



SilkWorm 3250/3850

Hardware Reference Manual

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Document History

The following table lists all versions of the *SilkWorm 3250/3850 Hardware Reference Manual*.

Document Title	Publication Number	Summary of Changes	Publication Date
<i>Brocade 3250/3850 Hardware Reference Manual</i>	53-0000623-01	This is a new document.	December 2003

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About This Document

This document is intended for use by systems administrators and technicians experienced with networking, Fibre Channel, and storage area network (SAN) technologies.

The sections that follow provide:

- A description of how to use this document.
- Information to help you use Brocade documentation.
- Information on additional SAN resources.
- How to get Technical Support.

Document Organization

This document is organized to help you find the particular information that you want as quickly and easily as possible. Because it primarily tells you how to install and operate the SilkWorm 3250/3850 switch, it is arranged in a loosely sequential order, beginning with prerequisites to getting started, continuing with configuration and operations, and ending with the specifications, which are useful as reference material.

The document contains the following components:

- [Chapter 1, “Introducing the SilkWorm 3250/3850,”](#) provides an overview of the SilkWorm 3250 and the SilkWorm 3850 switches, a feature comparison, and a look at the appearance of these two switches.
- [Chapter 2, “Installing and Configuring the SilkWorm 3250/3850,”](#) provides the information needed to install the switch into your network.
- [Chapter 3, “Operating the SilkWorm 3250/3850,”](#) discusses the day-to-day operational procedures for using the switch.
- [Chapter 4, “Monitoring and Maintenance,”](#) tells you how to monitor, manage, and maintain a SilkWorm 3250/3850.
- [Appendix A, “Product Specifications,”](#) provides a table of physical, environmental, and general specifications for both switches, helpful for quick lookup.

What's New in This Document

This is a new document. For further information, refer to the *SilkWorm 3250/3850 QuickStart Guide* or other documents referenced in [“Additional Information” on page ix](#).

Document Conventions

This section describes text formatting conventions, important notices formats, and terms as they are used in this document.

Formatting Conventions

The following table describes the formatting conventions that are used in this book.

Table 1

Convention	Purpose
bold text	<ul style="list-style-type: none">identifies command namesidentifies GUI elementsidentifies keywords/operandsidentifies text that you must enter at the GUI or CLI
<i>italic text</i>	<ul style="list-style-type: none">provides emphasisidentifies variablesidentifies paths and Web addressesidentifies book titles
code text	<ul style="list-style-type: none">identifies CLI outputidentifies syntax examples

Use of Notes, Cautions, and Warnings

The following notices appear in this document.



Note

A note provides a tip, emphasizes important information, or provides a reference to related information.



Caution

A caution alerts you to potential damage to hardware, firmware, software, or data.



Warning

A warning alerts you to potential danger to personnel.

Additional Information

Use the lists in this section to find further information about Brocade and the Fibre Channel industry in general.

Brocade Documentation

The following related documentation is provided on the Brocade Documentation CD-ROM and on the Brocade Web site:

Additional hardware documentation

- *SilkWorm 3250/3850 QuickStart Guide* (provided as hard copy with switch)

Fabric OS documentation

- *Brocade Fabric OS Procedures Guide*
- *Brocade Fabric OS Reference Manual*
- *Brocade Fabric OS Release Notes*
- *Brocade Diagnostic and System Error Message Reference Manual*
- *Brocade MIB Reference Manual*

Documentation for Fabric OS optional software

- *Brocade Fabric OS Features Guide*
- *Brocade Advanced Web Tools Administrator's Guide*
- *Brocade Fabric Watch User's Guide*
- *Brocade SES User's Guide*

Release notes are bundled with the Fabric OS.

Additional Information

For additional Brocade documentation, including white papers, visit the Brocade Web site at:

<http://www.brocade.com>

For information about Fibre Channel standards, visit the Technical Committee T11 Web site at:

<http://www.t11.org>

For information about the Fibre Channel industry, visit the Fibre Channel Industry Association Web site at:

<http://www.fibrechannel.com>

Getting Technical Help

Contact your switch supplier for hardware, firmware, and software support, including product repairs and part ordering. Be prepared to provide the information described in this section to support personnel.

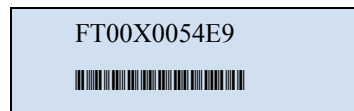
This section provides information for all types of SilkWorm switches. You will need the information specific to your switch.

1. General Information

- Technical Support registration number, if applicable
- Switch model
- Operating system version
- Error messages received
- Output from the **supportshow** command
- Fabric topology, provided by the **topologyshow** command
- Detailed description of the problem and specific questions
- Description of any troubleshooting steps already performed and results

2. Switch Serial Number

The switch serial number and corresponding bar code are provided on the serial number label, as shown below:



The serial number label is located as follows:

- SilkWorm 2000-series switches: bottom of chassis
- SilkWorm 3250/3850 and 3900 switches: back of chassis
- *SilkWorm 12000 switches*: inside front of chassis on wall to left of ports
- *SilkWorm 24000*: inside the front of the chassis, on the wall to the left of the ports

3. Switch World Wide Name (WWN)

- *SilkWorm 3250, 3850, 3900, 12000, and 24000 switches*: provide the license ID. Use the **licenseidshow** command to display the license ID.
- *All other SilkWorm switches*: provide the switch WWN. Use the **wwn** command to display the switch WWN.

Document Feedback

Because quality is our first concern at Brocade, we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you. Forward your feedback to documentation@brocade.com. Provide the title and version number and as much detail as possible about your issue, including the topic heading and page number and your suggestions for improvement

Introducing the SilkWorm 3250/3850

The SilkWorm 3250/3850 is a Fibre Channel Gigabit switch that supports link speeds up to 2 Gb/sec. It includes the Brocade Fabric Operating System and is compatible with the entire SilkWorm product family. It can operate in a fabric containing multiple switches or as the only switch in a fabric.

This chapter provides the following information:

- [“SilkWorm 3250/3850 Features” on page 1-1](#)
- [“3250/3850 Switch Comparison” on page 1-2](#)
- [“Switch Characteristics” on page 1-3](#)
- [“Supported \(Optional\) Features” on page 1-5](#)

SilkWorm 3250/3850 Features

The SilkWorm 3250/3850 provides the following features:

- Air-cooled 1U chassis. The chassis can be installed as a stand-alone unit or mounted in a standard Electronic Industries Association (EIA) 19 in. (48.26 cm) cabinet.
- 8 or 16 Fibre Channel ports, with the following characteristics:
 - Automatic negotiation to the highest common speed of all devices connected to port.
 - Port interfaces compatible with small form factor pluggable (SFP) transceivers, both short wavelength (SWL) and long wavelength (LWL).
 - Universal and self-configuring: capable of becoming an F_Port (fabric enabled), FL_Port (fabric loop enabled), or E_Port (expansion port).
- 8 or 16 short wavelength SFP transceivers (optional).
- One RS-232 serial port, designed to connect to a DTE port.
- One 10/100 Mb/sec Ethernet port with an RJ-45 connector.
- One (Silkworm 3250) or two (SilkWorm 3850) built-in power supplies.
- The following light-emitting diodes (LEDs):
 - Power status
 - System status
 - Ethernet status
 - Port Status and Port Speed for each port

Value Line and Licensing

The *SilkWorm 3250/3850 Hardware Reference Manual* is valid for all versions of the switch: SilkWorm 3250 VL2, 3850 VL2, 3850 VL4, and Full Fabric licensing. The license is preloaded according to the switch you ordered.

The Value Line™ option is a set of switches based on existing Brocade product lines but with limits placed on the number of domains that can be used.

- For the SilkWorm 3850 you can purchase a 2-domain limit or a 4-domain limit.
- The SilkWorm 3250 offers a 2-domain limit option.

Value Line switches provide the same Brocade quality within a limited-domain fabric.

Value Line products can be upgraded by license; refer to the *Fabric OS Procedures Guide* to learn how to upgrade a license.

To see the type of licensing your SilkWorm 3250/3850 runs, use the **licenseshow** command.

Example

```
switch:root> licenseshow
XXXnnXXnXnnXXX:
    Fabric Watch license
    Release v4.2 license
XXXnnXXnXnnXXX:
    Zoning license
XXXnnXXnXnnXXX:
    Web license
XXXnnXXnXnnXXX:
    2 Domain Fabric license ←
```

3250/3850 Switch Comparison

The basic difference between the SilkWorm 3250 and the SilkWorm 3850 is the number of ports: the SilkWorm 3250 contains 8 ports, while the SilkWorm 3850 contains 16. The SilkWorm 3250 contains only 1 power supply while the SilkWorm 3850 has built-in redundancy and contains 2 power supplies; thus, the SilkWorm 3850 also weighs more.

The Silkworm 3850 can operate indefinitely on either one of its redundant power supplies.

Switch Characteristics

The next few sections describe the physical characteristics of the SilkWorm 3250/3850 and some important requirements for proper operation.

