SilkWorm® 2800

Hardware Reference Manual

Copyright

Note Regarding Applicability of the BROCADE® SilkWorm®2800 Hardware Reference Manual to Hewlett-Packard

The *SilkWorm 2800 Hardware Reference Manual* describes how to maintain the SilkWorm 2800 switch. The following describes the extent to which this manual is applicable to Hewlett-Packard.

References to the following are not applicable:

- Model numbers
- Optional licensing information
- Part numbers
- Copper

The front matter (Notices, TOC, Preface) is applicable, with the following exceptions:

- Related Publications – Hewlett-Packard part numbers are as follows: *Hardware Reference Manual* A5624-90902, *Fabric OS* A5624-90903, *Zoning* A5624-90904, *QuickLoop* A5624-90905, *Web Tools User's Guide* A5624-90906, and *SCSI-3 Enclosure Services (SES) User's Guide* A5624-90907.
- Optionally licensed products are standard.

Chapter 1 (Introduction) is applicable, with the following exception:

- Cascading – additional cascading information available from Hewlett-Packard.

Chapter 2 (Installation) is applicable, with the following exceptions:

- Option of one power supply.
- Ambient temperature is 30°.
- Additional racking information available from Hewlett-Packard

Chapter 3 (Switch Management) is applicable.

Chapter 4 (Front Panel Diagnostics) is applicable.

Appendix A (Specifications) is applicable, with the following exception:

- References to copper

Appendix B (Switch Support) is not applicable. Refer to your Hewlett-Packard support contract for support information.

Appendix C (Error Messages) is applicable.

FCC Warning (USA only)

This equipment has been tested and complies with the limits for a Class A computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operating this equipment in a residential area is likely to cause harmful interference in which case the user is responsible for repairs.

VCCI Statement

This is a Class A product based on the standard of the Voluntary Control Council For Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

(Japanese Text)

CE Statement

The standards compliance label on the SilkWorm 2800 Fibre Channel Switch contains the CE mark which indicates that this system conforms to the provisions of the following European Council Directives, laws, and standards:

* Electro Magnetic Compatibility (EMC) Directive 89/336/EEC and the Complementary Directives 92/31/EEC and 93/68/EEC:
    * - EN550022, Class A; Emissions Industrial Environment
    * - EN 50082-2 Immunity Industrial Environment
    * - EN61000-4-2 Electro Static Discharge
    * - EN61000-4-3 Radiated RF
    * - EN61000-4-4 Electrical Fast Transients
    * - EN61000-4-5 Surge
    * - EN61000-4-6 Conducted RF
    * - EN61000-4-11 Line Interruption
* Low Voltage Directive (LVD) 73/23/EEC and the Complementary Directive 93/68/EEC:
    * - EN 60950:92 A1:93 & A2:93 & A3:95 & A4:96 & A11:97
    * - EN60825-1:199/A11, -2

Canadian Requirements

This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe A respecte toutee les exigences du Regiements sur le material brouilleur du Canada.

Laser Compliance

This equipment contains class 1 laser products, and it complies with FDA radiation Performance Standards, 21 CFR Subchapter J.

Preface

Chapter 1   Introduction

Chapter 2   Installation

Chapter 4   Front Panel Diagnostics

The *SilkWorm® 2800 Hardware Reference Manual* describes how to use and maintain the SilkWorm 2800 switch.

Audience

The audience for this manual includes:

- Field Technicians

How this Manual is Organized

The following table describes how the manual is organized.

For Information On	See
Switch features and system components	Chapter 1, *Introduction*
Installing and setting up the switch	Chapter 2, *Installation*
Managing the switch via the front panel	Chapter 3, *Switch Management*
Diagnostics and troubleshooting	Chapter 4, *Front Panel Diagnostics*
Technical specifications	Appendix A, *Specifications*
Customer support	Appendix B, *Switch Support*
Error messages	Appendix C, *Error Messages*

Related Publications

Other publications that may provide related information include:

- Fabric OS , Version 2.0 Manual, Part Number: 53-0001535-01
- Fibre Channel Standards

For detailed information on the Fibre Channel standards, see the Fibre Channel Association web site:

http://www.fibrechannel.com

Introduction

Power Supply #2   Power Supply #1

Port 0   Port 15

Figure 1-1   SilkWorm 2800 Front Panel

The SilkWorm 2800 switch is a 16-port Fibre Channel Gigabit switch that provides connectivity for up to 16 Fibre Channel compliant device ports, and a fabric operating system for building and managing a Fabric. A *Fabric* is an active, intelligent, interconnect scheme for Fibre Channel server and storage nodes. Figure 1-1 shows the front view of the switch. This chapter discusses:

•   Features

•   System Components

> **CAUTION:** SilkWorm 2800 contains two power supplies. To remove all power from the system, disconnect both power supply cords.

SilkWorm 2800 Features

The switch is a high-performance Fibre Channel Gigabit Switch with the following features:

•   **Simple** – Easy setup and configuration. After Power-On Self-Test (POST), you need only to add the switch's Internet Protocol (IP) address. The remainder of the switch's setup is automated.

•   **Intelligent** – The switch's fabric operating system allows discovery of all connected devices and determines optimum data paths without intervention, supporting up to 32 interconnected switches.

•   **Flexible** – Modular design with multiple GBIC modules supporting both and copper coaxfiber transmission media. The switch's modular construction gives the switch a range of flexibility in creating, upgrading, maintaining, and configuring a Fabric.

- **Reliable** – Highly integrated, reliable, multifunction (ASIC) devices are used throughout the switch.

- **High performance** – Low-latency, high-performance design resulting in a worst-case data-transfer latency of less than two microseconds from any port at peak Fibre Channel performance of 100 MB/sec. The latency may differ when the destination or device is a loop.

- **Automated congestion management** – Virtual channels lets the switch use sophisticated congestion management techniques that are performed automatically by the switch.

- **Cascading** – You can cascade switches for large Fabric support. Up to 239 switches can be interconnected for a large Fabric with hundreds of Fabric connections.

- **Compatibility** – SilkWorm 2800 has been designed to inter-operate with SilkWorm® 1000 series switches using a SilkWorm Compatibility Mode.

- **Universal** – SilkWorm 2800 switch ports are designed to support F, FL and E-port modes of operation with the software selecting the optimum mode of operation.

Performance

A minimum aggregate routing capacity of 4,000,000 frames/sec is specified for Class 2, Class 3, and Class F frames. Non-blocking throughput of up to 8 x 100MBytes/sec (0.8 GBytes/sec) is provided.

A maximum switch latency of less than two microseconds is specified for Class 2, Class 3, and Class F frames when the output port is free.

Manageability

The unit may be managed in band or out of band via Telnet, via SNMP, via SES or via the Web by connecting to the 10/100BaseT Ethernet port.

System Components

The motherboard is enclosed in an air-cooled chassis which may be either mounted in a standard rack or used as a standalone unit. The chassis includes an RJ-45 Ethernet connection for switch set up and management.

Fabric Operating System

Included with the switch is a fabric operating system tuned for each installation. The system provides a large number of commands and libraries to manage real time tasks. See the *BROCADE Fabric Operating System Version 2.0 Manual* for details about software features.

GBICs

The switch accommodates up to sixteen GBIC modules.The mother board module, is structured to accommodate a single channel FL_Port Interface Module module in the same slot used by the dual G_Port Interface Module module shown in Figure 1-3. Mixing

of FL_Port and G_Port Interface Module modules in different slots is permitted. All interfaces have status lights visible from the front panel giving a quick, visual check of the switch port's status and activity.

GBIC modules supported are the short wavelength (SWL) and long wavelength (LWL) fiber-optics, and Copper (Cu) versions.

If your installation requires installing less than sixteen GBIC modules, the unused port positions are protected by a metal, spring-loaded door.

SWL Fiber-Optic GBIC Module

The SWL fiber-optic GBIC module, with an SC connector color-coded black, is based on short-wavelength 850 mm lasers supporting 1.0625 Gbps link speeds. This GBIC module supports 50-micron, multi-mode fiber optic cables up to 500 meters in length. Figure 1-2 shows a SWL GBIC module.

Figure 1-2   Short-Wavelength Laser (SWL) fiber-optic GBIC module

> **Note:** The SWL GBIC module uses a Class 1 laser, which complies with the 21 CFR, subpart (J) as of the date of manufacture.

LWL Fiber-Optic GBIC Module

The LWL fiber-optic GBIC module, with SC connector color-coded blue, is based on long-wavelength 1300mm lasers supporting 1.0625 Gbps link speeds. This GBIC module supports 9-micron single-mode fiber optic cables up to 10 kilometers in length with a maximum of five splices. Figure 1-3 shows a LWL GBIC module.

Figure 1-3   Long-Wavelength Laser (LWL) fiber-optic GBIC module

Passive Copper GBIC Module

The Copper (Cu) GBIC module is based on the High-Speed Serial Data Connection (HSSDC) interface standards. The GBIC provides a female HSSDC connector. Copper cables up to 13 meters have currently been qualified, thereby supporting ANSI X3.230 FC-PH intra-cabinet requirements. Standard cables with HSSDC-to-DB9 male connectors are also available. Figure 1-4 shows a passive copper GBIC module.
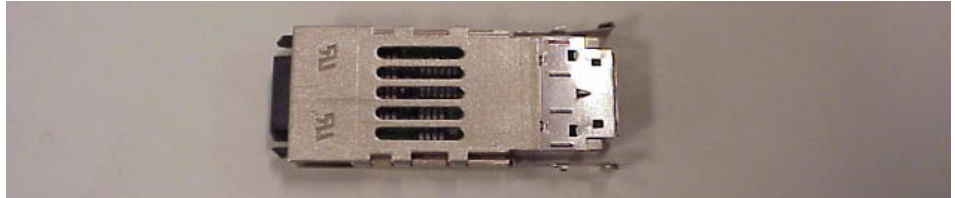
Figure 1-4   Passive Copper GBIC module

Installation

This chapter covers the following:

- Unpacking the switch
- Selecting a location and mounting method
- Setting up connections

Unpacking the Switch

While unpacking the switch, check to make sure the following items are included:

- Switch unit
- Requested GBIC modules
- Accessory kit containing the following:
  - Power cord, if ordered
  - Manuals, if ordered
  - Optional Software Feature Guides, if a feature(s) is ordered
  - Rubber mounting feet

Save packing materials in case you need to return the switch.

Cooling Requirements

Cooling air is drawn into the chassis by four fans mounted near the rear of the chassis, venting exhausted air through the front of the switch.

> **Note:** Do not block the front or rear air vents. The switch must have free access to ambient air for cooling.

Power Requirements

Switch power connection is via switched connectors on the switch's front panel, as shown in Figure 2-1. The switch power requirements are:

- Properly wired, earth-grounded outlet
- Input voltage: 85 – 265 VAC
- Total power: Up to 155 watts (depending on configuration, see Appendix ,)
- Input line frequency: Nominally 47 to 63 Hz

The switch has an autoranging power supply that automatically accepts voltages and line frequencies within its range. A green power on indicator light is above the power switch.

> **Note:** The SilkWorm® 2800 is available in two models. The 2801 includes one power supply unit and the 2802 includes two power supply units.

Power Supply 2   Power Supply 1

Figure 2-1   Model 2802 with Two Power Supplies

> **Note:** The switch meets IEC 801-5 surge voltage requirements, however, there is no other provision for surge protection built into the switch's power supplies. An installation should include normal provisions to assure clean power.

Installation Considerations

The switch has optional mounting hardware to mount the switch in a standard 19-inch rack. If the switch has had its rubber mounting feet installed, they may need to be removed for a rack installation.

