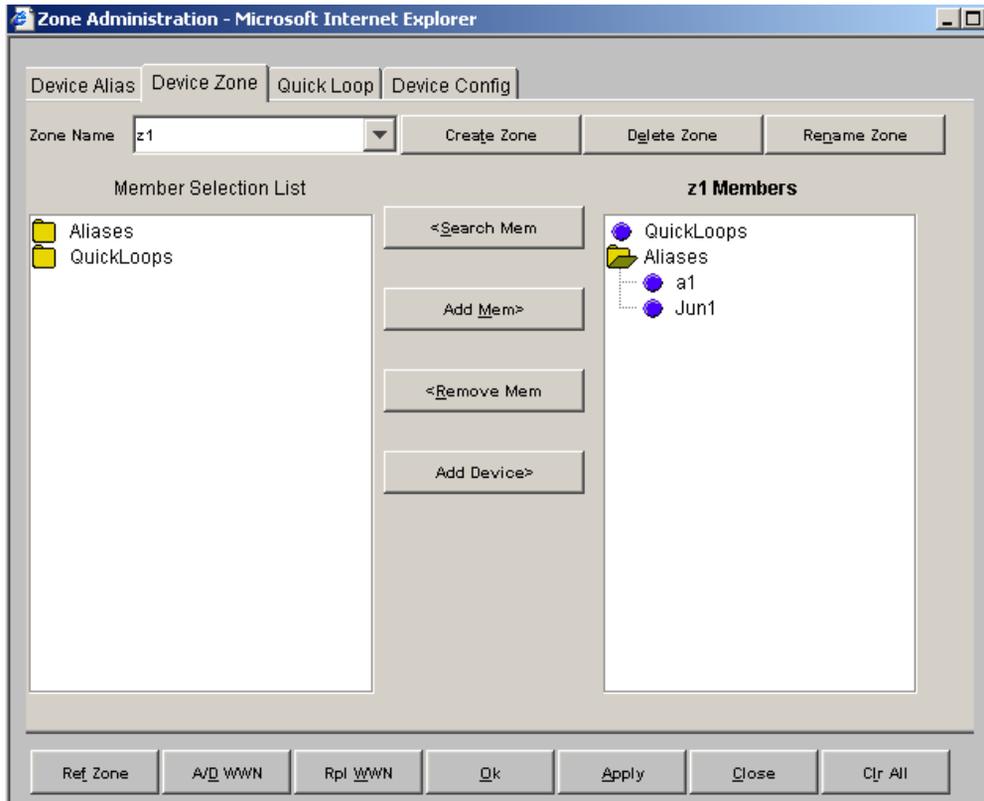


Figure 3–20: AL_PA Level Zoning menu AL_PA Device Zone tab

Table 3–18 contains a description of the fields on the AL_PA Device Zone tab.

Table 3–18: AL_PA Device Zone Tab Fields Description

| Name | Description |
|-------------|---|
| Zone Name | Select an existing zone member to modify. |
| Create Zone | Click to create a new zone member. |

Table 3–18: AL_PA Device Zone Tab Fields Description (Continued)

| Name | Description |
|-----------------------|--|
| Delete Zone | Click to delete a zone member. |
| Rename Zone | Click to rename a zone member. |
| Member Selection List | This field displays a list of potential zone members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| Zone Members | 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.” |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, in the Member Selection List based on the type of objects displayed in that list. |
| Add Device | Click to add a device that currently is not part of the Fabric. |
| Add Mem | Click to add a member from the member selection list into the Zone Members list. |
| Remove Mem | Click to remove a member from the Zone Member List when selected. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the switch. |
| Apply | Click to apply the changes to the switch. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all aliases, zones, configs locally on the switch. |

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 QuickLoop Tab on page 4-63. The QuickLoop tab is shown in Figure 3-21.

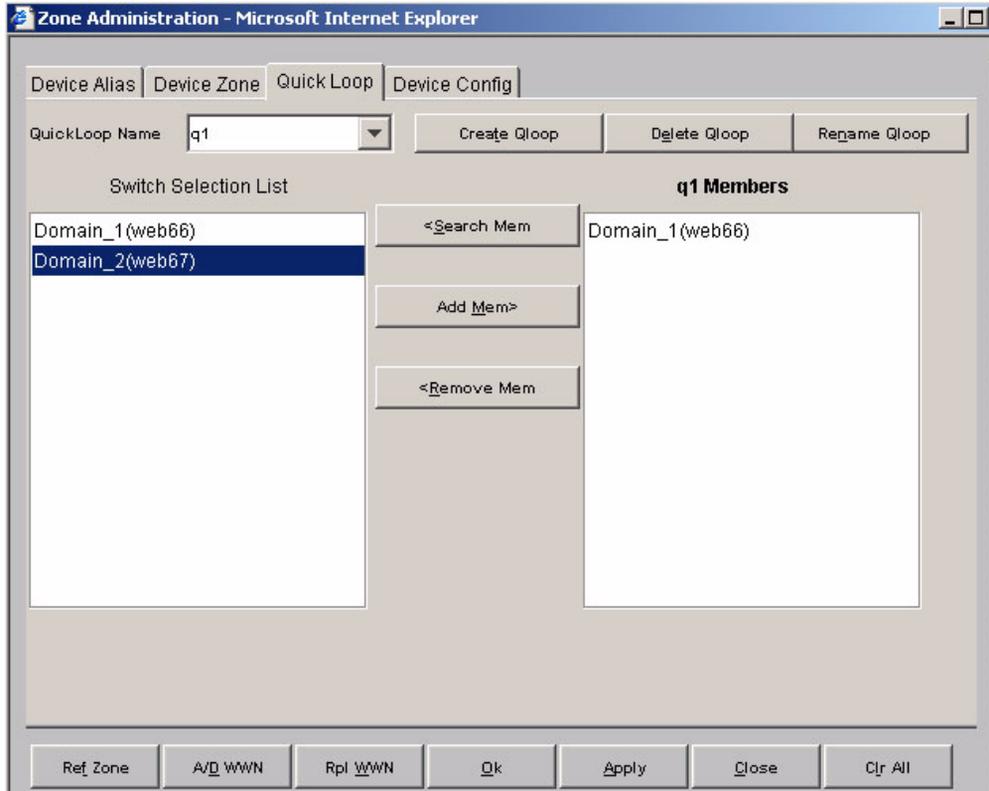


Figure 3-21: AL_PA Level Zoning menu QuickLoop tab

Table 3-19 contains a description of the fields on the QuickLoop tab.

Table 3–19: QuickLoop Tab Fields Description

| Field Name | Description |
|-----------------------|---|
| QuickLoop Name | Select an existing QuickLoop member name to modify. |
| Create Qloop | Click to create a new QuickLoop member. |
| Delete Qloop | Click to delete a QuickLoop member. |
| Rename Qloop | Click to rename a QuickLoop member. |
| Switch Selection List | This field displays a list of potential QuickLoop members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| QuickLoop Members | 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.” |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, in the Member Selection List based on the type of objects displayed in that list. |
| Add Mem | Click to add a member from the member selection list into the QuickLoop member contents. |
| Remove Mem | Click to remove a member from the QuickLoop member list when selected. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined. |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the switch. |
| Apply | Click to apply the changes to the switch. |
| Close | 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 3–22.

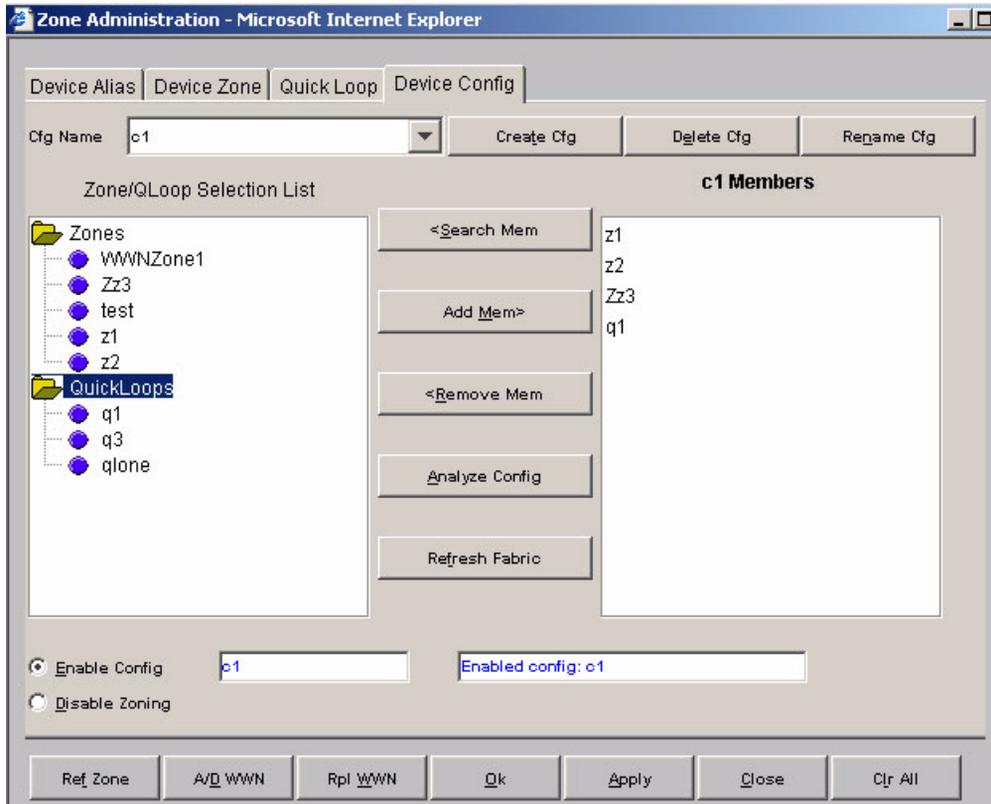


Figure 3–22: AL_PA Level Zoning menu AL_PA Device Config tab

Table 3–20 contains a description of the fields on the AL_PA Device Config tab.

Table 3–20: AL_PA Device Config Tab Fields Description

| Field Name | Description |
|---------------------------|--|
| Cfg Name | Select an existing AL_PA Configuration name to modify. |
| Create Cfg | Click to create a new AL_PA configuration. |
| Delete Cfg | Click to delete a AL_PA configuration. |
| Rename Cfg | Click to rename a AL_PA configuration. |
| Zone/QLoop Selection List | A list of Zone/QuickLoop members available to add to the AL_PA configuration. |
| Add Mem | Click to add a member from the Zone Selection List into the Configuration Member List. |
| Remove Mem | Click to remove a member from the Zone Selection List into the Configuration Member List. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, Qloop in the Member Selection List based on the type of objects displayed in that list. |
| AL_PA Config Members name | 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.” |
| Analyze Config | Click to analyze the configuration that is selected along with it's member zones and aliases, and comes up with a zoning error screen (See Figure 3-13) in the event of a conflict. |
| Enable Config | Select this option and press the Apply button to enable the selected config for zoning the fabric. |
| Disable Zoning | Select this option and press the Apply button to disable the selected config for zoning the fabric. |
| Refresh Fabric | Click to refresh the fabric view with the latest Domain/Port and WWN changes. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the Aliases, Zones defined. |

Table 3–20: AL_PA Device Config Tab Fields Description (Continued)

| Field Name | Description |
|------------|--|
| Rpl WWN | Click to replace a WWN with another one in all Aliases, Zones, defined. |
| OK | Applies the changes to the switch and exits the switch. |
| Apply | Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all Aliases, Zones, Configs locally on the switch. |

Mixed Level Zoning

Mixed Level Zoning is provided for backward compatibility of pre 3.0 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 3–23.

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

- Alias Tab on page 3-49
- Zone on page 3-52
- QuickLoop on page 3-54
- Fabric Assist on page 3-56
- Config Tab on page 3-58

Alias Tab

Use the Alias tab to set up mixed aliases. The Alias tab is shown in Figure 3–23.



Figure 3–23: Mixed Level Zoning menu Alias tab

Table 3–21 contains a description of the fields on the Alias tab.

Table 3–21: Alias Tab Fields Description

| Field Name | Description |
|--------------|--|
| Alias Name | Select an existing alias to modify. |
| Create Alias | 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. |
| Delete Alias | Click to delete the alias selected in the Alias Name field. Deleting an alias automatically removes it from all zones. |

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

| Field Name | Description |
|-----------------------|---|
| Rename Alias | 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. |
| Member Selection List | This field displays a of potential alias members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| Alias Members | 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.” |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, Qloop in the Member Selection List based on the type of objects displayed in that list. |
| Add FA Host | 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. |
| Add Mem | Click to add a member from the Member Selection List to the Alias Members list. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the window. |
| Apply | Click to apply the changes to the switch. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all aliases, zones, configs locally on 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 3–24.

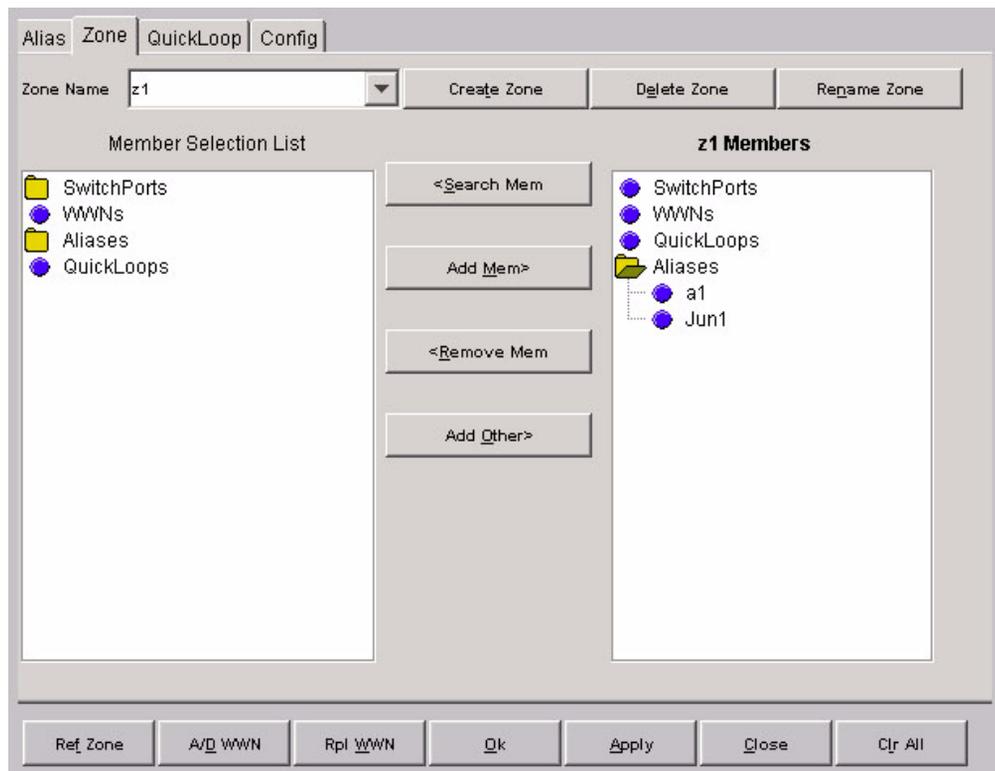


Figure 3–24: Mixed Level Zoning menu Zone tab

Table 3–22 contains a description of the fields on the Zone tab.

Table 3–22: Zone Tab Fields Description

| Field Name | Description |
|-------------|---|
| Zone Name | Select an existing zone member to modify. |
| Create Zone | Click to create a new zone member. |
| Delete Zone | Click to delete a zone member. |

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

| Field Name | Description |
|-----------------------|---|
| Rename Zone | Click to rename a zone member. |
| Member Selection List | This field displays a list of potential zone members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| Zone Members | 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”. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, in the Member Selection List based on the type of objects displayed in that list. |
| Add Mem | Click to add a member from the Member Selection List into the Zone Member contents. |
| Remove Mem | Click to remove a member from the zone member list when selected. |
| Add Other | Click to add a switch/port, WWN or a device that currently is not part of the Fabric. |
| Add Other Host | Select to add a host that is currently not part of the fabric. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined. |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the switch. |
| Apply | Click to apply the changes to the switch. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all aliases, zones, configs locally on 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 the Loop Tab on page 5-9 in this document. The QuickLoop tab is shown in Figure 3–25

The screenshot shows the 'QuickLoop' configuration tab. At the top, there are four tabs: 'Alias', 'Zone', 'QuickLoop', and 'Config'. Below the tabs, there is a 'QuickLoop Name' field with a dropdown menu showing 'q1'. To the right of this field are three buttons: 'Create Qloop', 'Delete Qloop', and 'Rename Qloop'. Below these buttons is a 'Switch Selection List' on the left and a 'q1 Members' list on the right. The 'Switch Selection List' contains two entries: 'Domain_1(web66)' and 'Domain_2(web67)'. The 'q1 Members' list contains one entry: 'Domain_1(web66)'. Between the two lists are three buttons: '<Search Mem', 'Add Mem>', and '<Remove Mem'. At the bottom of the window, there is a row of seven buttons: 'Ref Zone', 'A/D WWN', 'Rpl WWN', 'Ok', 'Apply', 'Close', and 'Clr All'.

Figure 3–25: Mixed Level Zoning menu QuickLoop tab

Table 3–23 contains a description of the fields on the QuickLoop tab.

Table 3–23: QuickLoop Tab Fields Description

| Name | Description |
|-----------------------|---|
| QuickLoop Name | Select an existing QuickLoop member to modify. |
| Create Qloop | Click to create a new QuickLoop member. |
| Delete Qloop | Click to delete a QuickLoop member. |
| Rename Qloop | Click to rename a QuickLoop member. |
| Switch Selection List | This field displays a list of potential QuickLoop members, including switches, ports, WWNs, and QuickLoop AL_PAs, and Fabric Assists. |
| QuickLoop Members | 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”. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, in the Member Selection List based on the type of objects displayed in that list. |
| Add Mem | Click to add a member from the member selection list into the QuickLoop member contents. |
| Remove Mem | Click to remove a member from the QuickLoop member list when selected. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the aliases, zones defined. |
| Rpl WWN | Click to replace WWN with another one in all aliases, zones defined. |
| OK | Click to apply the changes to the switch and exit the window. |
| Apply | Click to apply the changes to the switch. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Select to clear all Aliases, Zones, and Configs locally on the window. |

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 3–26.

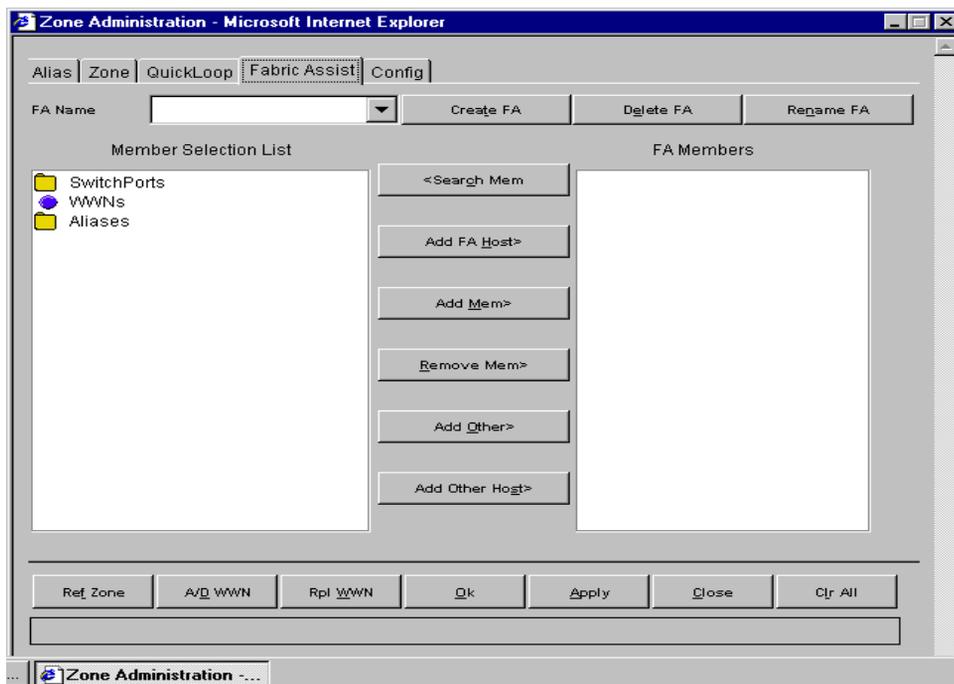


Figure 3–26: Fabric Assist tab of the Mixed Level Zoning menu

Table 3–24 contains a description of the fields on the Fabric Assist tab.

Table 3–24: Fabric Assist Tab Fields Description

| Name | Description |
|-----------|--|
| FA Name | Select an existing Fabric Assist name to be modified. |
| Create FA | 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. |

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

| Name | Description |
|-----------------------|---|
| Delete FA | 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. |
| Rename FA | Click to edit the name of the Fabric Assist selected in the FA Name field. |
| Member Selection List | This field displays a list of members available to add to the Fabric Assist. |
| Add FA Host | 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. |
| Add Mem | Click to add the member selected in the Member Selection List to the Fabric Assist name Members list. |
| Remove Mem | Click to remove the selected member from the Fabric Assist name Members list. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop, FA Zone in the Member Selection List based on the type of objects displayed in that list. |
| Add Other | Click to add a switch/port, WWN or a device that currently is not part of the Fabric. |
| Add Other Host | Click to add other host that currently is not part of the fabric. |
| Fabric Assist name | 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”. |
| Ref Zone | Click to refresh the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the Aliases, Zones, FA Zones defined. |

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

| Name | Description |
|---------|--|
| Rpl WWN | Click to replace a WWN with another one in all Aliases, Zones, FA Zones defined. |
| OK | Applies the changes to the switch and exits the window. |
| Apply | Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied. |
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Click to clear all Aliases, Zones, Configs, FA Zones locally on 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 3–27.