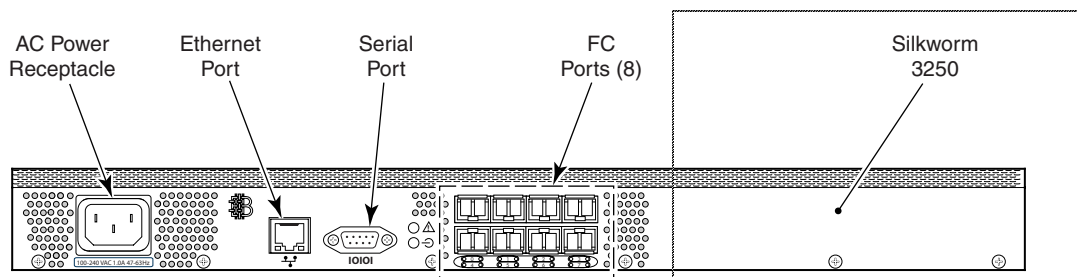
Port Side of the SilkWorm 3250/3850

You can see the physical differences between the Silkworm 3250 and the SilkWorm 3850 switches in the following figures. The most noticeable difference is the number of ports. [Figure 1-1](#) shows the port side of the SilkWorm 3250, and [Figure 1-2](#) shows the port side of the SilkWorm 3850.

All LEDs are on the port side of the switch; the nonport side is used for serial number labeling and to allow the free flow of air. The Silkworm 3850 enclosure has forced-air cooling, with the fans pushing the air from the nonport side of the chassis through the enclosure, and exhausting to the port side.

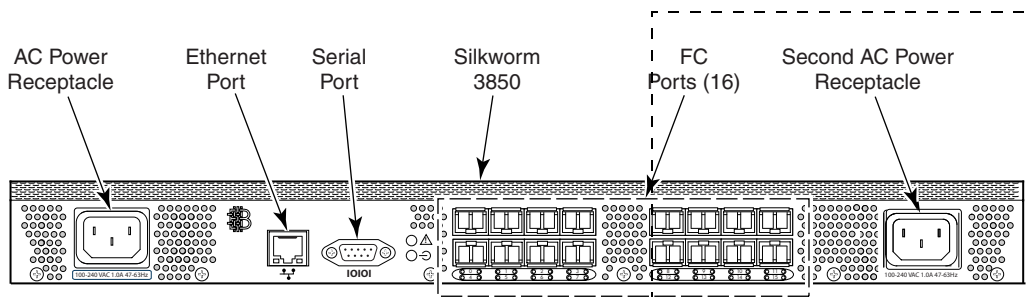
A complete description of the locations and interpretations of these LEDs can be found at [“Interpreting LED Activity” on page 3-1](#).

Figure 1-1 Port Side of SilkWorm 3250



As shown in [Figure 1-2](#), the SilkWorm 3850 has twice the number of ports and a second AC power receptacle.

Figure 1-2 Port Side of the SilkWorm 3850



Nonport Side of SilkWorm 3250/3850

The nonport side of the SilkWorm 3250/3850 is used solely for air flow and for serial number labels. There are two labels on the rear of the chassis; both contain a serial number label for the switch; the left label also contains the SilkWorm 3250/3850 MAC address and WWN.

Weight and Physical Dimensions

[Table 1-1](#) lists the weight and physical dimensions of the SilkWorm 3250/3850.

Table 1-1 Switch specifications

	SilkWorm 3250	SilkWorm 3850	Fixed-Rail Kit
Height	1.69 in (4.29 cm)	1.69 in (4.29 cm)	
Width	16.87 in (42.85 cm)	16.87 in (42.85 cm)	
Depth	12.10 in (30.734 cm)	12.10 in (30.734 cm)	
Weight	8.2 lb (3.72 kg) with no media installed	9.4 lb (4.27 kg) with no media installed	2.6 lb (1.18 kg)

Memory Specifications

The SilkWorm 3250/3850 memory is shown in [Table 1-2](#):

Table 1-2 Memory Specifications

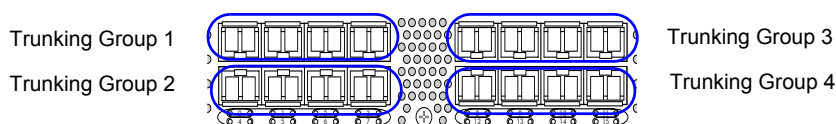
Memory Type	Installed Memory
Main Memory (SDRAM)	128 MB
Kernel Flash	16 MB
Boot Flash	512 KB
Compact Flash	256 MB

ISL Trunking Groups

If your SilkWorm 3250/3850 switch is licensed for ISL trunking, use the trunking groups available on the switch.

The Fibre Channel ports are numbered from left to right, color-coded into groups of four to indicate the groups of ports that can be used in the same interswitch link (ISL) trunking group. The trunking groups are the two or four sets of four ports at the top or at the bottom of the group, as shown in [Figure 1-3](#).

Figure 1-3 Trunking Groups



Note

Brocade ISL Trunking is optional software that allows you to create trunking groups of ISLs between adjacent switches. For more information about trunking, refer to the *Brocade Fabric OS Features Guide*.

Supported (Optional) Features

The SilkWorm 3250/3850 supports the following optional Brocade software, which can be activated with the purchase of the corresponding license key:

- Brocade Advanced Zoning
- Brocade ISL Trunking
- Brocade Fabric Watch
- Brocade Advanced Performance Monitoring
- Brocade Extended Fabrics
- Brocade Remote Switch

For information on any of these features, refer to the *Brocade Fabric OS Features Guide*.

Installing and Configuring the SilkWorm 3250/3850

This chapter provides the following information:

- [“Items Included with the SilkWorm 3250/3850” on page 2-1](#)
- [“Facility Requirements” on page 2-2](#)
- [“Environmental Requirements” on page 2-3](#)
- [“Installation and Safety Considerations” on page 2-3](#)
- [“Installing a Stand-Alone SilkWorm 3250/3850” on page 2-4](#)
- [“Installing a SilkWorm 3250/3850 Into an EIA Cabinet” on page 2-5](#)
- [“Cabling and Configuring the SilkWorm 3250/3850” on page 2-5](#)

Items Included with the SilkWorm 3250/3850

The following items are included with the standard shipment of the SilkWorm 3250/3850. When you open the SilkWorm packaging, verify that these items are included in the package and that no damage has occurred during shipping:

- One SilkWorm 3250 or SilkWorm 3850 switch, composed of:
 - One cabinet-mountable 1U chassis designed to be mounted in a 19 inch cabinet space, with forced-air cooling that flows from the non-port side of the switch to the port side.
 - 8 or 16 Fibre Channel ports, compatible with SFP transceivers, SWL and LWL.
 - One RS-232 serial port (DB-9 connector).
 - One IEEE-compliant RJ-45 connector for use with 10/100 Mbps Ethernet or in-band.
 - LEDs as described in [“LED Location” on page 3-2](#).
 - One (SilkWorm 3250) or two (SilkWorm 3850) fixed power supplies and built-in fans.
 - A real-time clock (RTC) with a 10-year battery.

- An accessory kit containing:
 - One or two grounded 6 ft. (1.8 m.) country-specific power cables, depending on the number of power supplies installed onto the switch.
 - One 10 ft. (3.0 m.) RS-232 serial cable; if necessary, convert this RS-232 cable to an RJ-45 connector by removing the adapter on the end of the cable.
 - Four rubber mounting feet, required for setting up the switch as a stand-alone unit.
 - One fixed rack mount kit, with instructions. A fixed rack mount kit is shipped with the SilkWorm 3250/3850, but a compatible slide-rail rack mount kit is also available and can be ordered from your switch supplier.
 - Optional SFP (small form factor pluggable) transceivers.
 - One SilkWorm 3250/3850 *QuickStart Guide*.
 - The SilkWorm 3250/3850 Hardware Reference Manual (this document).
 - The Brocade Documentation CD-ROM.

Facility Requirements

To ensure correct operation of the switch, the facility where the switch is in use must meet the following requirements shown in [Table 2-1](#):

Table 2-1 Facility Requirements

Type	Requirements
Electrical	<ul style="list-style-type: none"> • Primary AC Input 100-240 VAC, 1.5A, 47-63 Hz (SilkWorm 3250) and 100-240 VAC, 2.0A, 47-63 Hz (SilkWorm 3850); switch autosenses input voltage • Adequate supply circuit, line fusing, and wire size, as specified by the electrical rating on the switch nameplate • Circuit protected by a circuit breaker and grounded in accordance with local electrical codes <p>See Table A-4 on page A-3 for details.</p>
Thermal	<ul style="list-style-type: none"> • A minimum air flow of 24 cubic ft/minute available in the immediate vicinity of the switch • Ambient air temperature not exceeding 40° C (104° F) while the switch is operating
Cabinet (when rack-mounted)	<ul style="list-style-type: none"> • One rack unit in a 19-in. (48.3 cm.) cabinet • All equipment in cabinet grounded through a reliable branch circuit connection • Additional weight of switch must not exceed the cabinet's weight limits • Cabinet must be secured to insure stability in case of unexpected movement, such as an earthquake

Environmental Requirements

To ensure proper operation, the switch must not be subjected to environmental conditions beyond those that it was tested. The ranges specified in [Table 2-2](#) list the acceptable environment for both operating and non-operating conditions.

