

Extreme SLX 9850-4 Router Hardware Installation Guide

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Preface

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Document conventions

The document conventions describe text formatting conventions, command syntax conventions, and important notice formats used in Extreme technical documentation.

Notes, cautions, and warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE
A Note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION
An Attention statement indicates a stronger note, for example, to alert you when traffic might be interrupted or the device might reboot.

 **CAUTION**
A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.

 **DANGER**
A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Text formatting conventions

Text formatting conventions such as boldface, italic, or Courier font may be used to highlight specific words or phrases.

Format	Description
bold text	Identifies command names.
	Identifies keywords and operands.
	Identifies the names of GUI elements.
<i>italic text</i>	Identifies text to enter in the GUI.
	Identifies emphasis.
	Identifies variables.
Courier font	Identifies document titles.
	Identifies CLI output.

Format	Description
	Identifies command syntax examples.

Command syntax conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
<i>italic text</i>	Identifies a variable.
value	In Fibre Channel products, a fixed value provided as input to a command option is printed in plain text, for example, --show WWN.
[]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{ x y z }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options. In Fibre Channel products, square brackets may be used instead for this purpose.
x y	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, <i>member</i> [<i>member</i> ...].
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

Extreme resources

Visit the Extreme website to locate related documentation for your product and additional Extreme resources.

White papers, data sheets, and the most recent versions of Extreme software and hardware manuals are available at www.extremenetworks.com. Product documentation for all supported releases is available to registered users at www.extremenetworks.com/support/documentation.

Document feedback

Quality is our first concern at Extreme, and 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.

You can provide feedback in two ways:

- Use our short online feedback form at <http://www.extremenetworks.com/documentation-feedback-pdf/>
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Provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.

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If you require assistance, contact Extreme Networks using one of the following methods:

- [GTAC \(Global Technical Assistance Center\)](#) for immediate support
 - Phone: 1-800-998-2408 (toll-free in U.S. and Canada) or +1 408-579-2826. For the support phone number in your country, visit: www.extremenetworks.com/support/contact.
 - Email: support@extremenetworks.com. To expedite your message, enter the product name or model number in the subject line.
- [GTAC Knowledge](#) - Get on-demand and tested resolutions from the GTAC Knowledgebase, or create a help case if you need more guidance.
- [The Hub](#) - A forum for Extreme customers to connect with one another, get questions answered, share ideas and feedback, and get problems solved. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.
- [Support Portal](#) - Manage cases, downloads, service contracts, product licensing, and training and certifications.

Before contacting Extreme Networks for technical support, have the following information ready:

- Your Extreme Networks service contract number and/or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any action(s) already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

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Supported hardware

The following tables list the major field-replaceable units (FRUs), and rack mount kits supported for the Brocade SLX 9850-4 and the .

NOTE

This section only lists the system components that are software-dependent and the rack kits. It is not a comprehensive list of field-replaceable units (FRUs) or accessory kit items.

TABLE 1 Brocade SLX 9850 chassis bundles

Part number	Long description	Introduced OS	Currently supported
BR-SLX9850-8-BND-AC	Brocade SLX 9850 8-slot chassis with 1 management module, 5 switch fabric modules, 5 3000W AC power supplies, 3 fan modules, and accessory kit. Power cord not included	SLX-OS 16r.1.00	Yes
BR-SLX9850-8-BND-DC	Brocade SLX 9850 8-slot chassis with 1 management module, 5 switch fabric modules, 5 3000W DC power supplies, 3 fan modules, and accessory kit. Power cord not included	SLX-OS 16r.1.00	Yes

TABLE 2 Brocade SLX 9850-4chassis bundles

Part number	Long description	Introduced OS	Currently supported
BR-SLX9850-4-BND-AC	Brocade SLX 9850 4-slot chassis with 1 management module, 5 switch fabric modules, 3 3000W AC power supplies, 3 fan modules, and accessory kit. Power cord not included	SLX-OS 16r.1.00	Yes
BR-SLX9850-4-BND-DC	Brocade SLX 9850 4-slot chassis with 1 management module, 5 switch fabric modules, 3 3000W DC power supplies, 3 fan modules, and accessory kit. Power cord not included	SLX-OS 16r.1.00	Yes

TABLE 3 Brocade SLX 9850-4chassis bundle

Part number	Long description	Introduced OS	Currently supported
BR-SLX9850-4-BND-AC	Brocade SLX 9850 4-slot chassis with 1 management module, 5 switch fabric modules, 3 3000W AC power supplies, 3 fan modules, and accessory kit. Power cord not included	SLX-OS 16r.1.00	Yes

TABLE 4 Brocade SLX 9850 management module

Part number	Long description	Introduced OS	Currently supported
BR-SLX9850-MM	Brocade SLX 9850 management module for 4-slot and 8-slot systems, includes 16GB RAM, 2 internal Solid State Drives, 4-Core Intel CPU, 2 USB 3.0	SLX-OS 16r.1.00	Yes

TABLE 4 Brocade SLX 9850 management module (continued)

Part number	Long description	Introduced OS	Currently supported
	ports, 2 RJ-45 console ports, 10GbE Service port and 1GbE Management port		
BR-SLX9850-MM	Brocade SLX 9850 management module for 4-slot and 8-slot systems, includes 32GB RAM, 2 internal Solid State Drives, 4-Core Intel CPU, 2 USB 3.0 ports, 2 RJ-45 console ports, 10GbE Service port and 1GbE Management port	SLX-OS 17r.2.00	Yes

TABLE 5 Brocade SLX 9850-4 switch fabric module

Part number	Long description	Introduced OS	Currently supported
BR-SLX9850-4-SFM	Brocade SLX 9850 switch fabric module for 4-slot chassis	SLX-OS 16r.1.00	Yes

TABLE 6 Supported Brocade SLX 9850 interface modules

Part number	Long description	Introduced OS	Currently supported
BR-SLX9850-10Gx72S-D	Brocade SLX 9850 Brocade SLX 9850 72-port 10 GbE/1 GbE (D) interface module with IPv4/IPv6 hardware support. Requires SFP+ optics for 10 GbE connectivity and SFP optics for 1 GbE connectivity. Supports 750K MAC, 256K IPv4 routes and 64K IPv6 routes.	SLX-OS 16r.1.01	Yes
BR-SLX9850-10Gx72S-M	Brocade SLX 9850 Brocade SLX 9850 72-port 10 GbE/1 GbE (M) interface module with IPv4/IPv6/MPLS hardware support. Requires SFP+ optics for 10 GbE connectivity and SFP optics for 1 GbE connectivity. Supports 750K MAC, 256K IPv4 routes and 64K IPv6 routes.	SLX-OS 16r.1.00	Yes
BR-SLX9850-10Gx72S-N	Brocade SLX 9850 72-port 10 GbE/1 GbE interface module. Same features and specifications as BR-SLX9850-10 Gx72S-D, with the addition of Network Packet Broker (NPB) support.	SLX-OS 16r.1.00	Yes
BR-SLX9850-100Gx36CQ-D	Brocade SLX 9850 Brocade SLX 9850 36-port 100 GbE, 60-port 40 GbE, or 240-port 10 GbE flex-speed (D) interface module with IPv4/IPv6 hardware support. Requires QSFP28, QSFP+ optics & 40 GbE to 10 GbE breakout (10 GbE) connectivity. Supports 750K MAC, 256K IPv4 & 64K IPv6 routes.	SLX-OS 16r.1.01	Yes
BR-SLX9850-100Gx36CQ-M	Brocade SLX 9850 36-port 100 GbE, 60-port 40 GbE, or 240-port 10 GbE flex-speed (M) interface module with IPv4/IPv6/MPLS hardware support. Requires QSFP28, QSFP+ optics & 40 GbE to 10 GbE breakout (10 GbE) connectivity. Supports 750K MAC, 256K IPv4 & 64K IPv6 routes.	SLX-OS 16r.1.00	Yes
BR-SLX9850-100Gx36CQ-N	Brocade SLX 9850 36-port 100 GbE, 60-port 40 GbE, or 240-port 10 GbE flex-speed interface module. Same features and specifications as BR-SLX9850-100Gx36CQ-D, with the addition of Network Packet Broker (NPB) support.	SLX-OS 16r.1.00	Yes

The following table is a general reference to the types of transceivers supported on interface modules used by the device.

TABLE 7 Supported transceivers and cables

Interface module	Transceiver type and description	Introduced OS	Currently supported
BR-SLX9850-100Gx36CQ-M (36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed) interface module	100G-QSFP28-SR4 - 100 GbE QSFP28 optic (MTP 1x12), SR4, for distances up to 100 m over MMF	SLX-OS 16r.1.00	Yes
	100G-QSFP28-LR4-10KM - 100 GbE QSFP28 optic (LC), LR4, for distances up to 10 km over SMF	SLX-OS 16r.1.00	Yes
	100G-QSFP28-LR4L-2KM - 100 GbE QSFP28 optic (LC), LR4-Lite, for distances up to 2 km over SMF	SLX-OS 16r.1.00	Yes
	100G-QSFP28-CWDM4-2KM - 100 GbE QSFP28 optic (LC), CWDM4, for distances up to 2 km over SMF	SLX-OS 16r.1.00	Yes
	100G-QSFP28-LR4-LP-10KM - 100 GbE QSFP28 optic (LC), LR4 low power, for distances up to 10 km over SMF	SLX-OS 16r.1.00	Yes
	40G-QSFP-SR4 - 40GBASE-SR4 QSFP+ optic (MTP 1x8 or 1x12), 100m over MMF, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-SR4 - 40GBASE-SR4 QSFP+ optic (MTP 1x8 or 1x12), 100m over MMF, compatible with 10GBASE-SR, 10G breakout-capable, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-ESR4 - 40GBASE-SR4 QSFP+ optic (MTP 1x8 or 1x12), 300m over MMF, compatible with 10GBASE-SR, 10G breakout-capable, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-LR4 - 40GBase-LR4 QSFP+ optic (LC), for up to 10km over SMF, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-QSFP-C-0101 - 40GE Direct Attached QSFP+ to QSFP+ Active Copper cable, 1m, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-QSFP-C-0301 - 40GE Direct Attached QSFP+ to QSFP+ Active Copper cable, 3m, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-QSFP-C-0501 - 40GE Direct Attached QSFP+ to QSFP+ Active Copper cable, 5m, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-QSFP-AOC-1001 - 40GE Direct Attached QSFP+ to QSFP+ Active Optical Cable, 10m, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-QSFP-C-0101 - 4x10GE Direct Attached QSFP+ to 4 SFP+ Active Copper Breakout Cable, 1m, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-4SFP-C-0301 - 4x10GE Direct Attached QSFP+ to 4 SFP+ Active Copper Breakout Cable, 3m, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-4SFP-C-0501 - 4x10GE Direct Attached QSFP+ to 4 SFP+ Active Copper Breakout Cable, 5m, 1-pack	SLX-OS 16r.1.00	Yes
	40G-QSFP-4SFP-AOC-1001 - 4x10GE Direct Attached QSFP+ to 4 SFP+ Active Optical Breakout Cable, 10m, 1-pack	SLX-OS 16r.1.00	Yes
BR-SLX9850-10Gx72S-M (72-port 10GbE/1GbE) interface module	10G-SFP-SR - 10GBASE-SR, SFP+ optic (LC), target range 100m over MMF, 1-pack	SLX-OS 16r.1.00	Yes
	10G-SFP-SR - 10GBASE-SR, SFP+ optic (LC), target range 300m over MMF	SLX-OS 16r.1.00	Yes
	10G-SFP-SR-8 - 10GBASE-SR, SFP MMF LC CONNECTOR 8-PACK	SLX-OS 16r.1.00	Yes

TABLE 7 Supported transceivers and cables (continued)

Interface module	Transceiver type and description	Introduced OS	Currently supported
	10G-SFPP-LR - 10GBASE-LR, SFP+ optic (LC), for up to 10km over SMF	SLX-OS 16r.1.00	Yes
	10G-SFPP-LR-8 - 10GBASE-LR,SFPP SMF LC CONNECTOR 8-PACK	SLX-OS 16r.1.00	Yes
	10G-SFPP-ER - 10GBASE-ER SFP+ optic (LC), for up to 40km over SMF	SLX-OS 16r.1.00	Yes
	10G-SFPP-TWX-0101 - DIRECT ATTACHED SFPP ACTIVE COPPER,1M,1-PACK	SLX-OS 16r.1.01	Yes
	10G-SFPP-TWX-0108 - DIRECT ATTACHED SFPP COPPER,1M,8-PACK	SLX-OS 16r.1.01	Yes
	10G-SFPP-TWX-0301 - DIRECT ATTACHED SFPP ACTIVE COPPER,3M,1-PACK	SLX-OS 16r.1.01	Yes
	10G-SFPP-TWX-0308 - DIRECT ATTACHED SFPP COPPER,3M,8-PACK	SLX-OS 16r.1.01	Yes
	10G-SFPP-TWX-0501 - DIRECT ATTACHED SFPP ACTIVE COPPER,5M,1-PACK	SLX-OS 16r.1.01	Yes
	10G-SFPP-TWX-0508 - DIRECT ATTACHED SFPP COPPER,5M,8-PACK	SLX-OS 16r.1.01	Yes
	E1MG-LX-OM - 1000Base-LX SFP optic, SMF, LC connector, Optical Monitoring Capable	SLX-OS 16r.1.00	Yes
	E1MG-LX-OM-8 - 1000Base-LX SFP optic 8 Pack, SMF, LC connector, Optical Monitoring Capable	SLX-OS 16r.1.00	Yes
	E1MG-SX-OM - 1000Base-SX SFP optic, MMF, LC connector, Optical Monitoring Capable	SLX-OS 16r.1.00	Yes
	E1MG-SX-OM - 1000Base-SX SFP optic, MMF, LC connector, Optical Monitoring Capable	SLX-OS 16r.1.00	Yes
	E1MG-SX-OM-8 - 1000Base-SX SFP optic 8 Pack, MMF, LC connector, Optical Monitoring Capable	SLX-OS 16r.1.00	Yes
	E1MG-BXD - 1000Base-BXD SFP optic SMF, transmits at 1490nm and receives at 1310nm, LC connector,single strand SMF fiber. This optic should only be connected to an E1MG-BXU at the far end.	SLX-OS 16r.1.00	Yes
	E1MG-BXU - 1000Base-BXU SFP optic SMF, transmits at 1310nm and receives at 1490nm, LC connector,single strand SMF fiber. This optic should only be connected to an E1MG-BXD at the far end.	SLX-OS 16r.1.00	Yes
	XBR-000190 - FRU,SFP,1GE COPPER,1-PK, ROHS	SLX-OS 16r.1.00	Yes

TABLE 8 Supported Brocade SLX 9850 power supply modules

Part number	Long description	Introduced OS	Currently supported
XBR-SLX9850-ACPWR-3000	Brocade SLX 9850 AC 3000W power supply for 4-slot and 8-slot chassis, 90-132V, 180-264V AC input	SLX-OS 16r.1.00	Yes
XBR-SLX9850-DCPWR-3000	Brocade SLX 9850 DC 3000W power supply for 4-slot and 8-slot chassis, 48V DC input	SLX-OS 16r.1.01	Yes

TABLE 9 Brocade SLX 9850-4 fan module

Part number	Long description	Introduced OS	Currently supported
XBR-SLX9850-4-FANM	Brocade SLX 9850-4 fan module for 4-slot chassis. Fan module has 2 fans.	SLX-OS 16r.1.00	Yes

TABLE 10 Brocade SLX 9850-4 NEBS kit and spare air filter

Part number	Long description
XBR-SLX9850-4-NEBS-KIT	Brocade SLX 9850 Network Equipment-Building System (NEBS) kit for 4-slot chassis. Includes air filter door, air filter, and cable management kit
XBR-SLX9850-4-FLTR	Brocade SLX 9850 air filter for 4-slot chassis

TABLE 11 Brocade SLX 9850-4 rack mount kits

Part number	Long description
XBR-SLX9850-4-4PRM-KIT	Brocade SLX 9850 four-post rack mounting kit for 4-slot chassis. Includes options for 68.6–78.7 cm (27–31 in.) flush and recessed mounting
XBR-SLX9850-4-2PRM-KIT	Brocade SLX 9850 two-post rack mounting kit for 4-slot chassis. Includes Telco flush and midplane mounting

TABLE 12 Brocade SLX 9850-4 cable management kit

Part number	Long description
XBR-SLX9850-4-CAB	Brocade SLX 9850 Cable Management kit (included in the chassis)

What is new in this document

On October 30, 2017, Extreme Networks, Inc. acquired the SLX-OS product line from Brocade Communications Systems, Inc. This transitional release includes references to both companies.