Rackmount Safety Guidelines

In a rackmount installation, follow these safety guidelines:

* When installing a switch in a closed or multi-rack assembly, make certain the air temperature, measured at the front panel, does not exceed 40° C during operation.

* Ensure that the airflow available to the switch is at least 300 cfpm.

* Verify that the switch installation, both with the slides closed and fully extended, does not unbalance the rack or exceed the rack's mechanical limits.

* Verify the supply circuit, line fusing, and wire size are adequate. Refer to the switch's nameplate for its power requirements.

* Verify that all equipment installed in the rack has a reliable ground connection. Do not rely on connection to a branch circuit, such as power strips.

* Route and support the power cord to ensure that the switch moves freely on its slides without crimping or damaging the power cord or interfering with other equipment and cabling installed in the rack.

Installing Slide Assembly (Optional)

Before starting switch slide installation and the switch rack installation, locate the rack-mount slides and the mounting brackets package, then proceed:

To install slide assembly
1. Disassemble the slides by fully extending the slide, pressing the release, then pulling the slide apart.

2. Mount the slide moving portion to each switch side, using the supplied slide screws.

3. Open the rack mounting package, and secure the four rack mounting attachments to the stationary slide portion.

4. Mount the two brackets using two screws (of the four provided) for each handle.

Brackets are provided as part of the slide kit. The brackets are used to secure the switch to the rack. Mount both stationary slide portions to the front and rear rack rails.

1. Engage the slide mounted on the switch with the stationary slide portion mounted on the rack, and press toward the rear until the latches engage. Press the switch until the brackets are firmly seated on the rack front supports.

2. Secure the switch to the rack using the provided screws and nuts.

3. Connect the switch to power. This completes the switch rack installation.

Standalone

The switch is shipped in its standalone configuration. Adhesive rubber feet are supplied if the switch is surface mounted. Rubber feet installation is required for proper or safe switch operation.

To install the adhesive rubber feet:

1. Clean the four depressions at each corner of the chassis bottom so that they are free of dust.

2. Remove the rubber feet from the sheet and place one in each depression.

3. Firmly press the rubber feet in place.

Fiber Channel Cable Connections

All network cable connections are to the switch's front panel. All recommended cabling supports the switch's 1.0625-Gbps transfer rate, as shown in Table 2-1.

Table 2-1   Cabling Connections

Cable type	Cable Specification	Maximum run length	GBIC module Optical Wavelength
SWL Fiber Optic[a]	• Duplex SC plug connectors • Multimode fiber • 50 µm core diameter • 125 µm cladding diameter duplex cable	• 500 meters • 1641 feet	780-860 µm without open fiber control (non-OFC)
LWL Fiber Optic[a]	• Duplex SC plug connectors • Single mode fiber • 9 µm core diameter • 125 µm cladding diameter duplex cable	• 10 Kilometers • 84480 feet	1270-1350 µm without open fiber control (non-OFC)

Table 2-1   Cabling Connections

Cable type	Cable Specification	Maximum run length	GBIC module Optical Wavelength
Copper	• Impedance controlled for 150 ohm differential systems • Low skew, shielded quad, 150 ohm cable • Polarized interface • HSSDC receptacle	• 13 meters • 42 feet	NA

a. Recommend using a low EMI optical cable design.

> **Note:**   The switch is not designed to interoperate with devices using an Open Fibre Control optical interface.

Fiber cable connections are made to the switch's front panel using standard dual SC plug connectors as shown in Figure 2.2.
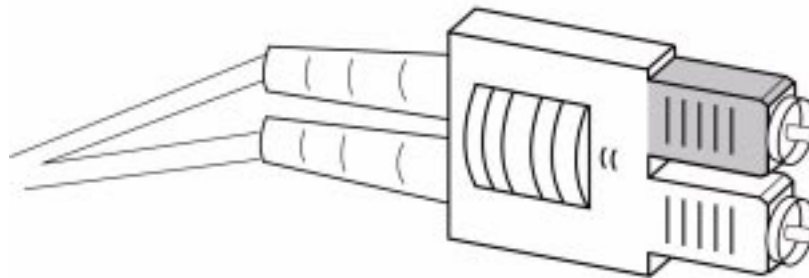
Figure 2-2   Dual SC fiber optic plug connector

The connectors are keyed and must be inserted into the GBIC module's connector in proper alignment. In most cases, one of the two connector plugs is a different color to aid in proper connector alignment.

> **Note:**   Remove the protective plug from the GBIC. Do not force the fiber optic plug into the GBIC module as you may damage the connector, the GBIC module, or both. Make certain the fiber surface is clean, free of dust or debris, before inserting the connector into GBIC module.

Copper cables use a High Speed Serial Data Connection (HSSDC) connector.

Loop (FL) connections

Additional supporting text to be added here when available.

Ethernet Connection

Connecting an existing Ethernet 10/100BaseT LAN to the switch via the front panel RJ-45 connector gives access to the switch's internal SNMP agent and also allows remote Telnet and Web access for remote monitoring and testing.

> **Note:** The connection is only for Telnet, SNMP agent and the Web-based Server access. No Fabric connection is used via this connection.

Verifying Power-On Self-Test (POST)

When the switch is powered on it automatically runs the POST. From the front panel the indications of a normal POST include a pause, a momentary flashing of the lights, followed by a series of diagnostics tests. See *Power-On Diagnostics (POST)* on page 4-3 for more information.

Switch Management

This chapter contains general information and examples on managing and monitoring the switch via the front panel:

*   *Comparing Switch Management Access Methods* on page 3-1
*   *Managing Through Front Panel Buttons* on page 3-2
*   *SilkWorm 2800 Menus* on page 3-3

Comparing Switch Management Access Methods

There are several access methods for managing a switch. Table 3-1 summarizes the different management access methods.

Table 3-1   Comparison of Management Access Methods

Method	Description	Local	In-Band (Fibre Channel)	Out-of-band (Ethernet)
Front panel controls	Managed through control located on the switch	Yes	No	No
Telnet commands	Managed remotely using Telnet commands	No	Yes	Yes
Managing with SNMP	Managed remotely using Simple Network Management Protocol (SNMP)	No	Yes	Yes
Managing through SES*	Managed SCSI-3 Enclosure Services	No	Yes	No
Web-based management*	Managed remotely though web	No	Yes	Yes

* SES and Web-based Management are optionally licensed features.

> **Note:**   An advanced set of controls and displays are available using a Telnet connection for testing and debugging purposes. Before a Telnet connection can be established the switch must have an IP address assigned to it, use the front panel buttons to assign an IP address.

To reset a switch to factory default values use the Reset to Default command, described in *Reset to Default* on page 3-12. Before changing any factory default settings, become familiar with the operations described in this chapter including both the switch's functions and interactive characteristics.

Managing Through Front Panel Buttons

Figure 3-1 shows the front panel buttons:
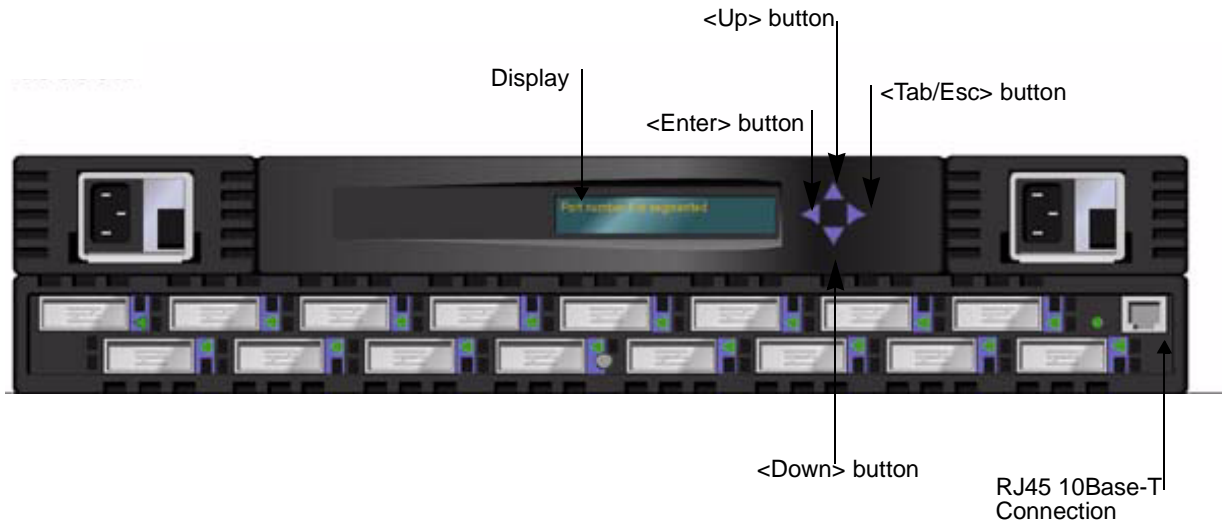
Figure 3-1 Front Panel Functionality

Control Buttons

Table 3-2 lists the primary control button functions. The function of the button changes depending on the menu level. Buttons either control navigating through the menus or incrementing/decrementing numeric values.

Table 3-2 Control Buttons

Control Button	Description
<Down>	<Down> scrolls down the command list, or if the user is changing a numeric display it decrements the displayed value.
<Up>	<Up> scrolls up the command list, or if the user is changing a numeric display, pressing this button increments the numeric value.
<Tab/Esc>	<Tab/Esc> tabs through multiple options. When displaying a menu item, pressing the <Tab/Esc> button reverses through previous commands and, if pressed repeatedly, turns off the front panel display.
<Enter>	<Enter> accepts the input and executes the selected function. To abort an entry, pressing <Tab/Esc> navigates to the previous item.

When entering a number, the <Up> and <Down> buttons start in the slow mode and change to the fast mode if either button is held down. Most numbers go to a maximum of 255; for a large number, it may be faster to use the <Down> button.

Activating Menu Display

The switch's front panel display is normally not illuminated. Pressing the front panel buttons activates the display:

> **Select Menu:**
> **Configuration Menu**

If no command is issued, the display turns off after 30 seconds.

SilkWorm 2800 Menus

The following menus are controlled using the front panel buttons:

Choose Menu

Configuration Menu
- Ethernet IP Address
- Ethernet Subnetmask
- Fibre Channel IP Address
- Fibre Channel Subnetmask
- Gateway Address
- Domain
- BB_credit
- R_A_TOV
- E_D_TOV
- Operating Mode
  - Non-SCSI Tachyon Mode
  - Disable Device Probing
  - VC Encoded Address Mode
  - Disable Translative Mode
  - Per-Frame Route Priority
- VC Link Ctl
- VC Class 2
- VC Class 3
- VC Multicast
- VC Priority 2-7
- Always send RSCN?
- Send FAN Frames?
- Frame Collection
- Set QuickLoop Port
- Unset QuickLoop Port
- QuickLoop Partner WWN
- Reset to Default

Operation Menu
- Switch Offline
- Switch Online
- Port Disable
- Port Enable
- QuickLoop Disable
- QuickLoop Enable
- QuickLoop Port Disable
- QuickLoop Port Enable
- Close Telnet Session
- Reboot

Status Menu
-Switch Name
-WorldWide Name
-Firmware Version
-Current Date
-Booted at
-Firmware Date
-Flash Date
-BootProm Date
-Up Time
-Powered Time
-Port Type
-Module Type
-Port Throughput
-Temperature
-Error Log
-Licenses

Test Menu
- Switch Offline
- Switch Online
- Memory Test
- Port Register Test
- Central Memory Test
- CMI Conn Test
- CAM Test
- Port Loopback Test
- Cross Port Test
- Spin Silk Test
- SRAM Data Retention Test
-CM EM Data Retention Test
- Display Test
- Push Button Test

Note: Items in Bold are available with the QuickLoop Software Option License

Figure 3-2   Menu Hierarchy

Commands

Table 3-3 shows the front panel commands and their equivalent Telnet command.