Table 2-2 Environmental Requirements

Condition	Acceptable Range During Operation	Acceptable Range During Non-operation
Temperature	-10° to +40° C (12° to 122° F)	-50° to 100° C (-122° to 212° F)
Humidity	20% to 85% RH non-condensing, at 40°C, with maximum gradient of 10% per hour	10% to 85% RH noncondensing, at 70° C
Altitude	0 to 10,000 ft (3 km) above sea level	0 to 39,370 ft (12 km) above sea level
Shock	20 G, 6 ms duration, half sine wave	15 G, 12-18 ms duration, trapezoid
Vibration	0.5 G, 5-500 Hz	2.0 G, 5-500 Hz
Air flow	Normal: 24 cubic ft/minute 1 fan failed remaining running at high speed): 30 cfm All fans running at high speed: 44 cfm	None required



Note

The 0° - 40° Celsius range applies to the ambient air temperature at the air intake vents on the nonport side of the switch. The temperature inside the switch can be up to 75° Celsius during switch operation.

If the internal temperature range exceeds the operating ranges of the components, the LEDs, error messages, and Fabric Watch alerts will indicate a problem. Enter the **tempshow** or Fabric Watch commands to view temperature status.

Installation and Safety Considerations

You can install the SilkWorm 3250/3850 in three ways:

1. As a stand-alone unit on a flat surface.
2. In an Electronic Industries Association (EIA) cabinet using a fixed-rail rack mount kit, which is provided with the switch.
3. In an EIA cabinet using an optional slide-rail rack mount kit. The optional slide-rail rack mount kit can be ordered from your switch retailer. When mounting into a slide-rail rack, you can mount the chassis to slide from either the port side or the nonport side.

Electrical Considerations

For successful installation and operation of the switch, ensure that the following electrical requirements are met. For power supply information, refer to [“System Specifications” on page A-3](#).

- Primary AC input 100-240 VAC (switch auto-senses input voltage), 47-63 Hz.
- Correctly wired primary outlet, with circuit protected by a circuit breaker and grounded in accordance with local electrical codes.
- Adequate supply circuit, line fusing, and wire size, as specified by the electrical rating on the switch nameplate.

Environmental Considerations

- At a minimum, adequate cooling requires that you install the switch with the non-port side, which contains the air intake vents, facing the cool-air aisle.
- Verify that a minimum of 24 cubic ft/minute of air flow is available to the air intake vents on the nonport side of the switch.
- Verify that the ambient air temperature does not exceed 40° C (104° F) while the switch is operating.
- If installing the switch in a cabinet:
 - The cabinet must be a standard EIA cabinet.
 - Plan a cabinet space that is 1 rack unit (1.75 inches; 4.45 cm) high, 19 inches (48.3 cm) wide, and at least 30 inches (76.2 cm) deep.
 - Ground all equipment in cabinet through a reliable branch circuit connection and maintain ground at all times. Do not rely on a secondary connection to a branch circuit, such as a power strip.
 - Ensure that airflow and temperature requirements are met on an ongoing basis, particularly if the switch is installed in a closed or multicabinet assembly.
 - Verify that the additional weight of the switch does not exceed the cabinet’s weight limits or unbalance the cabinet in any way.
 - Secure the cabinet to ensure stability in case of unexpected movement, such as an earthquake.

Installing a Stand-Alone SilkWorm 3250/3850

To install the SilkWorm 3250/3850 as a stand-alone unit, follow the procedure described here:

1. Unpack the SilkWorm 3250/3850 and verify that all items listed on [page 2-4](#) are present and undamaged.
2. Apply the adhesive rubber feet. Applying the rubber feet onto the switch helps prevent the switch from sliding off the supporting surface.
 - a. Clean the indentations at each corner of the bottom of the switch to ensure that they are free of dust or other debris that might lessen the adhesion of the feet.
 - b. With the adhesive side against the chassis, place one rubber foot in each indentation and press into place.

3. Place the switch on a flat, sturdy surface.
4. Provide power to the switch as described in [“Powering the SilkWorm 3250/3850 On and Off”](#) on page 3-1.



Caution

Do not connect the switch to the network until the IP address is correctly set. For instructions on how to set the IP address, see [“Cabling and Configuring the SilkWorm 3250/3850”](#).

Installing a SilkWorm 3250/3850 Into an EIA Cabinet

The rack mount kit can be installed in two ways:

- To allow the port side of the switch to slide out of the exhaust-air side of the cabinet. In this installation, the port side of the switch is flush with the edge of the cabinet.
- To allow the nonport side of the switch to slide out the cool-air side of the cabinet. In this installation, the port side of the switch is set 3 in. (7.62 cm.) back from the edge of the cabinet, allowing a more gradual bend in the fiber optic cables.

Whichever mounting method you choose, follow the installation instructions shipped with the appropriate rack mount kit:

- To install the switch into a fixed-rail rack (default with the SilkWorm 3250/3850), refer to the *Fixed Rack Mount Kit Installation Procedure* (53-0000244-03).
- To install the switch into a slide-rail rack, refer to the *Slide Rack Mount Kit Installation Procedure* (53-0001625-06).

Cabling and Configuring the SilkWorm 3250/3850

The SilkWorm 3250/3850 must be configured to ensure correct operation within a network and fabric. For instructions about configuring the switch to operate in a fabric containing switches from other vendors, refer to the *Brocade Fabric OS Procedures Guide*.

For more information about the commands used in this procedure, refer to the *Brocade Fabric OS Reference Manual*.

Recommendations for Cable Management

The minimum bend radius for a 50 micron cable is 2 inches under full tensile load and 1.2 inches with no tensile load.

Cables can be organized and managed in a variety of ways: for example, using cable channels on the sides of the cabinet or patch panels to minimize cable management. Following is a list of recommendations:

- Plan for rack space required for cable management before installing the switch.
- Leave at least 3.28 ft. (1 m.) of slack for each port cable. This provides room to remove and replace the switch, allows for inadvertent movement of the rack, and helps prevent the cables from being bent to less than the minimum bend radius.

- If you are using Brocade ISL Trunking, consider grouping cables by trunking groups. The cables used in trunking groups must meet specific requirements, as described in the *Brocade Fabric OS Features Guide*.
- For easier maintenance, label the fiber optic cables and record the devices to which they are connected.
- Keep LEDs visible by routing port cables and other cables away from the LEDs.
- Do not use tie wraps on fiber optic cables, because wraps are easily overtightened and can damage the optic fibers.

Power Supply Specifications

The power supplies are universal and capable of functioning worldwide without using voltage jumpers or switches. They meet IEC 61000-4-5 surge voltage requirements and are autoranging in terms of accommodating input voltages and line frequencies. Each power supply has its own built-in fan for cooling, pushing the air toward the port side of the switch. Power supplies are not removable.

[Table 2-3](#) lists the power supply specifications of the SilkWorm 3250/3850.

Table 2-3 SilkWorm 3250/3850 Power Supply Specifications

Specification	Value
Outlet	Correctly wired and earth-grounded
Maximum output from each power supply	SilkWorm 3250: 50 watts, with fans operating SilkWorm 3850: 75 watts, with fans operating
Maximum system power consumption	90 - 264 watts (depending on transceiver vendor)
Input voltage	100 - 240 VAC (nominal 80% efficiency), autoranging
Input line frequency	47 - 63 Hz
Harmonic distortion	Active power factor correction per IEC1000-3-2
BTU rating	SilkWorm 3250: 120 BTU SilkWorm 3850: 266 BTU
Inrush current	SilkWorm 3250: 20A SilkWorm 3850: 25A, each line input
Input line protection	Fused in both hot and neutral lines

Items Required for Installation

The following items are required for configuring and connecting the SilkWorm 3250/3850 for use in a network and fabric:

- SilkWorm 3250/3850 installed and connected to a power source
- Workstation with an installed terminal emulator, such as HyperTerminal
- Unused IP address and corresponding subnet mask and gateway address
- Serial cable (provided)
- Ethernet cable
- SFP transceivers and compatible cables, as required
- Access to an FTP server for backing up the switch configuration (optional)

Configuring the SilkWorm 3250/3850

Follow the steps described in the next sections to configure your SilkWorm 3250/3850 for use:

1. [“Create a Serial Connection” on page 2-7](#)
1. [“Power Up the Switch and Log In” on page 2-8](#)
1. [“Set the IP Address” on page 2-9](#)
2. [“Create an Ethernet Connection and Log In” on page 2-9](#)
3. [“Modify the Domain ID \(Optional\)” on page 2-9](#)
4. [“Install the SFP Transceivers” on page 2-10](#)
5. [“Connect the Cables” on page 2-11](#)

Step 1 - Create a Serial Connection

Before you can begin configuring the SilkWorm 3250/3850, you must create a connection via the serial port. To create a serial connection to the SilkWorm 3250/3850:

1. Insert the provided serial cable into the serial port on the switch.
2. Connect the serial cable to an RS-232 serial port on the workstation.