Device Overview

- Device slot numbering: port-side..... 17
- Device slot numbering: nonport-side..... 18
- Device management options.....20

Device slot numbering: port-side

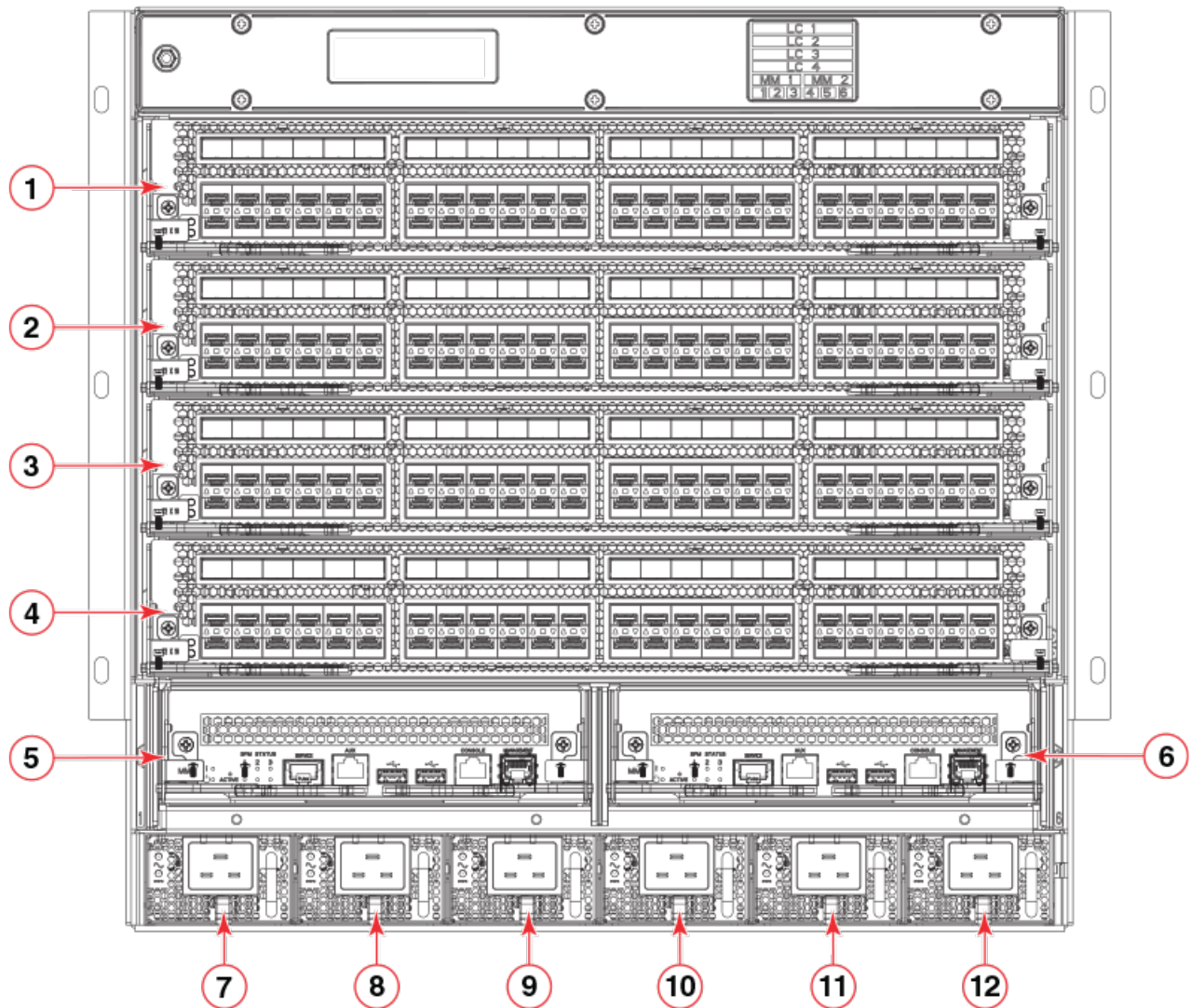
The Brocade SLX 9850-4 contains 4 slots for interface modules. Each slot is 1.5 rack units (RUs) in height. A maximum of 4 interface modules is supported per chassis.

The serial number for the device is located at the top of the chassis.

The following figure shows the device slot numbering and port side view of the Brocade SLX 9850-4. The callouts in the figure correspond to the numbering of each router component in the chassis when you enter the **show slots** command.

For a list and description of management module ports, refer to [Front panel and port description](#) on page 87. For a list and description of interface module ports, refer to [Front panel and port description](#) on page 95.

FIGURE 1 Port side of the Brocade SLX 9850-4

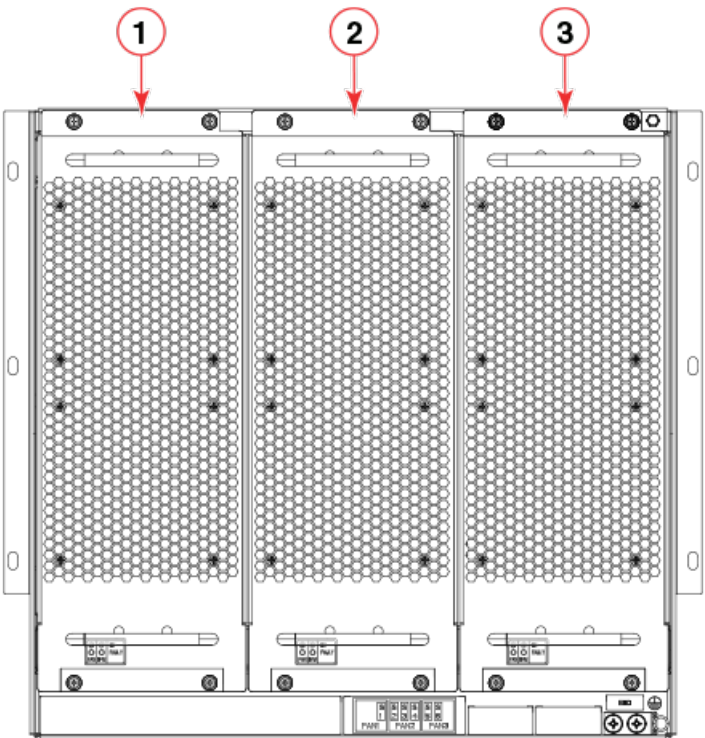


- | | |
|-----------------------------|-------------------------|
| 1. Interface module slot 1 | 7. Power supply slot 1 |
| 2. Interface module slot 2 | 8. Power supply slot 2 |
| 3. Interface module slot 3 | 9. Power supply slot 3 |
| 4. Interface module slot 4 | 10. Power supply slot 4 |
| 5. Management module slot 1 | 11. Power supply slot 5 |
| 6. Management module slot 2 | 12. Power supply slot 6 |

Device slot numbering: nonport-side

The following figure shows the nonport-side view of the Brocade SLX 9850-4. The callouts in the figure correspond to the numbering of the fan modules when you enter the **show slots** command.

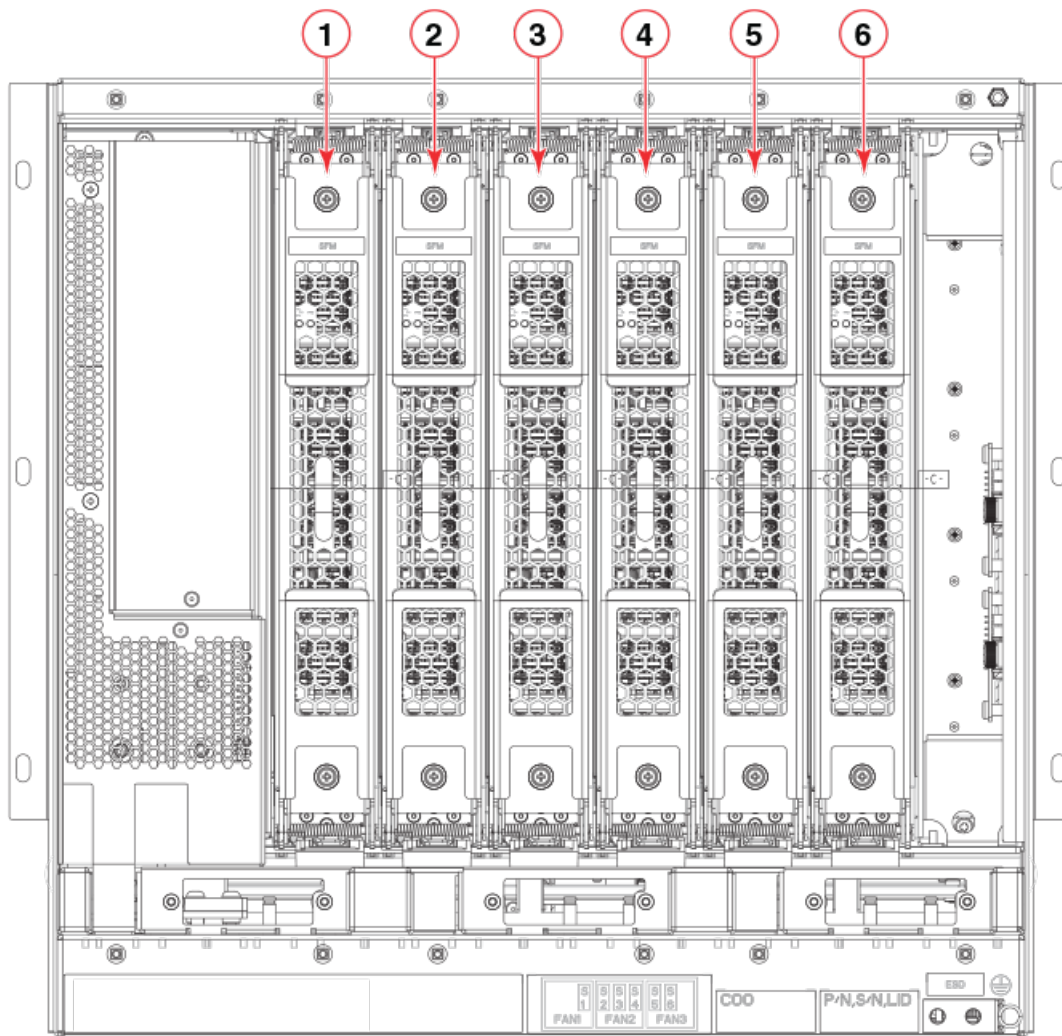
FIGURE 2 Nonport side of the Brocade SLX 9850-4



- 1. Fan module 1
- 2. Fan module 2
- 3. Fan module 3

The switch fabric modules are located behind the fans. There are six slots for the switch fabric modules. Numbering for the modules goes from left to right, with 1 on the far left and 6 on the far right.

FIGURE 3 Switch Fabric Modules shown with fans removed for the Brocade SLX 9850-4

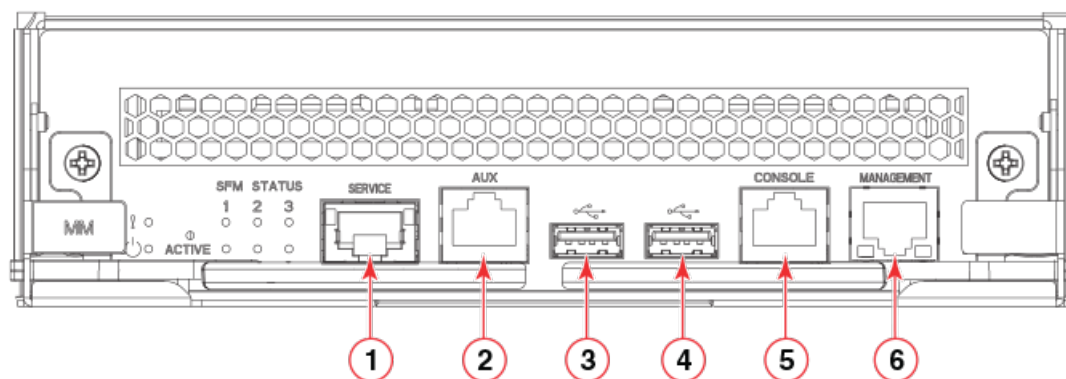


1. SFM 1
2. SFM 2
3. SFM 3

4. SFM 4
5. SFM 5
6. SFM 6

Device management options

Use the serial ports to manage your device. The serial ports are located on the management module. The following figure shows the serial console ports. Use the console port for device management.

FIGURE 4 Management module front panel

- | | |
|---------------------------------------|--|
| 1. Service Ethernet port, 10G/1G/100M | 4. USB port |
| 2. Auxiliary console port | 5. Console port |
| 3. USB port | 6. Management Ethernet port, 1G/100M/10M |

Preparing for the Installation

• Safety precautions.....	23
• Facility requirements	24
• Time and items required for installation.....	25
• Quick installation checklists.....	26
• Unpacking the shipping carton.....	28
• Shipping carton contents.....	29

Safety precautions

When using this product, observe all danger, caution, and attention notices in this manual. The safety notices are accompanied by symbols that represent the severity of the safety condition

Refer to [Cautions and Danger Notices](#) on page 149 at the end of this guide for translations of safety notices for this product.

General precautions



DANGER

The procedures in this manual are for qualified service personnel.



DANGER

Before beginning the installation, see the precautions in “Power precautions.”



CAUTION

Changes or modifications made to this device that are not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.



CAUTION

Disassembling any part of the power supply and fan assembly voids the warranty and regulatory certifications. There are no user-serviceable parts inside the power supply and fan assembly.



CAUTION

Make sure the airflow around the front, and back of the device is not restricted.



CAUTION

Never leave tools inside the chassis.



CAUTION

Use the screws specified in the procedure. Using longer screws can damage the device.

ESD precautions



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megaohm resistor.

Lifting precautions



DANGER

Use safe lifting practices when moving the product.



DANGER

A fully populated Brocade SLX 9850-4 weighs approximately 137.4 kg (303 lb) and requires a hydraulic or assisted lift to install it.

Laser precautions



DANGER

All fiber-optic interfaces use Class 1 lasers.



DANGER

Laser Radiation. Do Not View Directly with Optical Instruments. Class 1M Laser Products.



DANGER

Use only optical transceivers that are qualified by Brocade Communications Systems, Inc. and comply with the FDA Class 1 radiation performance requirements defined in 21 CFR Subchapter I, and with IEC 60825 and EN60825. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.

Facility requirements

Before installing the device, be sure the following facility requirements are met.

TABLE 13 Facility requirements

Type	Requirements
Device specifications	Ensure that the facility can accommodate system, power, and environmental specifications for this device as outlined in the Brocade SLX 9850 Router Technical Specifications on page 137 .
Electrical	Ensure that there are dedicated electrical branch circuits with the following characteristics: - Protected by a circuit breaker in accordance with local electrical codes - Supply circuit, line fusing, and wire size adequate to the electrical rating on the chassis nameplate - Location close to the chassis and easily accessible - Grounded outlets installed by a licensed electrician and compatible with the power cords
Thermal	Ensure that the air intake and exhaust vents have a minimum of 5.1 cm (2 in.) of airspace. Ensure that the air temperature on the air intake side is less than 40°C (104°F) during operation.
Rack	Plan to install the device with the port side facing the air-intake aisle. Ensure that the following amount of space is available in the rack: - Brocade SLX 9850-4: 10 rack unit (RU) height x 17.22 inches (43.7 cm) width x 30 inches (76.2 cm) depth. Ensure that the rack meets these additional requirements: - All equipment in the rack is grounded through a reliable branch circuit connection. - Additional weight of chassis will not exceed the rack's weight limits - The rack is secured to ensure stability in case of unexpected movement.

NOTE

This device is suitable for connection to the Central Office and where NEC requirements apply. Additionally, it may be installed in either a Common Bonding Network (CBN) or Isolated Bonding Network (IBN).

Time and items required for installation

You can set up and install the device in either a two- or four-post rack. Refer to [Supported hardware](#) on page 11 for applicable rack mount kits.

The following table describes the main installation and setup tasks and the estimated time required for each, and the items required to complete the task for a device.

These time estimates assume a prepared installation site and appropriate power and network connectivity.

TABLE 14 Installation tasks, time, and items required

Installation task	Time estimate	Items required
Site preparation and unpacking the device	30 minutes	#2 Phillips screwdriver. Pallet jack. Tinsnips or strapping cutter (used to cut carton straps). Hydraulic lift or assisted lift, able to raise to a minimum of 140 cm (55 in.), with a minimum capacity of 212 lb (96.2 kg) for the Brocade SLX 9850-4 To know the weight of your device fully populated with the required interface modules, refer to the Brocade SLX 9850 Router Technical Specifications on page 137 .
Installing rack mount kit	30 minutes	Refer to instructions in Mounting the Device on page 31.
Mounting and securing the device in the rack	30 minutes	Refer to instructions in Mounting the Device on page 31.
Installing power cables and powering on the device	20 minutes	Use the power cables provided in the device accessories kit. Refer to instructions in Providing power to the device on page 58.
Establishing serial connection, logging in to the device, and configuring IP addresses	20 minutes	Requires the following items: - Serial cable provided in the accessory kit. - Workstation computer with a serial port or terminal server port and a terminal emulator application (such as HyperTerminal). - Ethernet IP address for the device.
Installing an Ethernet cable, opening a Telnet session, and configuring the device domain ID, date and time, and additional system parameters. Verify and back up the configuration.	20 minutes	Ethernet cabling (optional) for Telnet access. Refer to Initial Setup and Verification on page 57 for more information.