Table 3-3 Front Panel and Telnet Commands

Menu	Front Panel	Telnet Command	Default
Configuration	Ethernet IP Address	ipAddrSet	10.1.2.3
	Ethernet Submask	ipAddrSet	none
	Fibre Channel IP Address	ipAddrSet	none
	Fibre Channel Subnetmask	ipAddrSet	none
	Gateway Address	ipAddrSet	none
	Domain	configure	0
	BB_credit	configure	16 (G_Port) - 0 (FL_Port)
	R_A_TOV	configure	10000
	E_D_TOV	configure	2000
	Operating Mode	configure	0
	Non-SCSI Tachyon Mode	configure	0
	Isolated Operation	configure	0
	Disable Device Probing	configure	0
	VC-Encoded Address Mode	configure	0
	Disable Translative Mode	configure	0
	Per-Frame Route Priority	configure	0
	VC Link Ctl	configure	0
	VC Class 2	configure	2
	VC Class 3	configure	3
	VC Multicast	configure	7
	VC Priorities	configure	0,1,2,2,2,2,3,3
	Frame Collection	configure	Piling
	Set QuickLoop Port	configure	0
	Unset QuickLoop Port	configure	0
	QuickLoop Partner WWN	a/Partner	00:00:00:00:00:00:00:00
	Reset to Default	configDefault	N/A
Operation	Switch Offline	SwitchDisable	N/A
	Switch Online	SwitchEnable	N/A
	Port Disable	portDisable <portno>	N/A
	Port Enable	portEnable <portno>	N/A
	QuickLoop Disable	a/Disable	N/A
	QuickLoop Enable	a/Enable	N/A
	QuickLoop Port Disable	a/Port Disable	N/A
	QuickLoop Port Enable	a/Port Enable	N/A
	Close Telnet Session	logout	N/A
	Reboot	reboot	N/A

Table 3-3 Front Panel and Telnet Commands (Continued)

Menu	Front Panel	Telnet Command	Default
Status	Switch Name	switchShow	N/A
	Worldwide Name	switchShow	N/A
	Firmware Version	version	N/A
	Current Date	date	N/A
	Booted At	version	N/A
	Firmware Date	version	N/A
	Flash Date	version	N/A
	Boot Prom Date	version	N/A
	Up Time	uptime	N/A
	Powered Time	uptime	N/A
	Port Type	switchShow	N/A
	Module Type	switchShow	N/A
	Port Throughput	portPerfShow	N/A
	Temperature	tempShow	N/A
	Error Log	errShow	N/A
	Licenses	licenseShow	N/A
Test	Switch Offline	SwitchDisable	N/A
	Switch Online	SwitchEnable	N/A
	Memory Test	ramTest	N/A
	Port Register Test	portRegTest	N/A
	Central Memory Test	centralMemoryTest	N/A
	CMI Conn Test	cmiTest	N/A
	CAM Test	cam Test	N/A
	Port Loopback Test	portLoopbackTest	N/A
	Cross Port Test	crossPortTest	N/A
	Spin Silk Test	spinSilk	N/A
	SRAM Data Retention Test	sramRetentionTest	N/A
	CMEM Data Retention Test	cmemRetentionTest	N/A
	Display Test	N/A	N/A
	Push-Button Test	N/A	N/A

Configuration Menu

You configure the switch using the Configuration Menu. Pressing <Enter> while in the Configuration Menu selects the option to choose commands:

Table 3-4   Configuration Menu

Configuration menu	See Page
Ethernet IP Address	3-6
Ethernet Subnetmask	3-7
Fibre Channel IP Address	3-7
Fibre Channel Subnetmask	3-8
Gateway Address	3-8
Domain	3-8
BB_credit	3-8
R_A_TOV	3-9
E_D_TOV	3-9
Operating Mode	3-9
Non-SCSI Tachyon Mode	3-12
Isolated Operation	3-12
Disable Device Probing	3-12
VC-Encoded Address Mode	3-12
Disable Translative Mode	3-12
Per-Frame Route Priority	3-12
VC Link Ctl	3-10
VC Class 2	3-11
VC Class 3	3-11
VC Multicast	3-11
VC Priorities	3-11
Frame Collection	3-12
Set QuickLoop Port	
Unset QuickLoop Port	
QuickLoop Partner WWN	
Reset to Default	3-12

> **Note:**   After changing any of the following menus from the front panel or Telnet
> connection, you must reboot the switch for the changes to take effect.

Ethernet IP Address

Pressing <Enter>, while Ethernet IP address is selected, displays the switch's
Ethernet IP address:

> **Ethernet IP address:**
> **10. 00. 00. 10**

The switch's default IP address, as shown, is a temporary address derived from the switch's WWN. Enter a valid IP address.

To enter an IP address
1. Use <Up> and <Down> to increment or decrement the displayed value. The underlined cursor indicates the numbers to modify.

   When entering a number, <Up> and <Down> start in the slow mode and move to the fast mode if the button is held down. The numbers go to a maximum of 255 and wraps to zero; for a large number, it may be faster to use the <Down> button.
2. After entering a number, press <Tab/Esc> to move the cursor to modify the next field.
3. After setting the IP address, pressing <Enter> stores the value.

Ethernet Subnetmask

Pressing <Enter>, while Ethernet Subnetmask is selected, displays:

> **Ethernet Subnetmask**
> **none**

The default subnet mask value is none. Refer to the network administrator for the appropriate subnet mask.

Enter the switch's subnet address by using <Up> and <Down> to increment or decrement the displayed value. The numbers with the underline cursor is the group to modify.

Fibre Channel IP Address

Pressing <Enter>, while Fibre Channel IP address is selected, displays:

> **Fibre Channel IP address:**
> <u>0</u>. 0. 0. 0

The default Fibre Channel IP address is 0.0.0.0, as shown in the example. Enter a valid IP address.

To update the Fibre Channel's IP address
1. Use <Up> and <Down> to increment or decrement the displayed value. The underlined cursor indicates the numbers to modify.
2. After entering a number, press <Tab/Esc> to move the cursor to modify the next field.
3. After setting the Fibre Channel's IP address, pressing <Enter> stores the value.

CAUTION: The Fibre Channel IP address should NOT be set to the same address as the Ethernet IP address -- two different addresses are required.

Fibre Channel Subnetmask

Pressing <Enter>, while `Fibre Channel Subnetmask` is selected, displays:

> **Fibre Channel Subnetmask**
> **none**

The default subnetmask value is *none*, as shown in the example. Consult your network administrator for the appropriate subnetmask.

Enter the switch's Fiber Channel Subnetmask by using <Up> and <Down> to increment or decrement the displayed value.

Gateway Address

Pressing <Enter>, while `Gateway address` is selected, displays:

> **Gateway address:**
> **0. 0. 0. 0**

The default gateway address is shown above. You must enter a valid gateway address, if required.

To enter the gateway address
1. Use <Up> and <Down> to increment or decrement the displayed value. The under-lined cursor indicates the numbers to modify.

2. After entering a number, press <Tab/Esc> to move the cursor to modify the next field.

3. After setting the gateway address, pressing <Enter> stores the value.

Domain

Pressing <Enter>, while `Domain` is selected, displays:

> **Domain:**
> **0**

The domain number uniquely identifies the switch in a Fabric. This switch ID is normally automatically assigned by the switch and may be any value between 1 and 239. If VC-Encoded Address Mode is in effect, then the values are between 0 and 31. You may also assign this number manually.

BB_credit

Pressing <Enter>, while `BB_credit` is selected, displays:

> **BB_credit:**
> **16**

The number represents the number of buffers, from 1 to 16, available to the host. For a complete description of buffer-to-buffer credit, refer to the industry specification Fibre Channel Physical and Signalling Interface (FC-PH).

R_A_TOV

Pressing <Enter>, while R_A_TOV is selected, displays:

```
R_A_TOV:
10000
```

Resource Allocation Time Out Value (R_A_TOV) is adjustable in 1-second increments using front panel controls, but its value is displayed in milliseconds. This variable works with the variable E_D_TOV to determine the switch's actions when presented with an error condition. Allocated circuit resources with detected errors are not released until the time value has expired. If the condition is resolved prior to the timing out, the internal time out clock resets and waits for the next error condition.

The range is 1 to 120 seconds.

> **Note:** The set value must be larger than the set value for the Error Detect Time Out Value.

E_D_TOV

Pressing <Enter>, while E_D_TOV is selected, displays:

```
E_D_TOV:
2000
```

E_D_TOV (Error Detect Time Out Value) is adjustable in 1-second increments using the front panel controls, but its value is displayed in milliseconds.

> **Note:** Use the flashSet command during a Telnet session to set the E_D_TOV or R_A_TOV value (in milliseconds) for values other than whole seconds.

This timer is used to flag a potential error condition when an expected response is not received (an acknowledgment or reply in response to packet receipt, for example) within the set time limit. If the time for an expected response exceeds the set value, then an error condition is met.

The range is 1 to 60 seconds.

> **Note:** The set value must be less than the set value for the Resource Allocation Time Out Value.

Operating Mode

The operating modes are determined by the host adapter. The six operating modes for the switch are:

Table 3-5   Operating Mode Definitions

Mode	Description
Non-SCSI Tachyon Mode	When set, multiple sequences from different sources are interleaved to Tachyon-based controllers at Sequence boundaries rather than at frame boundaries, resulting in better performance from Tachyon-based controllers.
Isolated Operation	Setting this mode isolates the switch from the rest of the Fabric.
Disable Device Probing	When this is set, devices that do not register themselves with the Name Server will not be present in the Name Server data base.
VC-Encoded Address Mode	When this mode is set, frame source and destination addresses utilize an address format compatible with some first-generation switches.
Disable Translative Mode	The setting is only relevant if VC Encoded Address Mode is also set. When set, this maintains explicit address compatibility with some first- generation switches.
Per-Frame Route Priority	In addition to the eight virtual channels used in frame routing priority, support is also available for per-frame based prioritization when this value it set. When set, the virtual channel ID will be used in conjunction with a frame header to form the final virtual channel ID.

The administrator determines the adapter in use, then sets the switch for the corresponding operating mode.

Virtual Channels

The switch provides the ability to tune the switch in a specific application.

The first two virtual channels are reserved for the switch's internal functions and are not available.

> **Note:** The default virtual channel settings are already optimized for switch performance. Changing the default values, if properly selected, may improve switch performance somewhat, but may also severely degrade performance. You should not change these settings without fully understanding the change's effects.

VC Link Ctl

Pressing<Enter>, while VC Link Ctl is selected, displays:

```
VC Link Ctl:
0
```

The Virtual Channel Link Control changes the link control channel. There are two options: 0 and 1.

Option 0 forces data receipt acknowledgments on Class 2 channels to be sent back on the data channel. This traffic consumes a portion of the available data channel bandwidth.

Option 1 allows data receipt acknowledgment packets to use the VC-1 (internal switch traffic channel) which frees additional bandwidth in the data channel, and transfers the data receipt traffic load to the switch's internal traffic channel.

VC Class 2

Pressing <Enter>, while VC Class 2 is selected, displays:

```
VC Class 2:
     2
```

This example shows the default channel as 2, but you can also select virtual channel 3, 4, or 5.