If the serial port on the workstation uses an RJ-45 connector instead of an RS-232, remove the adapter on the end of the serial cable and insert the exposed RJ-45 connector into the RJ-45 serial port on the workstation.

3. Disable any serial communication programs running on the workstation.

4. Open a terminal emulator application (such as HyperTerminal on a PC or TERM in a UNIX environment) and configure the application as follows:

- In a Windows 95, 98, 2000, or NT environment:

Bits per second	9600
Databits	8
Parity	None
Stop bits	1
Flow control	None

- In a UNIX environment, type the following string at the prompt:

```
tip /dev/ttyb -9600
```

Power Up the Switch and Log In

Once a serial connection is established, provide power to the switch; power is supplied to the switch as soon as the first power supply is connected and powered on:

1. Connect the power cords to both power supplies and power sources.

To protect against AC failure, connect the power cords to outlets on separate circuits. Ensure that the cords have a minimum service loop of six inches available at the connection to the switch and are routed to avoid stress.

The power supply LED lights up green, and the switch begins running POST. POST should complete and the switch will complete the boot process in about three minutes.

2. After POST is complete, verify that the System Status and Power Status LEDs are green.
3. Using a serial connection, when the terminal emulator application stops reporting information, press **Enter** to display the login prompt.
4. Log in using the administrative account; the logon is “admin” and the default password is “password”. Up to two simultaneous admin sessions and four user sessions can be created. For details, refer to the *Fabric OS Procedures Guide* and the *Fabric OS Reference Manual*.

Step 2 - Set the IP Address

Replace the default IP address and related information with the information provided by your network administrator. By default, the IP address is set to 10.77.77.77.

1. Type **ipaddrset** at the terminal emulator application prompt.
2. Type the requested information as prompted.

Example

```
switch:admin> ipaddrset
Ethernet IP Address [192.168.1.1]:10.32.53.47
Ethernet Subnetmask [255.255.255.0]:255.255.240.0
Fibre Channel IP Address [0.0.0.0]:
Fibre Channel Subnetmask [0.0.0.0]:
Gateway IP Address [0.0.0.0]:10.32.48.1
Set IP address now? [y = set now, n = next reboot]:y
IP address being changed...
Committing configuration...Done.
switch:admin>
```

3. Optionally, verify that the address was correctly set by entering the **ipaddrshow** command at the prompt.
4. Record the IP address on the label clearly displayed on the port side of the chassis.
5. If the serial port is no longer required, log out of the serial console, remove the serial cable, and replace the safety plug in the serial port.



Note

Any time the port is not in use, the safety plug should be installed to protect it from foreign material.

Step 3 - Create an Ethernet Connection and Log In

Create an Ethernet connection to the SilkWorm 3250/3850:

1. Connect an Ethernet cable to the Ethernet port and to the workstation or to an Ethernet network containing the workstation. After this connection is made, the switch can be accessed remotely, by command line or by Brocade Advanced Web Tools. Ensure that the switch is not being modified from any other connections during the remaining steps.
2. Log in to the switch by telnet, using the admin account.

Step 4 - Modify the Domain ID (Optional)

If desired, you can modify the domain ID. The default domain ID is domain 1. If the switch is not powered on until after it is connected to the fabric and the default domain ID is already in use, the domain ID for the new switch is automatically reset to a unique value. If the switch is connected to the fabric after it has been powered on and the default domain ID is already in use, the fabric segments.

The domain IDs that are currently in use can be determined using the **fabricshow** command. The number of domains is determined by your domain fabric licensing.

To modify the domain ID:

1. Disable the switch by typing **switchdisable**.
2. Type **configure**. This prompts display sequentially; type a new value or press **Enter** to accept each default value.
3. At the Fabric Parameters prompt, type **Y** and press **Enter**:

```
Fabric parameters (yes, y, no, n): [no] y
```

4. Enter a unique domain ID, such as the domain ID used by the previous switch, if still available:

```
Domain: (1..239) [1] 3
```

5. Complete the remaining prompts or press Ctrl+D to accept the remaining default settings.
6. Re-enable the switch by entering the **switchenable** command.
7. Optionally, specify any custom status policies:
 - a. Enter the **switchstatuspolicyset** command at the prompt. This command sets the policy parameters that determine the overall switch status.
 - b. Customize the status policies as desired.

To deactivate the alarm for a particular condition, enter **0** at the prompt for that condition.

Step 5 - Install the SFP Transceivers

If your SilkWorm 3250/3850 came with uninstalled SFP transceivers, or if those transceivers have been removed, use the following procedure to install them into the Fibre Channel ports. A list of supported SFPs can be found in [Table A-2 on page A-2](#).

The ports selected for use in trunking groups must meet specific requirements. For a list of these requirements, refer to the *Brocade Fabric OS Features Guide*.

To install SFP transceivers:

1. Position a transceiver so that it is oriented correctly and insert it into a port until the latching mechanism clicks. The transceivers are keyed to ensure correct orientation. If a transceiver does not install easily, ensure that it is correctly oriented.

For instructions specific to the type of transceiver, refer to the transceiver manufacturer's documentation.

2. Repeat for the remaining ports, as required.

Step 6 - Connect the Cables



Caution

The minimum bend radius for a 50-micron cable is 2 inches under full tensile load, and 1.2 inches with no tensile load.

Because they are easily overtightened, tie wraps are not recommended for optical cables.

Connect the cables to the transceivers:

1. The cable connectors are keyed to ensure correct orientation. Orient a cable connector so that the key (ridge on one side of connector) aligns with the slot in the transceiver and insert cable into transceiver until latching mechanism clicks. If a cable does not install easily, ensure it is correctly oriented. For instructions specific to cable type, refer to the cable manufacturer's documentation.
2. Repeat for the remaining transceivers, as required.

The cables used in trunking groups must meet specific requirements. For a list of these requirements, refer to the *Brocade Fabric OS Features Guide*.

Verifying Configuration

After completing the configuration, use the LEDs and commands to verify that the configuration has been accepted:

1. Check the LEDs to verify that all components are functional. For information about LED patterns, refer to [“Interpreting LED Activity” on page 3-1](#).
2. Verify the correct operation of the SilkWorm 3250/3850 by entering the **switchshow** command from the workstation. This command provides information about the switch and port status.
3. Verify the correct operation of the SilkWorm 3250/3850 in the fabric by entering the **fabricshow** command from the workstation. This command provides general information about the fabric.

Backing Up Your Configuration

Brocade recommends regular backups to ensure that a recent configuration is available for downloading to a replacement switch, if required. For specific instructions about how to back up the configuration, refer to the *Brocade Fabric OS Procedures Guide*.

Back up the switch configuration to an FTP server by entering the **configupload** command and following the prompts. This command uploads the switch configuration to the server, making it available for downloading to a replacement switch, if necessary.

Operating the SilkWorm 3250/3850

This chapter provides the following information:

- [“Powering the SilkWorm 3250/3850 On and Off” on page 3-1](#)
- [“Interpreting LED Activity” on page 3-1](#)
- [“POST and Boot Specifications” on page 3-7](#)
- [“Interpreting POST Results” on page 3-8](#)

Powering the SilkWorm 3250/3850 On and Off

To apply power to the SilkWorm 3250/3850, connect at least one power cable to an AC receptacle on the switch and to a power source. The switch runs POST (power-on self-test) by default each time it is powered on, reset, or rebooted, and requires as long as 3 minutes.

To end the flow of power to the SilkWorm 3250/3850, remove the power cord from the power source.



Note

Removing all power from the switch triggers a system reset. All devices are returned to their initial state the next time the switch is powered on.

Interpreting LED Activity

System activity and status can be determined through the activity of the LEDs on the switch.

There are three possible LED states: no light, a steady light, and a flashing light. The steady lights and flashing lights can be green or amber.

The LEDs flash any of these colors during boot, POST, or other diagnostic tests. This is normal and does not indicate a problem unless the LEDs do not indicate a healthy state after all boot processes and diagnostic tests are complete.