TABLE 14 Installation tasks, time, and items required (continued)

Installation task	Time estimate	Items required
Installing transceivers as needed	30-60 minutes	SFP+ and QSFP28 optical transceivers as needed. Requires the following optics: - SFP+ optics for 72-port 10GbE/1GbE interface module - QSFP28 for 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module
Attaching fiber-optic cables, cable ties, and cable guides	2-3 hours	Fiber optic cables, cable ties. If 10 GbE speed is used for the 36-port 100 GbE, 60-port 40 GbE, or 240-port 10GbE flex-speed interface module, 40 GbE-to-10 GbE breakouts are required.

Quick installation checklists

This checklists provide a high-level overview of the basic installation process from the planning stage to the point where the device comes online and is ready to be deployed. Completing all the tasks in the suggested order ensures successful installation. Brocade recommends that you print this checklists and take them to the installation site.

Pre-installation tasks

Review all installation requirements ahead of time as part of your site preparation. Careful planning and site preparation ensures seamless installation, especially when installing multiple devices.

TABLE 15 Installation prerequisites

Task	Task details or additional information	Completed
Unpack the device.	Unpack the device as shown in the Unpacking the shipping carton on page 28 . Take an inventory of the hardware components included in your shipment. Refer to Supported hardware on page 11 .	
Gather necessary components and required tools.	Review the time and items required information at the beginning of each chapter to ensure you have gathered all necessary components required for the following installation tasks: Mounting the Device on page 31 Inserting an interface module on page 97	
Review the safety precautions.	Refer to Safety precautions on page 23. For translations, refer to Cautions and Danger Notices on page 149.	
Plan the installation.	Prepare space in your rack for the device and obtain the appropriate rack mount kit. Refer to Mounting options on page 31.	
Review and verify installation requirements.	Verify that the following requirements are met. Refer to Facility requirements on page 24 for everything but the environmental requirements, which are found in the Environmental Requirements section in Brocade SLX 9850 Router Technical Specifications on page 137. - Electrical - Environmental - Rack - Thermal	
Gather network configuration parameters.	IP address:	

TABLE 15 Installation prerequisites (continued)

Task	Task details or additional information	Completed
	- Subnet mask: - Default gateway: - Domain ID: - Time zone:	

Installation and initial configuration

The initial setup includes mounting the device in a rack and completing the configuration tasks necessary to bring the device online and verify the operation.

TABLE 16 Installation and basic system configuration

Task	Task details or additional information	Completed
Mount the device.	Choose the two-post or the four-post rack mounting option. Refer to Mounting options on page 31 .	
Install the interface modules, power supply modules, switch fabric modules, and fan modules.	Refer to Inserting an interface module on page 97, Inserting an AC power supply module on page 108, Inserting a switch fabric module on page 122, and Inserting a fan module on page 117. Refer to Inserting an interface module on page 97, Inserting an AC power supply module on page 108 or Inserting a DC power supply module on page 109, Inserting a switch fabric module on page 122, and Inserting a fan module on page 117.	
Gather all components required for the initial setup.	Refer to Initial Setup and Verification on page 57.	
Provide power to the device.	Refer to Providing power to the device on page 58.	
Attach a management station, establish a serial connection, and change the default passwords (optional).	Refer to Establishing a serial connection on page 63. After completing this task, log in to the serial port to configure the device.	
Set the IP address, subnet mask, and the default gateway IP address.	Use the chassis virtual-ip or chassis virtual-ipv6 command to configure an IP address. For more information, refer to Configuring a static IP address on page 66.	
Establish an Ethernet connection.	By establishing an Ethernet connection, you can complete the device configuration using a serial or Telnet session. Refer to Establishing an Ethernet connection on page 68 for more information.	
Customize the chassis and host names.	Use the switch-attributes chassis-name and switch-attributes host-name commands to change the default router name. For more information, refer to the Customizing the chassis and host names on page 69	
Set the date and time.	- Use the clock set command to set the date and time. - Use the clock timezone command to set the time zone. - After you configure the system time, use commands in NTP configuration mode to synchronize the time with an external NTP server. Refer to Setting the date and time on page 70 for more information. For detailed command information, refer to the <i>Brocade SLX-OS Management Configuration Guide</i> for the Brocade SLX 9850 Router .	
Optional: Configure the DNS service.	Use the ip dns domain-name and, if required, ip dns name-server commands to create DNS server entries. Refer to the <i>Brocade SLX-OS Security Configuration Guide</i> for the Brocade SLX 9850 Router for more information.	
Verify that the device operates correctly.	Check the LEDs to verify operation of module components in the device. Refer to Interpreting management module LEDs on page 75, Interpreting interface module LEDs on page 77, Interpreting power supply module LEDs on page 80, Interpreting fan module LEDs on page 83, and Interpreting switch fabric module LEDs on page 84.	

TABLE 16 Installation and basic system configuration (continued)

Task	Task details or additional information	Completed
	- The following commands can be useful to establish an operational baseline for the device. Refer to the <i>Brocade SLX-OS Monitoring Configuration Guide</i> for the Brocade SLX 9850 Router for more information about the following commands: show chassis show system show slots show linecard show environment fan show environment power show environment sensor show environment temp	
Back up the configuration.	Use the copy running-config command to copy the running configuration to the startup configuration. Refer to the Backing up the configuration on page 73 for more information about this command.	
Optional: Power off the devices.	Disconnect all power cords to the power supplies or switch off the rack power source. Refer to Powering down the device on page 73 for more information.	

Unpacking the shipping carton

Use the following procedure to unpack and install your device. The device is packaged in a cardboard box with foam packing on a wooden pallet.

- Cut the bands that encircle the packing carton.
 - Unpack the device
 - Leave the device on top of the shipping tray and pallet if the device must be transported to the installation location.
- Slide the upper portion of the cardboard shipping box up off the pallet and shipping tray.

NOTE

Save the packing materials in the event you need to return the product.

- Remove the two cardboard inner walls from the sides of the package.
- Remove the accessory tray that is in the center of the upper foam packing.
The tray is in an oblong cardboard box.
- Remove the upper foam packing.
- Remove the front and rear foam pieces from the sides of the device.
- Use a pallet jack or other assisted lift to transport the device to the installation area.

NOTE

When removing the device from the packaging, be careful to not damage the ground lug that is located at the bottom rear of the device.

- Place the device so that the port side (front) has access to intake air.

Shipping carton contents

When unpacking the device, follow the procedures in [Unpacking the shipping carton](#) on page 28. Verify that the contents of the shipping carton are complete. Save the shipping carton and packaging in the event you need to return the shipment.

- The Brocade SLX 9850 device with shipping tray

NOTE

The interface modules are packaged separately while the switch fabric modules are shipped inside the chassis

- Packing foam
- Antistatic plastic
- An accessory kit containing the following items:
 - A serial cable
 - ESD wrist strap
 - SFP extraction tool
 - Cable management kit
 - China-RoHS Hazardous/Toxic Substance statement
 - Brocade documentation web pointer card
 - Power Cord Retainer Kit

NOTE

Power cords are not included.

NOTE

Rack mount kit is not included.

Mounting the Device

• Mounting options.....	31
• Mounting safety precautions.....	31
• Required tools and equipment.....	32
• Device surface preparation.....	32
• Installing a device on a four-post rack.....	32
• Installing a device on a two-post rack.....	39
• Installing an SLX-9850-4 NEBS kit.....	44
• Installing cable management combs	54

Mounting options

You can install the device in the following ways:

- In a four-post EIA rack: You will need an XBR-SLX9850-4-4PRM-KIT four-post rack kit to install the device. This kit includes options for 68.6–78.7 cm (27–31 in.) flush and recessed mounting.
- In a two-post telecommunications (Telco) rack: You will need an XBR-SLX9850-4-2PRM-KIT two-post rack kit to install the device in a two-post Telco rack, flush and middle mounting.

NOTE

Review the Safety Precautions before mounting the device.

Mounting safety precautions

The following precautions specifically apply to mounting the device.



DANGER

Mount the devices you install in a rack as low as possible. Place the heaviest device at the bottom and progressively place lighter devices above.



DANGER

Make sure the rack housing the device is adequately secured to prevent it from becoming unstable or falling over.



DANGER

Do not attempt to lift the chassis. It is extremely heavy. Use a mechanical lifting device to lift the chassis. Four or more people are required to position the unpopulated chassis into the rack.



CAUTION

Make sure the airflow around the front, and back of the device is not restricted.



CAUTION

Do not use the port cover tabs to lift the module. They are not designed to support the weight of the module, which can fall and be damaged.



CAUTION

To prevent damage to the chassis and components, never attempt to lift the chassis using the fan or power supply handles. These handles were not designed to support the weight of the chassis.

Required tools and equipment

The following tools and equipment is required to install the Brocade SLX 9850:

- #2 Phillips screwdriver
- 1/4" Hex socket driver
- Pallet jack
- Hydraulic lift or assisted lift, able to raise to a minimum of 140 cm (55 in.), with the ability to support the system weight

NOTE

The system weight varies depending on the type of system, and what modules are installed. To find the weight of your device fully populated with the required interface modules, refer to the [Brocade SLX 9850 Router Technical Specifications](#) on page 137.

Device surface preparation

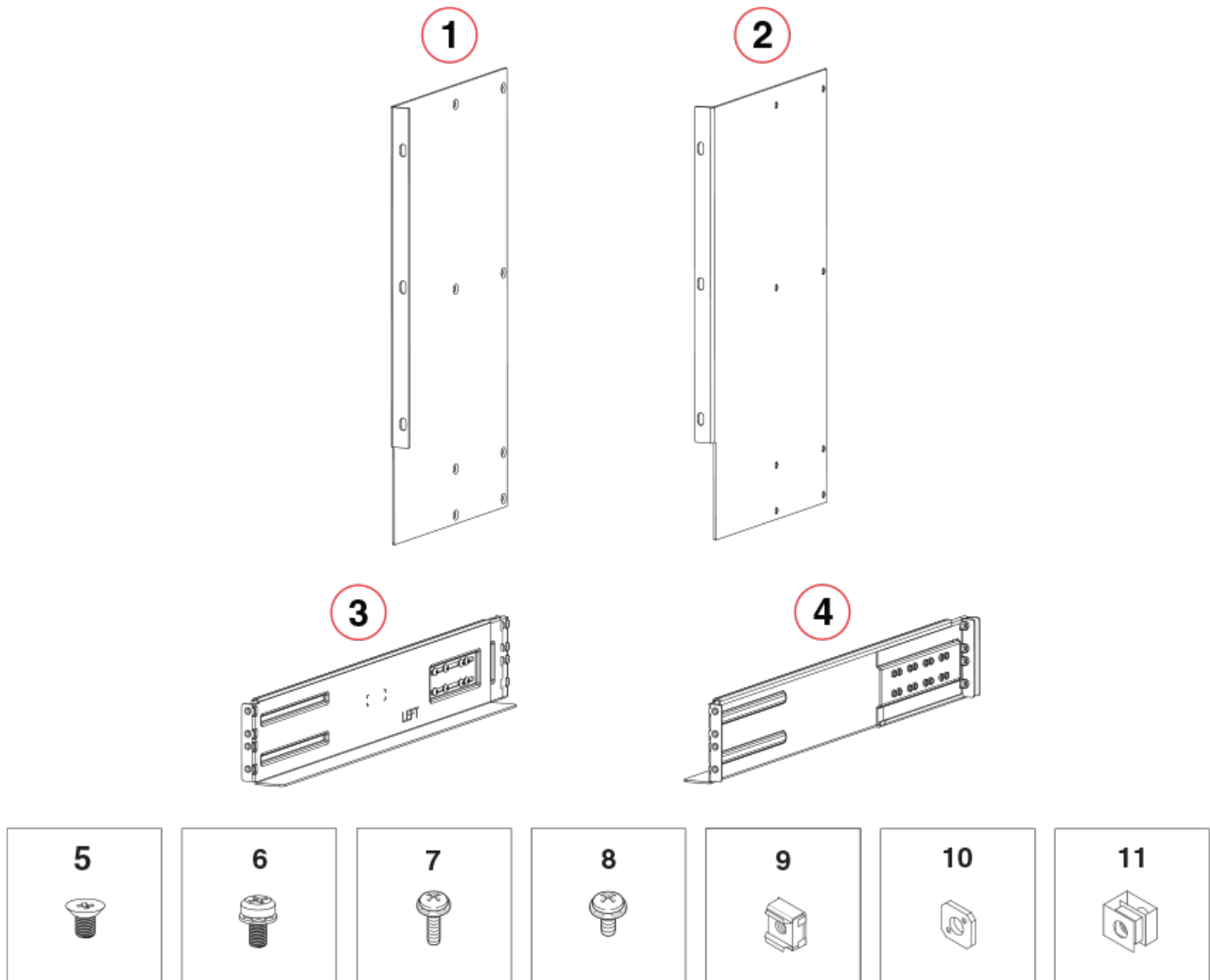
All surfaces on the Brocade device that are un-plated shall be brought to a bright finish and treated with an anti-oxidant solution before connections are made.

All non-conductive surface on the Brocade device shall be removed from all threads and connection points to ensure electrical continuity.

Installing a device on a four-post rack

Use part number XBR-SLX9850-4-4PRM-KIT to install the device on a four-post rack.

Verify that the items listed below are included in the rack kit.

FIGURE 5 Parts in XBR-SLX9850-4-4PRM-KIT

- | | |
|--------------------------------------|--|
| 1. Left ear bracket (1) | 7. Screw, 10-32 x .63-in., square cone |
| 2. Right ear bracket (1) | 8. Screw, 8-32 x .375 in., patch lock |
| 3. Left rail assembly (1) | 9. Nut retainer |
| 4. Right rail assembly (1) | 10. Washer |
| 5. Screw, 8-32 x .312 in., flathead | 11. Nut clip floating |
| 6. Screw, M6x1.0x12-in., square cone | |

Flush mount

1. Install the two rails from the rack-mount kit for the four-post rack, with the rails perpendicular to the aisle. 16 fasteners are required, 4 for each post.
 - If the four-post rack has round, threaded screw holes, use 16 screws from the rack-mount kit, with no additional hardware, to attach the kit to the posts.
 - If the four-post rack has rectangular, unthreaded holes, use 16 screws, 16 nuts, and 16 alignment washers from the rack-mount kit to attach the kit to the posts.
2. Prepare the device for mounting by attaching the lift to the device chassis.
3. Using the lift, raise the device to the correct level.
4. If applicable, lock the wheels of the lift.
5. Ensure that the device is oriented so that the front (port side) has access to intake air.

- Slide the device onto the rails of the rack mount kit in the four-post rack, ensuring that it remains supported during the transfer.