VC Class 3

Pressing <Enter>, while VC Class 3 is selected, displays:

```
VC Class 3:
     3
```

This example shows the default channel as 3, but you can select virtual channel 2, 4, or 5.

VC Multicast

Pressing <Enter>, while VC Multicast is selected, displays:

```
VC Multicast:
     7
```

The virtual channel multicast is shown as channel 7 in the example. You may change the multicast transmission channel to either virtual channel 6 or 7. Verify that the multicast channel has the frame class priority set to the frame class of the expected traffic.

VC Priorities

Pressing <Enter>, while VC Priorities is selected, displays:

```
VC Priorities:
0,1,2,2,2,2,3,3
```

The numbers displayed show the priorities assigned to each of the switch's virtual channels. Positions 1 and 2, starting at the left of the display, are fixed and displays 0 or 1.

The first position, a '0', shows and indicates that this virtual channel, assigned to handle internal switch traffic, has the highest priority. This priority value cannot be changed by the user.

The second position, indicated with a 1, shows the priority assigned by the virtual channel link control as described in the *VC Link Ctl* on page 3-10.

The third through eighth positions can have only a 2 or a 3 indicating that the channel gives priority to either Class 2 frame traffic or to Class 3 frame traffic.

Frame Collection

Pressing <Enter>, while Frame Collection is selected, displays:

> **Frame Collection:**
> **Method?   Bundle/Piling**

This command specifies two frame collection method, bundle and piling. Using bundling, frames are separated in different queues based on source/destination pairs. Using piling, frames are accumulated per destination AL_PA If NL_Ports can handle multiple frames in a loop. Additionally, piling can minimize loop traffic by reducing overhead and increases the loop efficiency.

To set, press <Tab/Esc> for Bundle or <Enter> for Piling.

Reset to Default

Pressing <Enter>, while Reset to Default is selected, displays:

> **Reset to Default**
> **Accept?   Yes   No**

Selecting the Yes option then pressing <Enter> causes all values in the Configuration Menu to reset to default conditions. Once the Ethernet IP address and the Switchname are changed, they are not reset to default values.

Note: Resetting the switch to default causes all configuration settings, names, and passwords entered to be reset to default settings.

Operation Menu

You control the switch's overall operational state using the Operation Menu. Pressing <Enter> while the Operation Menu is selected, allows you to select commands:

Table 3-6   Operation Menu

Operation menu	See Page
Switch Offline	3-13
Switch Online	3-13

Table 3-6   Operation Menu

Operation menu	See Page
Port Disable	3-13
Port Enable	3-14
QuickLoop Disable	
QuickLoop Enable	
QuickLoop Port Disable	
QuickLoop Port Enable	
Close Telnet Session	
Reboot	3-14

Switch Offline

The shutdown process is initiated from the front panel by pressing <Enter> while the `Switch Offline` message is displayed.

> **Operation Menu:**
> **Switch Offline**

> **Note:** You can observe and verify this process by watching the front panel LEDs change color from green to slow flashing amber as each port goes inactive.

After all multicast and broadcast paths have been rerouted, the F_Ports and FL_Ports are taken offline. This is followed by making all routes through the switch unavailable by increasing path cost to hex '00 00 00 00'. E_Ports are then taken offline individually as all routes through a given E_Port are eliminated.

Switch Online

Pressing <Enter>, while the `Switch Online` message is selected, brings the switch online.

> **Operation Menu:**
> **Switch Online**

Port Disable

Pressing <Enter>, while the `Port Disable` message is selected, displays a submenu to select the port to disable.

> **Operation Menu:**
> **Port Disable**

Pressing <Enter>, while a selected port is displayed, disables the port. The LED associated with the port changes from green to amber indicating the selected port has been disabled.

```
Port Disable
Accept?    Yes    No
```

Port Enable

Pressing <Enter> while the Port Enable message is displayed opens a submenu where you select the port.

```
Operation Menu:
Port Enable
```

Pressing <Enter>, while the selected port is displayed, enables the selected port. The LED associated with selected port changes from amber to green indicating the port has been enabled. When FL_Ports are enabled, the port initializes the loop attempting to be the master.

```
Port Enable
Accept?    Yes    No
```

Close Telnet Session

Reboot

Pressing <Enter> while the Reboot message is displayed causes the switch to reboot immediately.

```
Operation Menu:
Reboot
```

Rebooting the switch causes it to immediately exit all current processes and states, and start the POST process. Exercise caution using the reboot command on a switch connected to the Fabric.

Pressing <Enter>, while the screen above is selected, displays:

```
Reboot
Accept?    Yes    No
```

Selecting Yes causes the switch to immediately reboot. Selecting No or pressing <Tab/Esc> exits this function.

Status Menu

You can retrieve information on the switch using the Status Menu.The menu is informational only; you cannot make changes to the switch's status from this menu.

Press <Enter> while the Status Menu is selected to select commands.

Table 3-7   Status Menu

Status menu	See Page
Switch Name	3-16
Worldwide Name	3-16
Firmware Version	3-16
Current Date	3-16
Booted At	3-16
Firmware Date	3-16
Flash Date	3-17
Boot Prom Date	3-17
Up Time	3-18
Powered Time	3-18
Port Type	3-18
Module Type	3-18
Port Throughput	3-19
Temperature	3-19
Error Log	3-20
Licenses	3-18

Switch Name

Pressing <Enter>, while `Switch Name` is selected, displays:

Switch Name:
sw15

Worldwide Name

Pressing <Enter>, while `Worldwide Name` is selected, displays:

Worldwide Name:
10:0:0:60:69:0:0:e

The switch's WWN is a unique numeric identifier for each switch and it is assigned by the manufacturer. A numbering scheme administrated globally assures that this WWN is unique.

Firmware Version

Pressing <Enter>, while `Firmware Version` is selected, displays:

Firmware Version
v1.4

Current Date

Pressing <Enter>, while `Current Date` is selected, displays the switch's current date:

Current Date:
Mon Oct 21 10:23:35 1997

Booted At

Pressing <Enter>, while `Booted At` is selected, displays the switch's boot time:

Booted At:
Sat Sep 19 18:34:20 1997

Firmware Date

The *date* always reflects the firmware assembly date. The *Firmware Date* reflects the date code of the current executing firmware on the CPU. *Flash Date* reflects the firmware date in flash memory. These dates may not match if the flash memory has been updated with

new firmware but the switch has not yet been rebooted. When the switch is rebooted the flash code becomes the executing CPU code, both dates match.

Pressing <Enter>, while `Firmware Date` is selected, displays the date of the switch's firmware:

> **Firmware Date:**
> **Jun 12 08:48:29 PDT 1997**

Flash Date

Pressing <Enter>, while `Flash Date` is selected, displays:

> **Flash Date:**
> **Jun 12 08:48:29 PST 1997**

This display gives the date and time for the last flash firmware update. If you upgrade the firmware in flash memory with a different firmware version, the date the new firmware was entered is displayed.

Use this date to quickly establish the date the firmware was updated.

Boot Prom Date

Pressing <Enter>, while `Boot Prom Date` is selected, displays:

> **Boot Prom Date:**
> **Jun 12 08:48:29 PST 1997**

This display gives the date and time the Boot Prom was manufactured. Use this date to establish the Boot Prom version.

Up Time

Pressing <Enter>, while `Up Time` is selected, displays:

> **Up Time**
> **6 day, 22:20**

This display shows the time the switch has been up since the last reboot of the switch.

Powered Time

Pressing <Enter>, while `Powered Time` is selected, displays:

> **Powered Time**
> **137 days, 8:287**

This display shows the time the switch has been powered on.

Port Type

Pressing <Enter>, while `Port Type` is selected, displays:

> **Port Type:**
> **EFEG GFGF xxxx xxxx N**

This display shows the status of each port on the switch. The ports start with the first port on the switch which is the port in the top left position when the ports are viewed from the switch's front panel. The definitions assigned to the example are:

- E – E_Port is an interswitch expansion port, used to connect to an E_Port of another switch to build a larger switch Fabric.
- F – F_Port, the Fabric access port is used to connect an N_Port and is used within the switch Fabric for control and management.
- L – FL_Port is a switch port connected to an arbitrated loop.
- G – G_Port is a generic port that can operate either as an E_Port or an F_Port but has not yet assumed a specific function in the Fabric.
- U – U_Port
- N – N_Port is used within the switch itself for internal switch control traffic. It does not have an external physical port.
- x – Indicates no interface module is installed.

Module Type

Pressing <Enter>, while `Module Type` is selected, displays:

> **Module Type:L**

This display shows the type of GBIC module installed in a port as follows:

- L = long-wavelength
- S = short-wavelength
- C = copper

Port Throughput

Pressing <Enter>, while Port Throughput is selected, displays:

```
Port Throughput:
Port 0        75MB/s
```

This display shows port throughput on the switch. The throughput number represents the number of bytes received plus the number of bytes transmitted per second and is displayed as bytes/second (B/s), kilobytes/second (KB/s) or megabytes/second (MB/s). You can select different ports using <Up> and <Down>, from port 0 to port 15 and all ports, and is used to monitor a single or the aggregated of all port(s) performance.

Temperature

Pressing <Enter>, while Temperature is selected, displays:

```
Temperature:
36   34   37   36   35
```

Note: Using the <Up> or <Down> buttons, the user can toggle between Centigrade (default) and Fahrenheit temperature values.
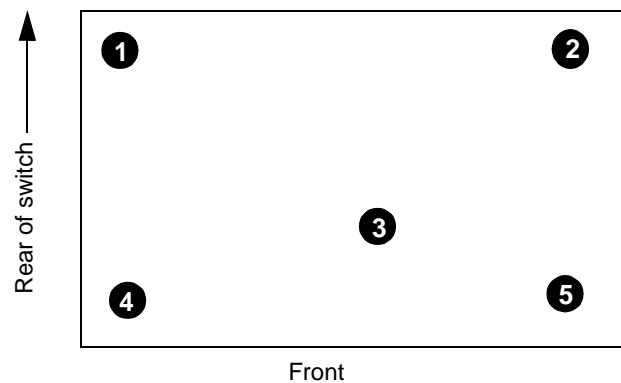
Figure 3-3 Temperature sensor approximate locations on motherboard

The numbered temperature sensor locations on the motherboard, shown in Figure 3-3, correspond to the temperature in the display. Sensor number 1 corresponds to the first temperature, 36, sensor number two corresponds to the second temperature, 34, and so forth.

The temperature readings are shown at a rate of one reading per second on the front panel. Readings obtained during a Telnet session are single reading made at command execution.

Error Log

Selecting Error Log, then pressing <Enter>, displays:

> **01 Feb 12 08:48:29   (23)**
> **Err SENSOR-FAILED-3**

The error log stores the last 64 error types sensed by the switch. The front panel display shows:

*   Error number (01-64)

*   Date and time of the last occurrence each error type was sensed

*   Total number of occurrences of each error type

*   Error type

*   Error level for each error type, with error level 1 being the most critical; Error level 2 and error level 3, warning, are the other error levels displayed.

    0–Panic (when this level is reached, the switch automatically reboots and the display no longer shows the error)

    1–Critical

    2–Error

    3–Warning

    4–Info

    5–Debug

In the sample above, the first line shows that this is the first error (01) found on Feb 12 08:48:29 and had (23) occurrences. The second line shows that the error type is SENSOR-FAILED with a severity level of 3 (warning).

> **Note:** The error occurrence count, shown in brackets at the end of the first line, does not appear until the error occurrence is higher than one.