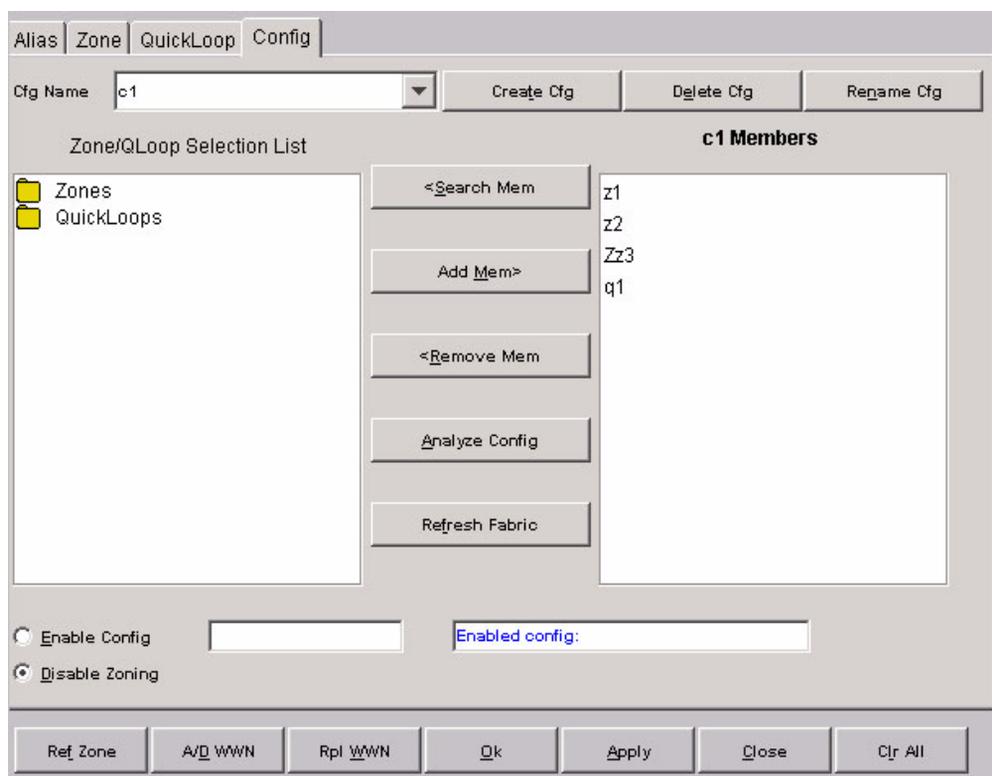


Figure 3–27: Mixed Level Zoning menu Config tab

Table 3–25 contains a description of the fields on the Config tab.

Table 3–25: Config Tab Fields Description

| Field Name | Description |
|---------------------------|---|
| Cfg Name | Select the existing Cfg name to be modified. |
| Create Cfg | Click to create a new configuration. |
| Delete Cfg | Click to delete a configuration. |
| Rename Cfg | Click to rename a configuration. |
| Zone/QLoop Selection List | A list of Zone/QuickLoop members available to add to the configuration. |

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

| Field Name | Description |
|----------------|--|
| Add Mem | Click to add a member from the Zone Selection list into the Config Member list. |
| Remove Mem | Click to remove a member from the Config Members list into the Zone Selection list. |
| Search Mem | Click to search for a Switch name, WWN, Alias, Zone, QuickLoop in the Member Selection List based on the type of objects displayed in that list. |
| Config Members | 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”. |
| Analyze Config | Click to analyze the configuration that is selected along with its member zones and aliases, and comes up with a zoning error screen (See Zoning Configuration Analysis Screen on page 3-27 in the event of a conflict). |
| Refresh Fabric | Click to refresh the fabric view with the latest Domain/Port and WWN changes. |
| Enable Config | If this option is checked, and the Apply button pressed, the selected config would be used for zoning the fabric. |
| Disable Zoning | Select this option and press the Apply button to disable the selected zoning configuration. |
| Ref Zone | Click to reload the local zoning data base copied from the switch. This button automatically flashes red/gray if the fabric zoning data is changed by another client. |
| A/D WWN | Click to add or delete a WWN to or from all the Aliases, Zones defined. |
| Rpl WWN | Click to replace a WWN with another one in all Aliases, Zones defined. |
| OK | Applies the changes to the switch and exits the window. |
| Apply | Click to apply all changes made including changes made on other tabs in the view. Changes cannot be cancelled once they are applied. |

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

| Field Name | Description |
|------------|---|
| Close | Click to exit the window without making any changes to the switch. |
| Clr All | Select to clear all Aliases, Zones, and Configs, locally on the window. |

Switch View

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

- Switch View on page 4-1
- Switch Events View on page 4-5
- Fabric Watch View on page 4-6
- Performance Monitor on page 4-17
- Administrative Interface on page 4-49
- Telnet Interface on page 4-78

Switch View

The Switch view represents the front panel of the switch, and displays when you click the **Switch** icon in Fabric view (see Figure 3–1). 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 calculated approximately once per second; however, the initial calculation does not occur until 30-60 seconds after the switch is booted.

To access Switch 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/
```

Web Tools launches, displaying Fabric view.

3. Click the **Switch** icon.

The Switch view displays as shown in Figure 4–1.



Figure 4–1: Switch view

The items and information available in Switch view are shown in Table 4–1.

Table 4–1: Switch View Information

| | |
|---|--|
| <p>Port icons</p>  | <p>The letters in the Port icon indicate the GBIC (Gigabit Interface Converter) type, as follows:</p> <ul style="list-style-type: none"> • (blank)—No GBIC present • SW—Short wave GBIC • LW—Long wave GBIC • CU—Copper GBIC • SWID—Short wave serial ID GBIC • LWID—Long wave serial ID GBIC • CUID—Copper serial ID GBIC <p>A yellow outline around a port icon indicates port failure. For detailed port information, click the Port icon to see the Port Information view.</p> |
| <p>Port numbers (on the top of each port)</p> | <p>The number of the port.</p> |

Table 4–1: Switch View Information (Continued)

| | |
|--|--|
| <p>LED Status Indicators (round light next to each port)</p>  | <p>The color indicates the status of the port.</p> <ul style="list-style-type: none"> • No light —No device attached. • Steady yellow —Receiving light, but not online; check cable connections. • Slowly flashing yellow —Disabled (diagnostics or portDisable command). • Rapidly flashing yellow —Error, fault with port. • Steady green—Online (connected with device by cable). • Slowly flashing green— Online but segmented (loopback cable or incompatible switch). • Rapidly flashing green— Internal loopback (diagnostic) • Flickering green —Online and transmitting/receiving frames. |
| <p>Power supply</p>  | <p>Removable power assemblies are updated to show presence/absence and status of each:</p> <ul style="list-style-type: none"> • Green—Power supply present and operational. • Red X—Power supply present but not operational. • Cover plate—Power supply absent or not fully plugged in. |
| <p>Status</p>  | <p>Click to view the health status of the switch.</p> |
| <p>Events</p>  | <p>Click to access switch Events view.</p> |
| <p>Telnet</p>  | <p>Click to launch a telnet session.</p> |
| <p>Fabric Watch</p>  | <p>Click to access Fabric Watch, if a license is installed (optional software).</p> |

Table 4–1: Switch View Information (Continued)

| | |
|--|--|
| <p>Fan</p>  | <p>The background color of the button indicates the overall status of the fans:</p> <ul style="list-style-type: none"> • Green—Healthy • Yellow—Marginal (mix of good and faulty readings) • Red—Down (more than two faulty readings) • Gray—Unknown or unmonitored |
| <p>Admin</p>  | <p>Click to display the Administrative Interface where you can perform switch management functions.</p> |
| <p>Perf</p>  | <p>Click to display the Performance Monitor where you can monitor switch performance.</p> |
| <p>Beacon</p>   <p>Beacon off Beacon on</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 flashing from side to side on the switch.</p> |
| <p>Temp</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"> • Green—Healthy • Yellow—Marginal (mix of good and faulty readings) • Red—Down (more than two faulty readings) • Gray—Unknown or unmonitored |
| <p>Info</p>  | <p>Click to display the switch information.</p> |

Switch Events View

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

To access Switch Events 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/
```

Web Tools launches, displaying Fabric view.

3. Click the **Switch** icon (see Figure 3–1).

The Switch view displays (see Figure 4–1).

4. Click the **Events** icon.

The Switch Events view displays as shown in Figure 4–2.

| Switch | Number | Time | Count | Level | Message |
|--------|--------|-----------------|-------|-------|--|
| web66 | 51 | Jul 20 15:43:23 | 1 | 3 | FW-BELOW eportState013 (E Port State Changes 13) is below l |
| web66 | 50 | Jul 20 15:43:23 | 1 | 3 | FW-BELOW eportState011 (E Port State Changes 11) is below l |
| web66 | 49 | Jul 20 15:43:23 | 1 | 3 | FW-BELOW eportState006 (E Port State Changes 6) is below lo |
| web66 | 48 | Jul 20 15:43:23 | 1 | 3 | FW-BELOW eportSync013 (E Port Loss of Sync 13) is below low |
| web66 | 47 | Jul 20 15:43:23 | 1 | 3 | FW-BELOW eportSync011 (E Port Loss of Sync 11) is below low |
| web66 | 46 | Jul 20 15:43:23 | 1 | 3 | FW-BELOW eportSync006 (E Port Loss of Sync 6) is below low t |
| web66 | 45 | Jul 20 15:43:23 | 1 | 3 | FW-BELOW eportLink013 (E Port Link Failures 13) is below low |
| web66 | 44 | Jul 20 15:42:19 | 1 | 3 | FW-ABOVE eportState013 (E Port State Changes 13) is above h |
| web66 | 43 | Jul 20 15:42:19 | 1 | 3 | FW-ABOVE eportState011 (E Port State Changes 11) is above h |
| web66 | 42 | Jul 20 15:42:19 | 1 | 3 | FW-ABOVE eportState006 (E Port State Changes 6) is above hig |
| web66 | 41 | Jul 20 15:42:19 | 1 | 3 | FW-ABOVE eportSync013 (E Port Loss of Sync 13) is above high |
| web66 | 40 | Jul 20 15:42:19 | 1 | 3 | FW-ABOVE eportSync011 (E Port Loss of Sync 11) is above high |

Warning: Applet Window

Figure 4–2: 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 4–2 contains a description of the columns in switch events view.

Table 4–2: Switch Events View Column Description

| Column Name | Description |
|-------------|--|
| Switch | Name of switch. |
| Num... | Event number. |
| Time | Time of event. |
| Count | Number of back-to-back occurrences of same event. |
| Level | Severity level of event: 0—panic (switch reboots) 1—critical 2—error 3—warning 4—information 5—debug |
| Message | Description of event. |

Fabric Watch View

You can use Fabric Watch view (optional software) to monitor fabric elements for potential problem conditions. This feature requires an active Fabric Watch license. For detailed information about Fabric Watch, see the *Fabric Watch User Guide*.

To access Fabric Watch 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/
```

Web Tools launches, displaying Fabric view (see Figure 3–1).

3. Click the **Switch** icon.

The Switch view displays (see Figure 4–1).

4. Click the **Watch** icon.

The Fabric Watch view displays, with the Alarm Notifications tab selected by default. The Fabric Watch view is described in the following section and shown in Figure 4–3.

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

- The name of the threshold
- The current value
- The last event type
- The last event time
- The last event value
- The last event state

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

The Alarm Notifications tab is shown in Figure 4–3.

| Name | State | Reason | Old Value | New Value | Time |
|------------|-------------|---------|-----------|-----------|------------------------|
| envTemp001 | Informative | Started | 0 | 36 | 15:56:26 on 07/17/2001 |
| envTemp002 | Informative | Started | 0 | 25 | 15:56:26 on 07/17/2001 |
| envTemp003 | Informative | Started | 0 | 27 | 15:56:26 on 07/17/2001 |
| envFan001 | Faulty | Below | 0 | 0 | 15:56:27 on 07/17/2001 |
| envFan002 | Informative | Started | 0 | 9660 | 15:56:26 on 07/17/2001 |
| envFan003 | Informative | Started | 0 | 9420 | 15:56:26 on 07/17/2001 |
| envFan004 | Informative | Started | 0 | 9300 | 15:56:26 on 07/17/2001 |
| envPS001 | Normal | Above | 1 | 1 | 15:56:27 on 07/17/2001 |
| envPS002 | Faulty | Below | 0 | 0 | 15:56:27 on 07/17/2001 |

Figure 4-3: Fabric Watch view Alarm Notifications tab

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 4-4.

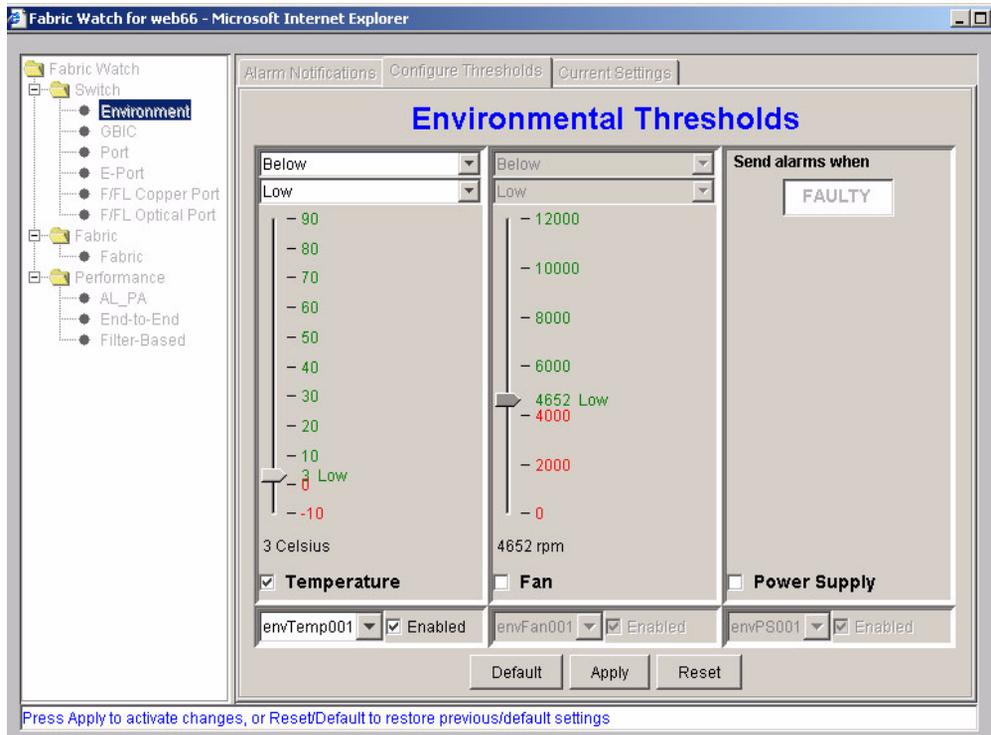
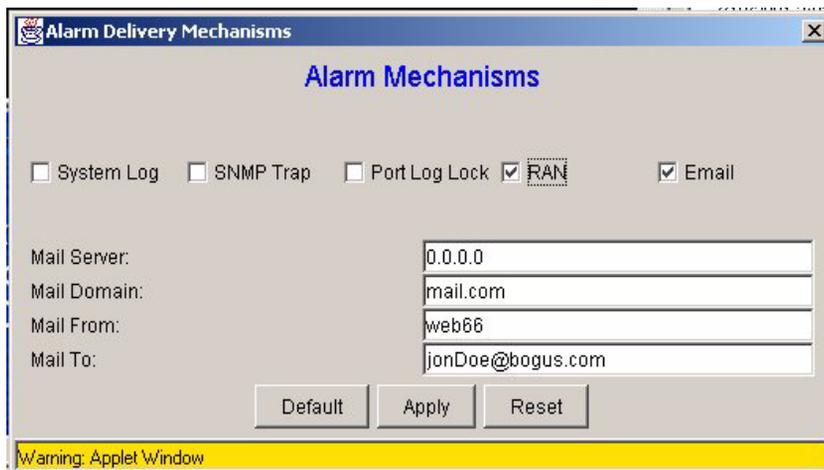


Figure 4-4: Fabric Watch view Environment Class selection

The Configure Threshold display changes according to the **class** and **area** selected in the organizational tree. However, the Configure Threshold tab always contains the buttons as described in Table 4-3.

Table 4–3: Configure Threshold Tab Fields Description

| Name | Description |
|---------|--|
| Default | Click to return settings to default values. |
| Apply | <p>Click to apply the values specified in the current display. When Apply is clicked after a change, the Alarm Delivery Mechanism dialog displays as shown in Figure 4–5. 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>To continue, select the type of alarm you want and click Apply.</p> <p>Changes made within this window will apply to <i>all</i> areas within the class you are working.</p> |
| Reset | Click to undo the last changes. |

**Figure 4–5: The Alarm Delivery Mechanism dialog box**

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 (Figure 4–4).

The columns for the *Temperature*, *RX Power*, *TX Power* and current areas contain the items shown in Table 4–4.

Table 4–4: Environmental File Column Description

| Column Name | Description |
|--|---|
| Threshold Type drop-down list | Select the threshold type (exceeded, above, in-between, below, changed). |
| High/Low drop-down list | 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). |
| Area Select checkbox | Select a Fabric Watch area to configure. Only one area can be selected at a time. |
| Thresh element drop-down list | Check or uncheck to specify if you want this element to be monitored. |
| The column for the <i>Power Supply</i> area contains the following item: | |
| Send alarms when box | 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 GBIC Classes

The GBIC classes are displayed by selecting the GBIC file from the separate column left of the Configure Thresholds tab (Figure 4–4).

The columns for the *Temperature*, *RX Power*, *TX Power* and current areas contain the items shown in

Table 4–5: GBIC Class Column Description

| Column Name | Description |
|--|---|
| Threshold Type drop-down list | Select the threshold type (exceeded, above, in-between, below, changed). |
| High/Low drop-down list | 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). |
| Scale | Specify the point at which you want to set the specified threshold. |
| Area Select checkbox | Select a Fabric Watch area to configure. Only one area can be selected at a time. |
| Thresh element drop-down list | Check or uncheck to specify if you want this element to be monitored. |
| The column for the <i>Current</i> area contain the following item: | |
| Send alarms when box | 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, 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):

- Low text box—Enter the low thresh boundary.
- High text box—Enter the high thresh boundary.
- Threshold Type drop-down list—Select the type of threshold.
- Time period drop-down list—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 4–6.

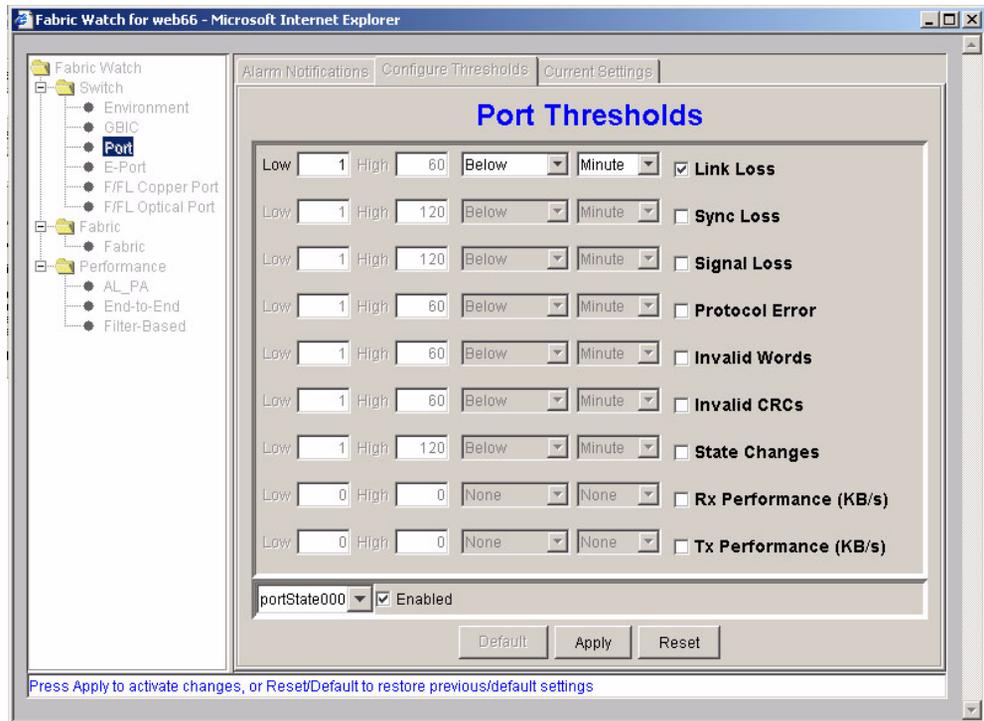


Figure 4–6: Fabric Watch view Configure Threshold tab selection

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 4–7.

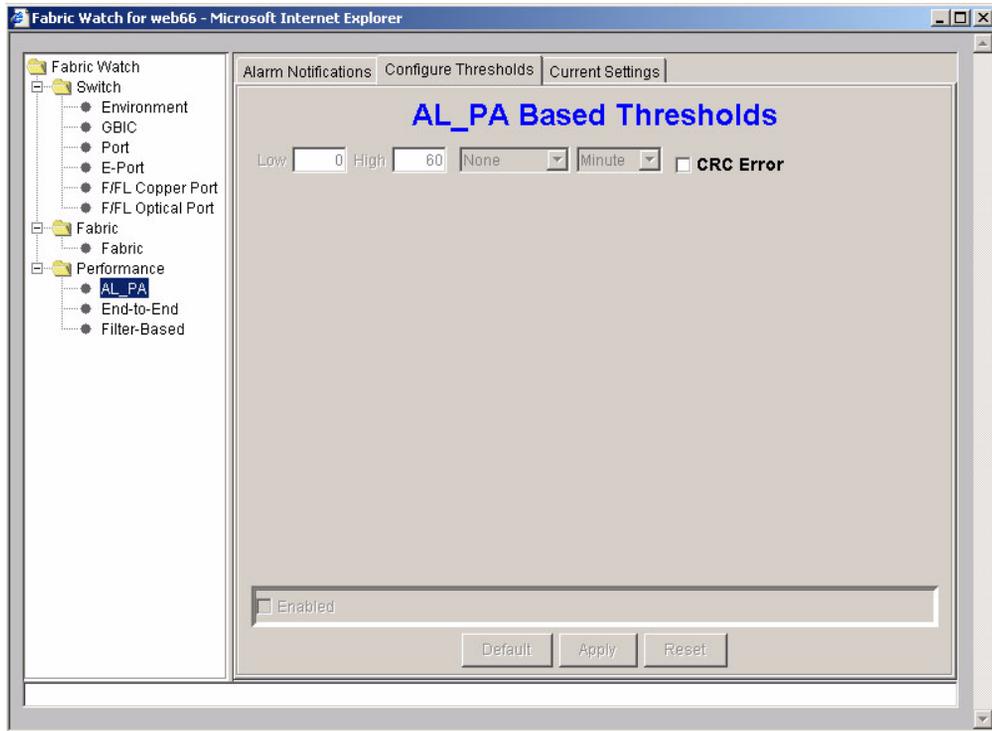


Figure 4-7: Configure Threshold tab with AL_PA class selected

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 4-17 of this document, or the *Advanced Performance Monitor User Guide*.

The Configure Thresholds tab for End-to-End Thresholds is shown in Figure 4-8.

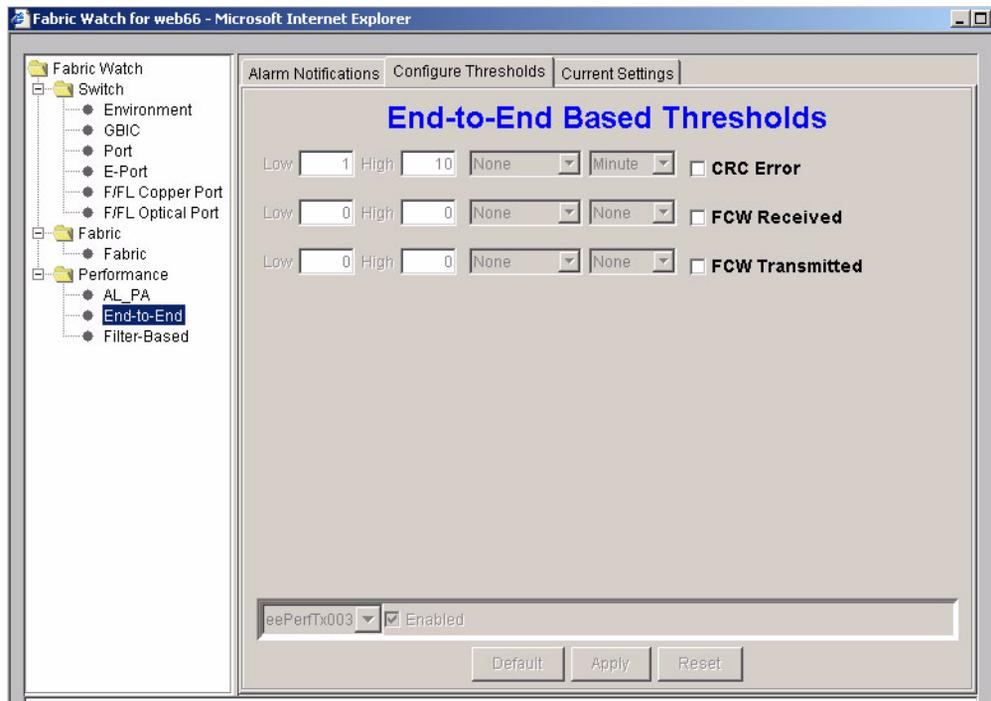


Figure 4–8: Configure Threshold tab with End-to-End class selected

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 4-17 of this document, or the *Advanced Performance Monitor User Guide*.

The Configure Thresholds tab is shown in Figure 4–9.

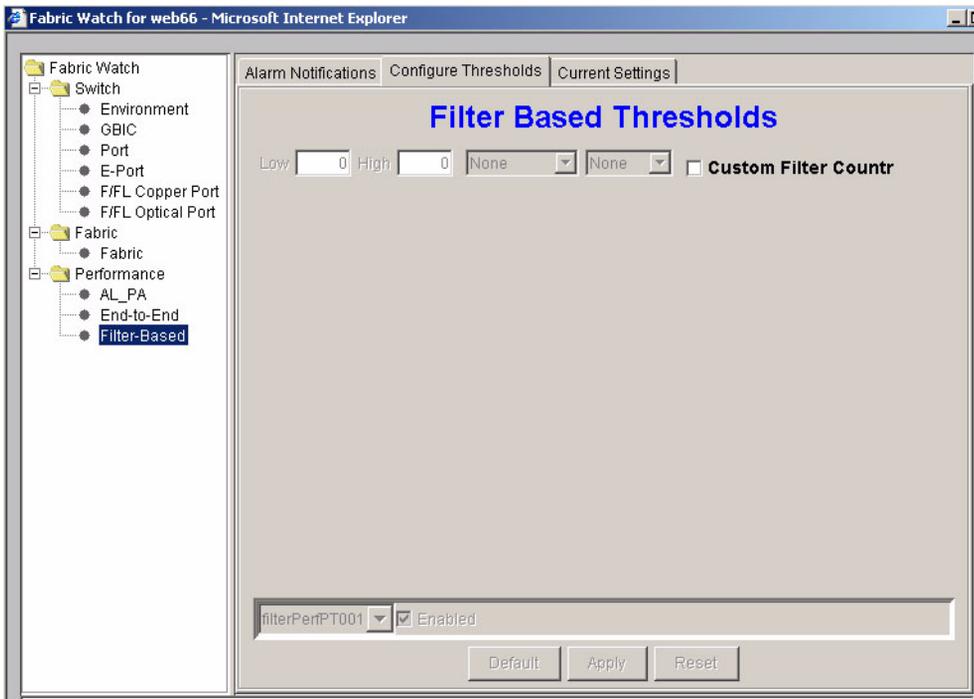


Figure 4–9: Configure Threshold tab with Filter Based Thresholds selected

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 4–10.

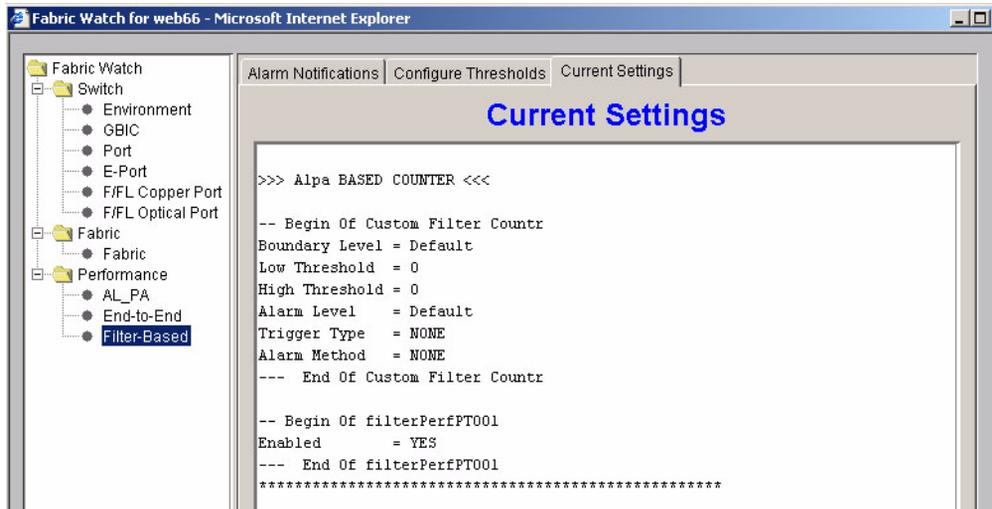


Figure 4–10: Fabric Watch view with Current Settings tab selected

Performance Monitor

The Performance Monitor performs the following functions:

- 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.
- Provides the ability to change the configuration of a switch or port visually by using the graphics.

NOTE: For more information about the Performance Monitor, see the *Advanced Performance Monitor User Guide*.

To access the Performance Monitor:

1. Launch the web browser and enter the switch name or IP address in the **Location/Address** field. For example:

```
http://switch name/
```

2. Press **Enter**.

Web Tools launches, displaying the Fabric view.

3. Click the **Switch** icon.

The Switch view displays.

4. Click the **Performance** icon.

The Performance Monitor displays, as shown in Figure 4–11.

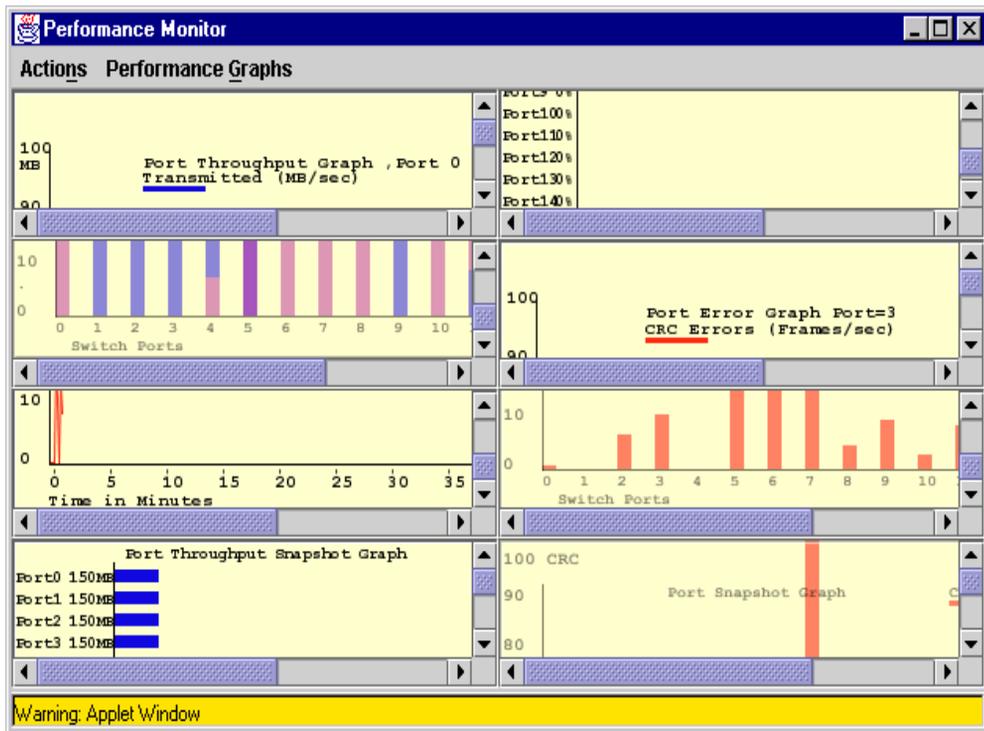


Figure 4–11: Performance Monitor screen displays

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.

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 8 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 20 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 a 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 In.”
- Each graph can be printed to a printer of choice.

Graph Types

Figure 4–12, Figure 4–13, and Figure 4–14 show the type of graphs used to display port and switch information. Table 4–9 and Table 4–10 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.

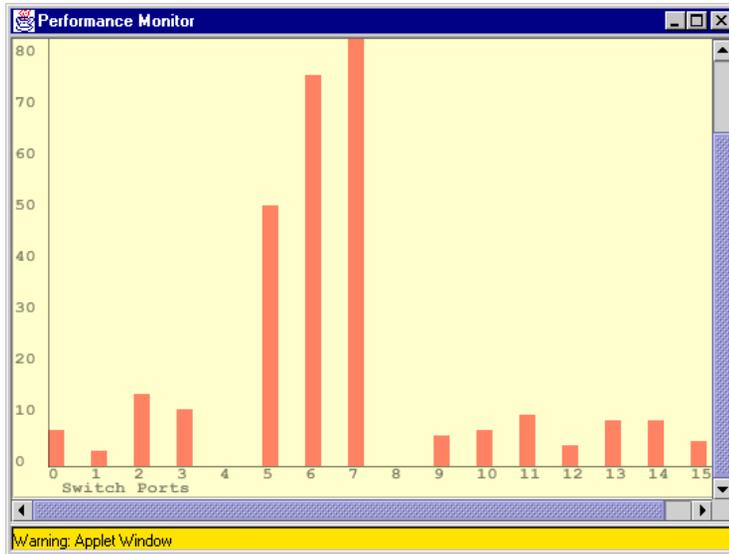


Figure 4–12: Performance Monitor vertical bar chart example

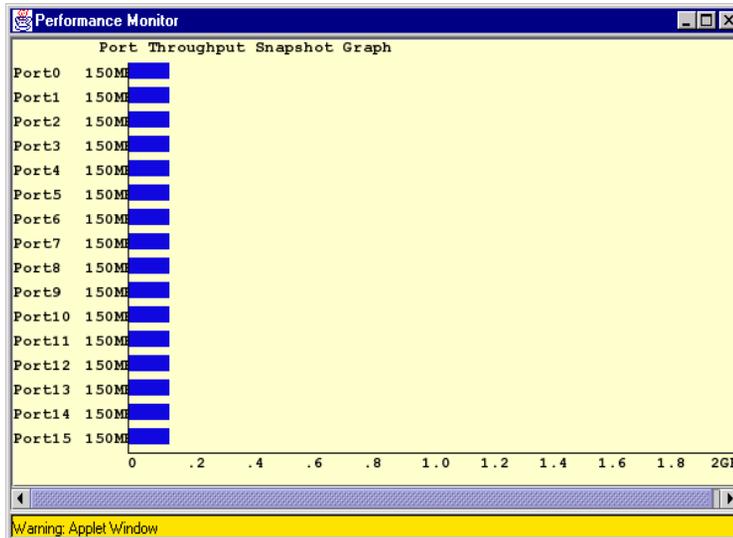


Figure 4–13: Performance Monitor horizontal bar chart example

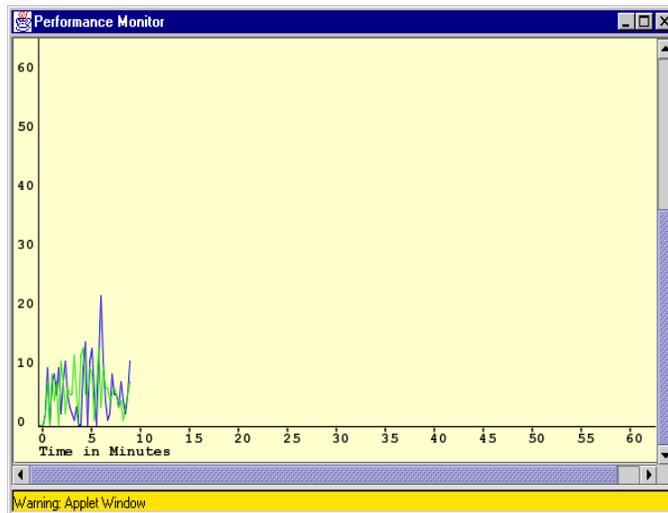


Figure 4–14: Performance Monitor line chart example

Performance Monitor Menus

The Performance Monitor is made up of two main menus:

- Actions Menu on page 4-21
- Performance Graphs Menu on page 4-30

Actions Menu

The Actions menu of the Performance Monitor feature is comprised of the following sub-menus:

- Display Canvas Configurations on page 4-22
- Save Current Canvas Configuration on page 4-26
- Resource Usage Display on page 4-28
- Print All Graphs on page 4-29

Display Canvas Configurations

The Display Canvas Configurations option allows you 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 will be displayed.

Each canvas has a name and a brief description. The Canvas Configuration List window is shown in Figure 4–15.

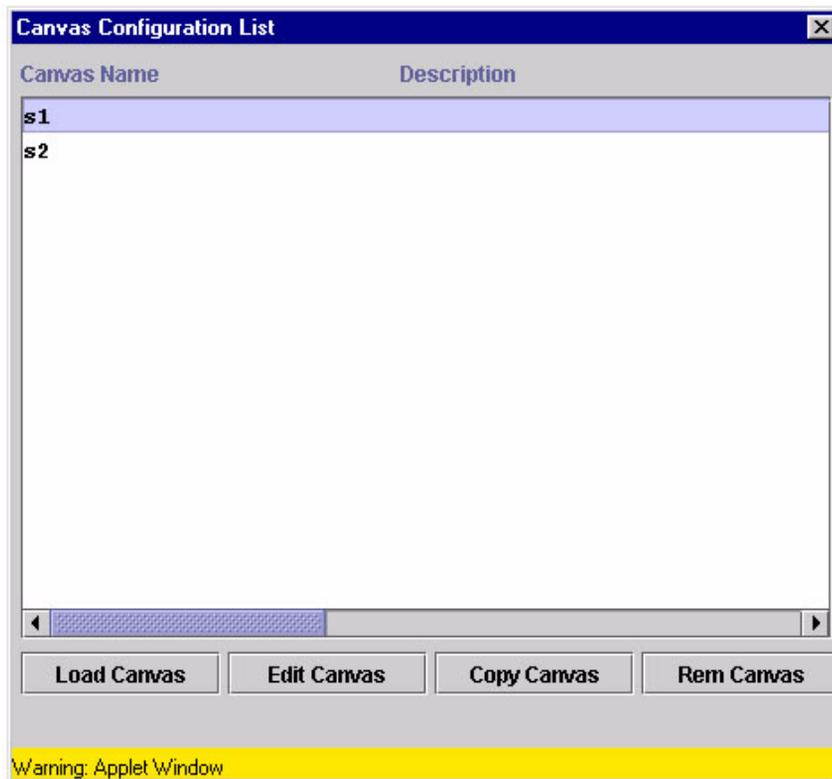


Figure 4–15: Canvas Configuration List window

The following are descriptions of the fields available using Display Canvas Configurations:

- The Load Canvas Button on page 4-23
- The Edit Canvas Button on page 4-24
- Copy Canvas Button on page 4-26
- The Rem Canvas Button on page 4-26

The Load Canvas Button

Select to load a canvas of 1 to 8 graphs onto the Performance Monitor facility by choosing the highlighted canvas name.

Figure 4–16 is an example of a what is displayed when you select two graphs and use the Load Canvas button.

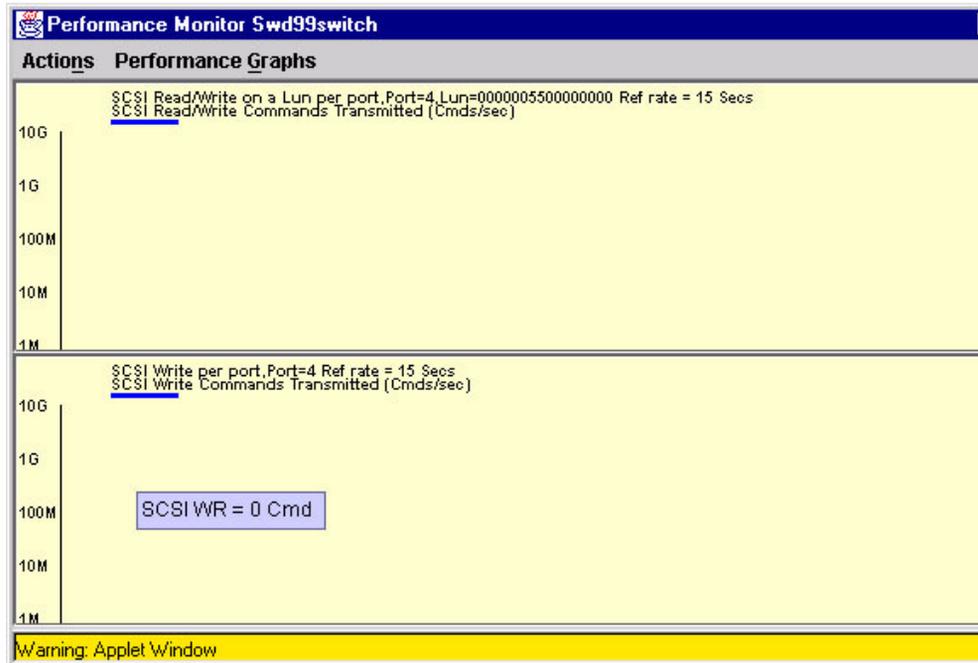


Figure 4–16: Performance Monitor Load Canvas example

The Edit Canvas Button

Select to make changes to a canvas or change configurations. Figure 4–17 is an example of what is displayed if you select the Edit Canvas button.

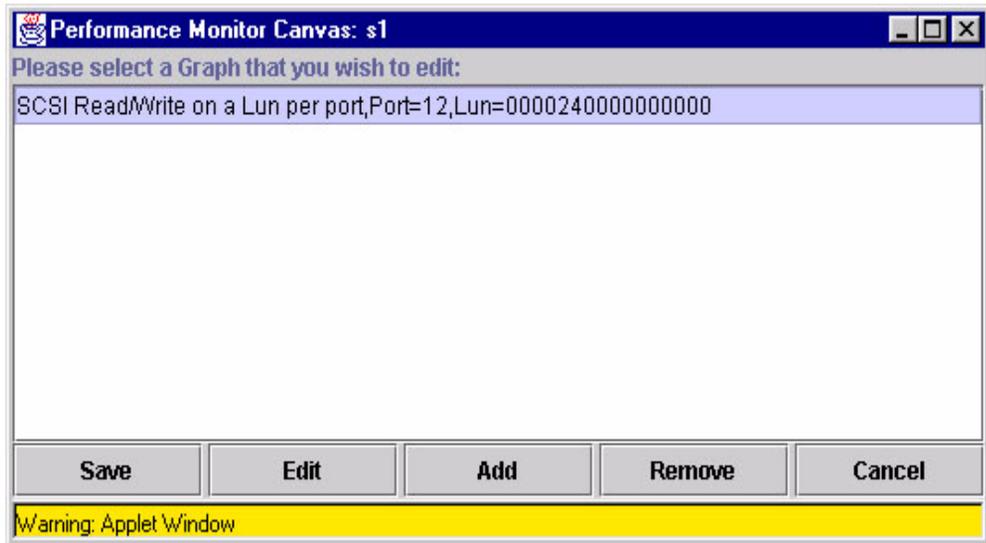


Figure 4–17: Performance Monitor Edit Canvas Example

The Edit Canvas option gives you the choices shown in Table 4–6.

Table 4–6: Edit Canvas Option Choices

| Choice | Description |
|--------|--|
| Save | Select to save an edited graph. |
| Edit | Select to alter a graph. For more information on this button, see Figure 4–18. |
| Add | Select to add a graph to a canvas. You will be prompted to choose Basic or Advanced Monitoring. For more information, see the Basic Monitoring on page 4-30 and Advanced Performance Monitoring on page 4-38 sections of this chapter. |
| Remove | Select to delete a graph. You will be prompted to choose the graph that you want to delete. |
| Cancel | Select to exit the window without making any changes. |

An example of the data entry frame that is displayed if you choose the Edit Canvas is shown in Figure 4–18:

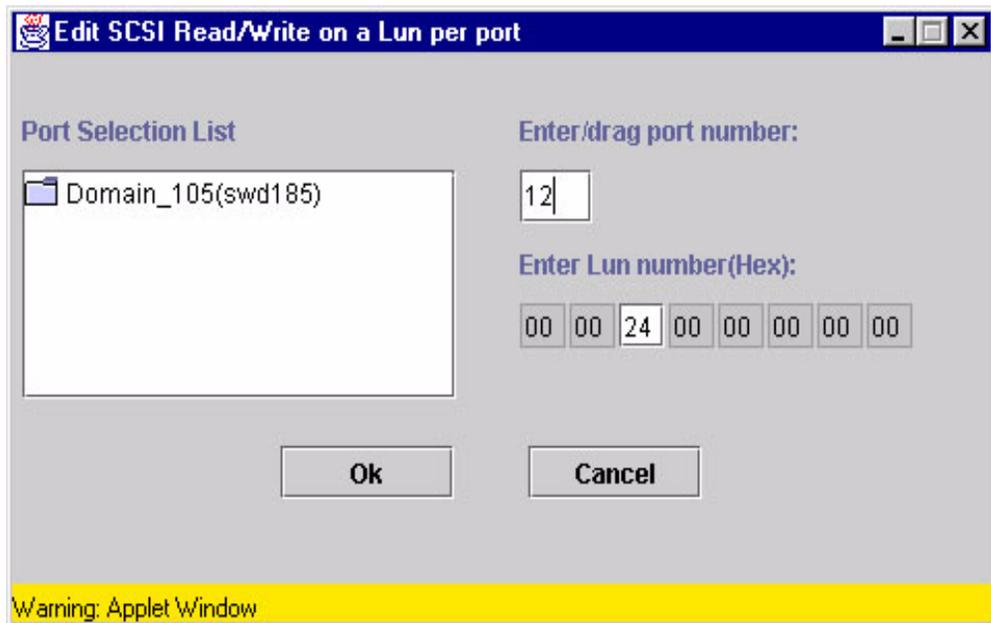


Figure 4–18: Performance Monitor Edit Canvas Data Entry frame

To choose the port and Lun that you want to graph or configure:

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.

IMPORTANT: You can only enter four Lun numbers at a time.

4. Click **OK**.

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

Copy Canvas Button

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 you want to copy your chosen graph to. For more information about this window, see Figure 4–19.

The Copy Canvas Configuration window is displayed in Figure 4–19.

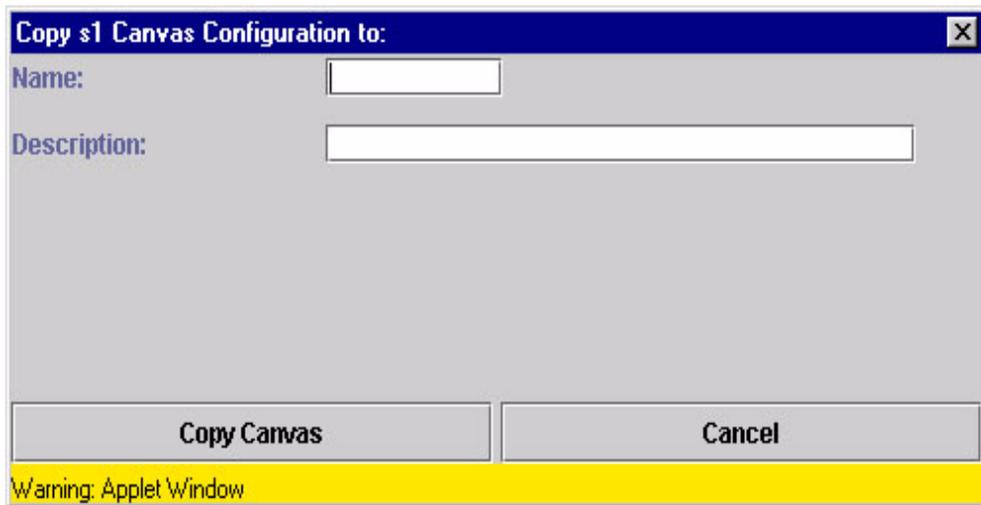


Figure 4–19: The Copy Canvas Configuration window

The Rem Canvas Button

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.

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 Canvas Configuration Save window is shown in Figure 4–20.

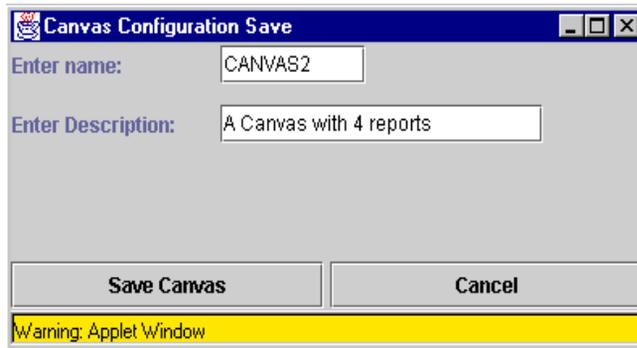


Figure 4–20: Canvas Configuration Save window

Table 4–7 contains a description of the fields in the Save Current Canvas Configuration menu.

Table 4–7: Save Current Canvas Configuration Field Description

| Field Name | Description |
|-------------|--|
| Save Canvas | Click to save the canvas to the switch flash. |
| Cancel | Click to cancel the window without any action. |

If the canvas already exists, a confirmation screen pops up, as shown in Figure 4–21.

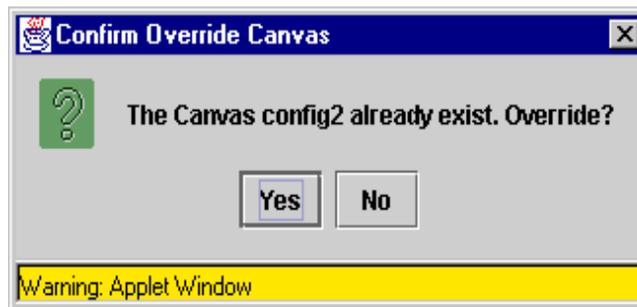


Figure 4–21: Confirm Override Canvas window

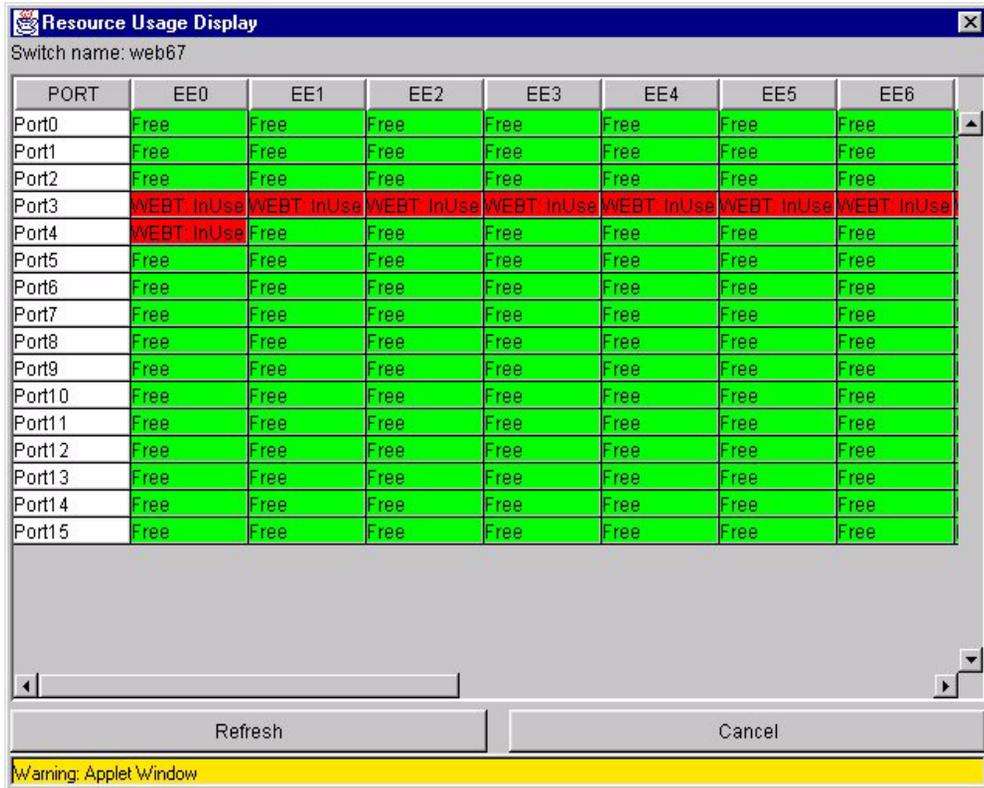
NOTE: Use the override option when you need to update an existing canvas.

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 4–22.



| 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 |

Warning: Applet Window

Figure 4–22: Performance Monitor Resource Usage Display window

Table 4–8 contains a description of the fields available in the Resource Usage Display window.

Table 4–8: Resource Usage Display Fields Description

| Field Name | Description |
|------------|--|
| Refresh | Select to reload the window immediately. The window will automatically reload either every 5 seconds, or every 15 seconds. The exact amount of time between reloads is listed at the top of every graph. |
| Cancel | Select to cancel the window without any action. |

Print All Graphs

The Print All Graphs option allows you 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 4–23.

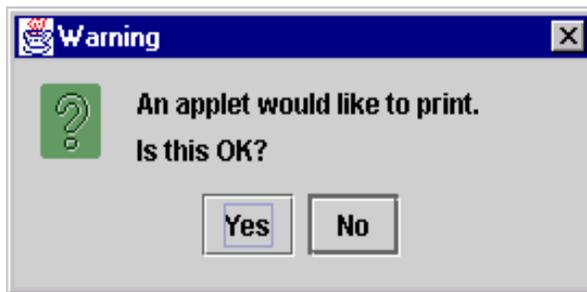


Figure 4–23: Performance Monitor Print all Graphs dialog box

4. Click Yes to accept.

The Print Dialog Box appears, as shown in Figure 4–24. Select print options such as printer choice, printing to a file, print properties, and the number of pages to print.

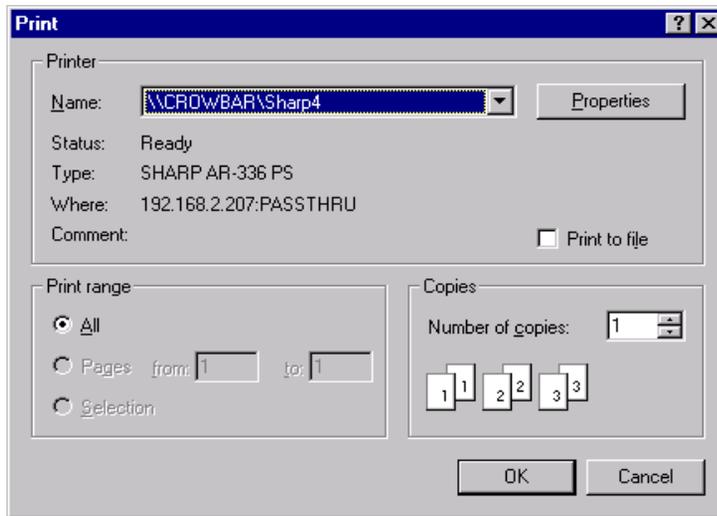


Figure 4–24: Performance Monitor Print dialog box

5. Click **OK**. Each report prints two pages. The first is the banner page with the name of the graph, and the second is the actual graph.

Performance Graphs Menu

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

- Basic Monitoring on page 4-30
- Advanced Performance Monitoring on page 4-38

Basic Monitoring

The Basic Monitoring sub-menu allows you to create 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 4–9 describes the types of graphs that are available through the Basic Monitoring menu.

Table 4–9: Graphs Types Displayed by way of Basic Monitoring Menu

| 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 4–25 |
| Switch | Switch Aggregate Throughput Graph | Line | Displays the aggregate performance of all ports of a switch. See Figure 4–26. |
| Switch | Switch Throughput Utilization Graph | Horizontal Bar | Displays the port throughput at the time the sample is taken. See Figure 4–27. |
| Switch | Port Error Graph | Line | Displays a line of CRC errors for a given port. See Figure 4–29. |
| 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 4–30. |
| Switch | Port SnapShot Error Graph | Vertical Bar | Displays the CRC error count between sampling periods for all the ports on a switch. See Figure 4–31. |