FIGURE 6 Installing the two rails from the rack-mount kit

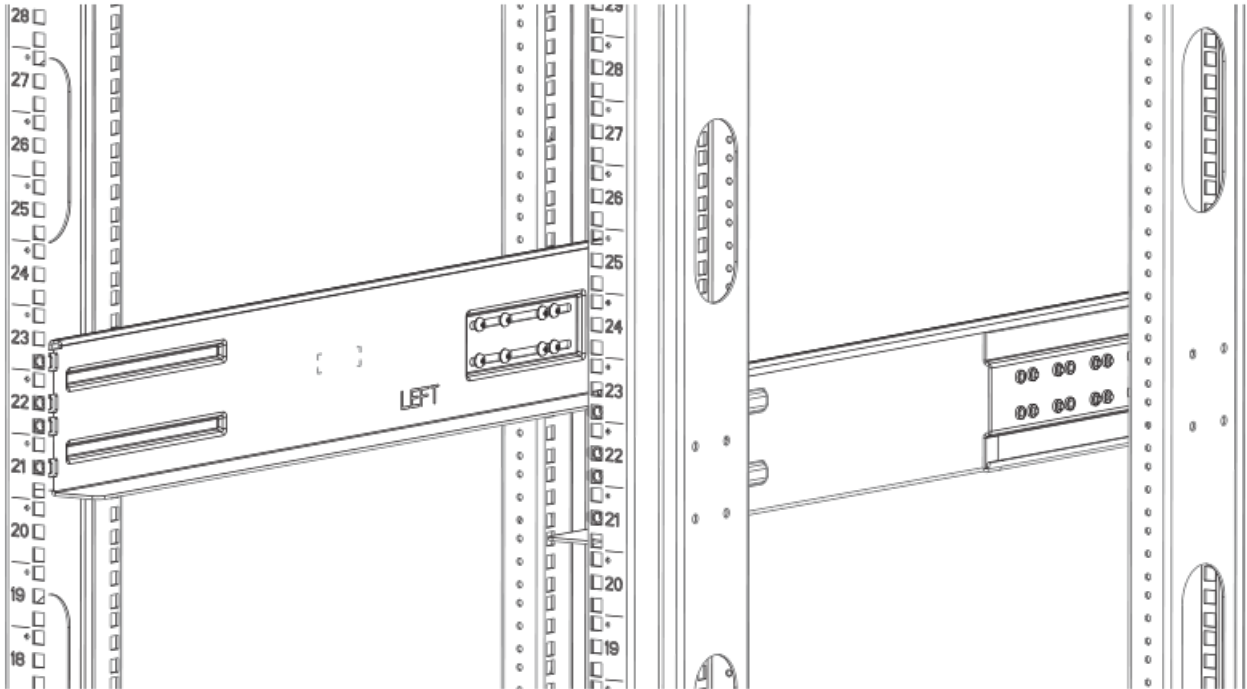
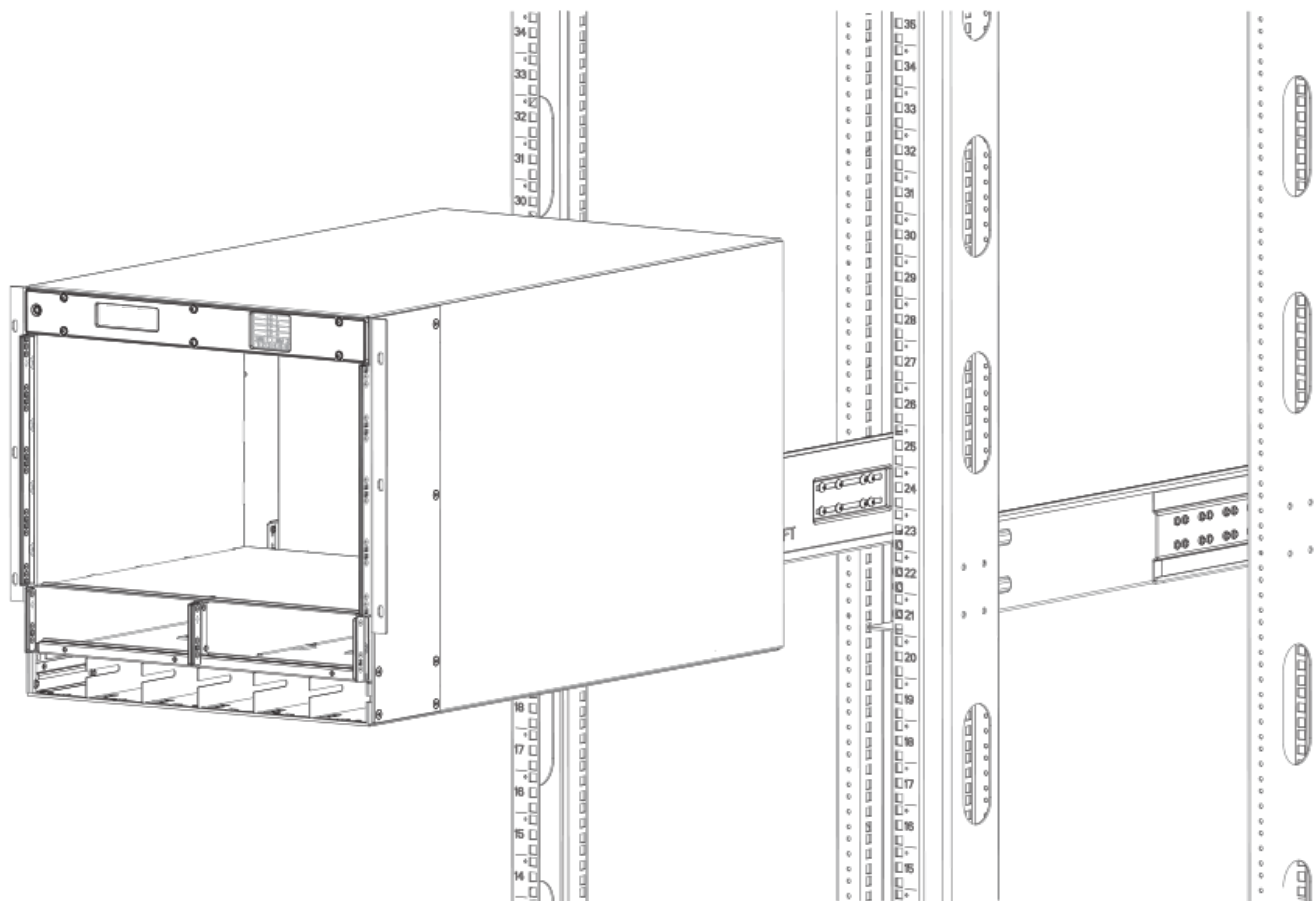
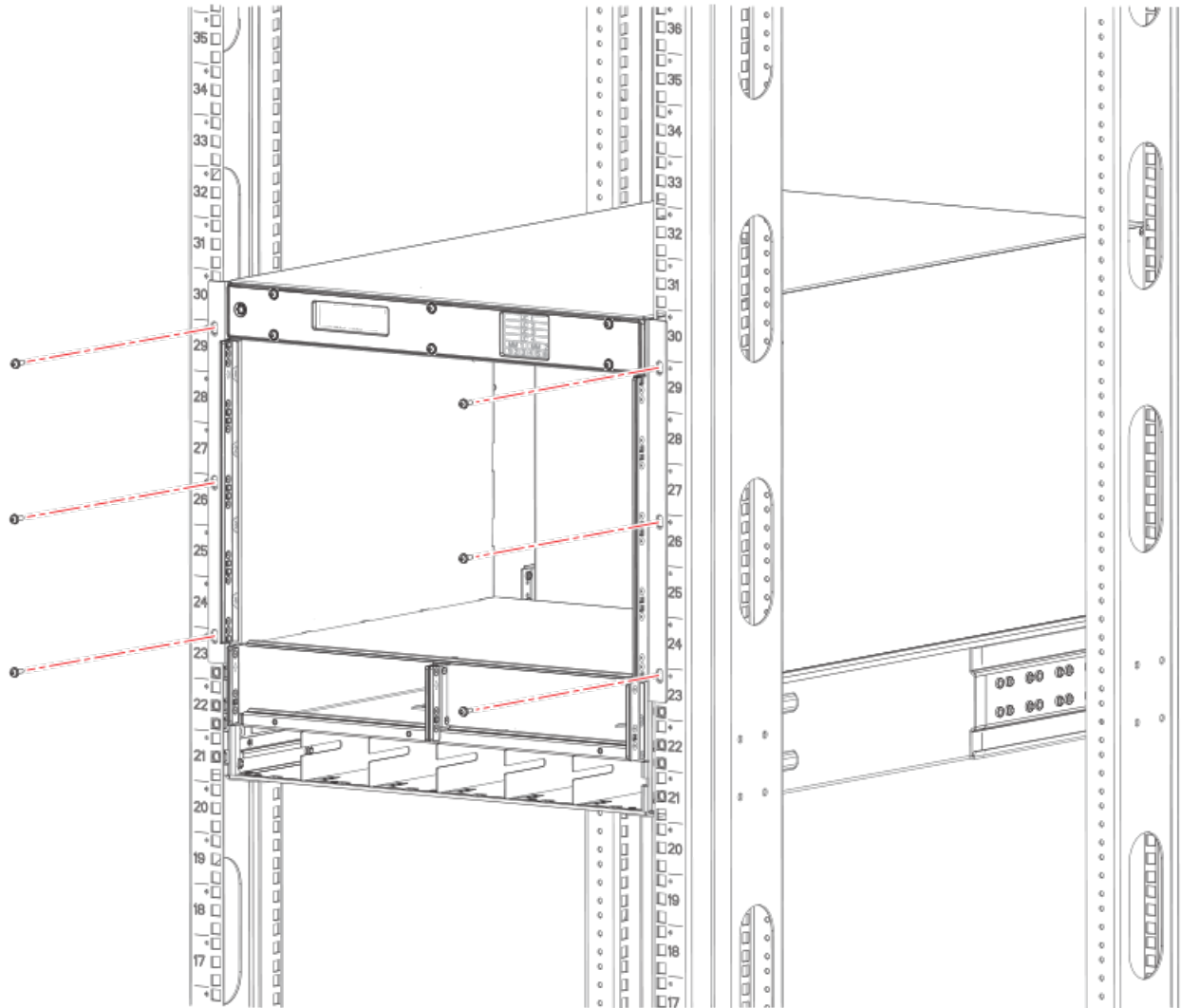


FIGURE 7 Installing the rack-mount kit to the four-post rack



7. Attach the device to the front (port side) posts of the four-post rack using 6 screws (3 on each side).

FIGURE 8 Attaching the device to the front posts of the rack



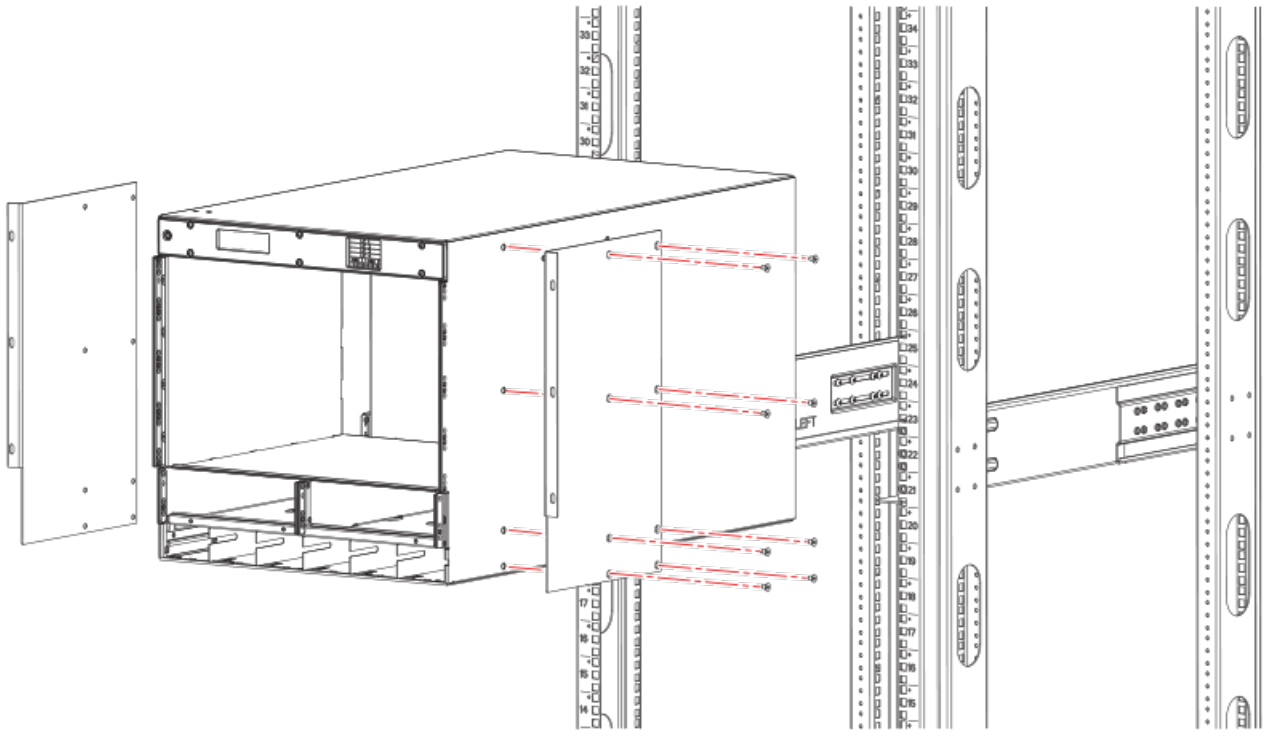
Recessed mount

The procedure to install a recessed mount device in a four-post rack is the same as installing the device with a flush mount, with the addition of removing the side plates on the front of the device chassis, and installing the side plates from the recessed mount kit.

1. Install the two rails from the rack-mount kit for the four-post rack, with the rails perpendicular to the aisle. 16 fasteners are required, 4 for each post.
 - If the four-post rack has round, threaded screw holes, use 16 screws from the rack-mount kit, with no additional hardware, to attach the kit to the posts.
 - If the four-post rack has rectangular, unthreaded holes, use 16 screws, 16 nuts, and 16 alignment washers from the rack-mount kit to attach the kit to the posts.

2. Remove the two side plates on the front (port) side of the chassis.
3. Attach the larger side plates from the recessed mount kit using 16 screws (8 per side).

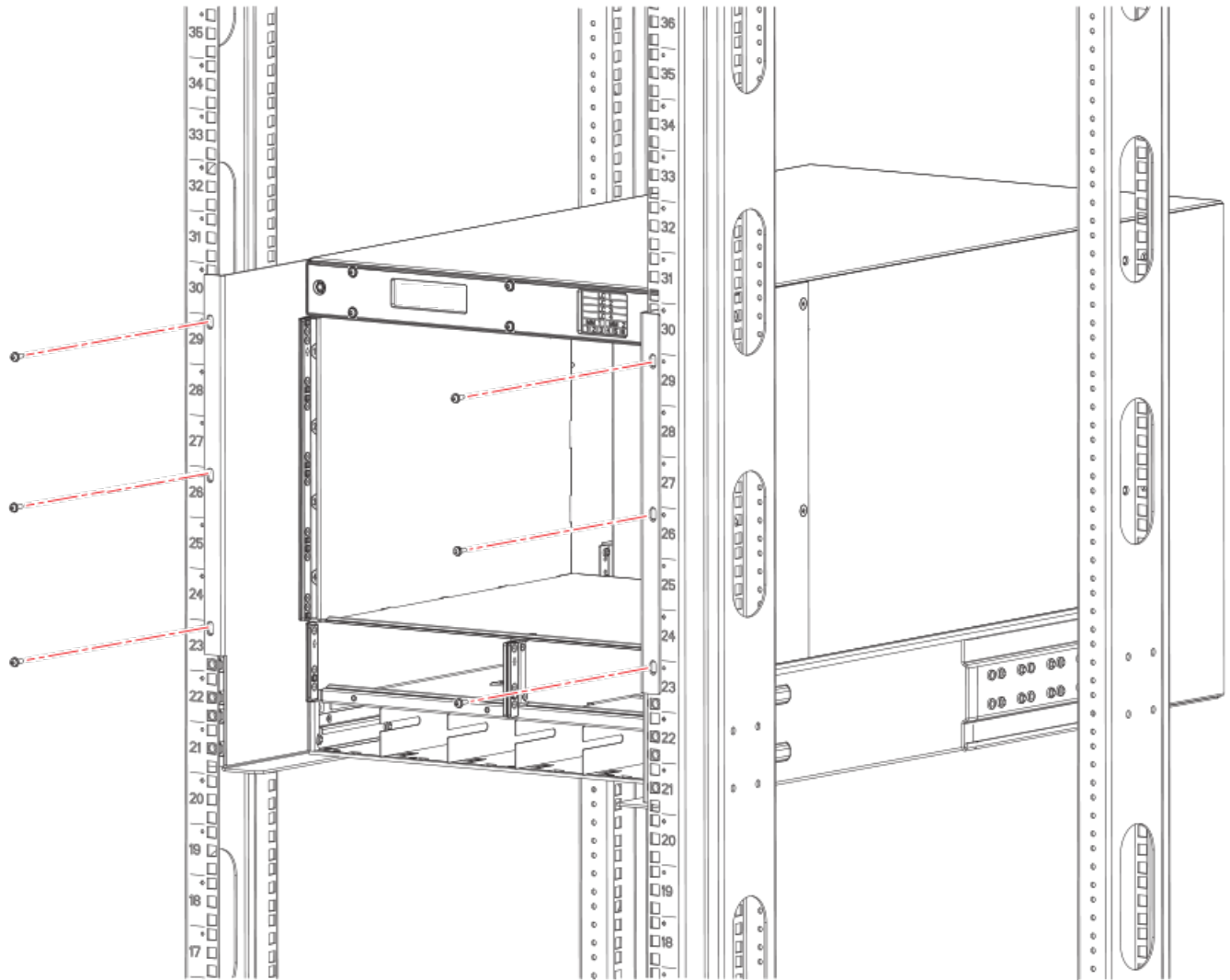
FIGURE 9 Attaching the recessed mount side plate to the device - rack mount kit already installed to rack



4. Prepare the device for mounting by attaching the lift to the device chassis.
5. Using the lift, raise the device to the correct level.
6. If applicable, lock the wheels of the lift.
7. Ensure that the device is oriented so that the front (port side) has access to intake air.
8. Slide the device onto the rails of the rack mount kit in the four-post rack, ensuring that it remains supported during the transfer.