Licenses

Selecting Licenses , then pressing <Enter>, displays:

> **Licenses**
> **01f**

The license display shows a bit map in hex of the installed license options. The current list of license options is: web=1, zoning=2, SES=4, QuickLoop=8, Fabric=16

Test Menu

The tests available from the Test Menu are part of the diagnostic and fault isolation capabilities. See *Test Menu* on page 4-4 for more information.

Front Panel Diagnostics

This chapter discusses troubleshooting and diagnostic testing. It includes these sections:

- Diagnostic Overview
- Status and Activity Indicators
- Diagnostic Tests

> **Note:** See Appendix C, *Error Messages* for the actual error message descriptions.

Diagnostic Overview

The switch is designed for maintenance free operation. When there is a suspected failure, the switch has self diagnostic capabilities to aid in isolating any equipment or Fabric failures.

The switch supports Power-On Self-Tests (POSTs) and diagnostic tests. The diagnostic tests determine the switch's status and isolate problems.

Telnet commands are used to determine the switch's status, error conditions, and switch operating statistics.

You perform diagnostics using either the switch's front panel controls or commands via a Telnet session. The front panel and Telnet diagnostics overlap in function but are mutually exclusive. You can, for example, start a diagnostic from Telnet, and monitor the results using both the front panel display and via Telnet.

If a test is started using the front panel, you can monitor the test progress, but cannot control the test through Telnet. If you start a test using Telnet, attempting to control the test via the front panel may lock up the switch and require a reboot.

The actual tests performed by the front panel and via a Telnet are identical. Because the front panel displays a two line limit, more detailed test results can be displayed via Telnet.

Diagnostic Front Panel Displays

If you suspect a switch or a Fibre Channel port failure, a visual check of the color LED Indicators, shown in Figure 4-1, determines the status of each port. See *Status and Activity Indicators* on page 4-2 for additional information.

LED Indicators

Power Indicator LED

Figure 4-1 Front-panel displays

Isolating a System Fault

Various loopback paths are built into the switch hardware for diagnostic purposes. A loopback path test within the switch verifies the proper internal Fibre Channel port logic functions and the paths between the interfaces and central memory.

The switch's diagnostics also support external loops which include GBIC modules in cross port configurations. These port-to-port diagnostics allow checking installed fiber cables and port fault isolation.

Removing Power

Note: Error messages are stored in RAM and are lost when power is removed from the switch. Access the error message log to view and note any error messages before removing power from the switch.

Status and Activity Indicators

Front Panel LED Port Indicators

The color and flash speed of each port's LED, as described in Table 4-1, indicates the individual port's status.

Table 4-1 Port LED Status Indicators

Port's LED	Definition
No light showing	No light or signal carrier (no module, no cable) for media interface
Steady yellow	Receiving light or signal carrier, but not yet online
Slow yellow (flashes two seconds)	Disabled (result of diagnostics or portDisable command).
Fast yellow (flashes a half second)	Error, fault with port.

Table 4-1   Port LED Status Indicators (Continued)

Port's LED	Definition
Steady green	Online (connected with external device over cable)
Slow green (flashes two seconds)	Online, but segmented (loopback cable or incompatible switch)
Fast green (flashes a half second)	Internal loopback (diagnostic).
Flickering green	Online and frames flowing through port.

Initialization Steps

At power-on or reset, the following steps are executed:

1. Preliminary POST diagnostics

2. VxWorks operating system initialization

3. Hardware initialization (resets, internal addresses assigned to ASICs, serial port initialized, front panel initialized)

4. Full POST

5. Link initialization; receiver/transmitter negotiation to bring connected ports online

6. Fabric analysis; the switch checks for ports connected to other Fabric elements. If there are other Fabric elements connected, it identifies the master switch.

7. Address assignment; after the master switch is identified, port addresses may be assigned. Each switch tries to keep the same addresses that were previously used. These are stored in the switch's configuration flash PROM.

8. Routing table construction; after addresses are assigned, the unicast routing tables are constructed.

9. Enable normal port operation.

Power-On Diagnostics (POST)

The following table lists the diagnostic tests automatically run during POST. POST behaves differently depending on the boot method. A power cycle (power off & power on) is considered a cold boot. All other boots from a powered-on state (per reboot, panic, etc.) are considered warm boots.

Table 4-2   POST Tests

Test	Brief Description	Pages
Memory Test	Checks CPU RAM memory.	*Ram Test* on page 4-6
Port Register Test	Checks the ASIC registers & SRAMs.	*Port Register Test* on page 4-6
Central Memory Test	Checks the motherboard SRAMs.	*Central Memory Test* on page 4-6

Table 4-2   POST Tests (Continued)

Test	Brief Description	Pages
CMI Conn Test	Checks the CMI bus between ASICs	*CMI Test* on page 4-7
CAM Test	Checks the CAM	*CAM Test* on page 4-7
Port Loopback Test	Checks all of the switch's hardware: frames transmitted, are looped back, and received	*Port Loopback Test* on page 4-7

POST execution per cold boot executes the long version of ramTest. POST execution per warm boot executes a shorter version of ramTest. Boot time with POST varies depending on the boot method.

A switch rebooted with POST disabled will generate the DIAG-POST_SKIPPED error log message.

If a error is detected during POST, it is written to the system error log and is available for analysis via Telnet.

If the error prohibits the switch from completing the boot process (fatal error), the switch stops the boot process and displays the error on the switch's front panel display.

If the error occurred in the POST processing before the switch is able to display the boot failure cause, the switch's front panel power on indicator flashes (instead of its normal steady light) indicating the switch failed the boot process and is not operating.

> **Note:** A switch boot failure indicates the switch must be taken offline to be repaired or replaced. Contact your service representative as described in Appendix , .

Diagnostic Tests

The following tests are available from the switch's front panel and via Telnet. For details on how to use the switch's front panel buttons and how to access the Test Menu from the front panel, refer to the section *Managing Through Front Panel Buttons* on page 4-2.

> **Note:** Accessing the switch via Telnet provides a more detailed response indicating the switch's condition and allows the use of some commands which do not have an equivalent front panel command.

Test Menu

Pressing the Enter button while the Test Menu is displayed on the switch's front panel, allows you to select the following operations:

- Switch Offline
- Switch Online
- Ram Test
- Port Register Test
- Central Memory Test

- CMI Conn Test
- CAM Test
- Port Loopback Test
- Cross Port Test
- Spin Silk Test
- SRAM Data Retention Test
- CMEM Data Retention Test
- Display Test
- Push Button Test

> **Note:** See Appendix C, *Error Messages* for the actual error message descriptions.

Table 4-3 Offline and Online Test

Offline Tests	Offline & Online Tests
portRegTest	ramTest
centralMemoryTest	crossPortTest
cmiTest	
sramRetentionTest	
cmemRetentionTest	
camTest	
portLoopbackTest	
spinSilk	

Switch Offline

Pressing <Enter> while Switch Offline is selected displays:

```
Switch Offline:
Accept?    Yes    No
```

Tests that would jeopardize data transmission require taking the switch offline. If the switch is not offline, a prompt appears before the test is allowed to proceed.

Switch Online

Pressing <Enter> while Switch Online is selected displays:

```
Switch Online:
Accept?    Yes    No
```

After the switch is offline, proceed with the test.

Ram Test

Pressing <Enter> while `ramTest` is selected displays:

> **System Memory Test at
> 0x1021d460 len 13091456**

If the memory tests OK, the front panel displays:

> **0x10199a10 len 13091456
> ramTest: passed**

Related error messages: DIAG-MEMORY, DIAG-MEMSZ, DIAG-MEMNULL

Port Register Test

Pressing <Enter> while `Port Register Test` is selected displays a reminder to take the switch offline if it is not offline. If the message is displayed, take the switch offline.

Pressing <Enter> starts the test, which checks the switch's ASIC registers. The ports tested are 0 to 15.

If the test is successful, the panel displays `RegTest: passed`**.**

> **Port Reg Test
> RegTest: passed**

Related error messages: DIAG-REGERR, DIAG-REGERR_UNRST, DIAG-BUS_TIMEOUT

Central Memory Test

The centralMemoryTest verifies that the central memory in each Loom ASIC is functioning correctly by checking the following:

*   The built-in-self-repair (BISR) circuit in each Loom chip does not report failure to repair bad cells (bisr test).
*   The data cells can be uniquely written and read correctly (data write/read test).
*   The data in any one asic can be read from any other ASIC (loom connection test).
*   Bad parity can be detected and flagged in the error register and interrupt posted (parity error test).
*   Buffer number error can be detected and flagged in the error register and interrupt posted (buffer number error test).
*   Chip number error can be detected and flagged in the error register and interrupt posted (chip number error test).

Pressing <Enter> while `Central Memory Test` is selected displays a reminder to take the switch offline, if it is not offline. If the message is displayed, take the switch offline.

If the switch passes the test, **Passed** is displayed:

Central MemTest: passed

Related error messages: DIAG-CMBISTRO, DIAG-CMBISRF, DIAG-LCMTO, DIAG-LCMRS, DIAG-LCMEM, DIAG-LCMEMTX, DIAG-CMNOBUF, DIAG-CMERRTYPE, DIAG-CMERRPTN, DIAG-PORTABSENT, DIAG-BADINT, DIAG-TIMEOUT, DIAG-INTNOTCLR

CMI Test

The cmiTest verifies that control messages can be correctly sent from any ASIC to any ASIC. It also tests that the checksum check is ok. The switch must be offline.

Related error messages: DIAG-BADINT, DIAG-INTNIL, DIAG-CMISA1, DIAG-CMINOCAP, DIAG-CMIINVCAP, DIAG-CMIDATA, DIAG-CMICKSUM

SRAM Retention Test

The sramRetentionTest verifies that data written into the ASIC memories are retained and that data bits do not "drop" when read after some amount of delay since the write. The switch must be offline.

Related error messages: DIAG-REGERR, DIAG-REGERR_UNRST, DIAG-BUS_TIMEOUT

cmemRetention Test

The cmemRetentionTest verifies that data written into the SRAMs that make up the central memory are retained and that data bits do not "drop" when read after some amount of delay since the write. The switch must be offline.

Related error messages: DIAG-LCMEM, DIAG-LCMRS, DIAG-LCMTO

CAM Test

The camTest verifies that the SID translation required by QuickLoop and implemented using content addressable memories (cam) are functioning correctly. The switch must be offline.

Related error messages: DIAG-CAMINIT, DIAG-CAMSID, DIAG-XMIT

Port Loopback Test

The portLoopbackTest verifies the intended functional operation of the switch by sending frames from each port's transmitter back to the same port's receiver via an internal hardware loopback.

Pressing <Enter> while `Port Loopback Test` is selected displays a reminder to take the switch offline, if it is not offline. If the message is displayed, take the switch offline.

The `Port Loopback Test` is an internal test which continues to run until you press any button. While the test is running, all GBIC module front panel LEDs rapidly flicker green indicating that the test is finding no errors and is processing.

To stop the test, press any button, `Aborted` is displayed:

Port Loopback Test: Aborted

Related error messages: DIAG-INIT, DIAG-PORTDIED, DIAG-XMIT, DIAG-TIMEOUT, DIAG-ERRSTAT, DIAG-STATS, DIAG-DATA, DIAG-PORTABSENT

Cross Port Test

The crossPortTest verifies the intended functional operation of the switch by sending frames from each port's transmitter via the GBIC and external cable and back to another port's receiver. It exercises the entire path of the switch.

Figure 4-2 is a recommended connection when executing the crossPortTest. The cables need not be connected as such. A Port can be connected to any port in the same switch provided the connection is of the same technology; meaning copper ports must connect to copper ports, SW ports to SW ports and LW ports to LW ports.