Port Throughput Graph

An example of a Port Throughput Graph, monitoring bytes transmitted and received, is shown in Figure 4–25.

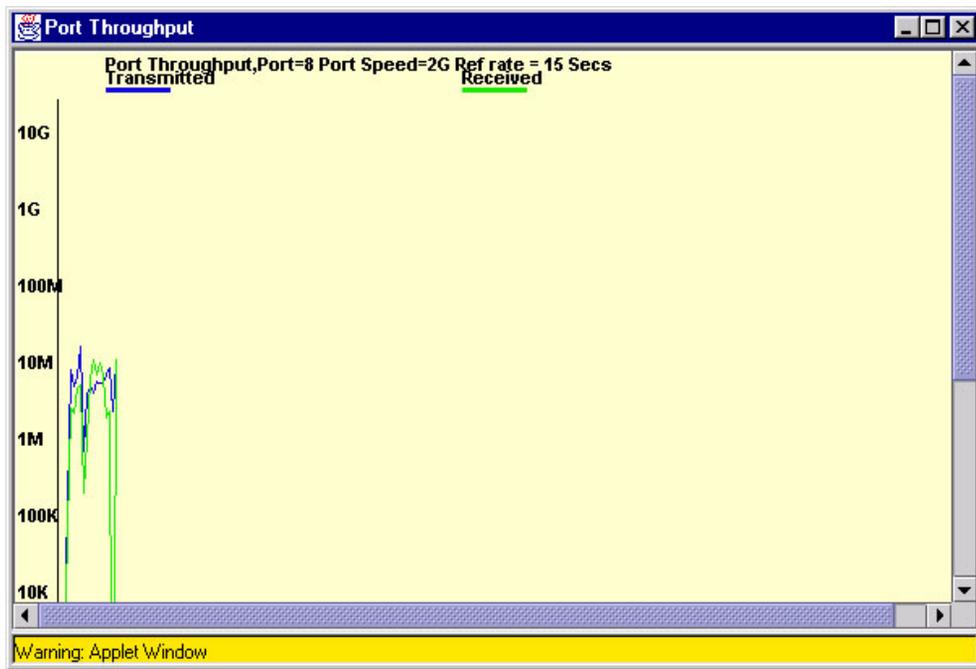


Figure 4–25: Performance Monitor Port Throughput graph

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 4–26.

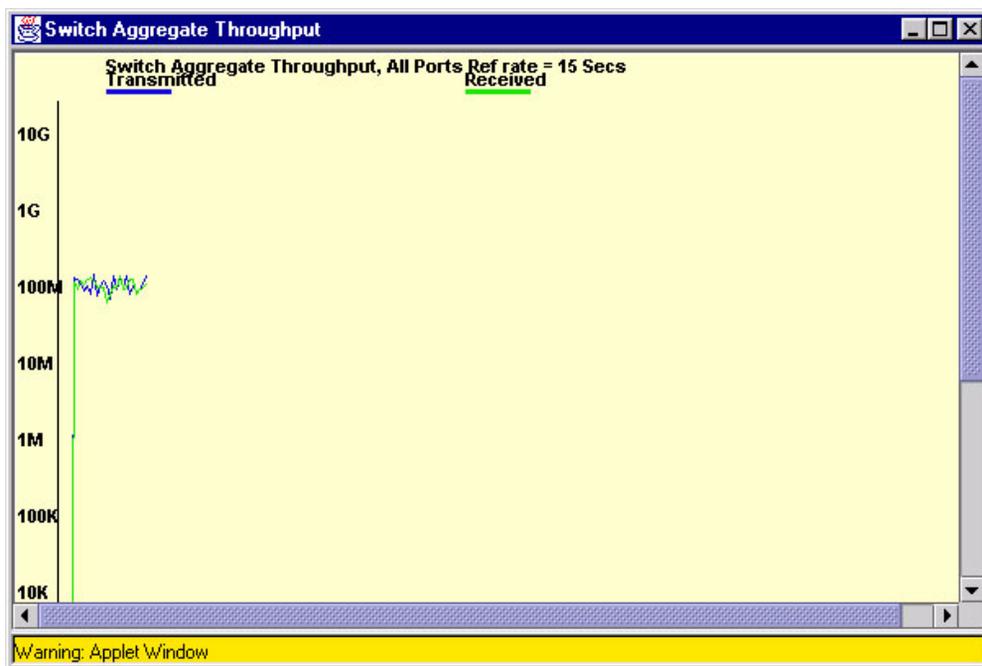


Figure 4–26: Performance Monitor Switch Aggregate Throughput graph

Switch Throughput Utilization Graph

An example of a Switch Throughput Utilization Graph, displaying a sample of the port throughput, is shown in Figure 4–27.

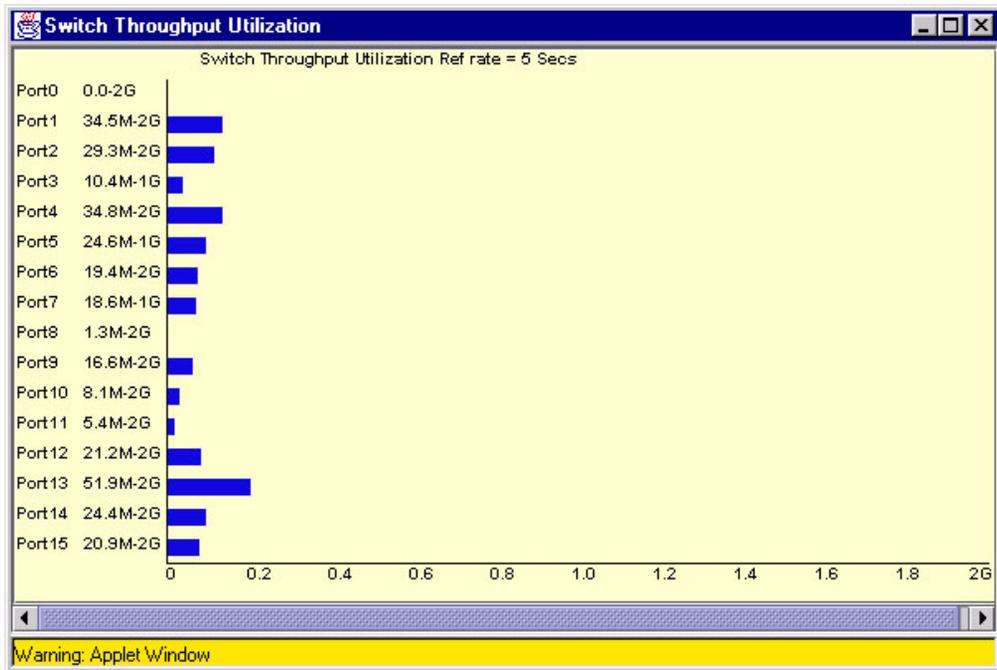


Figure 4–27: Performance Monitor Switch Throughput Utilization graph

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 4–28 is an example of the data entry window that you will see when you create a Port Error Graph.

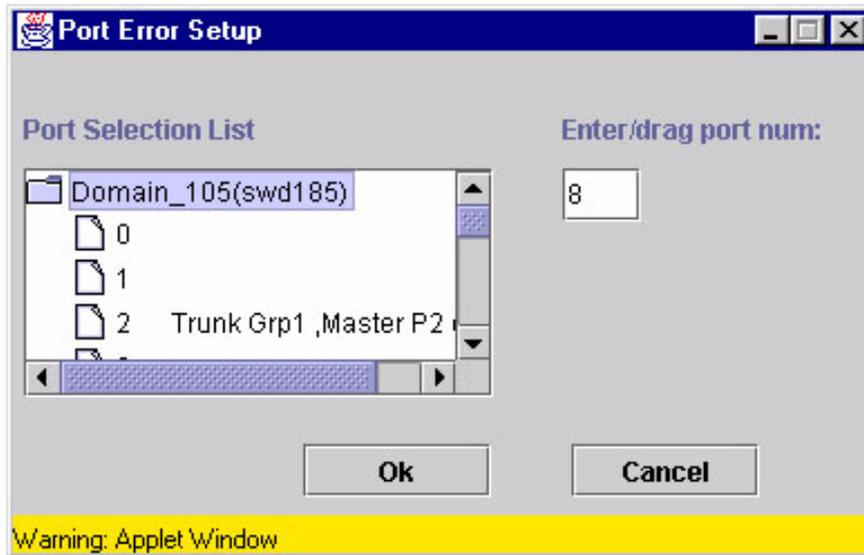


Figure 4–28: Performance Monitor Port Error Setup data entry window

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 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. Click **OK**.
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 4–29.



Figure 4–29: Performance Monitor Port Error graph

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 4–30.

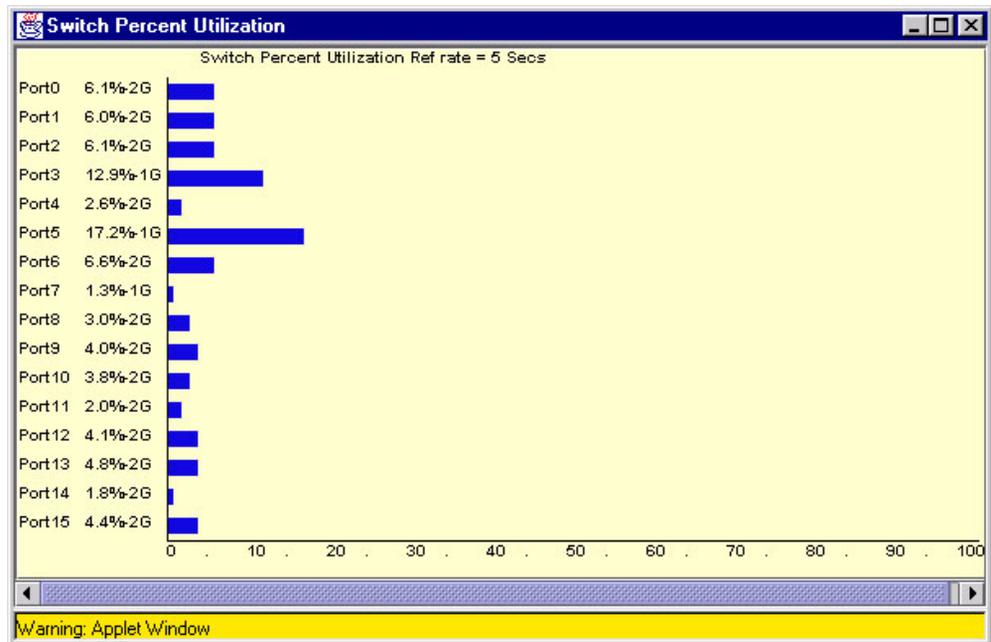


Figure 4–30: Performance Monitor Switch Percent Utilization graph

Port Snapshot Error Graph

An example of a Port Snapshot Error Graph, displaying the CRC error count between sampling periods, is shown in Figure 4–31.

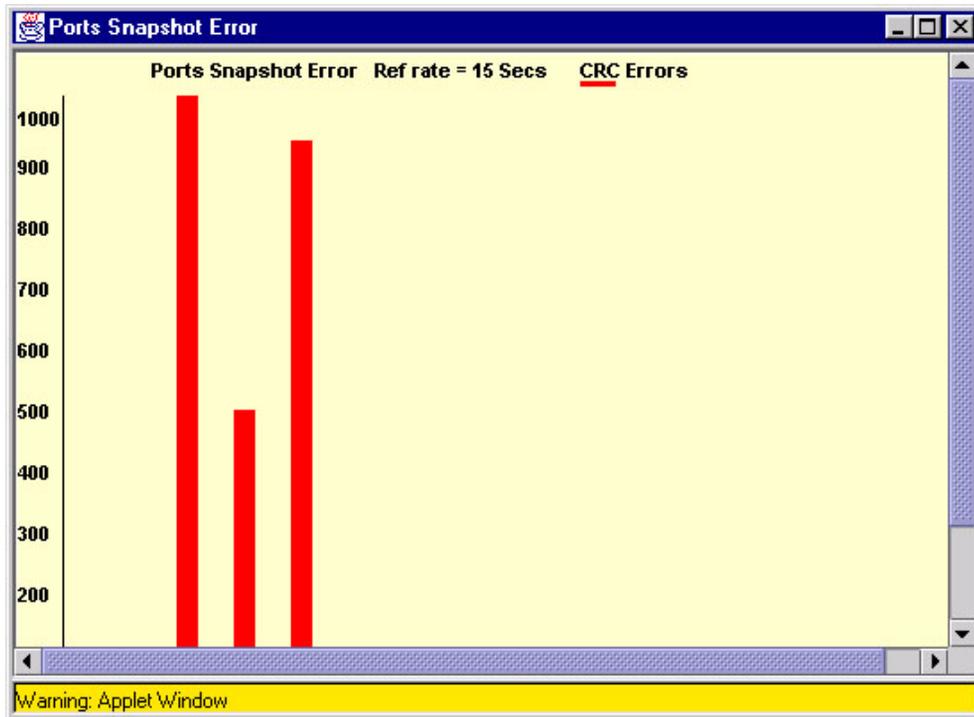


Figure 4–31: Performance Monitor Port Snapshot Error graph

Advanced Performance Monitoring

The Advanced Performance Monitor 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.

Table 4–10 describes the types of graphs that are available through the Advanced Monitoring menu.

Table 4–10: Graph Types Displayed Using the Advanced Monitoring Menu

| Scope | Graph Name | Type | Description |
|--------|---------------------|--------------|--|
| Switch | SID/DID Performance | Line | This graph charts the traffic between a SID (or WWN) and a DID (or WWN) pair on the switch being managed. See Figure 4–33. |
| Switch | SCSI Commands | Line | The total number of Read/Write commands on a given port to a specific LUN. Provides the following choices: <ul style="list-style-type: none"> • 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 4–35. |
| Switch | SCSI vs IP | Vertical Bar | Shows percentage of SCSI vs IP frame traffic on each individual port. See Figure 4–35. |
| Switch | ALPA Error | Line | Displays CRC errors for a given port and a given AL_PA. See Figure 4–38. |

SID/DID Performance Graph

When you select the SID/DID Performance Graph, you will be prompted with a data entry window where you will chose the SID and DID to be charted. Figure 4–32 is an example of the data entry window that you will see when you choose to create a SID/DID Performance Graph.

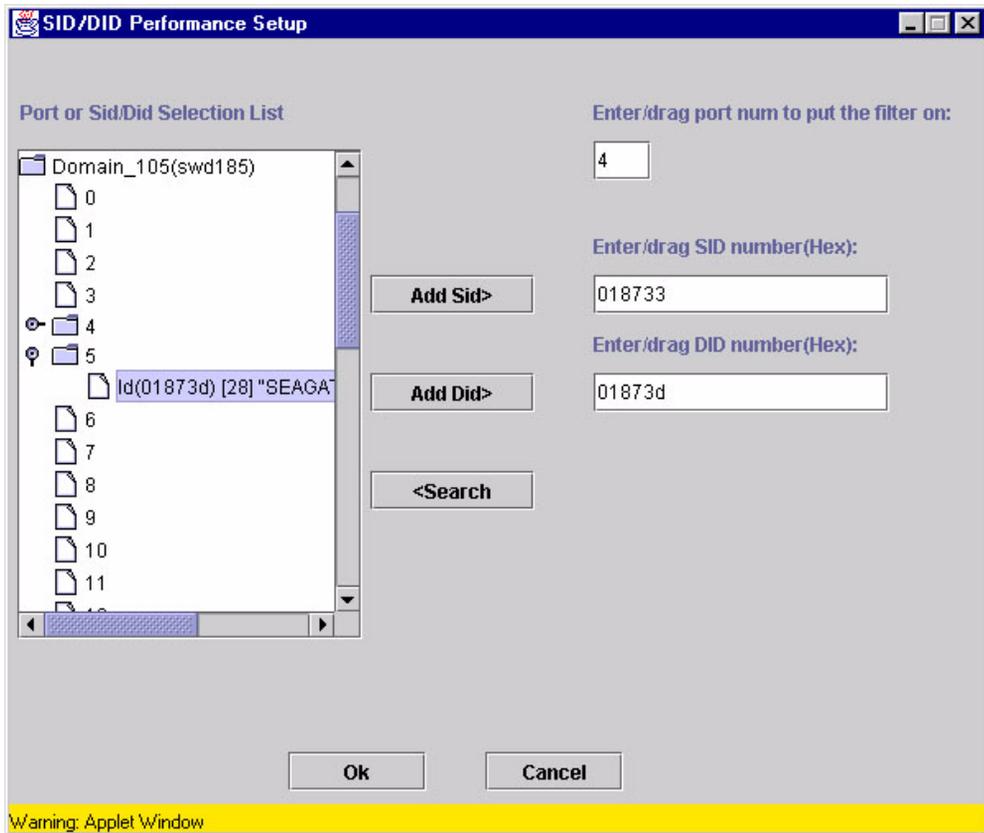


Figure 4–32: SID/DID Performance Setup data entry window

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. Click **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 4–33.

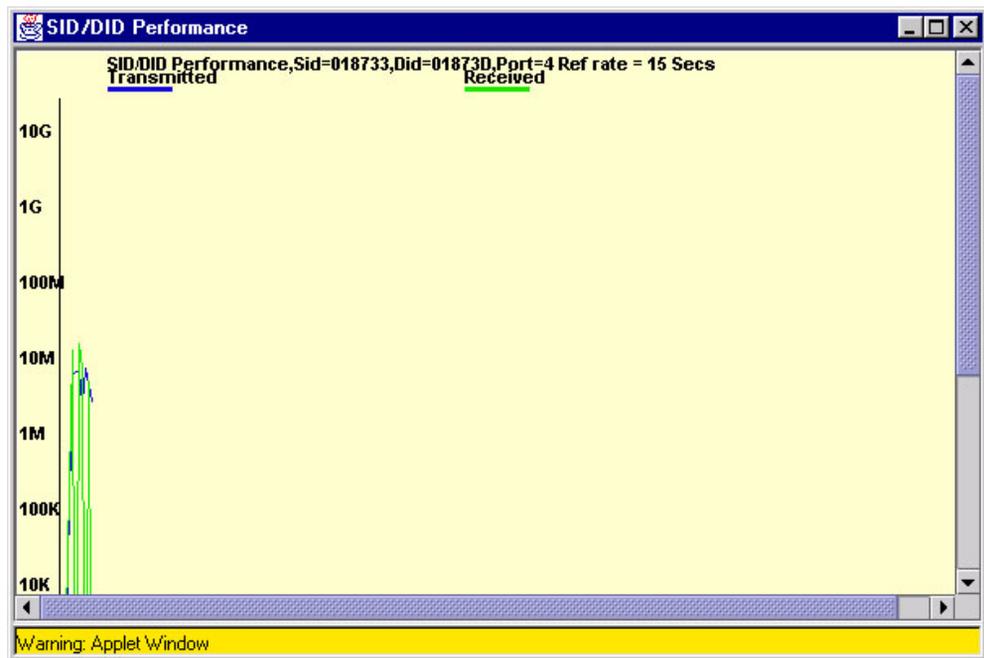


Figure 4–33: Performance Monitor SID/DID Performance graph

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 4–34.

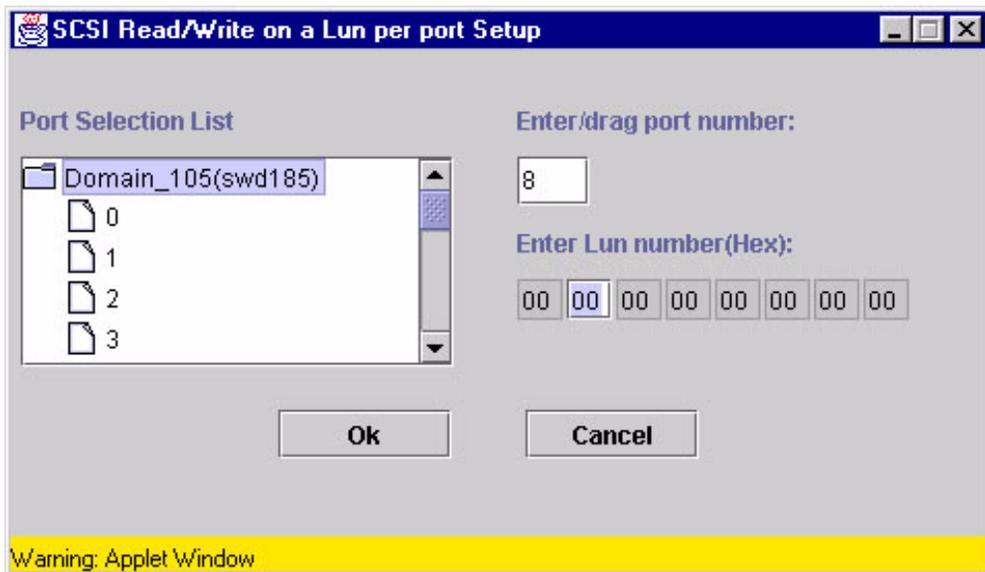


Figure 4–34: Performance Monitor SCSI Graph data entry window

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 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 mask, a warning window will appear.

4. Click **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 4–35.

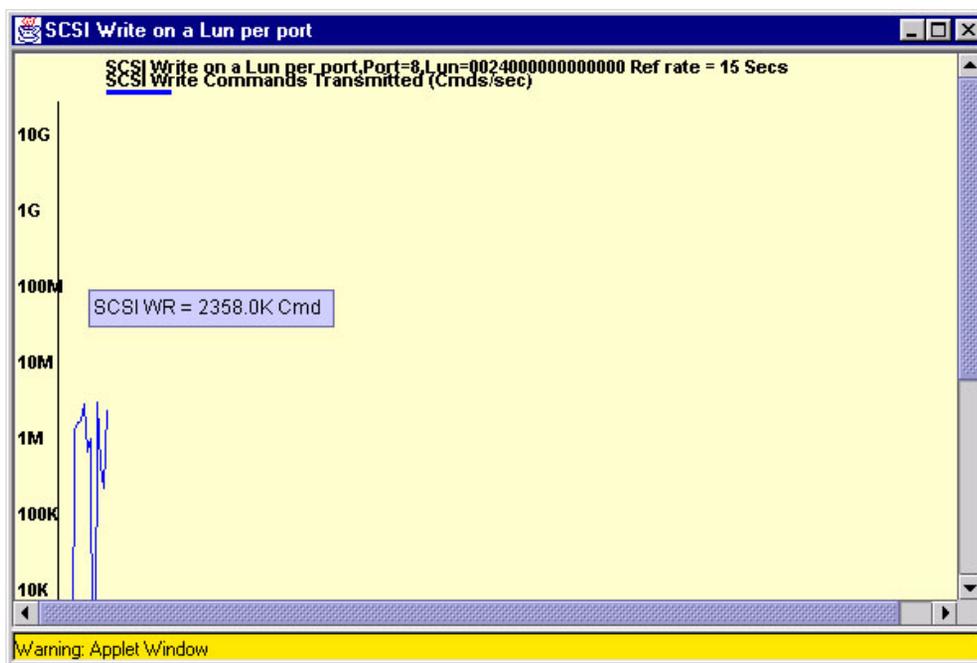


Figure 4–35: SCSI Write on a Lun per port graph

SCSI vs IP Graph

An example of a SCSI vs IP graph, displaying the percentage of SCSI vs IP frame traffic, is shown in Figure 4–36.

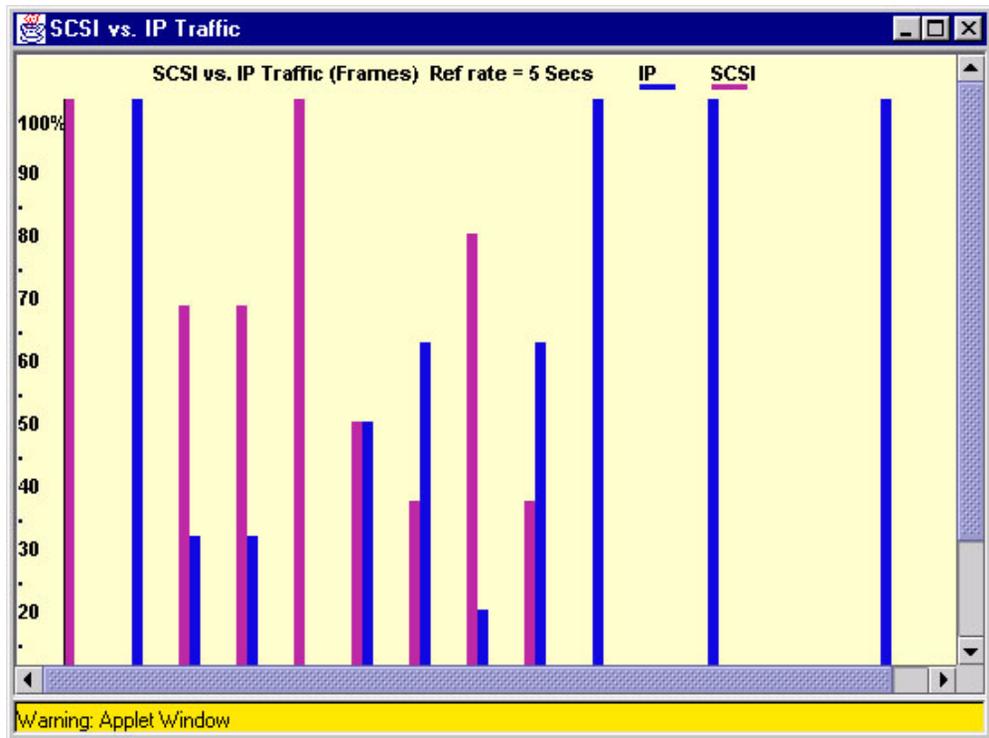


Figure 4–36: SCSI vs IP graph

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 4–37 is an example of the data entry window that you will see when you choose to create a ALPA Error Graph.

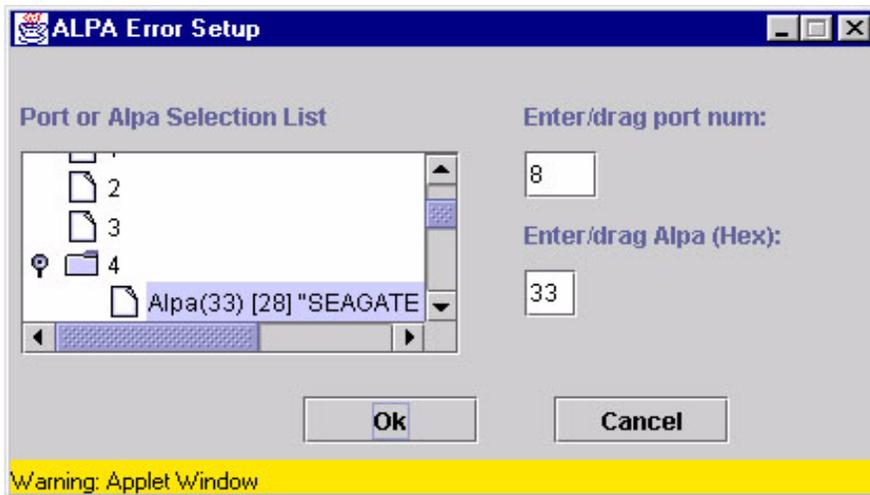


Figure 4-37: ALPA Error Setup data entry window

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. Click **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 4–38.

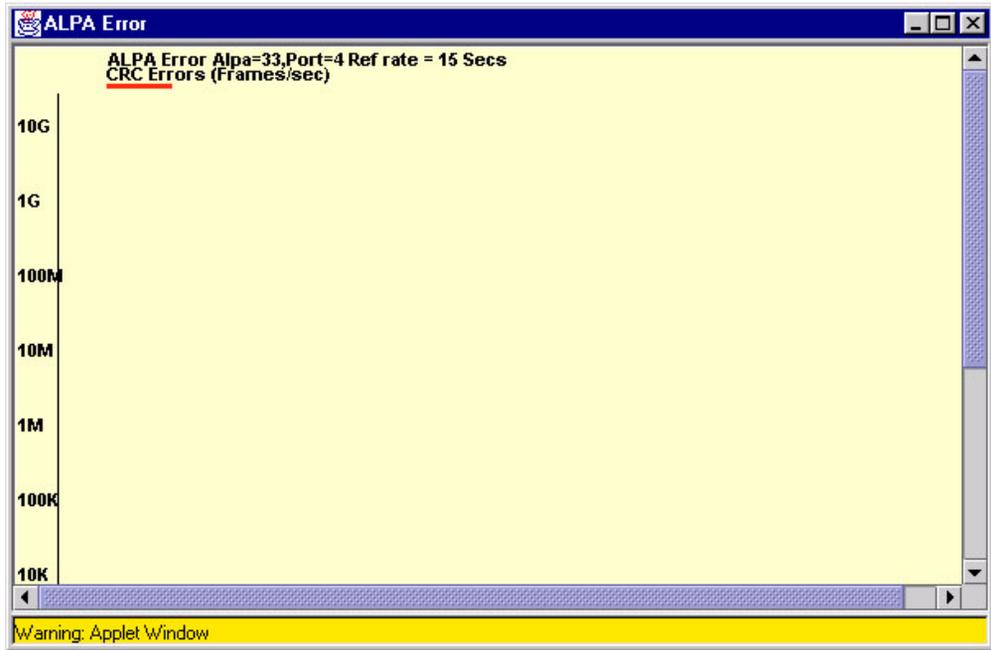


Figure 4–38: ALPA Error graph example

Additional Options

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

- Right-Clicking Options on page 4-48
- Tool Tips on page 4-48

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

Right-Clicking Options

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

Table 4–11 contains a list of all the possible options that are available by right-clicking your mouse in a particular graph.

NOTE: Not all graphs will have all options available, but every graph supports at least the first three options.

Table 4–11: Performance Monitor Right-Click Options

| Option Name | Description |
|-------------|--|
| Zoom In | Select to “Zoom In”, or magnify a single graph, rather than viewing multiple graphs on one canvas. |
| Remove | Select to delete any graph from the canvas. |
| Print | Select to print any graph. |
| Show Tx/Rx | Displays number of bytes being both transmitted and received. |
| Show Tx | Displays number of bytes being transmitted. |
| Show Rx | Displays number of bytes being received. |
| Show Crc | Displays amount of CRC errors being transmitted. |

Tool Tips

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

Table 4–12 contains a list of all the possible Tools Tips information that is available by rolling over a graph with your mouse pointer.

NOTE: Not all graphs will have all options available, but nearly every graph supports at least one Tools Tip.

Table 4–12: Performance Monitor Tool Tips

| Tip Name | Description |
|-----------------------|---|
| Top 5 busiest port(s) | Displays the five ports that are transmitting and receiving the most bytes. |
| Tx=0.0, Rx=0.0 | Displays the number of bytes being transmitted and received. |

Table 4–12: Performance Monitor Tool Tips (Continued)

| Tip Name | Description |
|-----------|--|
| CRC=0 | Displays the number of Cyclic Redundancy Errors being transmitted on a port. |
| SCSI RW=0 | Displays the number of SCSI commands being read or written on a port or on a given port to a specific LUN. |
| SCSI RD=0 | Displays the number of SCSI commands being read on a port or on a given port to a specific LUN. |
| SCSI WR=0 | Displays the number of SCSI commands being written on a port or on a given port to a specific LUN. |

Administrative Interface

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

- Switch Settings Tab on page 4-51
- User Admin Tab on page 4-52
- Firmware/Configuration File Administration Tab on page 4-55
- SNMP Tab on page 4-57
- License Administration Tab on page 4-60
- Remote Switch Tab on page 4-61
- QuickLoop Tab on page 4-63
- Configure Tab on page 4-66
- Extended Fabric Tab on page 4-69
- Network Configuration Tab on page 4-71
- Port Settings Tab on page 4-73
- Routing Tab on page 4-74
- Trunk Information Tab on page 4-76
- Report Tab on page 4-77

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

Accessing the Administrative Interface

To access 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 4–39.



Figure 4–39: The Enter Network Password dialog box

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

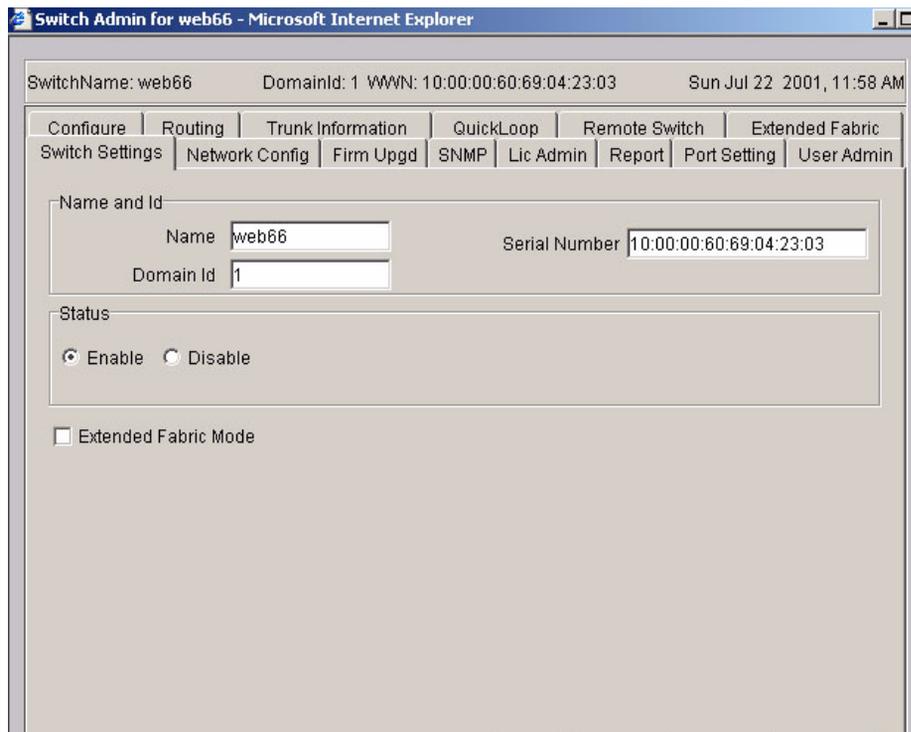
The Administrative Interface displays, with the Switch Settings tab selected by default, as shown in Figure 4–40.