9. Attach the device to the front (port side) posts of the four-post rack using 6 screws (3 on each side).

FIGURE 10 Attaching the device to the front posts of the rack



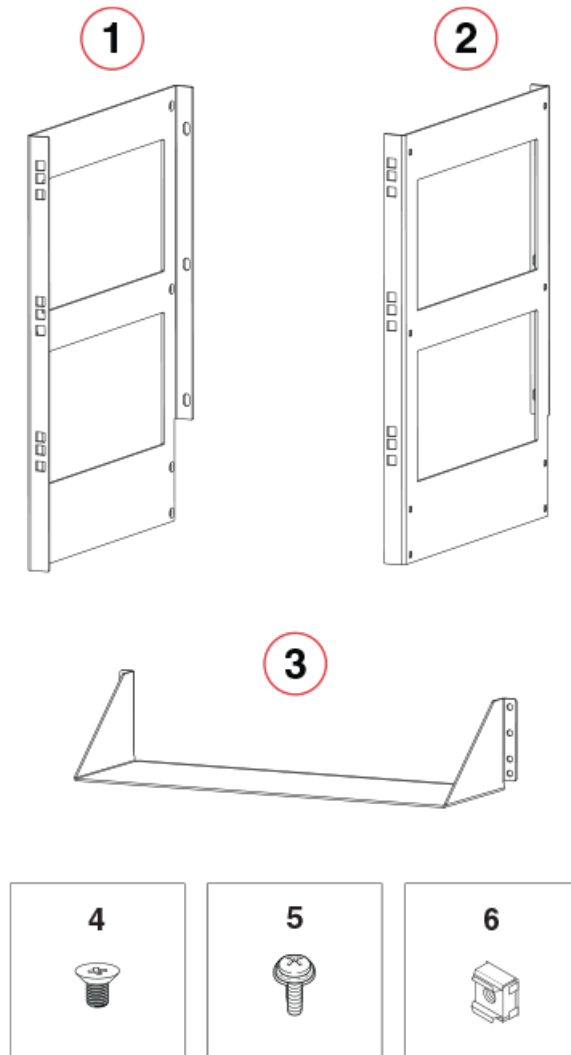
10. Install any device modules (management modules, switch fabric modules, interface modules, switch fabric modules, fan modules, and power supply modules) that have not already been installed.

Installing a device on a two-post rack

Use part number XBR-SLX9850-4-2PRM-KIT to install the device on a two-post rack.

Verify that the items listed below are included in the rack kit.

FIGURE 11 Parts in XBR-SLX9850-4-2PRM-KIT



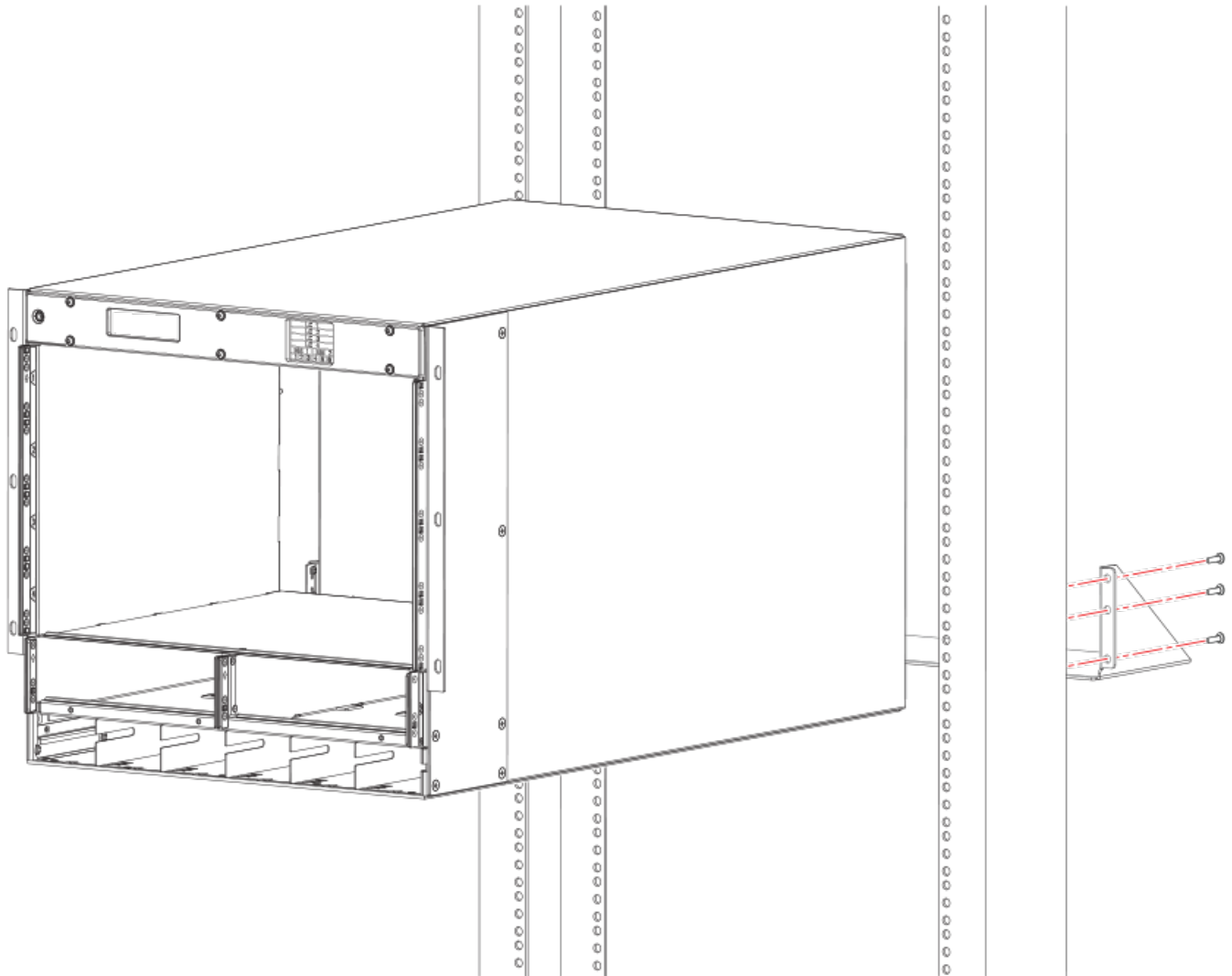
1. Left ear bracket
2. Right ear bracket
3. Saddle

4. Screw, 8-32 x .312 in., flathead
5. Screw, 10-32 x .63-in., square cone
6. Nut retainer

Flush mount

1. Install the saddle from the rack-mount kit for the two-post rack using 6 screws (3 on each side of the saddle).
 - If the two-post rack has round, threaded screw holes, use 6 screws from the rack-mount kit, with no additional hardware, to attach the saddle to the posts.
 - If the two-post rack has rectangular, unthreaded holes, use 6 screws, 6 nuts, and 6 alignment washers from the rack-mount kit to attach the saddle to the posts.

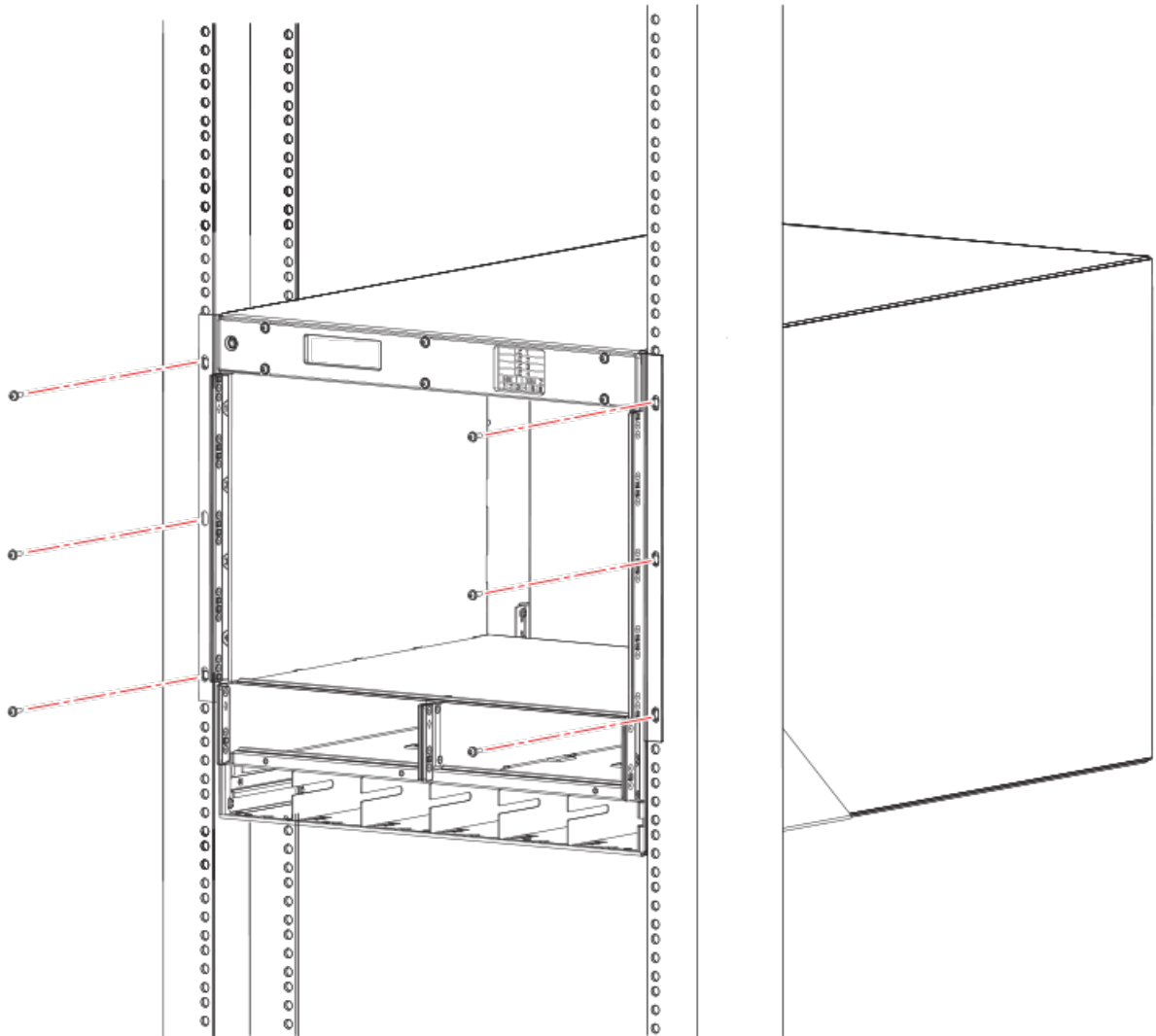
FIGURE 12 Installing the saddle onto the two-post rack



2. Remove the two side plates on the front (port) side of the chassis.
3. Attach the larger side plates from the mid mount kit using 16 screws (8 per side).
4. Prepare the device for mounting by attaching the lift to the device chassis.
5. Using the lift, raise the device to the correct level.
6. If applicable, lock the wheels of the lift.

7. Ensure that the device is oriented so that the front (port side) has access to intake air.
8. Raise the device slightly above the level of the two saddles, and bring the chassis forward until the front plates touch the front of the rack, then lower the device until it rests on the saddles.
9. Attach the device to the two posts of the rack using 6 screws (3 on each side).

FIGURE 13 Attaching the device to the rack



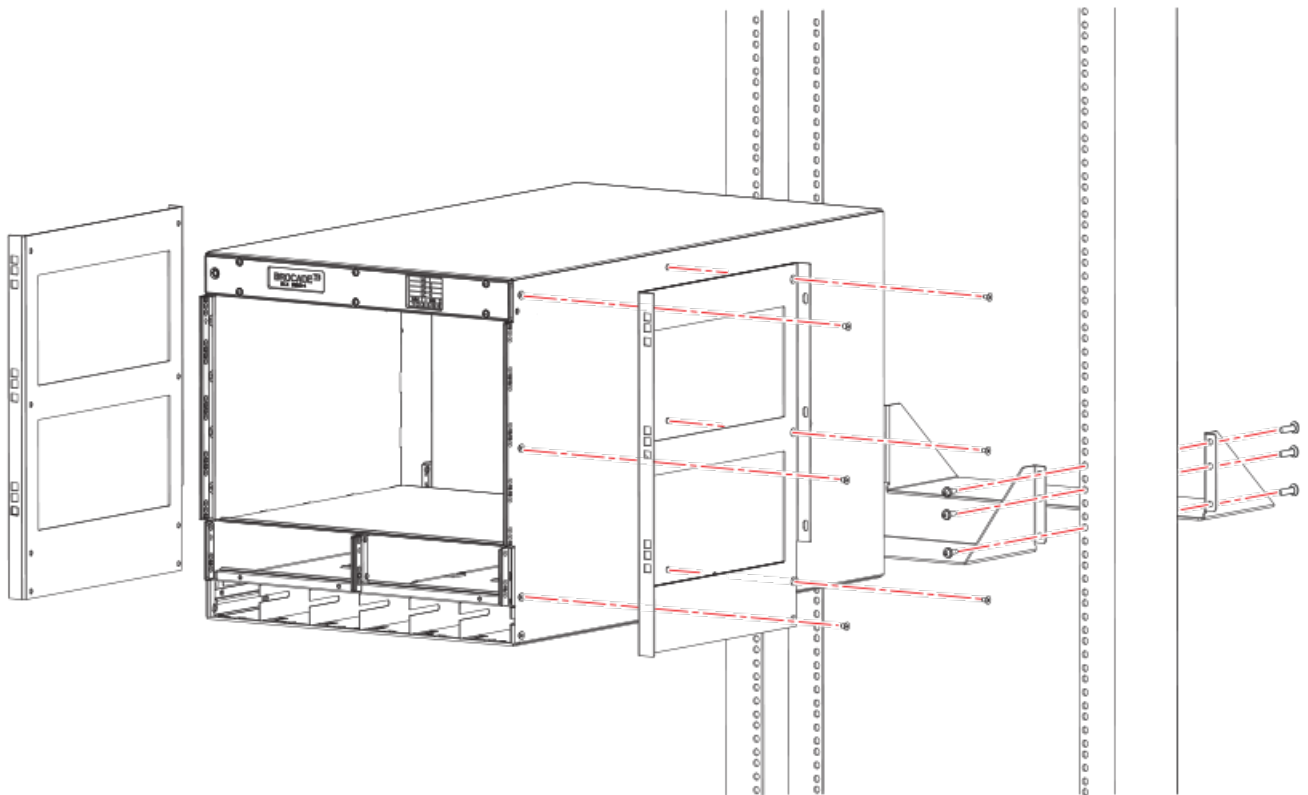
10. Install any device modules (management modules, interface modules, switch fabric modules, fan modules, and power supply modules) that have not already been installed into the rack.

Middle mount

The procedure to install a mid mount device in a two-post rack is the same as installing the device with a flush mount, with the addition of removing the side plates on the front of the device chassis, and installing the side plates from the recessed mount kit.

1. Install the two saddles from the rack-mount kit for the two-post rack using 12 screws (6 for each saddle).
 - If the two-post rack has round, threaded screw holes, use 12 screws from the rack-mount kit, with no additional hardware, to attach the saddles to the posts.
 - If the two-post rack has rectangular, unthreaded holes, use 12 screws, 12 nuts, and 12 alignment washers from the rack-mount kit to attach the saddles to the posts.
2. Remove the two side plates on the front (port) side of the chassis.
3. Attach the larger side plates from the mid mount kit using 16 screws (8 per side).