Figure 4-2 Switch Setup to Run Cross Port Test

> **Note:** All ports on the switch must be connected or else the switch shows an error condition. When running the cross port test, you must set the operating mode value to 0 or 1. Modes 2 and 3 do not send out the ELP used to discover switches. If the ELP is not sent, the switch does not know the port is connected to another port on the same switch and the test fails.

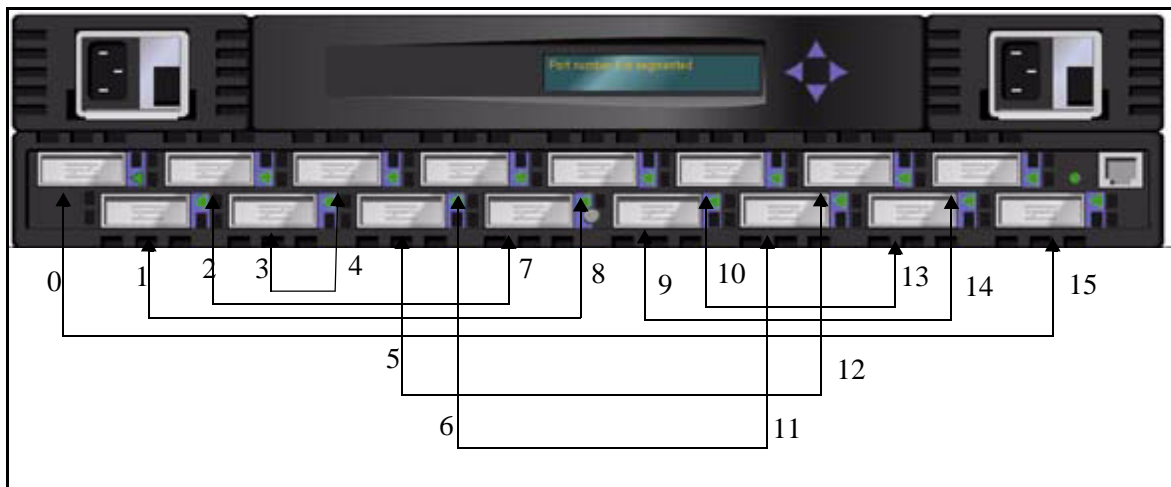If an error is encountered during the test, the error is displayed on either the front panel display or during the Telnet session.

Related error messages: DIAG-INIT, DIAG-PORTDIED, DIAG-XMIT, DIAG-TIMEOUT, DIAG-ERRSTAT, DIAG-STATS, DIAG-PORTWRONG, DIAG-DATA, DIAG-PORTABSENT

Spin Silk Test

The spinSilk test verifies the intended functional operation of the switch by sending frames from each port's transmitter via the GBIC and external cable, and back to another port's receiver at the full hardware speed of 1Gb/s. It exercises the entire path of the switch. The switch must be offline.

Because the CPU is not comparing data on each frame as with the other two frame tests, the DIAG-DATA error is never reported during spin silk. However, the other error messages defined for crossPortTest and their corresponding probable causes and actions are applicable to the spin silk test.

Pressing <Enter> while Spin Silk Test is selected displays a reminder to take the switch offline, if it is not offline. If the message is displayed, take the switch offline.

Pressing <Enter> starts the Spin Silk Test and displays:

> **SpinSilk: Press any
> button to terminate**

If an error is encountered during the test, the error is displayed on either the front panel display or via Telnet.

> **Note:** When running the Spin Silk Test, you must set the operating mode value to 0 or 1. Modes 2 and 3 do not send out the ELP used to discover switches. If the ELP is not sent, the switch does not know the port is connected to another port on the same switch and the test fails.

Related error messages: DIAG-INIT, DIAG-PORTDIED, DIAG-XMIT, DIAG-PORTSTOPPED, DIAG-ERRSTAT, DIAG-ERRSTATS, DIAG-PORTABSENT

Display Test

Pressing <Enter> while Display Test is selected causes a series of test characters to be displayed. Use this test to determine that the display is functioning properly.

Push Button Test

Pressing <Enter> while Push Button Test is selected displays:

> **Push Button Test   3 2 4
> 1 & 4 to exit   1**

Pressing any front panel button causes the corresponding button number to move to the second line. To exit this test, simultaneously press the 1 (down) and 4 (enter) buttons.

Specifications

General Specifications

Table A-1 shows the switch specifications.

Table A-1   Switch Specifications

Specifications	Description
Fibre Channel protocol	ANSI Fibre Channel Standard (FC-PH)
Fabric Initialization	Complies with FC-SW 3.2
IP Over Fibre Channel (FC-IP)	Complies with 2.3 of the FCA profile
System architecture	Nonblocking shared-memory switch
System processor	Superscalar 33-Mhz Intel i960RP
Number of Fibre Channel Ports	16 ports
Fibre Channel port speed	1.0625 Gbps full duplex
Modes of operation	Fibre Channel Class-2 service and Fibre Channel Class-3 connectionless service
Aggregate switch I/O bandwidth	16 Gbps, full duplex
Frame buffers	16 buffers per port at 2112 bytes per frame
Fabric latency	<2 microseconds with no contention
Data transmission range	up to 500 m (1,625 ft.) for short-wavelength optical link Up to 10 kilometers (84,480 ft.) for long-wavelength optical link
Chassis types	Back-to-front airflow (power supply out front)

Fabric Management Specifications

Table A-2 shows Fabric management specifications:

Table A-2   Fabric Management Specifications

Standard Features	Description
Fabric management	Simple Name Server, Alias Server, SNMP, Telnet, World Wide Web

Table A-2   Fabric Management Specifications (Continued)

Standard Features	Description
User interface	RJ45 front panel connector for 10/100Base-T Ethernet

Safety Specifications

Table A-3 Shows Safety specifications:

Table A-3   Safety Specifications

Country	Safety	EMC
Canada	CSA 22.2 No. 950 Third Edition	CSA C108.8 Class A
United States	UL 1950 Third Edition	FCC Part 15 Class A
Japan	EN60950+A1+A2+A3+A4+A11	VCCI Class A
International	EN60950+A1+A2+A3+A4+A11	EN55022 Level A/ CISPR22 Class A
United Kingdom/ Ireland	EN60950+A1+A2+A3+A4+A11;73/23/EEC	EN55022 Level A; 89/336/EEC
France	EN60950+A1+A2+A3+A4+A11;73/23/EEC	EN55022 Level A; 89/336/EEC
Germany	EN60950+A1+A2+A3+A4+A11;73/23/EEC	EN55022 Level A; 89/336/EEC
Austria	EN60950+A1+A2+A3+A4+A11;73/23/EEC	EN55022 Level A; 89/336/EEC
Spain/Portugal/Italy	EN60950+A1+A2+A3+A4+A11;73/23/EEC	EN55022 Level A; 89/336/EEC
Sweden	EN60950+A1+A2+A3+A4+A11;73/23/EEC	EN55022 Level A; 89/336/EEC
Norway	EN60950+A1+A2+A3+A4+A11	
Finland	EN60950+A1+A2+A3+A4+A11;73/23/EEC	EN55022 Level A; 89/336/EEC
Denmark	EN60950+A1+A2+A3+A4+A11;73/23/EEC	EN55022 Level A; 89/336/EEC
Australia		AS/NZS 3548:1995 Class A
New Zealand		AS/NZS 3548:1995 Class A

Optical Port Specifications

Fibre Channel interfaces of a SilkWorm 2800 system equipped with an optical port interface uses a shortwavelength (780 to 850 nm.) or long wavelength (1270 to 1350 nm) laser transmitter. The laser complies with 21 CFR(J) Class 1 laser safety requirements. It uses Non-Open Fibre Control (OFC) Optical GBICs in the Cocoon circuit. Safe Class 1 operation is guaranteed by limiting optical power emitted by the port, thereby eliminating the need for physical shutters. The optical GBIC uses the duplex-SC connector scheme.

Copper GBIC Module

The Copper (CU) GBIC module is based on the High-Speed Serial Data Connection (HSSDC) interface standards. The GBIC provides a female HSSDC connector. Copper cables up to 13 meters have currently been qualified, thereby supporting ANSI X3.230 FC-PH intra-cabinet requirements. Standard cables with HSSDC-to-DB9 male connectors are also available.

Environmental Specifications

The switch's primary operating environments are server rooms, network equipment closets, and office environments. The acceptable environmental ranges for a the switch are shown inTable A-4

Table A-4   Environmental Specifications

Specification	Value
Temperature (operating)	10°C to 40 °C
Temperature (non-operating)	-35°C to 65 °C
Operating humidity	5% to 85% noncondensing @ 40°C
Nonoperating humidity	95% RH noncondensing @ 40°C
Operating Altitude	0 to 3 kilometers above sea level
Nonoperating Altitude	0 to 12 kilometers above sea level
Operating shock	5g, 11MS duration, half sine
Nonoperating shock	20g, 11MS duration, sq.wave
Operating vibration	5, 5-500-5Hz@1.0 octave/minute
Nonoperating vibration	10, 5-500-5Hz@1.0 octave/minute
Handling drop	

Dimensions

The switch may be configured for either rack mount or tabletop use.

Rack Mount Dimensions

2U, 19-in. rack mount (EIA compliant)

H: mm (1.71 in.), W: 428.6 mm (16.88 in.), D: 450.0 mm (17.72 in.)

Table Top Dimensions

H: mm (1.86 in.), W: 428.6 mm (16.88 in.), D: 450.0 mm (17.72 in.)

Weight

25 lbs.

Power Supply

The switch has a universal power supply capable of functioning worldwide without voltage jumpers or switches. The supply is autoranging in terms of accommodating input voltages and line frequencies. A semi-custom switching power supply, repackaged for the requirements of the switch enclosure architecture, is used.

The power supply meets the following requirements:

Table A-5   Power Supply Requirements

Total power	155 watts
Input voltage	85 to 265 VAC
Input line frequency	47 to 63 Hz.
Inrush Current	10 Amps Peak, > 300 usec - hot/cold start
Harmonic Distortion	Active power factor correction per IEC1000-3-2
Input Line Protection	Fused in both hot & neutral lines
Maximum Dimensions	3.5"W X 1.5"H X 11"L
Redundancy	Dual Supplies - Hot Pluggable
BTU Rating	155 watts X 3.412 BTU/hr/watts = 529 BTU/hr

The power supply has a modular design that plugs directly into the enclosure through the front panel, mating to an internal blind_mate connector. It provides facilities to support a dual redundandant power supply configuration in which the supplies are hot-swappable.

An integral on/off switch, input filter and power indicator are provided in the power supply.

Switch Support

Support for your switch can be obtained from the supplier of your switch. Please contact the supplier to report hardware or software problems. The supplier is also the correct source for switch repairs or for supplying spare components.

Support Tool

Included in the switch software is a command that will provide a display of a variety of information that is helpful in diagnosing switch related problems. This command is: *suppportShow.* This command can be entered into a telnet session command window and the results should be saved and supplied to your support contact.

Error Messages

This appendix explains the error message format and possible errors. This section includes:

- Error message formats
- Error message modules

Error Message Formats
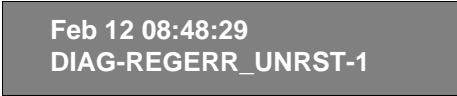
There are two error message formats depending on whether you are gathering information from the front panel or via Telnet. The front panel shows an abbreviated message and via Telnet displays the entire error message.

In all cases, the last error encountered is the first error displayed. Up to 32 messages are held in a buffer. If the 32 message limit is exceeded, the messages are overwritten in a first in, first out sequence.

> **Note:** Error messages are stored in volatile RAM and are lost whenever power is removed from the switch. Access the error message log to view error messages before removing power.