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).

All tabs in the Administrative Interface are consistent with the tabs of the other interfaces with the exception of the Trunk Information and the Report tab, which are read-only tabs and, has only the Close button function.

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 4–40.



Switch Admin for web66 - Microsoft Internet Explorer

SwitchName: web66 DomainId: 1 WWN: 10:00:00:60:69:04:23:03 Sun Jul 22 2001, 11:58 AM

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

Name and Id

Name: Serial Number:

Domain Id:

Status

Enable Disable

Extended Fabric Mode

Figure 4–40: Switch Settings tab

Table 4–13 contains a description of the fields on the Switch Settings tab.

Table 4–13: Switch Settings Tab Fields Description

| Name | Description |
|----------------------|---|
| Name | Enter data for the switch name. Enter a new name to change a name in this field. |
| Domain ID | 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 Compaq StorageWorks Fibre Channel Switch). |
| Serial Number | Displays the serial number of the switch. |
| Extended Fabric Mode | Click on the box to allow ports to be configured for long distance, or uncheck to turn the option off. |
| (Status) Enabled | Click on the radio button to enable the switch. |
| (Status) Disabled | Click on the radio button to disable the switch. |
| OK | Click and exit Administrative view to save any changes. |
| Apply | 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. |
| Close | 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. |
| Reset | 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 4–41.

Switch Admin for web66 - Microsoft Internet Explorer

SwitchName: web66 DomainId: 1 WWN: 10:00:00:60:69:04:23:03 Sun Jul 22 2001, 12:02 PM

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

Admin Account

User Name

New Password Verify Password

User Account

User Name

New Password Verify Password

OK Apply Close Reset

Figure 4–41: User Admin tab

Table 4–14 contains a description of the fields on the User Admin tab.

Table 4–14: User Admin Tab Fields Description

| Name | Description |
|-----------------|---|
| User Name | <p>Enter new user name or modify the existing user name.</p> <p>NOTE: You cannot create a new user name to one that is already being used. Doing so will cause the Verification Exception dialog box to appear:</p>  |
| New Password | Enter new password or modify the existing password. |
| Verify Password | Re-enter password to verify. |
| OK | Click to save the changes made to the tab and exit the Switch Administrative view. |
| Apply | Click to save the changes made to this tab. Additional changes can be made and the Apply button clicked when making changes incrementally. |
| Close | 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. |
| Reset | 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 4–42.

The screenshot shows the 'Switch Admin for web66 - Microsoft Internet Explorer' window. The interface includes a header with 'SwitchName: web66', 'DomainId: 1', 'WWN: 10:00:00:60:69:04:23:03', and 'Sun Jul 22 2001, 12:09 PM'. Below the header 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 'Firm Upgd' tab is active. The main content area is divided into three sections: 'Function' with radio buttons for 'Firmware Download', 'Boot Switch', 'Config Upload', 'Config Download', and 'Config Default'; 'Host Details' with a 'Protocol' dropdown set to 'RSH', 'User Name' text box containing 'user', 'Host IP' text box containing '192.168.168.66', and 'Filename' text box containing '/path/filename'; and 'Boot Options' with checkboxes for 'FastBoot', 'ReBoot', 'Power On Self Test', and 'Reboot After Download'.

Figure 4–42: Firmware/Configuration File Administration tab

Table 4–15 contains a description of the fields on the Firmware/Configuration File Administration tab.

Table 4–15: Firmware/Config File Admin Tab Fields Description

| Field Name | Description |
|--|--|
| Available in the Function section: | |
| Firmware Download | Select the radio button to download firmware. |
| Bootswitch | Select the radio button to boot the switch. |
| Config Upload | 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. |
| Config Download | Select the radio button to download the firmware. |
| Config Default | Select the radio button to reset the configuration to the default value. |
| Available in the Host Details section: | |
| Protocol | Select the pull-down menu to chose the downloading protocol. |
| User name | Enter the User Name. |
| Host IP | Enter the IP address of the host. |
| Filename | Enter the filename to be downloaded. |
| Available in the Boot Options section: | |
| FastBoot | Select the radio button to do a Fastboot on the switch. This will allow the switch to skip over the POST test. |
| Reboot | Select the radio button to reboot the switch. |
| Power on Self-Test | 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. |
| Reboot After Download | Check the box to have the switch reboot automatically after the firmware download. |
| OK | Select and exit the tab to save any changes made. |

Table 4–15: Firmware/Config File Admin Tab Fields Description (Continued)

| Field Name | Description |
|------------|---|
| Apply | 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. |
| Close | Select to exit the Firmware/Configuration file tab. If changes have been made and not committed, a dialog box will display asking if want to save the changes. |
| Reset | 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 4–43.

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: Field Support Description: Fibre Channel Switch.
 Location: End User Premise Trap Level: 0

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 4–43: SNMP tab

Table 4–16 contains a description of the fields on the SNMP tab.

Table 4–16: SNMP Tab Fields Description

| Name | Description |
|----------|--|
| Name | Displays or sets contact information for switch. Default is Field Support. |
| Location | Displays or sets the location of switch. Default is End User Premise. |

Table 4–16: SNMP Tab Fields Description (Continued)

| Name | Description |
|--|---|
| Description | Displays or sets system description. Default is Fibre Channel Switch. |
| Trap Level | Sets severity level of switch events that prompt SNMP traps. Default is 0. |
| Enable Authentication Trap | Check on to enable authentication traps; uncheck to disable (recommended). |
| Community And Trap Recipient Configuration | |
| Community String | 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. |
| Recipient | 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. |
| Access Control List | 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 be changed. Read/Write access means that a member of a community string can be both viewed and make changed. |
| Access Control List Configuration | |
| Access Host | Displays the IP address of the host of the access list. |
| Access Control List | 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. |
| OK | Click to save the changes made to the tab and to exit the tab. |
| Apply | 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. |

Table 4–16: SNMP Tab Fields Description (Continued)

| Name | Description |
|-------|---|
| Close | Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays. |
| Reset | 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 4–44.

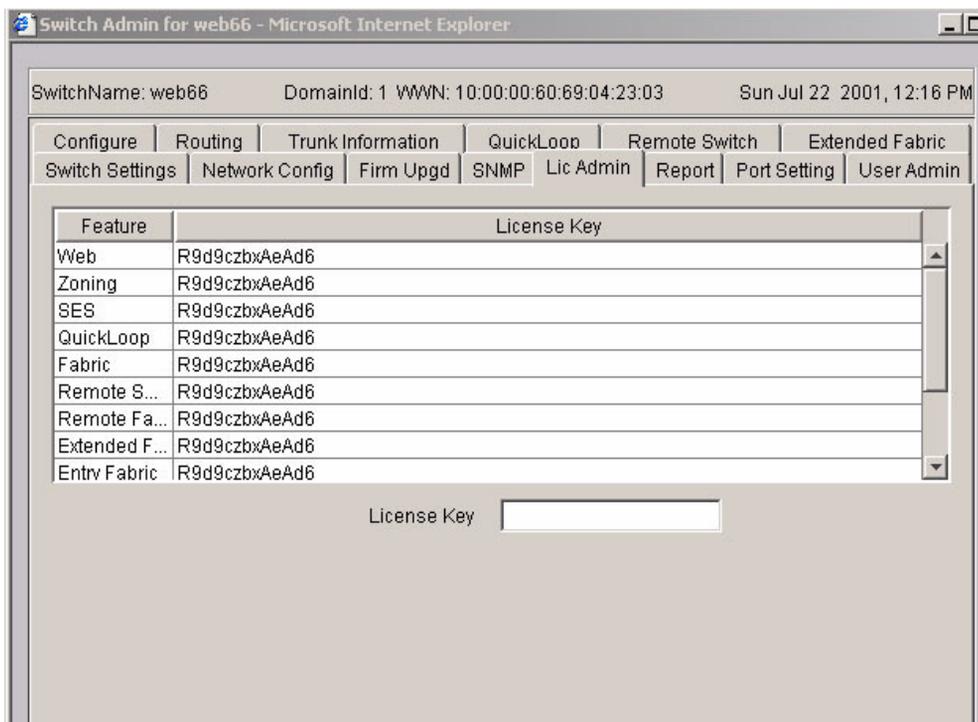
**Figure 4–44: License Administration tab**

Table 4–17 contains a description of the fields on the License Administration tab.