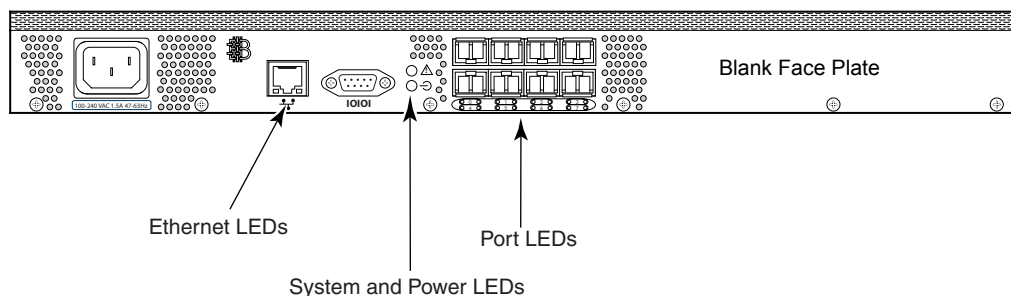
LED Location

All SilkWorm 3250/3850 LEDs are located on the port side. They include:

- Switch Status
- Power
- Port Status
- Port Speed
- Ethernet

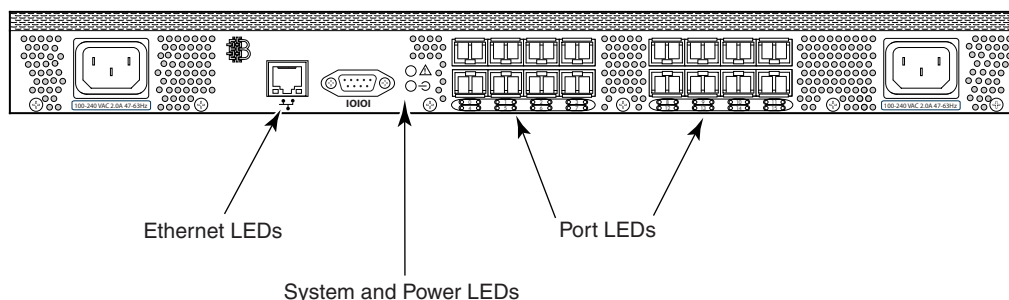
Figure 3-1 shows the port side of the SilkWorm 3250, paying special attention to the LEDs. Figure 3-2 shows the port side of the SilkWorm 3850.

Figure 3-1 SilkWorm 3250 LED Locations



The 3250 and 3850 switches are physically similar except for the number of ports—and related port LEDs—and the second AC power receptacle. For a closer look at the location of the SilkWorm 3250/3850 LEDs, see Figure 3-3.

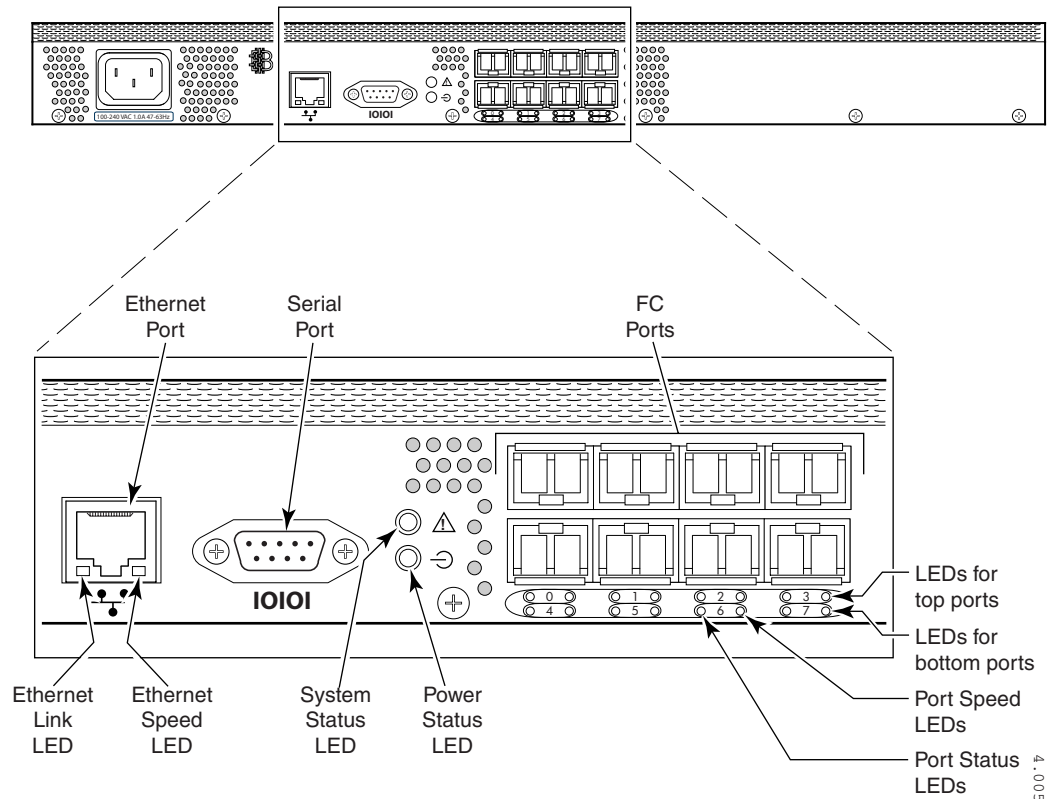
Figure 3-2 SilkWorm 3850 LED Locations



All LEDs are on the port side of the switch. Figure 3-3 shows the location of these LEDs. See “LED Patterns” on page 3-4 for details about interpreting LEDs.

Figure 3-3 shows the LEDs on the SilkWorm 3250, but the LEDs are the same for the SilkWorm 3850; there are equivalent LEDs on the second set of ports.

Figure 3-3 Detailed View, SilkWorm 3250 LEDs



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LED Patterns

[Table 3-2](#) and [Table 3-2](#) summarize LED location, color, and meaning of the SilkWorm 3250/3850 LEDs, as well as any recommended user response.

System and Power LED Patterns

The system and power LED patterns are shown in [Table 3-1](#).

Table 3-1 System LED Patterns During Normal Operation

LED Name, Location	LED Color	Status of Hardware	Recommended Action
System Status and Power Status At right of serial port on bottom	No light	Switch is off, boot is not complete, or boot failed.	Verify that switch is on and has completed booting.
	Steady green	Switch is on and power supplies are functioning properly.	No action required.
	Slow-flashing green (on 1 second, off 1 second)	One or both of the following are true: <ul style="list-style-type: none"> One or more environmental ranges are exceeded. Error log contains one or more port diagnostic error messages. 	<ol style="list-style-type: none"> 1. Check environmental conditions, error log, Port Status LEDs, transceivers, cables, and loopback plugs. 2. Correct error condition. 3. Clear error log. 4. Rerun diagnostics to verify fix.
	Amber	One failed power supply in 3850	No action required, but failure of the remaining power supply will cause the switch to fail.

Port LED Patterns

Each port has two LEDs: a port speed and a port status indicator. Table 3-2 shows the LED location, color, and meaning for these port LEDs.

Table 3-2 Port LED Patterns During Normal Operation

LED Name, Location	LED Color	Status of Hardware	Recommended Action
Port Status Below ports on left	No light	No light or signal carrier (transceiver or cable) detected.	Check transceiver and cable.
	Steady green	Port is online (connected to external device) but has no traffic.	No action required.
	Slow-flashing green (on 1 second, off 1 second)	Port is online but segmented, indicating a loopback cable or incompatible switch.	Verify that the correct device is connected to port and that the switch and port settings are correct.
	Fast-flashing green (on 1/4 second, off 1/4 second)	Port is in internal loopback (diagnostic).	No action required.
	Flickering green	Port is online with traffic flowing through port.	No action required.
	Steady amber	Port is receiving light or signal carrier, but is not yet online.	No action required.
Port Status Below ports on left	Slow-flashing amber (on 1 second, off 1 second)	Port is disabled as the result of diagnostics or portDisable command. If all ports are slow-flashing amber, the switch could be disabled.	Enable the port: use the portEnable command; refer to <i>Brocade Fabric OS Reference</i> for more information. If all ports are slow-flashing amber, enable the switch (switchEnable command).

Table 3-2 Port LED Patterns During Normal Operation (Continued)

LED Name, Location	LED Color	Status of Hardware	Recommended Action
	Fast-flashing amber (on 1/4 second, off 1/4 second)	Port is faulty.	1. Check the Port Status LEDs, error log, transceiver, and cable or loopback plug. 2. Clear the error log. 3. Rerun the diagnostics to verify that the error condition is fixed.
	Alternating green and amber	Port is bypassed.	Check configuration of Fibre Channel loop.
Port Speed Below ports on right	No light	Port is transmitting/receiving at 1 Gb/sec.	No action required.
	Steady green	Port is transmitting/receiving at 2 Gb/sec.	No action required.

Ethernet LED Patterns

Each Ethernet port has two LEDs, described in [Table 3-3](#)

Table 3-3 Ethernet LED Patterns

LED Name, Location	LED Color	Status of Hardware	Recommended Action
Ethernet speed Below port on right	No light	Port speed is 10 Mb/sec	No action required.
	Steady green	Port speed is 100 Mb/sec	
Ethernet link Below port on right	Amber	Link is valid traffic	No action required.
	Blinking green		

POST and Boot Specifications

When the switch is turned on or rebooted, the switch performs POST. Total boot time with POST is a minimum of 3 minutes.

POST can be omitted after subsequent reboots by using **fastboot**. For more information about this command, refer to the *Brocade Fabric OS Reference*.

POST

The success/failure results of the diagnostic tests that run during POST can be monitored through the error log or the command line interface.

POST includes the following steps:

1. Preliminary POST diagnostics are run.
2. Operating system is initialized.
3. Hardware is initialized.
4. Diagnostic tests are run on several functions, including circuitry, port functionality, memory, statistics counters, and serialization.