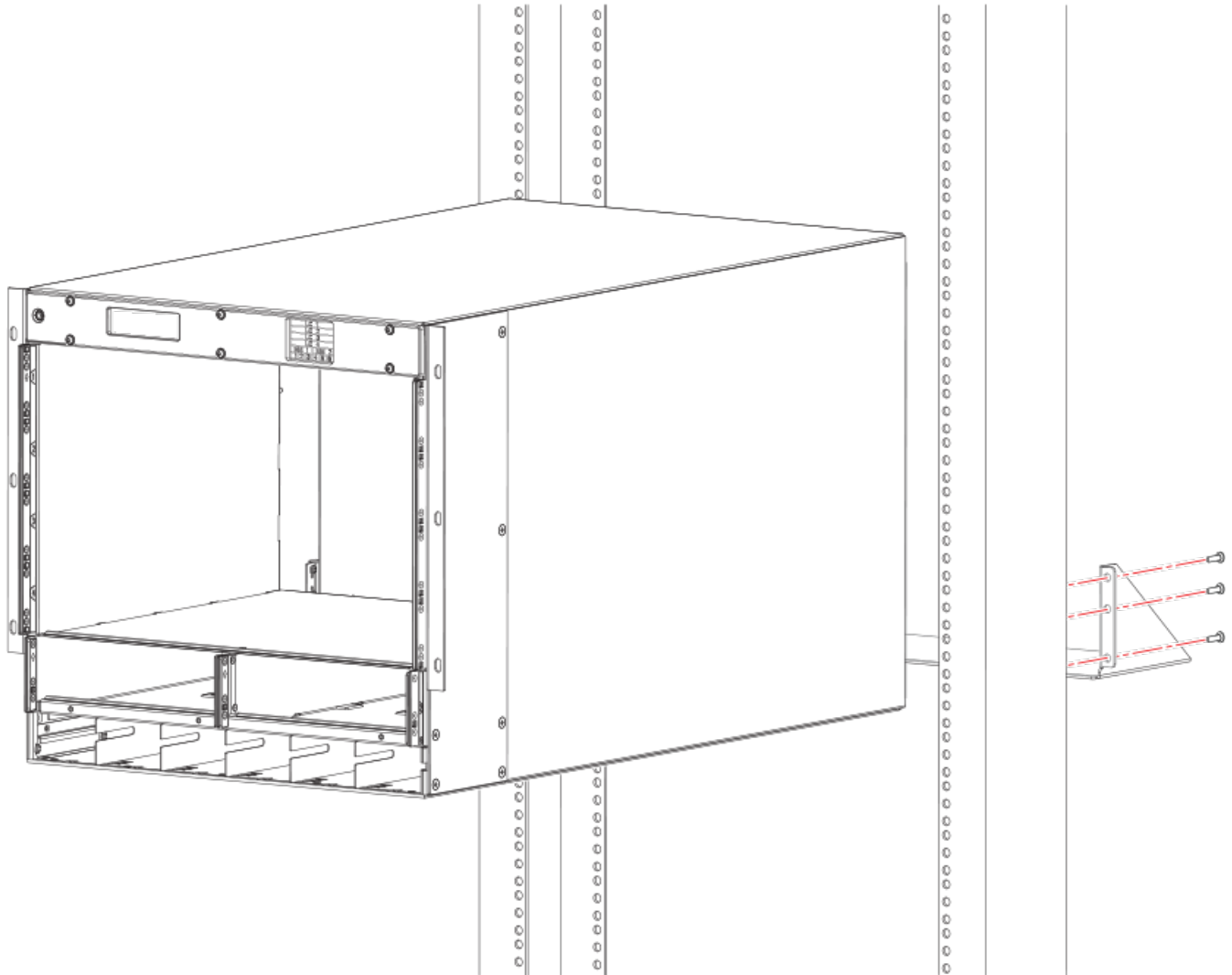
FIGURE 14 Attaching the saddles to the rack and the side plates to the device



4. Prepare the device for mounting by attaching the lift to the device chassis.
5. Using the lift, raise the device to the correct level.
6. If applicable, lock the wheels of the lift.
7. Ensure that the device is oriented so that the front (port side) has access to intake air.
8. Raise the device slightly above the level of the two saddles, and bring the chassis forward until the front plates touch the front of the rack, then lower the device until it rests on the saddles.

9. Attach the device to the two posts of the rack using 6 screws (3 on each side).

FIGURE 15 Attaching the device to the rack



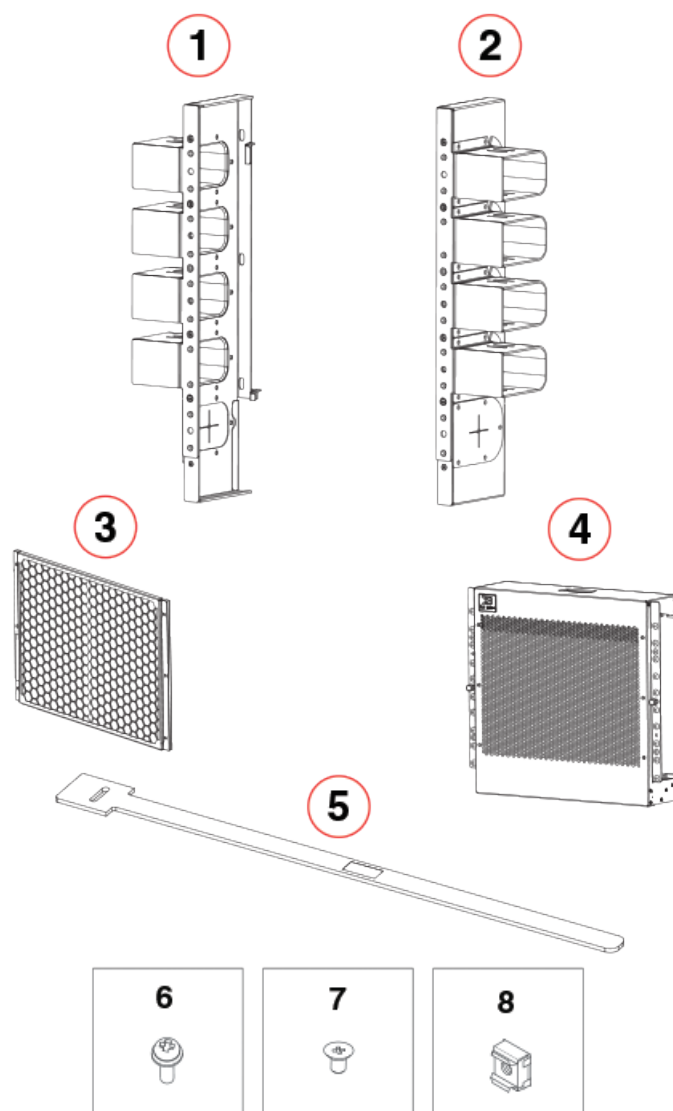
10. Install any device modules (management modules, interface modules, switch fabric modules, fan modules, and power supply modules) that have not already been installed.

Installing an SLX-9850-4 NEBS kit

Use the following instructions to install the Brocade SLX 9850 NEBS two-post rack kit with a mid-mount .

Use this kit XBR-SLX9850-4-NEBS-KIT to help direct airflow away from the rack area.

Verify that the items listed below are included in the NEBS Kit.

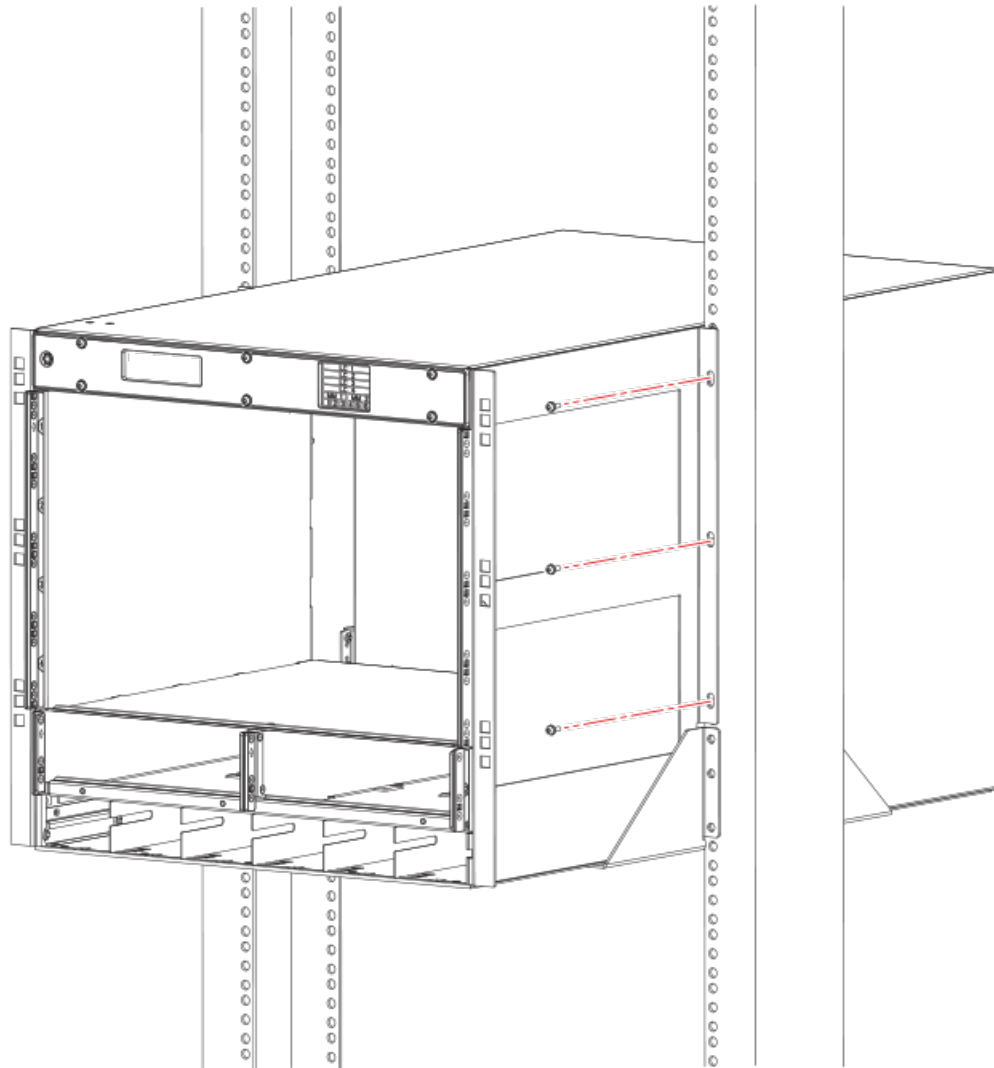
FIGURE 16 NEBS kit parts list

- | | |
|----------------------------------|--|
| 1. Left cable comb assembly (1) | 5. Velcro strap (8) |
| 2. Right cable comb assembly (1) | 6. Screw, 10-32 x .63-in., square cone washer (10) |
| 3. Air filter (1) | 7. Screw, 8-32 x .312 in., flathead (20) |
| 4. Chassis door (1) | 8. Nut retainer (6) |

Procedure to install:

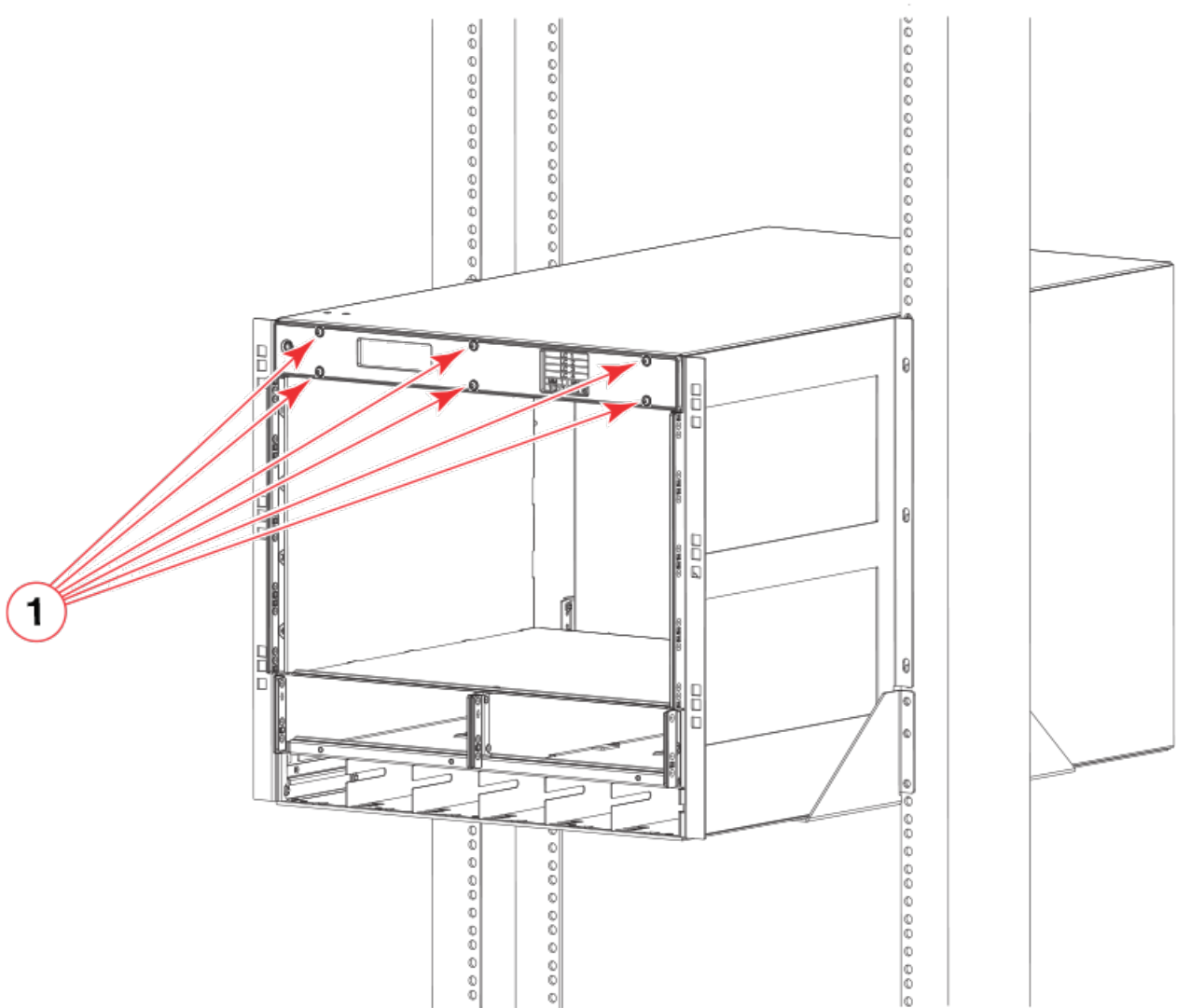
1. Before starting the NEBS kit installation, the bezel needs to be removed.