Table 4–17: License Administration Tab Fields Description

| Name | Description |
|-------------|---|
| Feature | A list of the licenses installed on the switch. |
| License Key | Enter license key to be added or removed. |
| Add | Check to add the specified license. |
| Remove | Check to remove the specified license. |
| Close | 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. |
| Reset | 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

Use the Remote Switch feature (option software) 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.

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 4–45.

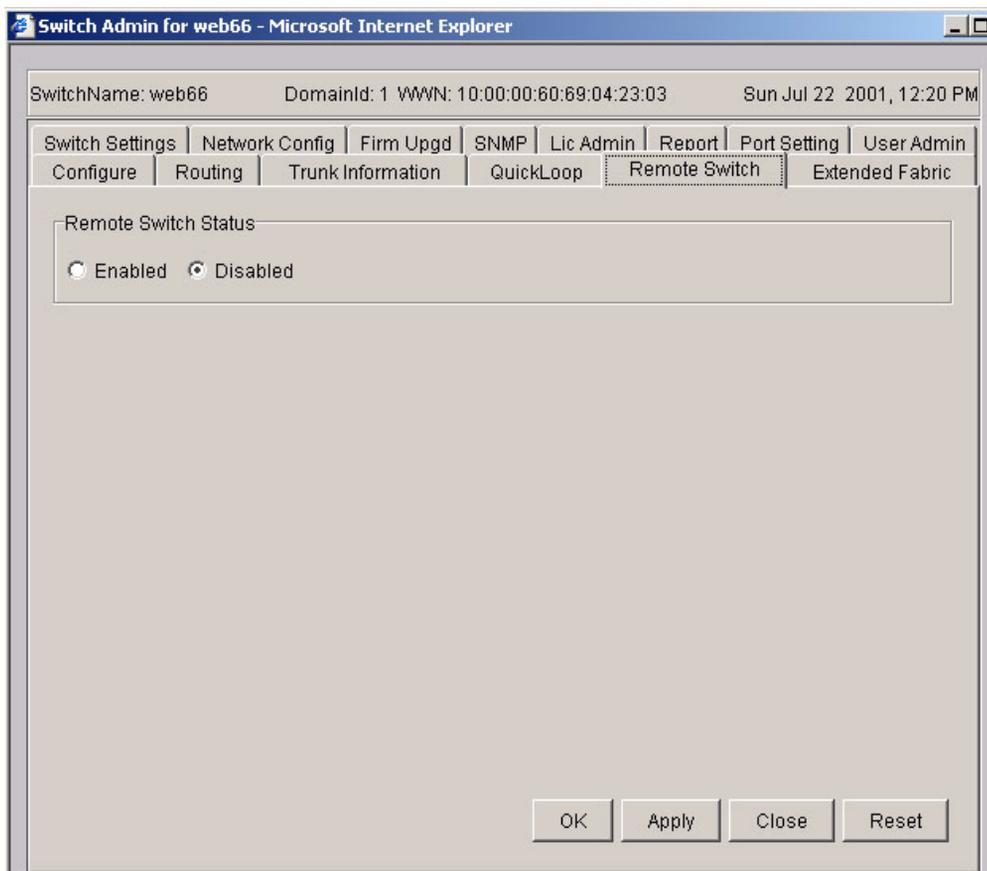


Figure 4-45: Remote Switch tab

Table 4-18 contains a description of the fields on the Remote Switch tab.

Table 4–18: Remote Switch Tab Fields Description

| Field Name | Description |
|------------|--|
| Enabled | Click on radio button to enable the Remote Switch feature, or uncheck to disable it. |
| Disabled | Click on radio button to disable the Remote Switch feature, or uncheck to disable it. |
| OK | Click to save the changes made to the tab and to exit the tab. |
| Apply | 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. |
| Close | Click to exit the current tab. If changes have been made but not committed by clicking the APPLY button, a dialog box displays. |
| Reset | 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

Use the QuickLoop tab (optional software) to manage QuickLoop configuration. For information about managing the features available when QuickLoop and Zoning are used together, see *Zone Administration View* on page 3-12 in this document. For detailed information about the QuickLoop feature, see the *QuickLoop User Guide*.

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

The QuickLoop tab is shown in Figure 4–46.

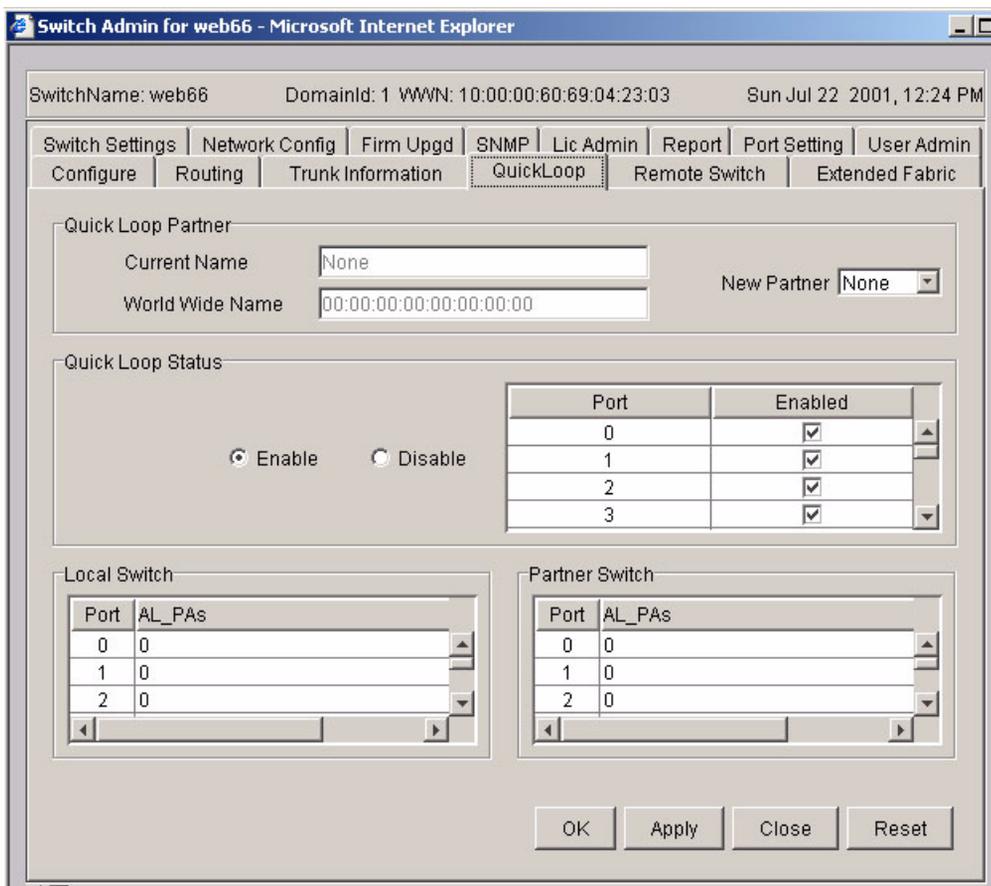


Figure 4–46: QuickLoop tab

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

Table 4–19: QuickLoop Tab Fields Description

| Field Name | Description |
|----------------------------|---|
| QuickLoop Partner section: | |
| Current Name | Displays the current name of the remote switch. |
| World Wide Name | Displays the World Wide Name of the remote switch. |
| New Partner | Displays the current partner switch name of a dual-switch QuickLoop. |
| QuickLoop Status section: | |
| Enable | Click the radio button to enable the switch for QuickLoop. |
| Disable | Click the radio button to disable the switch for QuickLoop. |
| Port | Displays the port numbers. |
| Enabled | Check box to enable a port for QuickLoop, or uncheck to disable the port for QuickLoop. |
| Local Switch Port | Lists the ports connected to the local switch. |
| Local Switch AL_PAs | Lists the AL_PAs of devices connected to the local switch. |
| Partner Switch Port | Lists the ports connected to a remote switch. |
| Partner Switch AL_PAs | Lists the AL_PAs of devices connected to a remote switch. This information displays if a partner is configured. |
| OK | Click to save the changes made to the tab and to exit the tab. |
| Apply | 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. |
| Close | Click to exit the current tab. If changes have been made but not committed by clicking the APPLY button, a dialog box displays. |

Table 4–19: QuickLoop Tab Fields Description (Continued)

| Field Name | Description |
|------------|--|
| Reset | 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 *Fabric Operating System Reference Guide* description of the `configure` command. The Configure tab is shown in Figure 4–47.

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 Supress 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 4–47: Configure tab

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

Table 4–20: Configure Tab Fields Description

| Field Name | Description |
|------------|---|
| BB Credit | Displays the number of buffers that are available to attached devices for frame receipt. |
| E_D_TOV | 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. |

Table 4–20: Configure Tab Fields Description (Continued)

| Field Name | Description |
|----------------------------|---|
| R_A_TOV | 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. |
| Datafield Size | Specifies in bytes, the largest possible data field size. |
| 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. |
| Suppress Class F Traffic | Only applies if VC Encoded Address Mode is also set. When set, translative addressing is disabled. |
| Disable Device Probing | When set, devices that do not register with the Name Server are not present in the Name Server data base. Set this mode only if the switch N_Port discovery process (PLOGI, PRLI, INQUIRY) causes an attached device to fail. |
| VC Encoded Address Mode | When set, the frame source and destination address use an address format that is compatible with the Compaq StorageWorks Fibre Channel Switch. Set this mode only if the fabric includes this type of switch. |
| Virtual Channel Parameters | Enables fine tuning for a specific application by configuring the parameters for eight virtual channels. |
| Send Fan Frames | Specifies that Fabric Access Notification frames be sent to public loop devices to notify them of their node ID and address. |
| Always Send RSCH | 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. |
| Do Not Allow AL_PA 0x00 | Check box to specify that AL-PA is not allowed. |
| rstatd | Dynamically enables or disables a server that returns information about system operation information through remote procedure calls. |
| rapid | Check box to enable rapid system service. |
| rusersd | Dynamically enables or disables a server that returns information about the user who is logged into the system through remote procedure calls. |

Table 4–20: Configure Tab Fields Description (Continued)

| Field Name | Description |
|-------------|---|
| RLS Probing | Check to enable RLS Probing services. |
| OK | Click to save the changes made to the tab and to exit the tab. |
| Apply | 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. |
| Close | Click to exit the current tab. If changes have been made but not committed by clicking the APPLY button, a dialog box displays. |
| Reset | 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

Use the Extended Fabric (optional software) 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. 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 is shown in Figure 4–48.

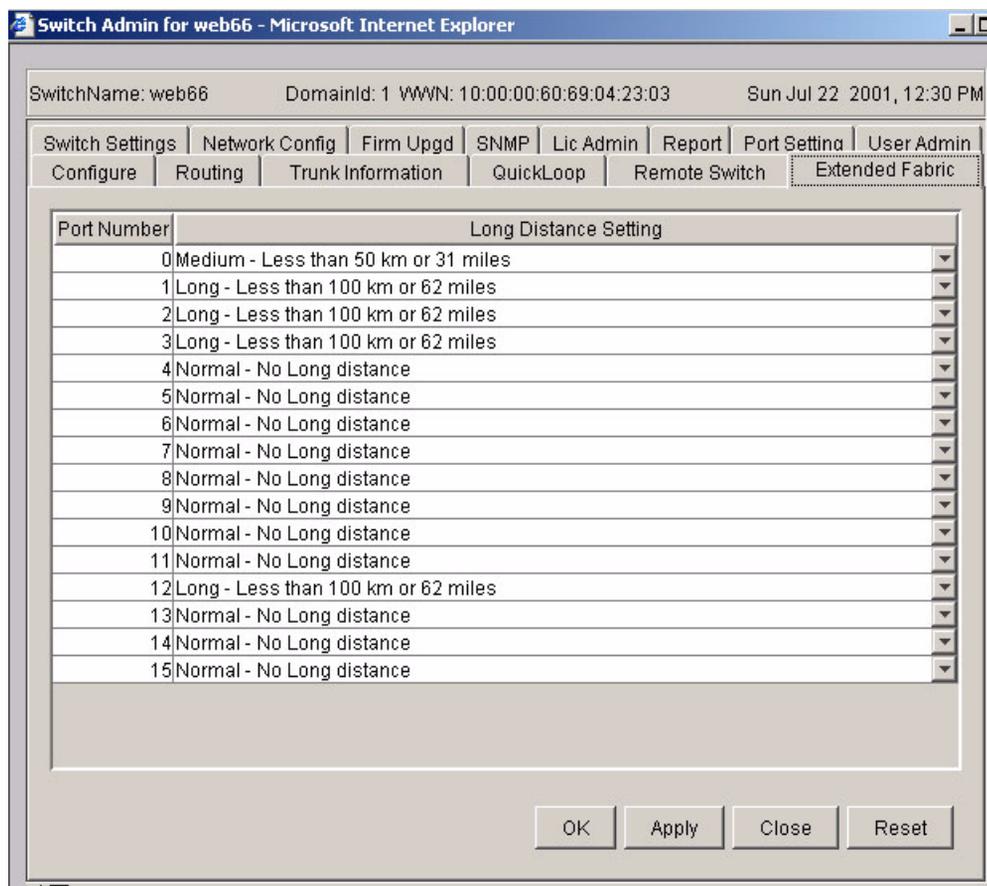


Figure 4-48: Extended Fabric tab

Table 4-21 contains a description of the fields on the Extended Fabric tab.

Table 4–21: Extended Fabric Tab Fields Description

| Field Name | Description |
|-----------------------|---|
| Port Number | Port Number being used for the Extended Fabric. |
| Long Distance Setting | Click to view Long Distance settings. |
| OK | Click to save the changes made to the tab and to exit the tab. |
| Apply | 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. |
| Close | Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays. |
| Reset | 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 is configured and the SYSLOG daemon message recipients. The Network Configuration tab is shown in Figure 4–49.

Switch Admin for web66 - Microsoft Internet Explorer

SwitchName: web66 DomainId: 1 WWN: 10:00:00:60:69:04:23:03 Sun Jul 22 2001, 12:34 PM

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

Ethernet IP Fibre Channel IP

Ethernet SubnetMask Fibre Channel Subnet...

Gateway IP Syslog IP 1

Syslog IP 2

Syslog IP 3

Syslog IP 4