Boot

Boot completes in approximately 3 minutes if POST is run. In addition to POST, boot includes the following steps after POST is complete:

1. Universal port configuration is performed.
2. Links are initialized.
3. Fabric is analyzed, and if any ports are connected to other switches, the switch participates in a fabric configuration.
4. Switch obtains a domain ID and assigns port addresses.
5. Unicast routing tables are constructed.
6. Normal port operation is enabled.

Interpreting POST Results

POST is a system check that is performed each time the switch is powered on, rebooted, or reset. During POST, the LEDs flash different colors. Any errors that occur during POST are listed in the error log.

To determine that POST completed successfully and whether or not any errors were detected:

1. Verify that the switch LEDs indicate that all components are healthy. See [Table 3-2](#) for description and interpretation of LED patterns. If one or more LEDs do not display a healthy state, verify that the LEDs on the switch are not set to “beacon”; use the **switchshow** command.
2. Verify the switch prompt displays on the terminal of a computer workstation connected to the switch. If there is no switch prompt when POST completes, press **Enter**. If the switch prompt still does not display, try opening another telnet session or accessing through another management tool. If this is not successful, the switch did not successfully complete POST; contact your switch supplier for repair.
3. Review the switch system log for errors. Any errors detected during POST are written to the system log, accessible through the **errshow** command.

For information about all referenced commands, and on accessing the error log, refer to *Brocade Fabric OS Procedures Guide*. For information about error messages, refer to the *Brocade Diagnostic and System Error Message Reference Manual*.

Monitoring and Maintenance

Once your SilkWorm 3250/3850 is installed and configured, you can monitor the health of the fabric as well as maintain the switch health. This chapter provides the following information:

- [“Management Features of the SilkWorm 3250/3850” on page 4-1](#)
- [“Maintaining the SilkWorm 3250/3850” on page 4-2](#)

Management Features of the SilkWorm 3250/3850

Using any of the management tools built into the SilkWorm 3250/3850 listed in [Table 4-1](#), you can monitor fabric topology, port status, physical status, and other information used for performance analysis and system debugging.

When running IP over Fibre Channel, these management tools must be run on both HBA and switch and must be supported by both HBA and HBA driver. For a list of HBAs supported by the SilkWorm 3250/3850, see [Table A-3 on page A-3](#).

Table 4-1 Management Options for SilkWorm 3250/3850

Management Tool	Out-of-Band Support	In-Band Support
Command line interface Up to two admin sessions and four user sessions simultaneously. For more information, refer to the <i>Brocade Fabric OS Procedures Guide</i> and the <i>Brocade Fabric OS Reference Manual</i> .	Ethernet or serial connection	IP over Fibre Channel
Brocade Fabric Manager	Ethernet connection	IP over Fibre Channel

Table 4-1 Management Options for SilkWorm 3250/3850 (Continued)

Management Tool	Out-of-Band Support	In-Band Support
Brocade Advanced Web Tools For information, refer to the <i>Brocade Advanced Web Tools Administrator's Guide</i> .	Ethernet connection	IP over Fibre Channel
Standard SNMP applications For information, refer to the <i>Brocade MIB Reference Manual</i> .	Ethernet connection	IP over Fibre Channel
Management server For more information, refer to the <i>Brocade Fabric OS Procedures Guide</i> and the <i>Brocade Fabric OS Reference Manual</i> .	Ethernet connection	Native in-band interface (over HBA only)
Brocade SCSI Enclosure Services For more information, refer to the <i>Brocade SES User's Guide</i> .	Not supported	SCSI over Fibre Channel

Maintaining the SilkWorm 3250/3850

The SilkWorm 3250/3850 does not require any regular physical maintenance; it was designed to minimize the chance of failure.

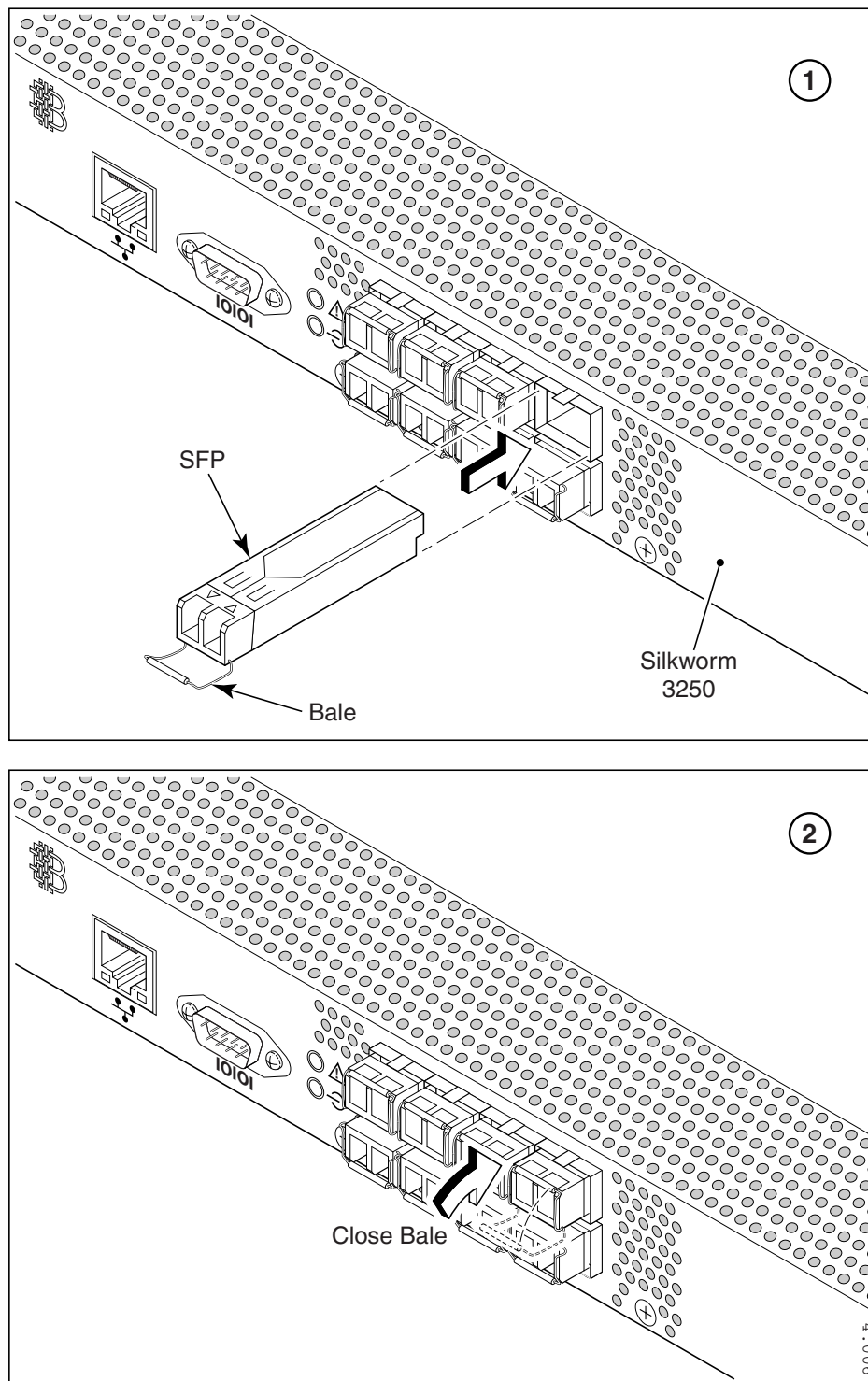
Ensure that the environmental conditions, described in “[System Specifications](#)” on page A-3, are met. This helps prevent failure of the switch due to distress or abuse.

Installing an SFP

If your SilkWorm 3250/3850 did not come with installed SFPs, or you are replacing older ones, follow these instructions to install your SFP:

1. Making sure that the bale (wire handle) is in the unlocked position, place the SFP in the correctly oriented position on the port, as shown in [Figure 4-1](#).
2. Slide the SFP into the port until you feel it click into place and close the bale.

Figure 4-1 Installing an SFP



Removing an SFP

In some cases you might need to remove an SFP transceiver, either because it is no longer needed or because you must replace it.

To remove SFP transceivers:

1. Press and hold the cable release, as shown in [Figure 4-2](#).
2. Remove the cable from the transceiver.
3. Pull the bale (wire handle) to release the transceiver.
4. Grasping it by the bale, gently but firmly pull the transceiver out of the port.