Front Panel Message Formats

The switch's front panel displays error messages, as shown:

> **Feb 12 08:48:29**
> **DIAG-REGERR_UNRST-1**

The first line includes the error's date and time. The beginning of each second line on the front panel display starts with the module name (Diag), error name (REGERR_UNRST), and the severity level (1).

The possible values are:

- 1-critical
- 2-error
- 3-warning
- 4-informational
- 5-debug

> **Note:** If the same error occurs within the same module (for example, DIAG-REGERR_UNRST) but on different ports, the number of occurrences for that message is incremented in brackets (up to 999), and the error number is not incremented (that is, this error, though it may occur 999 times, occupies one message in the 32-message buffer.

To display error message from the front panel
1. From the front panel, select the Status menu.

2. Select Error Log.

3. Scroll through the error log (if no errors encountered, the panel displays "No Error").

Diagnostic Error Message Formats

If any port fails during a diagnostic test, it is marked BAD in the status display.

To retest a port which has been marked BAD, clear the port and set to OK using the `diagClearError (port#)` command. This command clears the port status only and does not clear the logs or change the port's condition. The `diagClearError (port#)` command should only be used during diagnostic procedures to reset a bad port for retest.

Some messages contain the following abbreviations:

• sb = Should Be

• er = Bits in error

> **Note:** If you run the *portStatsShow* or the *diagShow* command prior to running a test, errors may appear as a result of the normal synchronization process. These errors should be addressed if the number of errors found increases when running the *portStatsShow* command again.
>
> Running any of the tests discussed in "Front Panel Test Menu" clears the accumulated errors before the test is run.

Table C-1   Probable Failure Actions

Failed test	Action
ramTest	replace DRAM module or mainboard assembly
portRegTest	replace mainboard assembly
centralMemoryTest	replace mainboard assembly
cmiTest	replace mainboard assembly
cmemRetentionTest	replace mainboard assembly
sramRetentionTest	replace mainboard assembly
camTest	replace mainboard assembly
portLoopbackTest	replace mainboard assembly
crossPortTest	replace mainboard assembly, GBIC or fiber cable
spinSilk	replace mainboard assembly, GBIC or fiber cable

Error Message Numbers

An error number ERR#xxxx appears at the end of an error message. Table C-2 matches each error number with the test that caused the error and the name of the error. Look up the complete definition of the error name and the actions that will correct it in Table C-3.

Table C-2   Error Message Codes Defined

Error Number	Test Name	Error Name
0001	n/a	DIAG-CLEAR_ERR
0004	n/a	DIAG-POST_SKIPPED
0B15	sramRetentionTest	DIAG-REGERR
0B16		DIAG-REGERR_UNRST
0B0F		DIAG-BUS_TIMEOUT
1F25	cmemRetentionTest	DIAG-LCMRS
1F26		DIAG-LCMTO
1F27		DIAG-LCMEM
0110	ramTest	DIAG-MEMORY
0111		DIAG-MEMSZ
0112		DIAG-MEMNULL
0415	portRegTest	DIAG-REGERR
0416		DIAG-REGERR_UNRST
040F		DIAG-BUS_TIMEOUT
1020	centralMemoryTest	DIAG-CMBISRTO
1021		DIAG-CMBISRF
1025		DIAG-LCMRS
1026		DIAG-LCMTO
1027		DIAG-LCMEM
1028		DIAG-LCMEMTX
1029		DIAG-CMNOBUF
102A		DIAG-CMERRTYPE
102B		DIAG-CMERRPTN
102C		DIAG-INTNOTCLR
103O		DIAG-BADINT
106F		DIAG-TIMEOUT

Table C-2   Error Message Codes Defined (Continued)

Error Number	Test Name	Error Name
2030	cmiTest	DIAG-BADINT
2031		DIAG-INTNIL
2032		DIAG-CMISA1
2033		DIAG-CMINOCAP
2034		DIAG-CMIINVCAP
2035		DIAG-CMIDATA
2036		DIAG-CMICKSUM
223B	camTest	DIAG-CAMINIT
223C		DIAG-CAMSID
2640	portLoopbackTest	DIAG-ERRSTAT (ENCIN)
2641		DIAG-ERRSTAT (CRC)
2642		DIAG-ERRSTAT (TRUNC)
2643		DIAG-ERRSTAT (2LONG)
2644		DIAG-ERRSTAT (BADEOF)
2645		DIAG-ERRSTAT (ENCOUT)
2646		DIAG-ERRSTAT (BADORD)
2647		DIAG-ERRSTAT (DISCC3)
264F		DIAG-INIT
265F		DIAG-PORT_DIED
266E		DIAG-DATA
266F		DIAG-TIMEOUT
2660		DIAG-STATS(FTX)
2661		DIAG-STATS(FRX)
2662		DIAG-STATS(C3FRX)
2670		DIAG-PORTABSENT
2671		DIAG-XMIT

Table C-2   Error Message Codes Defined (Continued)

Error Number	Test Name	Error Name
3040	crossPortTest	DIAG-ERRSTAT(ENCIN)
3041		DIAG-ERRSTAT(CRL)
3042		DIAG-ERRSTAT(TRUNC)
3043		DIAG-ERRSTAT(2LONG)
3044		DIAG-ERRSTAT(BADEOF)
3045		DIAG-ERRSTATENCOUT)
3046		DIAG-ERRSTAT(BADORD)
3047		DIAG-ERRSTAT(DISC3)
304F		DIAG-INIT
305F		DIAG-PORTDIED
3060		DIAG-STATS (FTX)
3061		DIAG-STATS (FRX)
3062		DIAG-STATS (C3FRX)
306E		DIAG-DATA
306F		DIAG-TIMEOUT
3070		DIAG-PORTABSENT
3071		DIAG-XMIT
3078		DIAG-PORTWRONG
384F	spinSilk	DIAG-INIT
385F		DIAG-PORTDIED
3840		DIAG-ERRSTAT (ENCIN)
3841		DIAG-ERRSTAT (CRC)
3842		DIAG-ERRSTAT (TRUNC)
3843		DIAG-ERRSTAT (2LONG)
3844		DIAG-ERRSTAT (BADEOF)
3845		DIAG-ERRSTAT (ENCOUT)
3846		DIAG-ERRSTAT (BADORD)
3847		DIAG-ERRSTAT (DISCC3)
3870		DIAG-PORTABSENT
3871		DIAG-XMIT
3874		DIAG-PORTSTOPPED

Error Message Tables

Table C-3 Diagnostic Error Messages

Message	Description	Probable Cause	Action
DIAG-BADINT **Err#1030, 2030** [centralMemoryTest, cmiTest]	Port received an interrupt when not expecting one	ASIC failure	Replace mainboard assembly
DIAG-BUS_TIMEOUT **Err#0BoF, 4040F** [portRegTest, sramRetentionTest]	ASIC register or ASIC SRAM did not respond to an ASIC data access	ASIC failure	Replace mainboard assembly
DIAG-CAMINIT **Err#223B** [camTest]	Port failed to initialize due to one of the following reasons: Switch not disabled Diagnostic queue absent Malloc failed Chip is not present Port is not in loopback mode Port is not active	Software operational setup error or mainboard failure	Retry, reboot or replace mainboard assembly
DIAG-CAMSID **Err#223C** [camTest]	ASIC failed SID NO translation test.	ASIC failure	Replace mainboard assembly
DIAG-CLEAR_ERR **Err#0001**	Port's diag error flag (OK or BAD) is cleared.	Informational Only	None required
DIAG-CMBISRF **Err#1021** [centralMemoryTest]	ASIC's Central Memory SRAMs did not complete the BISR within the timeout period	ASIC failure	Replace mainboard assembly
DIAG-CMBISRTO **Err#1020** [centralMemoryTest]	ASIC's Central Memory SRAMs did not complete the BISR within the timeout period	ASIC failure	Replace mainboard assembly
DIAG-CMERRPTN **Err#102B** [centralMemoryTest]	Error detected at the wrong port	ASIC failure	Replace mainboard assembly
DIAG-CMERRTYPE **Err#102A** [centralMemoryTest]	Port got the wrong CMEM error type	ASIC failure	Replace mainboard assembly
DIAG-CMICKSUM **Err#2036** [cmiTest]	CMI message received failed bad checksum test.	ASIC or mainboard failure	Replace mainboard assembly
DIAG-CMIDATA **Err#2035** [cmiTest]	CMI data received did not match data transmitted	ASIC or mainboard failure	Replace mainboard assembly

Table C-3   Diagnostic Error Messages (Continued)

Message	Description	Probable Cause	Action
DIAG-CMIINVCAP `Err#2034` [cmiTest]	Unintended ASIC erroneously got CMI capture flag	ASIC or mainboard failure	Replace mainboard assembly
DIAG-CMINOCAP `Err#2033` [cmiTest]	CMI intended receiver ASIC failed to get CMI capture flag.	ASIC or mainboard failure	Replace mainboard assembly
DIAG-CMISA1 `Err#2032` [cmiTest]	An attempt to send a CMI message from ASIC to ASIC failed.	ASIC failure	Replace mainboard assembly
DIAG-CMNOBUF `Err#1029` [centralMemoryTest]	Port could not get any buffer	ASIC failure	Replace mainboard assembly
DIAG-DATA `Err#266E, 306E` [portLoopbackTest, crossPortTest]	Payload received by port did not match payload transmitted.	mainboard, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-ERRSTAT `Err#2640-2647, 3040–3047, 3840-3847` [portLoopbackTest, crossPortTest, spinSilk]	Port Error Statistics counter is non-zero, meaning an error was detected when receiving frames. One of the following status errors occurred. **Enc_in** – Encoding error, inside frame **CRC_err** – Cyclic redundancy check on frame failed **TruncFrm** – Truncated frame **FrmTooLong** – Frame too long **BadEOF** – Bad end of file **Enc_out** – Encoding error, outside frame **BadOrdSet** – Bad symbol on fiber-optic cable **DiscC3** – Discarded Class 3 frames	ASIC, mainboard, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-INIT `Err#264F, 304F, 384F` [portLoopbackTest, crossPortTest, spinSilk]	Port failed to go active in the loopback mode requested.	ASIC, mainboard, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-INTNIL `Err#2031` [cmiTest]	ASIC failed to get a CMI error (interrupt)	ASIC failure	Replace mainboard assembly

Table C-3   Diagnostic Error Messages (Continued)

Message	Description	Probable Cause	Action
DIAG-INTNOTCLR **Err#102C** [centralMemoryTest]	The interrupt bit could not be cleared.	ASIC failure	Replace mainboard assembly
DIAG-LCMEM **Err#1027** [centralMemoryTest, cmemRetentionTest]	Data read from the Central Memory location did not match data previously written into the same location	ASIC failure	Replace mainboard assembly
DIAG-LCMEMTX **Err#1F27, 1028** [centralMemoryTest]	Central Memory transmit path failure: ASIC 1 failed to read ASIC 2 via the transmit path	mainboard failure	Replace mainboard assembly
DIAG-LCMRS **Err#1F25, 1025** [centralMemoryTest, cmemRetentionTest]	Central Memory Read Short: M bytes requested but got less than M bytes	ASIC failure	Replace mainboard assembly
DIAG-LCMTO **Err#1F26, 1026** [centralMemoryTest, cmemRetentionTest]	Central Memory Timeout: Data transfer initiated did not complete within the timeout period.	ASIC failure	Replace mainboard assembly
DIAG-MEMNULL **Err#0112** [ramTest]	Test failed to malloc.	mainboard failure	Replace mainboard assembly
DIAG-MEMSZ **Err#0111** [ramTest]	Memory size to be tested is less than or equal to zero	mainboard failure	Replace mainboard assembly
DIAG-MEMORY **Err#0110** [ramTest]	Data read from RAM location did not match previously written data into same location	CPU RAM failure	Replace mainboard assembly or DRAM module
DIAG-PORTABSENT **Err#2670, 3070, 3870** [portLoopbackTest, crossPortTest, spinSilk]	Port is not present	ASIC or mainboard failure	Replace mainboard assembly
DIAG-PORTDIED **Err#265F, 305F, 385F** [portLoopbackTest, crossPortTest, spinSilk]	Port was in loopback mode and then went inactive	ASIC, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-PORTSTOPPED **Err#3874** [spinSilk]	Port is no longer transmitting, as indicated by the Number Of Frames Transmitted counter being stuck at N frames.	ASIC, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable

Table C-3   Diagnostic Error Messages (Continued)

Message	Description	Probable Cause	Action
DIAG-PORTWRONG **Err#3078** [crossPortTest]	Frame erroneously received by port M instead of the intended port N	ASIC failure	Replace mainboard assembly
DIAG-POST_SKIPPED **Err# 0004** [switch initialization]	POST is skipped. It's message recommended that POST be executed.	Informational Only	None required
DIAG-REGERR **Err#0B15, 0415** [portRegTest, sramRetentionTest]	Data read from ASIC register or ASIC SRAM did not match data previously written into same location	ASIC failure	Replace mainboard assembly
DIAG-REGERR_UNRST **Err#0B16, 0416** [portRegTest, sramRetentionTest]	Port failed to unreset.	ASIC failure	Replace mainboard assembly
DIAG-STATS **Err#2660–2662, 3060 – 3062** [portLoopback Test, crossPortTest]	Port counter value did not match the number of frames actually transmitted. Possible counters reporting: FramesTx - number of frames transmitted FramesRx - number of frames received Cl3FrmRx - number of Class 3 frames received	ASIC, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-TIMEOUT **Err#266F, 306F, 386F** [portLoopbackTest, crossPortTest, centralMemoryTest]	For portLoopbackTest and crossPortTest: Port failed to receive frame within timeout period For centralMemoryTest: Port failed to detect an interrupt within the timeout period.	ASIC, GBIC module or fiber cable failure	Replace mainboard assembly, GBIC module or fiber cable
DIAG-XMIT **Err#2271, 2671, 3071, 3871** [portLoopbackTest, crossPortTest, spinSilk, camTest]	Port failed to transmit frame	ASIC failure	Replace mainboard assembly

Table C-4 System Error Messages

Message	Description	Probable Cause	Action
CONFIG CORRUPT	The switch configuration information has become irrevocably corrupted.	OS error	The system automatically resorts to the default configuration settings.
CONFIG OVERFLOW	The switch configuration information has grown too large to be saved or has an invalid size.	OS error	Contact customer support.
CONFIG VERSION	The switch has encountered an unrecognized version of the switch configuration.	OS error	The system automatically resorts to the default configuration settings.
FABRIC, SEGMENTED, LOG_WARNING	Fabric segmented.	Incompatible fabric parameters/ switches Conflict zones	Reconfigure fabric or zones.
FABRIC, NO_ALIASID, LOG_WARNING	No free multicast alias	Too many multicast groups in use	Remove some of the groups.
FABRIC, BADILS, LOG_WARNING	Bad ISL-ELS size	The ISL-ELS payload is wrong.	Contact customer support
FLASH, BAD_MIRROR, LOG_WARNING	The system's flash memory has encountered an error.	OS error	The system attempts to recover from its mirrored backup. Contact customer support.
RPC, SVC_EXIT	An RPC service daemon has terminated prematurely or unexpectedly.	OS error	Contact customer support.
RPC, SVC_REG	An RPC service daemon could not establish service for a particular protocol handler.	OS error	Contact customer support.
TEMP, 1_FAILED, LOG_WARNING	Switch overheated	Fan Failure	Contact customer support.
TEMP, 2_FAILED, LOG_ERROR	Switch overheated	Fan Failure	Contact customer support.
TEMP, 3_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support.
TEMP, 4_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support.

Table C-4   System Error Messages (Continued)

Message	Description	Probable Cause	Action
TEMP, 5_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support.
FANS, 1_FAILED, LOG_WARNING	Switch overheated	Fan Failure	Contact customer support.
FANS, 2_FAILED, LOG_ERROR	Switch overheated	Fan Failure	Contact customer support.
FANS, 3_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support.
FANS, 4_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support.
FANS, 5_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support.
FANS, 6_FAILED, LOG_CRITICAL	Switch overheated	Fan Failure	Contact customer support.
POWER, 1_FAILED, LOG_CRITICAL	Switch Power Failure	Power Supply Failure	Contact customer support.
POWER, 2_FAILED, LOG_CRITICAL	Switch Power Failure	Power Supply Failure	Contact customer support.
FCIU, IUBAD, L, S	Invalid IU	OS error	Contact customer support
FCIU, IUCOUNT, L, S	Total number of IUs Count < 0	OS error	Contact customer support
FCPH, EXCHBAD, L, S	Bad exchange	OS error	Contact customer support
FCPH, EXCHFREE, L, S	Unable to free an exchange	OS error	Contact customer support
MQ, QWRITE, L, M	Message queue overflow	Task blocked	Contact customer support
MQ, QREAD, L, M	Message queue unread	OS error	Contact customer support
MQ, MSGTYPE, E, M	Unknown message type	OS error	Contact customer support
SEMA, SEMGIVE, L, M	Unable to give a semaphore	OS error	Contact customer support
SEMA, SEMTAKE, L, M	Unable to take a semaphore	OS error	Contact customer support
SEMA, SEMFLUSH, L, M	Unable to flush a semaphore	OS error	Contact customer support
PANIC, TASKSPAWN, LOG_PANIC	task creation failed	OS error	Contact customer support
PANIC, SEMCREATE, LOG_PANIC	Semaphore creation failed	OS error	Contact customer support
PANIC, SEMDELETE, LOG_PANIC	Semaphore deletion failed	OS error	Contact customer support
PANIC, QCREATE, LOG_PANIC	Message queuer failed	OS error	Contact customer support
PANIC, QDELETE, LOG_PANIC	Message queuer deletion failed	OS error	Contact customer support

Table C-4   System Error Messages (Continued)

Message	Description	Probable Cause	Action
PANIC, MALLOC, LOG_PANIC	Memory allocation failed	OS error	Contact customer support
PANIC, FREE, LOG_PANIC	Memory free failed	OS error	Contact customer support
PANIC, INCONSISTENT, LOG_PANIC	Data out of sync	OS error	Contact customer support
PANIC, INTCONTEXT, LOG_PANIC	Data out of sync	OS error	Contact customer support
PANIC, ZOMTIMSET, LOG_PANIC	Attempt to set a zombie timer	OS error	Contact customer support
PANIC, ZOMTIMKILL, LOG_PANIC	Zombie timer destroyed	OS error	Contact customer support
PANIC, FREETIMRLSD, LOG_PANIC	Free timer released	OS error	Contact customer support
PANIC, TIMEUSECNT, LOG_PANIC	Timer use count exceeded	OS error	Contact customer support
PANIC, LSDB_CKSUM, LOG_PANIC	Link State Database checksum failed	OS error	Contact customer support
SYS, NOMEM, LOG_CRITICAL	No memory	OS error	Contact customer support
SYS, SYSCALL, LOG_ERROR	System call failed	OS error	Contact customer support
SYS, BADPTR, LOG_ERROR	Bad system pointer	OS error	Contact customer support
SYS, INTRPT, LOG_CRITICAL	Bad system interrupt	OS error	Contact customer support
SYS, FLASHRD, LOG_ERROR	FLASH memory read error	OS error	Contact customer support
SYS, FLASHWR, LOG_ERROR	FLASH memory write error	OS error	Contact customer support
TIMERS, ENQFAIL, LOG_CRITICAL	Invalid timeout value	OS error	Contact customer support
TIMERS, MSG,LOG_WARNING	Invalid message	OS error	Contact customer support
FLANNEL, PHANTOM, LOG_WARNING	Port's PLT limit exceeded	OS error	Contact customer support
ASIC, MINI_BUFFER, LOG_WARNING	ASIC Failure	Bad mainboard	Contact customer support
LSDB, LSID, LOG_ERROR	Link State ID 'd out of range	OS error	Contact customer support.
LSDB, NOLOCALENTRY, LOG_CRITICAL	No database entry for local Link State Record	OS error	Contact customer support.
LSDB, NOLSR, LOG_WARNING	No Link State Record for domain	OS error	Contact customer support.

Table C-4 System Error Messages (Continued)

Message	Description	Probable Cause	Action
LSDB, MAXINCARN, LOG_WARNING	Local Link State Record reached max incarnation	OS error	Contact customer support.
FLOOD, INVLSU, LOG_WARNING	Discard received LSU	OS error	Contact customer support.
FLOOD, INVLSR, LOG_WARNING	Unknown LSR type	OS error	Contact customer support.
FLOOD, LSRLEN, LOG_ERROR	Excessive LSU length	OS error	Contact customer support.
HLO, INVHLO, LOG_ERROR	Invalid Hello received from port	OS error	Contact customer support.
HLO, HLOTIMEOUT, LOG_ERROR	Incompatible Hello timeout from port	OS error	Contact customer support.
HLO, DEADTIMEOUT, LOG_ERROR	Incompatible Inactivity timeout from port	OS error	Contact customer support.
FSPF, SCN, LOG_WARNING	Illegal SCN	OS error	Contact customer support.
FSPF, NBRCHANGE, LOG_WARNING	Wrong neighbor ID in Hello message from port	OS error	Contact customer support.
FSPF, INPORT, LOG_ERROR	Input port out of range	OS error	Contact customer support.
FSPF, VERSION, LOG_ERROR	FSPF version not supported	OS error	Contact customer support.
FSPF, SECTION, LOG_ERROR	Wrong Section Id	OS error	Contact customer support.
FSPF, REMDOMAIN, LOG_ERROR	Remote Domain ID out of range	OS error	Contact customer support.
NBFSM, NGBRSTATE, LOG_ERROR	Wrong input to neighbor FSM	OS error	Contact customer support.
MCAST, ADDPORT, LOG_WARNING	Add port failed	OS error	Contact customer support.
MCAST, REMPORT, LOG_WARNING	Remove port failed	OS error	Contact customer support.
MCAST, ADDBRANCH, LOG_ERROR	Add branch failed	OS error	Contact customer support.
MCAST, REMBRANCH, LOG_ERROR	Remove branch failed	OS error	Contact customer support.
MCAST, NOPARENT, LOG_ERROR	Null parent	OS error	Contact customer support.
MCAST, NOPARENTLSR, LOG_ERROR	Null lsrP	OS error	Contact customer support.
UCAST, ADDPATH, LOG_CRITICAL	Add path failed	OS error	Contact customer support.
UCAST, ADDPORT, LOG_WARNING	Add port failed	OS error	Contact customer support.

Table C-4   System Error Messages (Continued)

Message	Description	Probable Cause	Action
UCAST, REMPORT, LOG_WARNING	Remove port failed	OS error	Contact customer support.
UCAST, RRTIM, LOG_CRITICAL	Invalid reroute timer ID	OS error	Contact customer support.
UCAST, SPFCOST, LOG_WARNING	No minimum cost path in candidate	OS error	Contact customer support.
UCAST, RELICPDB, LOG_WARNING	Relic PDB to Domain	OS error	Contact customer support