Syslog IP 5

Syslog IP 6

Figure 4–49: Network Configuration tab

Table 4–22 contains a description of the fields on the Network Configuration tab.

Table 4–22: Network Configuration Tab Fields Description

| Field Name | Description |
|--------------------------|--|
| Ethernet IP | Displays the Ethernet IP address. |
| Ethernet SubnetMask | Displays the Ethernet SubnetMask address. |
| Gateway IP | Displays the Gateway IP address. |
| Fibre Channel IP | Displays the Fiber Channel IP address. |
| Fibre Channel SubnetMask | Displays the Fiber Channel SubnetMask address. |
| Syslog IP/~6 | Displays six Syslog IP addresses for a user to configure. |
| OK | Click to save the changes made to the tab and to exit the tab. |

Table 4–22: Network Configuration Tab Fields Description (Continued)

| Field Name | Description |
|------------|--|
| Apply | 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. |
| Close | Click to exit the current tab. If changes have been made but not committed by clicking the APPLY button, a dialog box displays. |
| Reset | 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 4–50.

| Port Number | Trunking Enable:Disable | Port Enable:Disable | Port Speed |
|-------------|-------------------------------------|-------------------------------------|------------|
| 0 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2G |
| 1 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2G |
| 2 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2G |
| 3 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 2G |
| 4 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2G |
| 5 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2G |
| 6 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | N1 |
| 7 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2G |
| 8 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 1G |
| 9 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | N2 |
| 10 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | N2 |
| 11 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | N2 |
| 12 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | N2 |
| 13 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | N2 |
| 14 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | N2 |

Figure 4–50: Port Settings tab

Table 4–23 contains a description of the fields on the Port Settings tab.

Table 4–23: Port Settings Tab Fields Description

| Field Name | Description |
|--------------------|---|
| Port Number | Port Number. |
| Trunking Enabled | 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. |
| Port Enabled | Check to enable or uncheck to disable ports on the switch. |
| Current Port Speed | Click to display the current port speed. Port speed can be fixed to 1G, 2G, or negotiate 1G (N1G) or negotiate 2G (N2G). If the speed is set to negotiate, the speed will depend on the negotiated result. |
| Change Port Speed | 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. |
| OK | Click to save the changes made to the tab and to exit the tab. |
| Apply | 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. |
| Close | Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays. |
| Reset | 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 4–51.

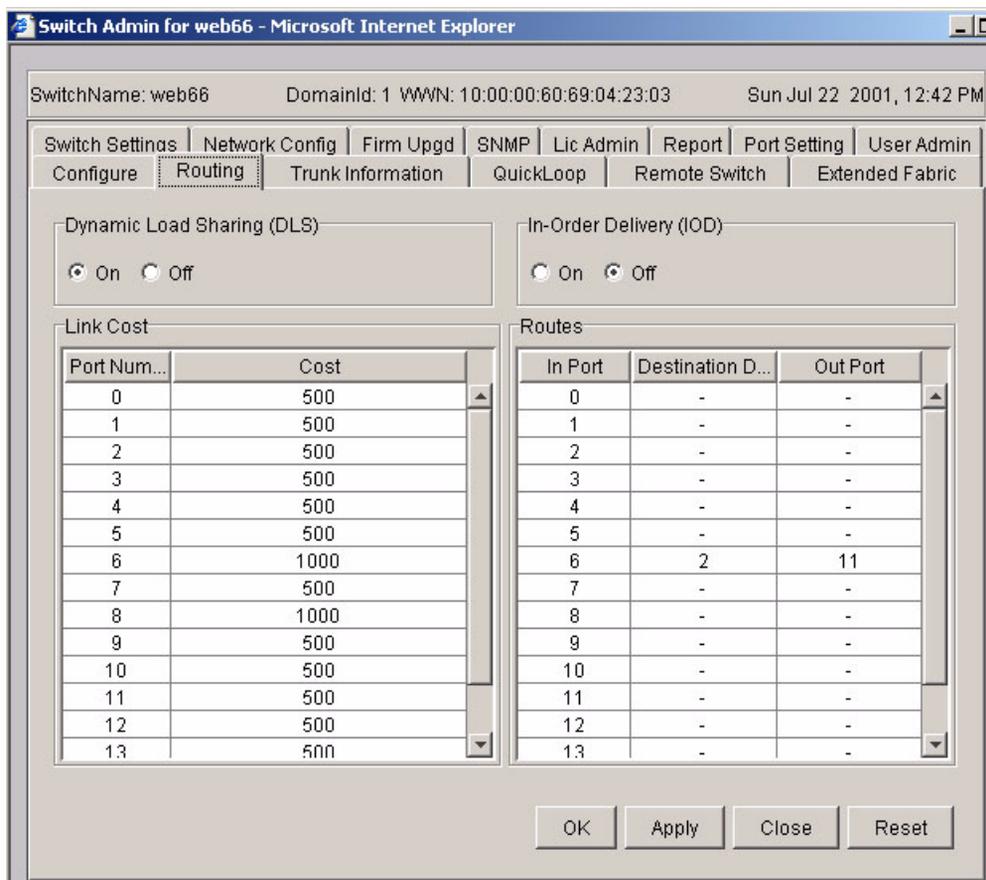


Figure 4–51: Routing tab

Table 4–24 contains a description of the fields on the Routing tab.

Table 4–24: Routing Tab Fields Description

| Field Name | Description |
|----------------------------|---|
| Dynamic Load Sharing (DLS) | Click the radio button to turn Dynamic Load Sharing on or off. |
| In-Order Delivery (IOD) | Click the radio button to turn In-Order Delivery on or off. |
| Port Number | Displays Port Number. |
| Cost | Use the Cost field to change the link cost for a particular tab. |
| In Port | Displays In Port number. |
| Destination | 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. |
| Out Port | 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. |
| OK | Click to save the changes made to the tab and to exit the tab. |
| Apply | 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. |
| Close | Click to exit the current tab. If changes have been made but not committed by clicking the Apply button, a dialog box displays. |
| Reset | 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 the Trunk Information tab is a read-only tab and, has only the Close button function. The Trunk Information tab is shown in Figure 4–52.

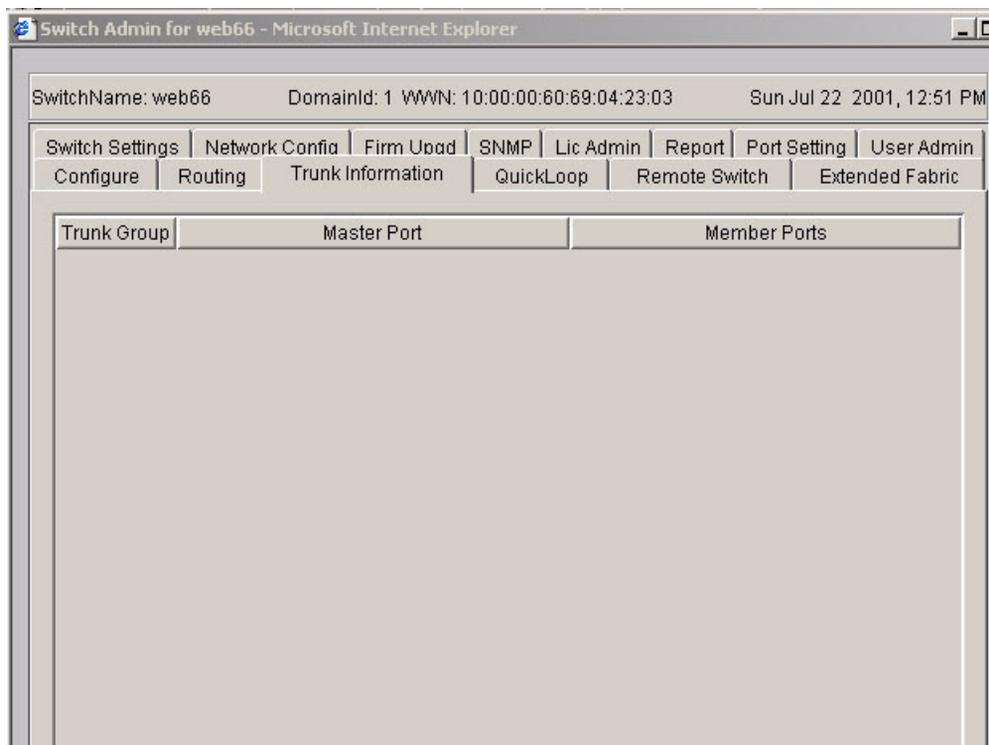


Figure 4–52: Trunking tab

Table 4–25 contains a description of the fields on the Trunk Information tab.

Table 4–25: Trunking Tab Fields Description

| Name | Description |
|-------|--------------------------------|
| Close | 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 4–53.

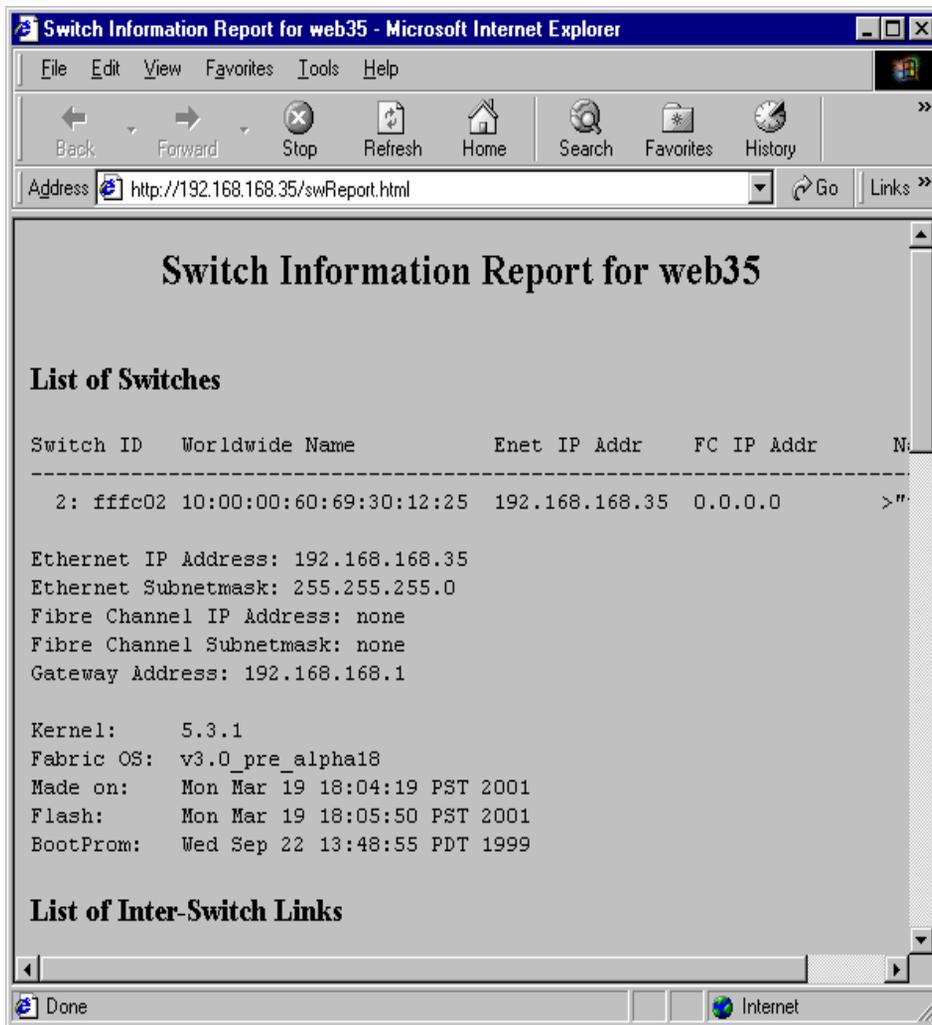


Figure 4-53: Report tab

Telnet Interface

Only one Telnet session can be active at a time.

NOTE: The telnet interface requires administrative privileges. Once an administrative login is entered, administrative privileges remain available until the web browser is exited.

To access the Telnet 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 **Telnet** icon on the switch panel.

If a Telnet session is already active, the following message displays as shown in Figure 4–54.



Figure 4–54: Telnet Session in Use message dialog box

4. If this message displays and you want to abort the active session, click **Abort Session**. Otherwise, click **Cancel**.

If there is no active session or it has been aborted, the following dialog appears as shown in Figure 4–55.

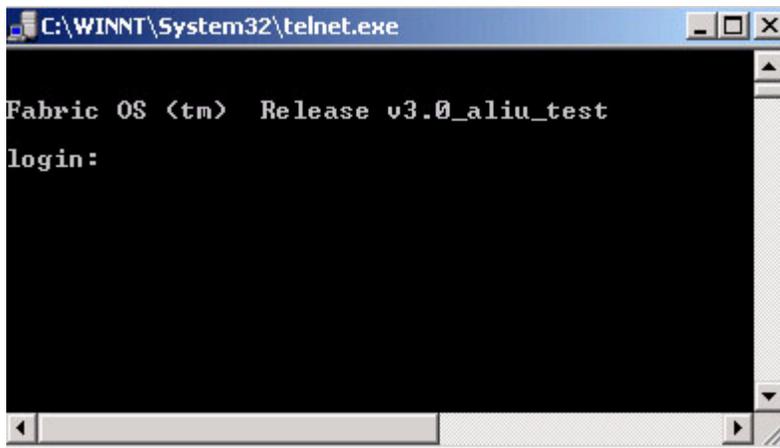


Figure 4-55: Telnet interface

5. Enter your user name and password (the account used must have administrative privileges).

Port Information View

Introduction

This chapter describes the views and interfaces available through the Port Information view in Web Tools, which consist of the following:

- PortStats Tab on page 5-4
- GBIC Tab on page 5-6
- Loop Tab on page 5-9

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.

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.

Figure 5–1 shows the top of the Port Information view screen.

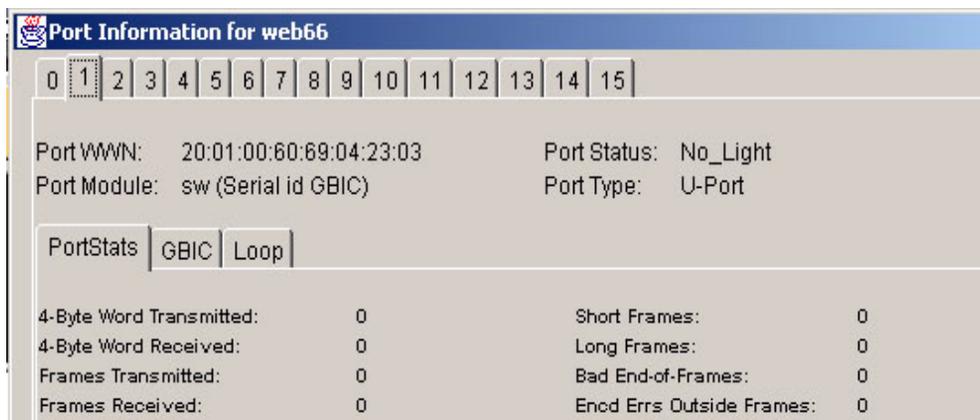


Figure 5–1: Port Information view

Table 5–1 contains 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 Description

| Field Name | Description |
|----------------------|--|
| Port World Wide Name | World Wide Name (WWN) of this port. |
| Port Module | The GBIC type, as follows: <ul style="list-style-type: none"> • (blank)—No GBIC present • SW—Short wave GBIC • LW—Long wave GBIC • CU—Copper GBIC • SWID—Short wave serial ID GBIC • LWID—Long wave serial ID GBIC • CUID—Copper serial ID GBIC |
| Port Status | The current status of the port. <ul style="list-style-type: none"> • No_Module—No GBIC 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. |

Table 5–1: Port Information View Fields Description (Continued)

| Field Name | Description |
|----------------------------|--|
| Port Status (continued) | <ul style="list-style-type: none"> • Laser_Flt—Module signaling a laser fault (defective GBIC). • Port_Flt—Port is marked faulty (defective GBIC, cable, or device). • Diag_Flt—Port failed diagnostics. • Online—Port is up and running. • Lock_Ref—Port is locking to reference signal. <p>NOTE: 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).</p> |
| Port Type | <p>The type of port.</p> <ul style="list-style-type: none"> • 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 |

To access Port Information 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/
```