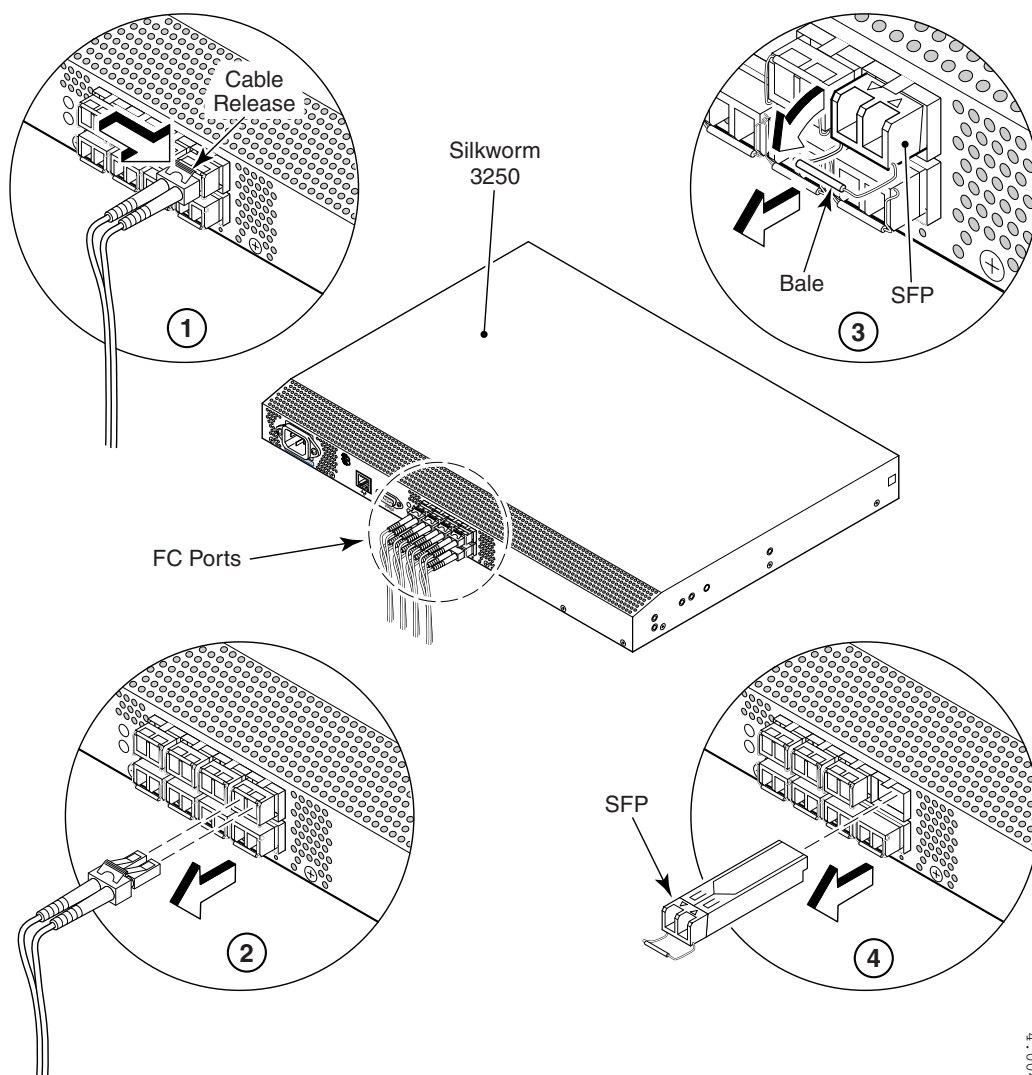


Caution

If the SFP you are removing does not have a bale, use a small implement such as a screwdriver to press the release trigger beneath the port. Non-baled SFPs can be damaged by the removal process and are not recommended. Refer to the *Brocade Compatibility Matrix* for a list of supported SFPs and devices.

5. Repeat this procedure for the remaining ports as required.

Figure 4-2 Removing an SFP



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Diagnostic Tests

In addition to POST, Fabric OS includes diagnostic tests to help troubleshoot the hardware and the firmware. This includes tests of internal connections and circuitry, fixed media, and the transceivers and cables in use.

The tests are implemented by command, either through a telnet session or through a terminal set up for a serial connection to the switch. Some tests require the ports to be connected by external cables, to allow diagnostics to verify the serializer/deserializer interface, transceiver, and cable.

All diagnostic tests are run at link speeds of both 1 Gb/sec and 2 Gb/sec.



Caution

Diagnostic tests can temporarily lock the transmit and receive speed of the links during diagnostic testing.

For information about specific diagnostic tests, refer to the *Brocade Fabric OS Procedures Guide*.

Product Specifications

This appendix provides the following information:

- [“Data Transmission Ranges” on page A-1](#)
- [“Fibre Channel Port Specifications” on page A-2](#)
- [“Serial Port Specifications” on page A-2](#)
- [“Regulatory Compliance” on page A-5](#)
- [“Supported HBAs” on page A-3](#)
- [“System Specifications” on page A-3](#)
- [“Regulatory Compliance” on page A-5](#)

Data Transmission Ranges

[Table A-1](#) provides the data transmission ranges for different cable types and port speeds.

Table A-1 Laser Data Transmission Ranges

Port Speed	Cable	Short Wavelength	Long Wavelength
1 Gb/sec	50μ	500 m. (1,640 ft.)	n/a
1 Gb/sec	62.5μ	300 m. (984 ft.)	n/a
1 Gb/sec	9μ	n/a	10 km (6.2 miles)
2 Gb/sec	50μ	300 m. (984 ft.)	n/a
2 Gb/sec	62.5μ	150 m. (492 ft.)	n/a
2 Gb/sec	9μ	n/a	10 km (6.2 mi) without a Brocade Extended Fabrics license; 50 to 100 km with a Brocade Extended Fabrics license

Fibre Channel Port Specifications

The Fibre Channel ports in the SilkWorm 3016 are compatible with SWL and LWL SFP transceivers. The strength of the signal is determined by the type of transceiver in use.

The ports meet all required safety standards. For more information about these standards, see [“Regulatory Compliance” on page A-5](#).

The ports are capable of operating at 2.125 Gb/sec or 1.0625 Gb/sec, and are able to autosense the highest speed of which all attached devices are capable.

Serial Port Specifications

The serial port is located on the port side of the switch. It is a three-wire RS-232 port with a DB-9 male connector, designed to connect to a DTE port.



Note

To provide dust and ESD protection, keep the safety plug on the serial port whenever the port is not in use.

The serial port can be used to connect to a computer workstation to configure the switch IP address without connecting to the fabric. The serial port's parameters are 9600 baud, 8 data bits, no parity, 1 stop bit, and no flow control.

The port requires a straight (extension) serial cable with a female 9-pin subminiature-D connector. Only pins 2, 3, and 5 are supported.

Supported SFPs

SFPs that have been tested and are known to work with the SilkWorm 3250/3850 are shown in [Table A-2](#). Use only SFPs that are tested and supported. Do not use non-supported SFPs, as these can affect switch operability. They might not fit correctly and could void your warranty.

When ordering from Brocade, the package can contain either brand of qualified SFP. Refer to the *Brocade Compatibility Matrix* for a list of supported SFPs and devices.

Table A-2 SilkWorm 3250/3850 Supported SFPs

Media and Type	Manufacturer's Part Number
SWL Digital Diagnostic	Finisar FTRJ-8519P1BCL
	Infineon V23848-M305-C56
SWL N/A	Foxconn HP27542-FC2
LWL Digital Diagnostic	Finisar FTRJ1319P1BCL
	Infineon V23848-M15-C56

Supported HBAs

HBAs that have been tested and are known to work with the SilkWorm 3250/3850 are shown in [Table A-3](#). Refer to the *Brocade Compatibility Matrix* for a list of supported SFPs and devices.

Table A-3 SilkWorm 3250/3850 Supported HBAs

Brand	Models
Emulex	LP952, LP7000, LP8000, LP9000, LP9002L
Q-Logic	QLA 2100, QLA 2200, QLA 2202, QLA 2300, QLA 2312, cPCI
JNI	FC64-1063, FCI-1063, FCE-6410, FCE-6460
Agilent	HHBA-5221A, A5158A, A6685A, A6795A, D8602B, CPQ64

System Specifications

[Table A-4](#) lists the system specifications for the SilkWorm 3250/3850.

Table A-4 General Specifications

Specification	Description
Configurable port types	F_Port, FL_Port, and E_Port
System architecture	Nonblocking shared-memory switch
System processor	PPC405GP, 200 MHz CPU
ANSI Fibre Channel protocol	FC-PH (Fibre Channel Physical and Signalling Interface standard)
Modes of operation	Fibre Channel Class 2, Class 3, Class F
Fabric initialization	Complies with FC-SW 5.0

Table A-4 General Specifications (Continued)

FC-IP (IP over Fibre Channel)	Complies with FC-IP 2.3 of FCA profile
Aggregate switch I/O bandwidth	64 Gb/sec if all 16 ports running at 2 Gb/sec, full duplex
Port-to-port latency	Less than 2 microseconds with no contention (destination port is free)
EMC (electromagnetic compatibility)	<p>Emissions</p> <p>An operating SilkWorm 3250/3850 conforms to the emissions requirements specified by the following regulations:</p> <ul style="list-style-type: none"> • FCC Rules & Regulations, Part 15 subpart B, Class A • CISPR22 Class A • EN55022 Class A • VCCI Class A ITE • AS/NZS 3548 Class A • CNS13438 Class A • ICES-003 Class A <p>Immunity</p> <ul style="list-style-type: none"> • IEC 61000-4-2 Severity Level 3 for Electrostatic Discharge • IEC 61000-4-3 Severity Level 3 for Radiated Fields • IEC 61000-4-4 Severity Level 3 for Fast Transients • IEC 61000-4-5 Severity Level 3 for Surge Voltage • IEC 61000-4-6 Conducted Emissions • IEC 61000-4-11 Voltage Variations

Regulatory Compliance

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 the 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

Korean RRL EMC Statement

사용자 안내문 : A 급기기

이기는 업무용으로 전자파 적합등록을 받은 기기 이오니, 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

Taiwan BSMI EMC Statement

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

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.