FIGURE 17 Chassis installed on 2-post mid-mount rack with bezel



2. Locate the 6 screws that holds the bezel to be removed prior to starting NEBS kit installation.

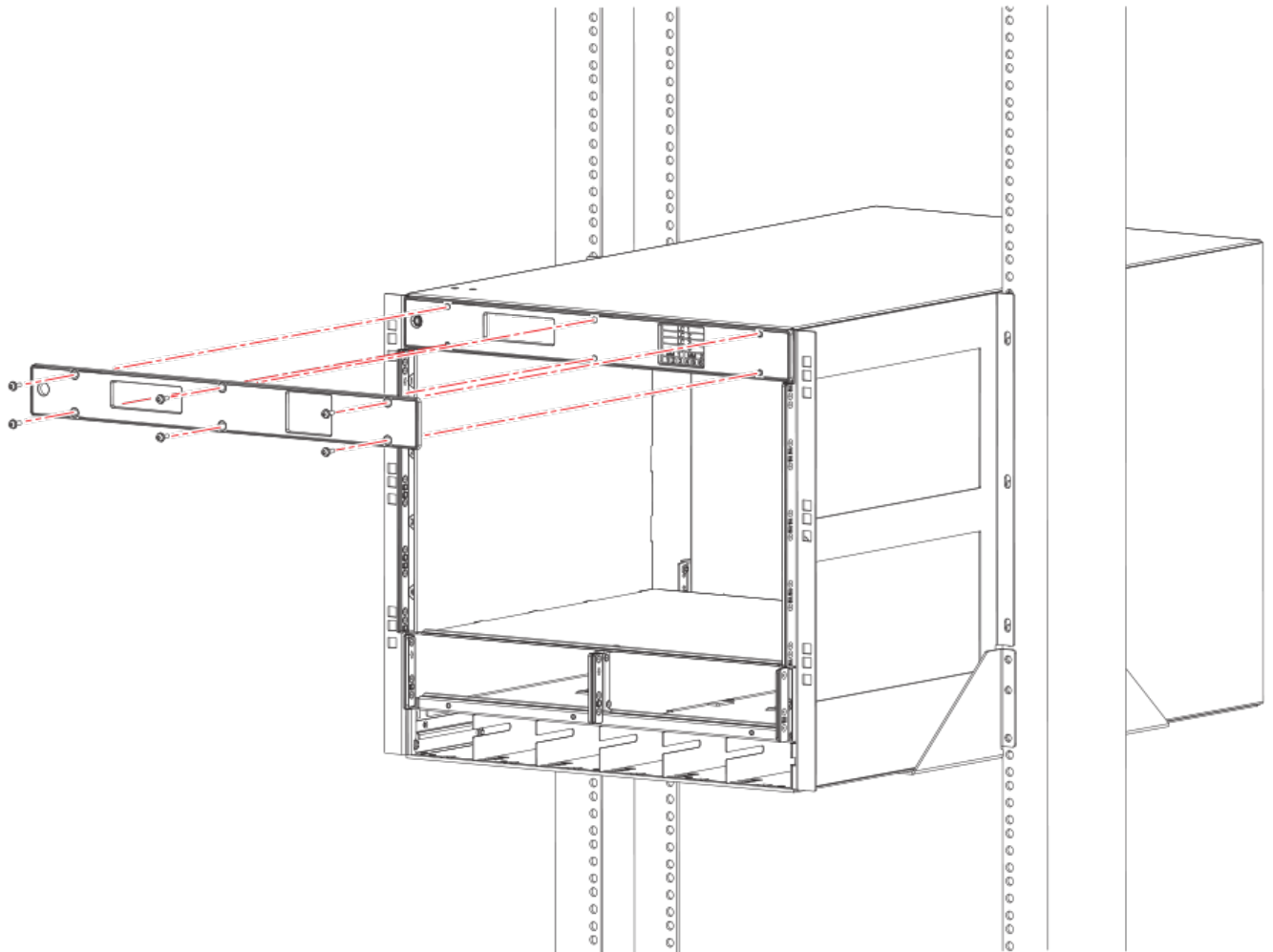
FIGURE 18 Bezel screws to be removed



1. Screw

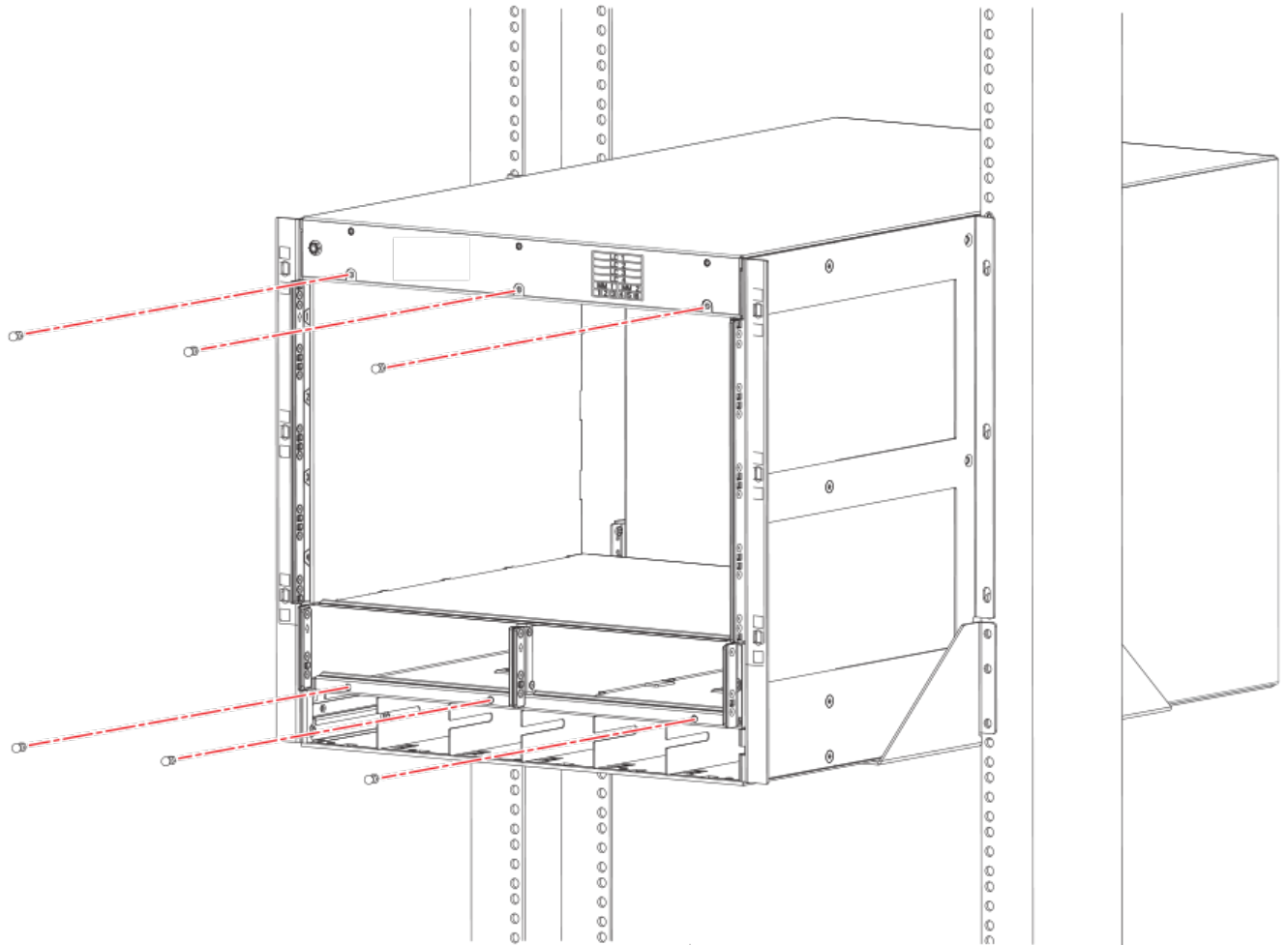
3. Remove the 6 screws.

FIGURE 19 Removing the screws holding the bezel



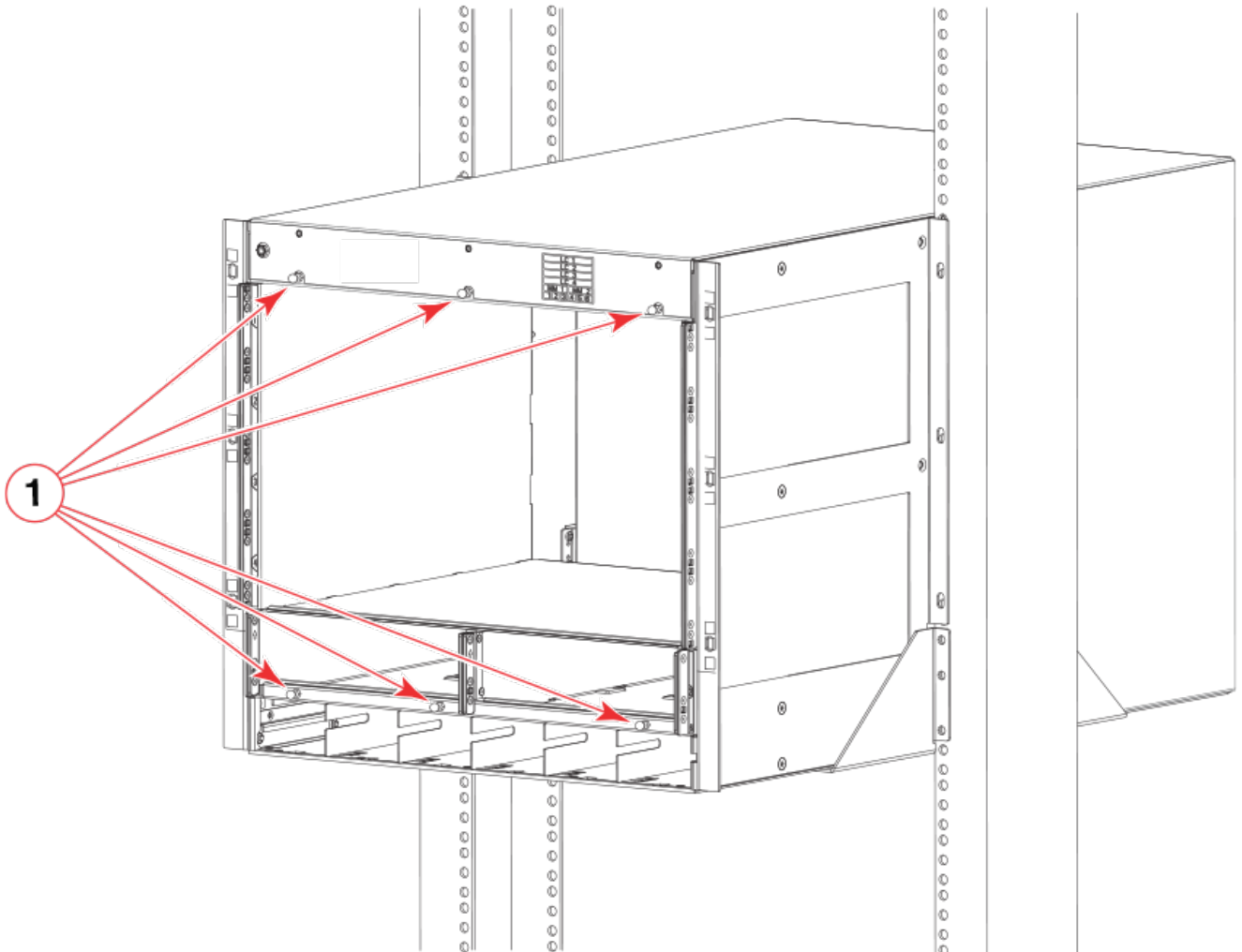
4. Locate the position where the six ball studs will be installed

FIGURE 20 Ball studs to be installed



5. Install the 6 ball studs using a 1/4" Hex socket driver.

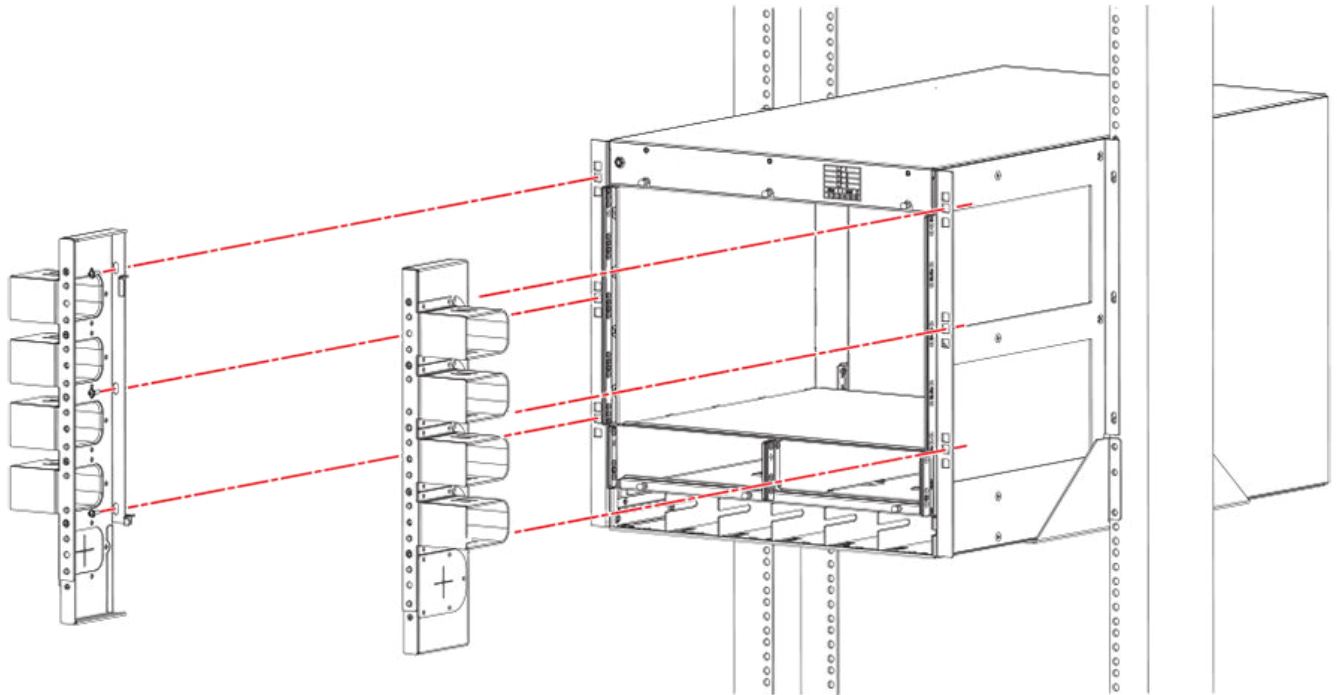
FIGURE 21 Ball studs installed



1. Ball studs

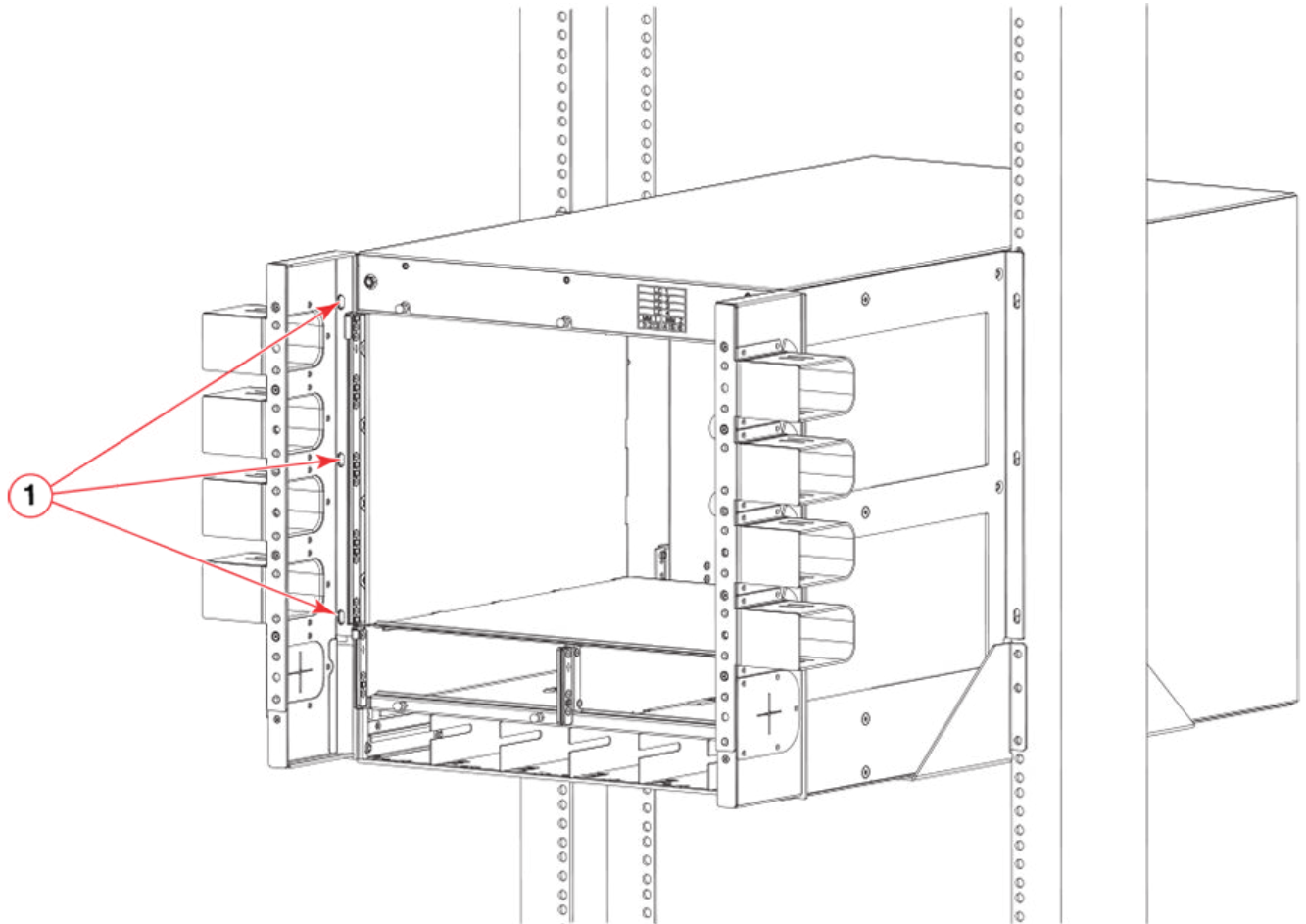
6. Install the left cable comb assembly and the right cable comb assembly.