Web Tools launches, displaying Fabric view (see Figure 3–1).

3. Click the **Switch** icon in Fabric view.

The Switch view displays (see Figure 4–1).

4. Click a **Port** icon.

The Port Information view displays, as shown in Figure 5–1.

PortStats Tab

The PortStats tab provides information about transmission speed, reception speed, and the volume of traffic through the selected port. The PortStats tab information is shown in Figure 5–2.

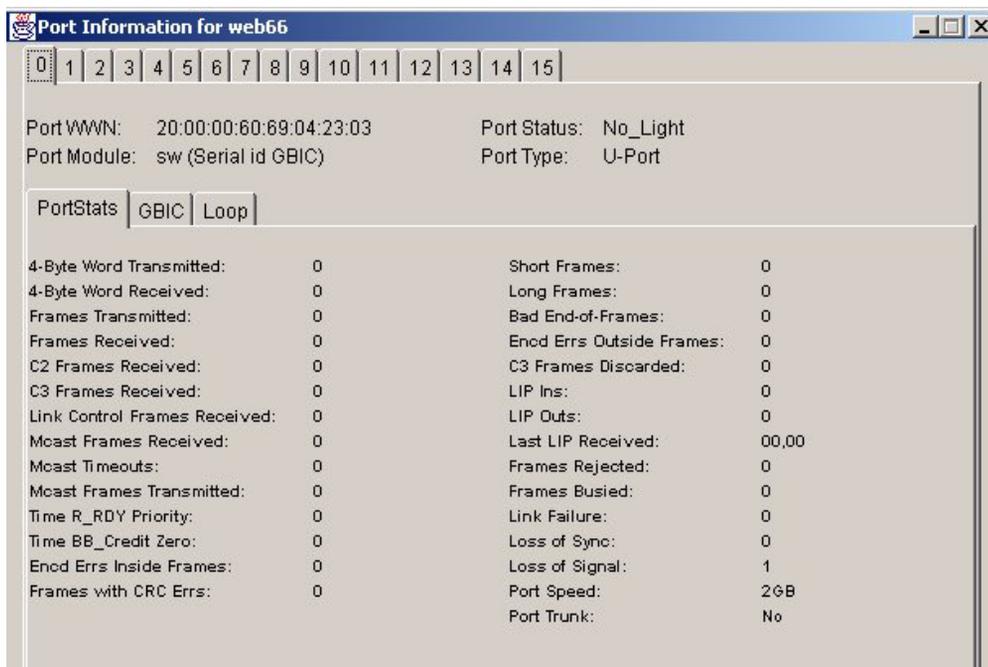


Figure 5–2: Port Information view PortStats tab selected

Table 5–2 contains a description of the fields on the PortStats tab.

Table 5–2: PortStats Tab Fields Description

| Field Name | Description |
|-------------------------|--|
| 4-Byte Word Transmitted | Number of four-byte words transmitted. |
| 4-Byte Word Received | Number of four-byte words received. |
| Frames Transmitted | Number of frames transmitted. |
| Frames Received | Number of frames received. |
| C2 Frames Received | Number of class 2 frames received. |

Table 5-2: PortStats Tab Fields Description (Continued)

| Field Name | Description |
|------------------------------|--|
| C3 Frames Received | Number of class 3 frames received. |
| Link Control Frames Received | Number of link control frames received. |
| Mcast Frames Received | Number of multicast frames received. |
| Mcast Time-outs | Number of multicast timeouts. |
| Mcast Frames Transmitted | Number of multicast frames transmitted. |
| Time R_RDY Priority | Number of times R_RDY has priority over frames to be sent. |
| Time BB_Credit Zero | Number of times BB_Credit went to zero. |
| Encd Errs Inside Frames | Number of encoding errors inside frames. |
| Frames with CRC Errs | Number of frames with CRC errors. |
| Short Frames | Number of frames shorter than minimum. |
| Long Frames | Number of frames longer than maximum. |
| Bad End-of-Frames | Number of frames with faulty end-of-frames. |
| Encd Errs Outside Frames | Number of frames with encoding errors outside frames. |
| C3 Frames Discarded | Number of class 3 frames discarded. |
| LIP Ins | Number of LIPs received. |
| LIP Outs | Number of times loop initialized by FL_Port. |
| Last LIP Received | Last LIP received: AL_PD, AL_PS. |
| Frames Rejected | Number of F_RJTs sent. |
| Frames Busied | Number of F_BSYs sent. |
| Link Failure | Number of times NOS received/sent. |
| Loss of Sync | Number of times loss of sync occurred. |
| Loss of Signal | Number of times loss of signal occurred. |
| Port Speed | Displays the speed of the port. |
| Port Trunk | Displays whether Trunking is enabled or disabled. |

GBIC Tab

The GBIC tab provides information about the GBIC (Gigabit Interface Converter) installed in the selected port. The information displayed depends on the type of GBIC installed. The GBIC tab is shown in Figure 5–3.

- Standard GBIC—Module type (short wave, long wave, copper, etc.).
- Serial ID GBIC—Module type, plus extended information about capabilities, interfaces, and manufacturer.
- Smart Finisar GBIC—All of the above information, plus GBIC active status.

If the port does not contain a GBIC, the following information displays:

“Not a serial ID GBIC. No GBIC info available.”

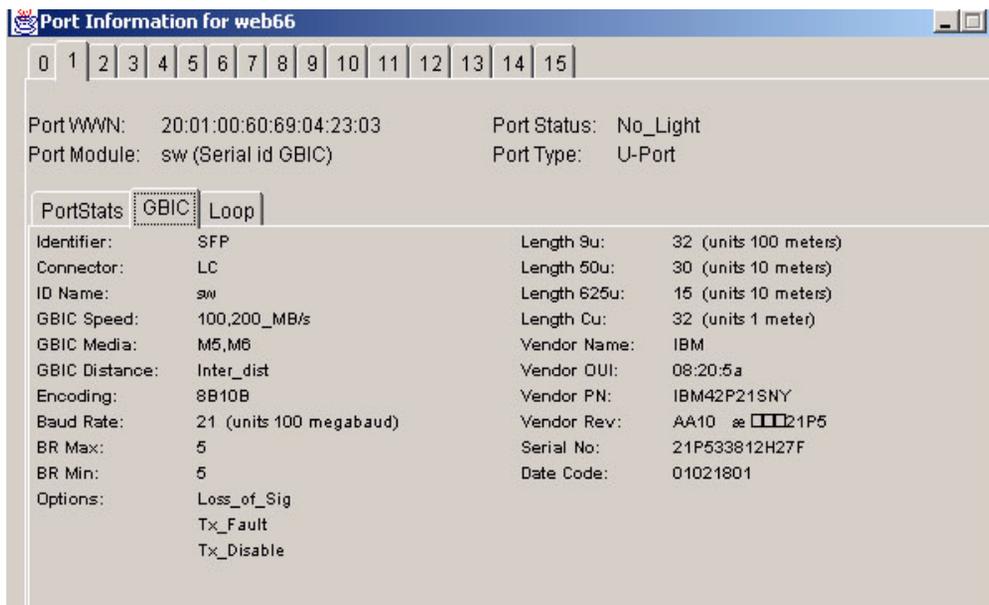


Figure 5–3: Port Information view with GBIC tab selected

Table 5–3 contains a description of the fields on the GBIC tab.

Table 5–3: GBIC Tab Fields Description

| Field Name | Description |
|---------------|--|
| Identifier | Indicates the type of serial transceiver, which can be GBIC or on-board. |
| Connector | Indicates the external connector type, which can be one of the following: <ul style="list-style-type: none"> • SC • Style-1 Copper • Style-2 Copper • BNC/TNC • Coaxial |
| ID Name | Indicates the GBIC module type: <ul style="list-style-type: none"> • (blank)—No GBIC present • sw—Short wave GBIC • lw—Long wave GBIC • cu—Copper GBIC • swid—Short wave serial ID GBIC • lwid—Short wave serial ID GBIC • cuid—Short wave serial ID GBIC |
| GBIC Speed | Indicates the GBIC speed, which can be 100, 200, or 400 MB/sec. |
| GBIC Media | Indicates the transmission media, which can be: <ul style="list-style-type: none"> • SM—single mode • M5—multi-mode, 50u • M6—multi-mode, 62.5u • TV—video coax • MI—miniature coax • TP—shielded twisted pair • TW—twin axial pair |
| GBIC Distance | Indicates the length of the fibre channel link, which can be long distance, intermediate distance, or short distance. |
| Encoding | Indicates the serial encoding mechanism, which can be 8B10B, 4B5B, NRZ, or Manchester. |

Table 5-3: GBIC Tab Fields Description (Continued)

| Field Name | Description |
|---|--|
| Baud Rate | Nominal baud rate in units of 100 MB. |
| BR Max | Upper limit at which GBIC meets its specifications (in units of 1 percent above nominal baud rate). |
| BR Min | Lower limit at which GBIC meets its specifications (in units of 1 percent below nominal baud rate). |
| Options | May indicate any of the following: <ul style="list-style-type: none"> • Loss of Signal • Loss of Signal Inverted • Transmission Fault • Transmission Disable |
| Length 9u | Length of link using single mode fiber |
| Length 50u | Length of link using 50µm multi-mode fiber. |
| Length 625u | Length of link using 62.5µm multi-mode fiber. |
| Length Cu | Minimum length of link using copper cable. |
| Vendor Name | Name of vendor. |
| Vendor OUI | Unique identifier for vendor. |
| Vendor P/N | Vendor part number. |
| Vendor Rev | Vendor revision number. |
| Serial No. | Vendor serial number. |
| Date Code | Vendor date code. |
| Smart GBIC Data (only displays if a smart GBIC is present): | |
| Temperature | Module temperature in degrees Celsius (°C). |
| Rx Power | Received optical power in microwatts (µW). |
| Tx Power | Transmitted optical power in microwatts (µW; longwave only). |
| Current | Laser diode drive current in milliamperes (mA). |

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 information is shown in Figure 5–4.

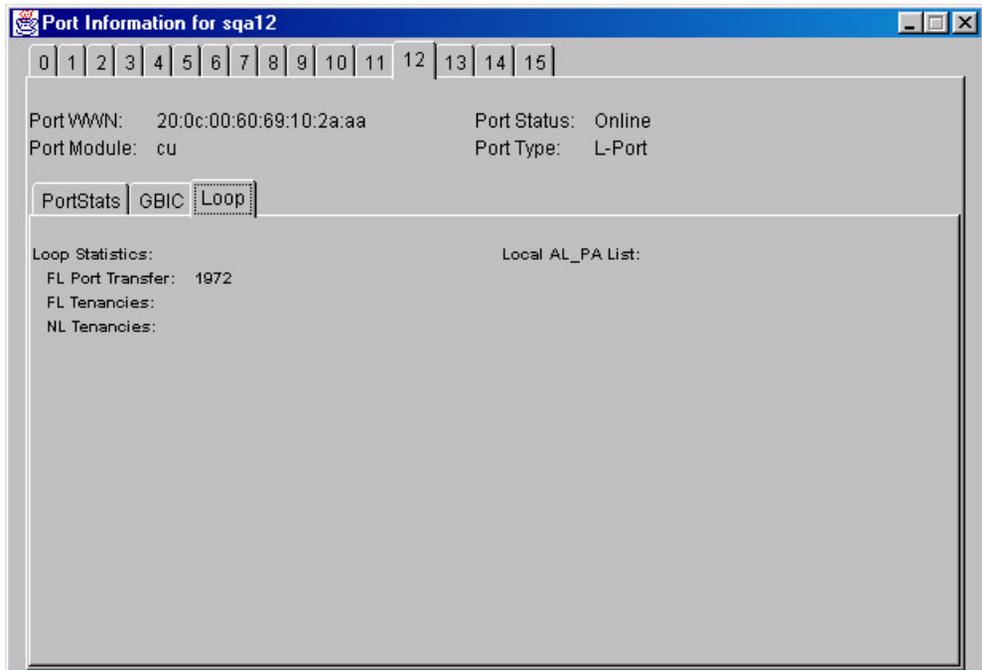


Figure 5–4: Port Information view with Loop tab selected

Table 5–4 contains a description of the fields on the Loop tab.

Table 5–4: Loop Tab Fields Description

| Field Name | Description |
|-----------------------------------|---|
| FL Port Transfer | Displays number of times FL_Port used transfer state. |
| FL Tenancies | Displays the number of times FL_Port opens loop tenancy. |
| NL Tenancies | Displays the number of times NL_Port opens loop tenancy. |
| QL/Zone Inits Caused | Displays number of times looplest has caused QuickLoop to be initialized. |
| Successful QL/Zones Inits | Displays number of times looplest has successfully initialized. |
| Number of Failed QL/Zone Inits | Displays number of times looplest failed to successfully initialize. |
| Times Being Bypassed | Displays number of times looplest was not included as part of QuickLoop. |
| Last Time bypassed | Displays time that looplest was last bypassed. |
| Local AL_PA List | Displays list of AL_PAs associated with devices connected to loop. |
| QL Init Attempts | Displays number of times QuickLoop attempted initialization. |
| Successful QL Inits | Displays number of time QuickLoop successfully initialized. |
| Times in Single Switch Mode | Displays number of times switch reverted to single switch mode. |
| Times in Dual Switch Mode | Displays number of times switch operated in dual switch mode. |
| Time of Last QL Init | Displays time of latest QuickLoop initialization. |
| Switch, Port Caused the Last Init | Displays number of switch, port that caused the latest initialization. |

Glossary

This glossary defines terms used in this guide or related to this product and is not a comprehensive glossary of computer terms.

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.

Address Identifier

A 24-bit or 8-bit value used to identify the source or destination of a frame.

AL_PA

Arbitrated Loop Physical Address; a unique 8-bit value assigned during loop initialization to a port in an arbitrated loop.

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.

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.

API

Application Programming Interface; defined protocol that allows applications to interface with a set of services.

Arbitrated Loop

A shared 100 MBps Fibre Channel transport structured as a loop. Can support up to 126 devices and one fabric attachment. See also *Topology*.

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.

AW_TOV

Arbitration Wait Time-out Value; the minimum time an arbitrating L_Port waits for a response before beginning loop initialization.

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*.

Beginning Run 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*.

Block

As applies to Fibre Channel, upper-level application data that is transferred in a single sequence.

Bridge

Hardware that connects incompatible networks by providing translation for both hardware and software. For example, an ATM gateway can connect a Fibre Channel link to an ATM connection.

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. The recommended number of interswitch links is seven. 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 connection-less frame switching service between two ports, with notification of delivery or nondelivery.

Class 3

Service that provides a connection-less frame switching service between two ports, without notification of delivery or nondelivery of data. Can also be used to provide a multicast connection between the originator and recipients, with notification of delivery or nondelivery.

Class 4

Connection-oriented service that provides a virtual circuit between two ports, with notification of delivery or nondelivery. Allows fractional parts of the bandwidth to be used in a virtual circuit.

Class 6

Connection-oriented service that provides a multicast connection between the multicast originator and recipients, with notification of delivery or nondelivery.

Class F

Connection-less 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.

CLS

Close Primitive Signal. The protocol used by a port in an arbitrated loop to close a circuit.

Code Balance

The ratio of one bit to the total number of transmitted bits.

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*.

Command Line

Interface that depends entirely on the use of commands, such as through telnet or SNMP, and does not involve a GUI.

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*.

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.

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 (loop port state machine). See also *Fill Word*.

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*.

Defined Zone Configuration

The set of all zone objects defined in the fabric. May include multiple zone configurations. See also *Enabled Configuration*, *Zone Configuration*.

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 SAN 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.

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.

Enabled Zone Configuration

The currently enabled configuration of zones. Only one configuration can be enabled at a time. See also *Defined Configuration*, *Zone Configuration*.

End-to-end Flow Control

Governs flow of class 1 and 2 frames between N_Ports. See also *EE_Credit*.

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*.

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.

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 Name

The unique identifier assigned to a fabric and communicated during login and port discovery.

Fabric

A Fibre Channel network containing two or more switches in addition to hosts and devices. May also be referred to as a switched fabric. See also *Topology*, *SAN*, *Cascade*.

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 Signalling 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.

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*.

Fill Word

An IDLE or ARB ordered set that is transmitted during breaks between data frames to keep the Fibre Channel link active.

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*.

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.

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 specific 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*.

FSP

Fibre Channel Service Protocol; the common protocol for all fabric services, transparent to the fabric type or topology. See also *FS*.

FSPF

Fabric Shortest Path First; the routing protocol for Fibre Channel switches.

Full Fabric

The licensing 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

A device such as a switch that connects different subnets together. A switch can be used as a gateway from the Ethernet to the Fibre Channel. Set the gateway address on one switch to the Fibre Channel IP address of another switch to enable the other switch to forward IP traffic to the ethernet port on the second switch.

GBIC

Gigabit Interface Converter; a removable serial transceiver module that allows gigabaud physical-level transport for Fibre Channel and gigabit ethernet. Also known as Optical Transceiver.

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.

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.

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.

IN_ID

Initial Identifier. The field in the CT_HDR where the port ID of the client originator of a Fibre Channel Services request.

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 Compaq StorageWorks Fibre Channel SAN Switch IS/32 or IS/64, or SAN Switches 16-EL/8-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.

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*.

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*.

IU

Information Unit; a set of information as defined by either upper-level process protocol definition or upper-level protocol mapping.

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*.

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.

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 fibres. 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. Communicated through PLOGI, PDISC link services, or FLOGI.

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.

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*.

MIB

Management Information Base; an SNMP structure to help with device management, providing configuration and device information.

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.

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*.

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. The protocol used by a port that has won arbitration in an arbitrated loop to establish a circuit.

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. The Compaq switches use the FSPF protocol.

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.

A twenty-bit public address created for an 8-bit loop device to allow public devices to access it.

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_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.

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.

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.

Public Device

A device that can log into the fabric and support 20-bit addresses (or has 20-bit phantom addresses created for it by the switch). See also *Phantom Addresses*

Public Loop

An arbitrated loop that includes a participating FL_Port, and may contain both public and private NL_Ports.

QuickLoop

A feature 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.

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*.

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*.

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*.

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*.

Single Mode

The fiber optic cabling standard that corresponds to distances of up to 10 km between devices.

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 protocol, 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*.

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*.

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.

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.

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.

Trap (SNMP)

The message sent by an SNMP agent to inform the SNMP management station of a critical error. See also *SNMP*.

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*.

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

Worldwide Name; an identifier that is unique worldwide. Each entity in a fabric has a separate WWN.

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 Configuration

A specified set of zones. Enabling a configuration enables all zones in that configuration. See also *Defined Configuration*, *Enabled Configuration*.

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*.

Zoning

A feature 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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