この装置は、情報処理装置等電波障害自主規制協議会（V C C I）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

CE Statement



Warning

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

The standards compliance label on the SilkWorm 3250/3850 contains the CE mark which indicates that this system conforms to the provisions of the following European Council directives, laws, and standards:

- Electromagnetic Compatibility (EMC) Directive 89/336/EEC and the Complementary Directives 92/31/EEC and 93/68/EEC.
- Low Voltage Directive (LVD) 73/23/EEC and the Complementary Directive 93/68/EEC.
- EN50082-2/EN55024:1998 (European Immunity Requirements)
 - EN61000-3-2
 - EN61000-3-3/IEIDA (European and Japanese Harmonics Spec)

Canadian Requirements

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations, ICFS-003.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada, NMB-003.

Laser Compliance

This equipment contains Class 1 laser products, and complies with FDA Radiation Performance Standards, 21 CFR Subchapter J and the international laser safety standard IEC 825-2.



Caution

Use only optical transceivers that are qualified by Brocade Communications Systems and comply with the FDA Class 1 radiation performance requirements defined in 21CFR Subchapter J, and with IEC 825-1. Optical products that do not comply with these standards may emit light that is hazardous to the eyes

RTC Battery



Warning

Do not attempt to replace the RTC battery. There is danger of explosion if the battery is incorrectly replaced or disposed of. Contact your switch supplier if the clock begins to lose time.

Electrical Safety



Warning

This switch may have more than one power cord. To reduce the risk of electric shock, disconnect both power cords before servicing.



Warning

Connect the power cords only to a grounded outlet.
Apparaten skall an slutas till jordat nattuag.



**Warning
(Norway Only)**

This product is designed for an IT power system with phase-to-phase voltage 230V. After operation of the protective device, the equipment is still under voltage if it is connected to an IT power system.

Regulatory Certifications

Table A-5 lists the safety and EMC (electromagnetic compatibility) specifications for which the SilkWorm 3250/3850 is certified.

Table A-5 SilkWorm 3250/3850 Regulatory Certifications

Country	Safety Specification	EMC Specification
Canada	CSA 22.2 No. 60950 Third Ed.	ICES-003 Class A
United States	UL 60950 Third Ed., Info. Tech. Equip.	FCC Part 15, Subpart B, (CFR title 47) Class A
Japan	IEC 60950+A1+A2+A3+A4+A11	VCCI V-3/2000.04, Class A
International	IEC 60950+A1+A2+A3+A4+A11	CISPR22 Class A
Norway	IEC 60950+A1+A2+A3+A4+A11 (NEMKO CB Report)	
European Union (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom)	EN 60950:92+A1:93+A2:93+A3:95+A4:96+A11:97 73/23/EEC TUV (Germany only)	89/336/EEC EN 55022:1998 Class A EN 55024 (Immunity) EN60825-1:1994/A11, -2 EN 61000-4-2 Severity Level 3 for Electrostatic Discharge EN 61000-4-3 Severity Level 3 for Radiated Fields EN 61000-4-4 Severity Level 3 for Electrical Fast Transients EN 61000-4-5 Severity Level 3 for Surge Voltage EN 61000-4-6 Conducted Emissions EN 61000-4-8 Magnetic Fields EN 61000-4-11 Line Interruption
Australia and New Zealand		AS/NZS 3548:1995 Class A (radio interference)

Glossary

G

A

- arbitrated loop** A shared 100 Mb/sec 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.

B

- backup FCS switch** Backup fabric configuration server switch. The switch or switches assigned as backup in case the primary FCS switch fails. *See also* [FCS switch](#), [primary FCS switch](#).
- boot flash** Flash (temporary) memory that stores the boot code and boot parameters.

C

- 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](#).
- CLI** Command line interface. Interface that depends entirely on the use of commands, such as through telnet or SNMP, and does not involve a GUI.
- compact flash** Flash (temporary) memory that is used in a manner similar to hard disk storage. It is connected to a bridging component which connects to the PCI bus of the processor. Not visible within the processor's memory space.
- Configuration** The way in which a system is set up. Can refer to hardware or software.
- Hardware:** The number, type, and arrangement of components that make up a system or network.
- Software:** The set of parameters that guide switch operation. Can include general system parameters, IP address information, domain ID, and other information. Modifiable by any login with administrative privileges.
- Can also refer to a set of zones. *See also* [zone configuration](#).

D

domain ID Unique identifier for all switches in a fabric, used in routing frames. Usually automatically assigned by the principal switch, but can be assigned manually. The domain ID for a SilkWorm switch can be any integer between 1 and 239.

E

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](#).

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* [zone configuration](#).

end-to-end flow control Governs flow of class 1 and 2 frames between N_Ports.

F

F_Port Fabric port. A port that is able to transmit under fabric protocol and interface over links. Can be used to connect an N_Port to a switch. *See also* [FL_Port](#), [Fx_Port](#).

fabric A Fibre Channel network containing two or more switches in addition to hosts and devices. Can also be referred to as a “switched fabric”. *See also* [SAN](#), [topology](#).

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

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.

FCS switch Fabric configuration server switch. One or more designated SilkWorm switches that store and manage the configuration and security parameters for all switches in the fabric. FCS switches are designated by WWN, and the list of designated switches is communicated fabric-wide. *See also* [backup FCS switch](#), [primary FCS switch](#).

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](#).

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. Brocade's routing protocol for Fibre Channel switches.

Fx_Port A fabric port that can operate as either an F_Port or FL_Port. *See also* [F_Port](#), [FL_Port](#).

G

gateway 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.

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.

Gb/sec Gigabits per second (1,062,500,000 bits/second).

H

HBA Host bus adapter. The interface card between a server or workstation bus and the Fibre Channel network.

I

integrated fabric The fabric created by connecting multiple SilkWorm switches with multiple ISL cables, and configuring the switches to handle traffic as a seamless group.

ISL Interswitch link. A Fibre Channel link from the E_Port of one switch to the E_Port of another. *See also* [E_Port](#).

ISL trunking The distribution of traffic over the combined bandwidth of multiple ISLs. A set of trunked ISLs is called a "trunking group", and the ports in a trunking group are called "trunking ports". *See also* [master port](#).

isolated E_Port An E_Port that is online but not operational due to overlapping domain IDs or nonidentical parameters (such as E_D_TOVs). *See also* [E_Port](#).

L

LED Light Emitting Diode. Used to indicate status of elements on switch.

link As applies to Fibre Channel, a physical connection between two ports, consisting of both transmit and receive fibres. *See also* [circuit](#).

LWL Long wavelength. A type of fiber optic cabling that is based on 1300nm lasers and supports link speeds up to 2 Gb/sec. Can also refer to the type of transceiver. *See also* [SWL](#).

M

master port The port that determines the routing paths for all traffic flowing through a trunking group. One of the ports that is 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.

N

node A Fibre Channel device that contains an N_Port or NL_Port.

node name The unique identifier for a node, communicated during login and port discovery.

P

point-to-point A Fibre Channel topology that employs direct links between each pair of communicating entities. *See also* [topology](#).

POST Power On Self-Test. A series of tests run by a switch after it is powered on.

primary FCS switch Primary fabric configuration server switch. The switch that actively manages the configuration and security parameters for all switches in the fabric. *See also* [backup FCS switch](#), [FCS switch](#).

Q

quad A group of four adjacent ports that share a common pool of frame buffers.

S

SAN Storage area network. A network of systems and storage devices that communicate using Fibre Channel protocols. *See also* [fabric](#).

SDRAM The main memory for the switch.

SFP Small form factor pluggable. A type of transceiver used to convert signals between fiber optic cables and switches.

SilkWorm The brand name for the Brocade family of switches.

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

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.

switch Hardware that routes frames according to Fibre Channel protocol and is controlled by software.

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.

SWL Short wavelength. A type of fiber optic cabling that is based on 850nm lasers and supports link speeds up to 2 Gb/sec. Can also refer to the type of transceiver. *See also* [LWL](#).

T

throughput The rate of data flow achieved within a cable, link, or system. Usually measured in bps (bits per second).

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.

trap (SNMP) The message sent by an SNMP agent to inform the SNMP management station of a critical error. *See also* [SNMP](#).

trunking *See* [ISL trunking](#).

U

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.

W

workstation A computer used to access and manage the fabric. Can also be referred to as a “management station” or “host”.

WWN World Wide Name. An identifier that is unique worldwide. Each entity in a fabric has a separate WWN.

Z

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.

zone configuration A specified set of zones. Enabling a configuration enables all zones in that configuration. *See also* [enabled zone configuration](#).

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