FIGURE 22 Installing cable comb assemblies



7. Use 6 screws, 6 nuts, and 6 alignment washers from the rack mount kit to attach the cable combs to the posts.

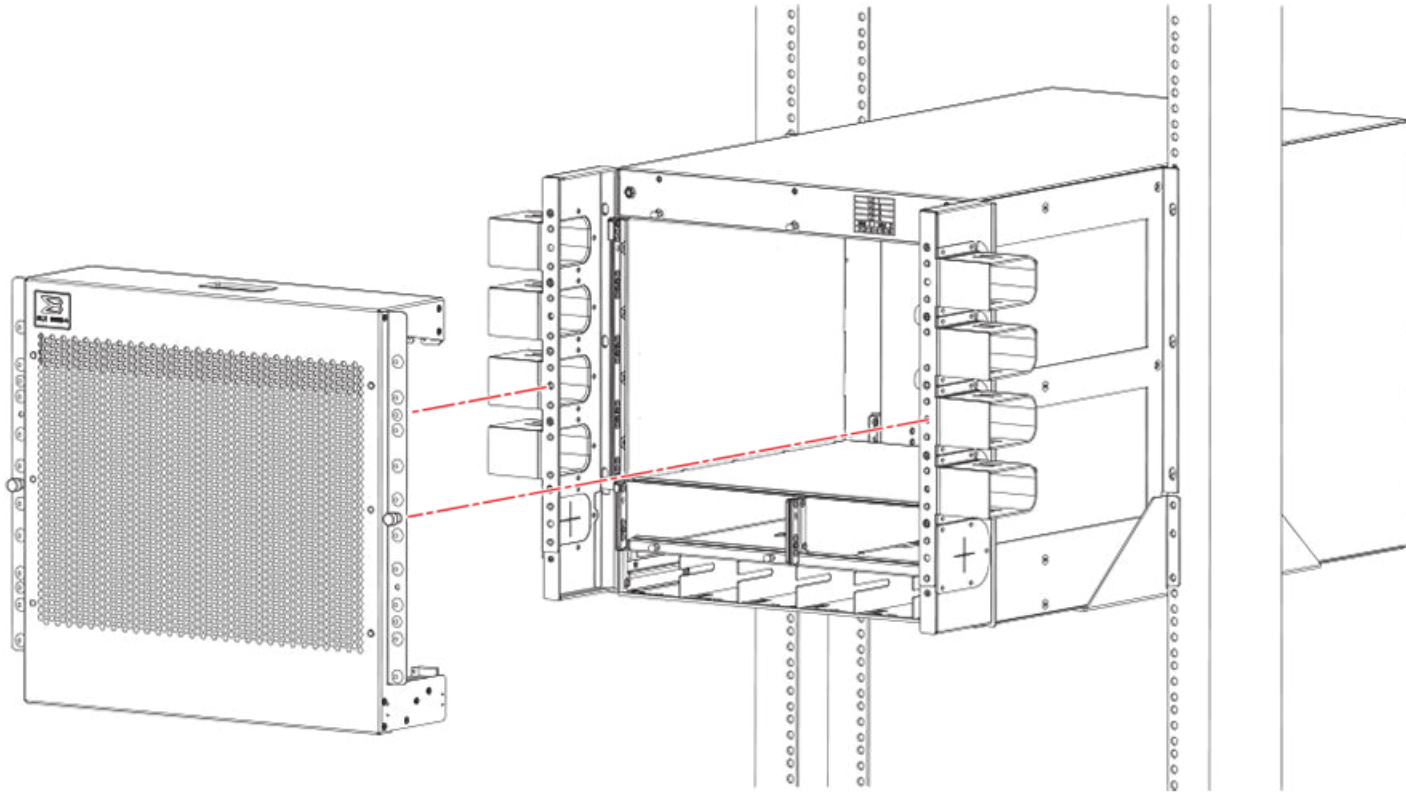
FIGURE 23 Cable comb assemblies installed



1. Screw

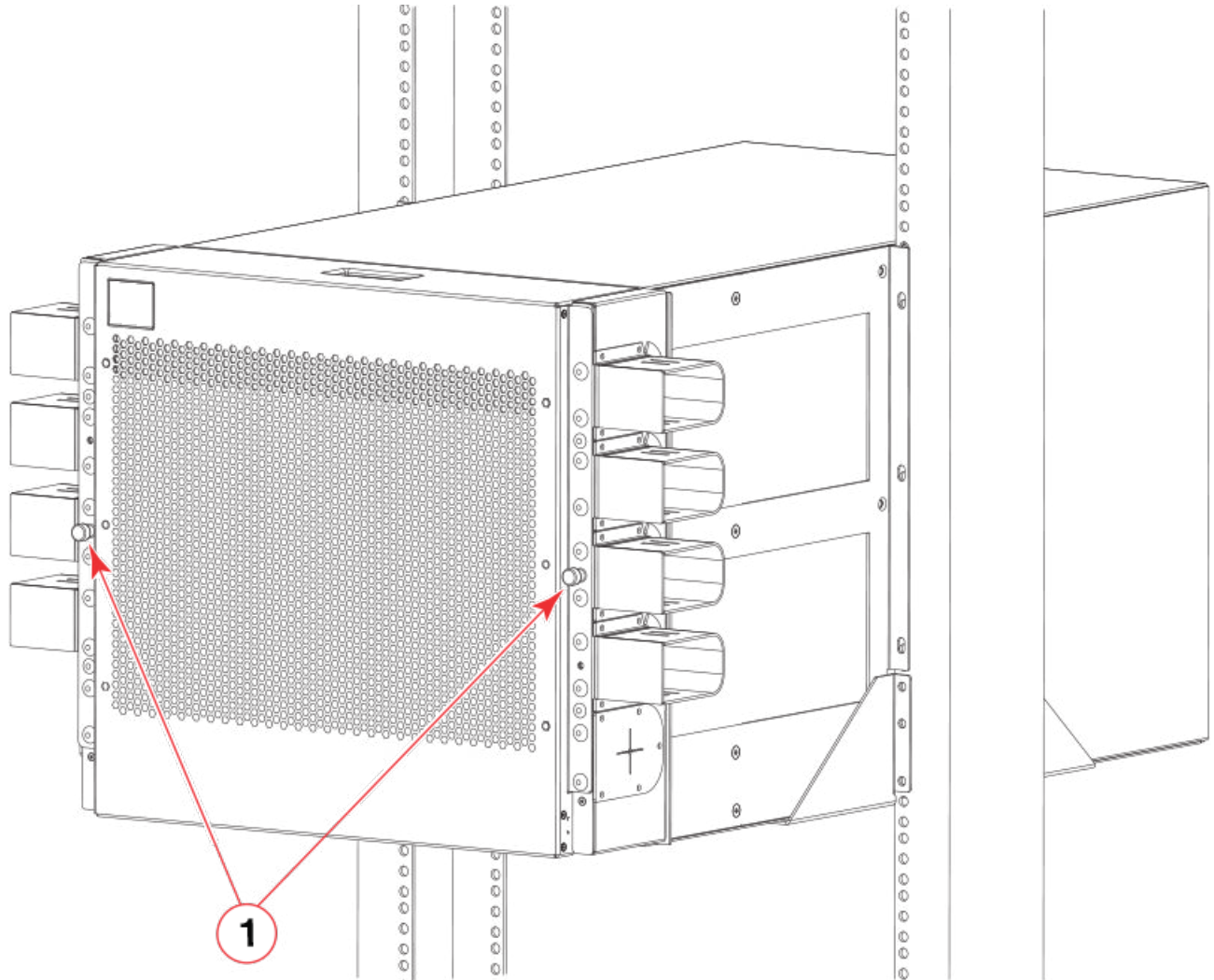
8. Snap the door onto chassis ball studs.

FIGURE 24 Installing the chassis door



9. Secure the door by tightening the thumbscrews on the door. The chassis door is now installed.

FIGURE 25 Chassis door installed



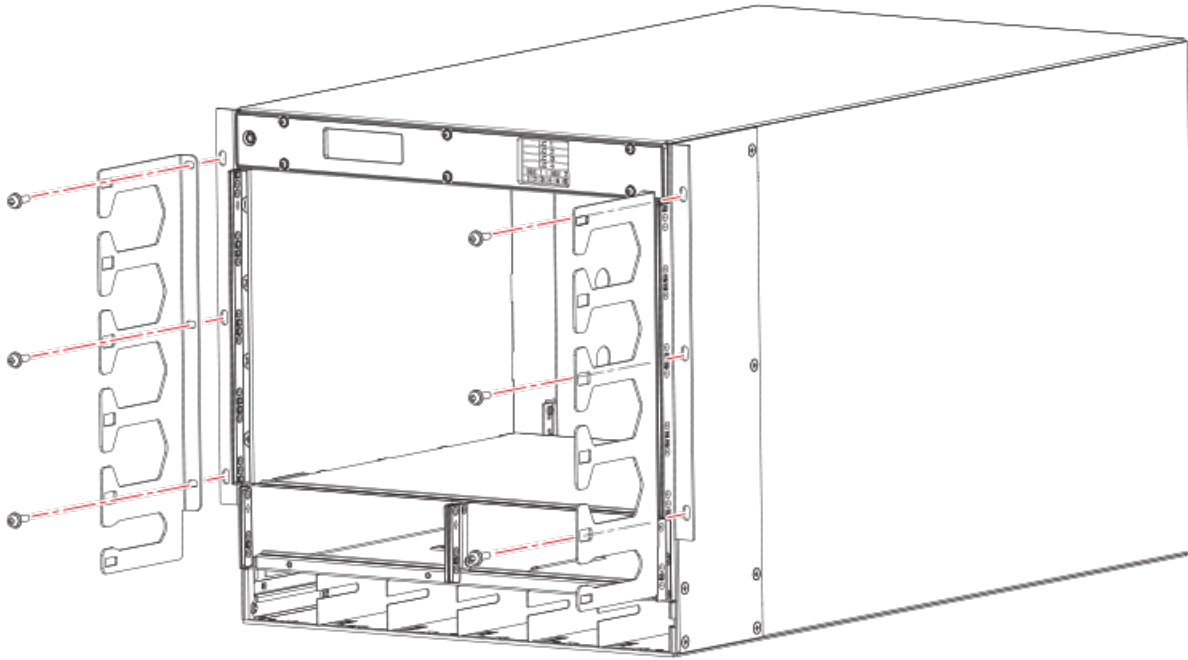
This completes the SLX-9850-4NEBS kit installation for two -post rack kit mid-mount.

Installing cable management combs

You can install the cable management combs shipped with the chassis without service interruption for simple cable management.

If installing cable management combs, remove the chassis mount screws, and install the cable combs shown in the diagram below. Reinstall the chassis mount screws when done.

FIGURE 26 Installing cable management combs on the SLX9850-4 chassis



For more information about cable management, refer to the [Managing cables](#) on page 127 under the *Transceivers and cables* section of this guide.

Initial Setup and Verification

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Initial setup and configuration checklist

Use the procedures in the following table to initially configure and setup the device, verify correct operation, and back up the configuration.

TABLE 17 Initial setup and configuration checklist

Task	Task details or additional information
Attach a management station, establish a serial connection, and change the default passwords (optional).	Refer to Establishing a serial connection on page 63. After completing this task, log in to the serial port to configure the device.
Set the IP address, subnet mask, and the default gateway IP address.	Use the chassis virtual-ip or chassis virtual-ipv6 commands to configure an IP address. For more information, refer to Configuring a static IP address on page 66.
Establish an Ethernet connection.	By establishing an Ethernet connection, you can complete the device configuration using a serial or Telnet session. Refer to Establishing an Ethernet connection on page 68 for more information.
Customize the chassis and host names.	Use the switch-attributes chassis-name and switch-attributes host-name commands to change the default router name. For more information, refer to Customizing the chassis and host names on page 69
Set the date and time.	• Use the clock set command to set the date and time. • Use the clock timezone command to set the time zone. • After you configure the system time, use commands in NTP configuration mode to synchronize the time with an external NTP server. Refer to Setting the date and time on page 70 for more information. For detailed command information, refer to <i>Brocade SLX-OS Management Configuration Guide</i> for the Brocade SLX 9850 Router .
Optional: Configure the DNS service.	Use the ip dns domain-name and, if required, the ip dns name-server command to create DNS server entries. Refer to <i>Brocade SLX-OS Security Configuration Guide</i> for the Brocade SLX 9850 Router for more information.
Verify that the device operates correctly.	• Check the LEDs to verify operation of module components in the device. Refer to Interpreting management module LEDs on page 75, Interpreting interface module LEDs on page 77,

TABLE 17 Initial setup and configuration checklist (continued)

Task	Task details or additional information
	Interpreting power supply module LEDs on page 80, Interpreting fan module LEDs on page 83, and Interpreting switch fabric module LEDs on page 84. - The following commands can be useful to establish an operational baseline for the device. Refer to <i>Brocade SLX-OS Monitoring Configuration Guide</i> for the Brocade SLX 9850 Router for more information about these commands. <code>show chassis</code> <code>show system</code> <code>show slots</code> <code>show linecard</code> <code>show environment fan</code> <code>show environment power</code> <code>show environment sensor</code> <code>show environment temp</code>
Back up the configuration.	Use the <code>copy running-config</code> command to copy the running configuration to the startup configuration. Refer to the Backing up the configuration on page 73 for more information about this command.

Items required

The following items are required for initial setup and verification of the device:

- The device, mounted and installed with the required interface modules, FRUs, transceivers, and cables, and connected to a power source.
- A workstation computer with an installed terminal emulator application, such as HyperTerminal for Windows.
- An unused IP address with corresponding subnet mask and gateway address.
- A serial cable (provided) with an RJ-45 connector.
- Two Ethernet cables (one per management module).
- Optional: Access to an FTP server or USB device for backing up (uploading) or downloading the device configuration or collecting diagnostic output data.
- Optional: A Brocade USB drive for backing up (uploading) or downloading the device configuration or collecting diagnostic output data.

Providing power to the device

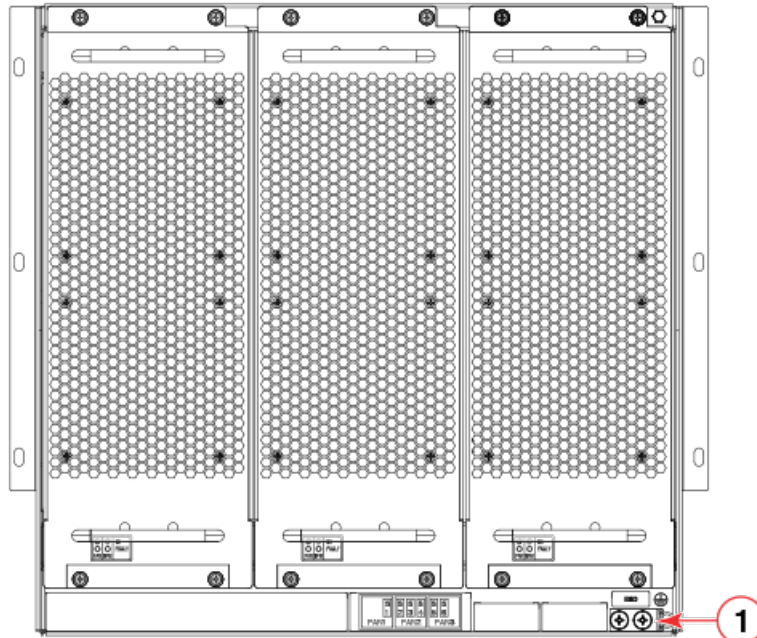
To provide power to the device, follow the steps in the following sections. To find power supply requirements for the device, refer to the power supply specifications section in the [Brocade SLX 9850 Router Technical Specifications](#) on page 137.

Complete the following steps to provide power to the chassis.

Connecting an AC power cord

To connect an AC cord to the power supply module, complete the following steps.

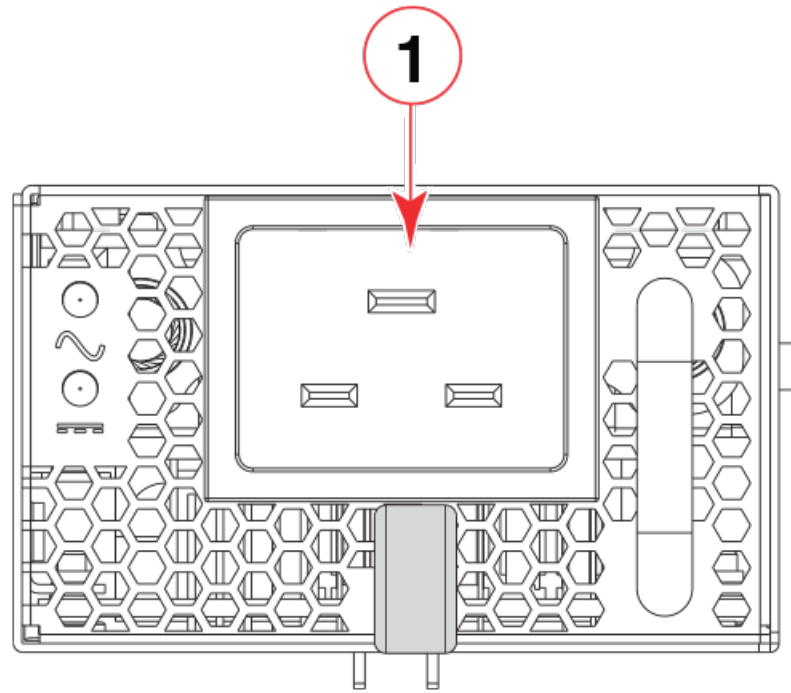
1. Attach the chassis ground lug to the chassis ground.



1. Chassis ground lug

2. Plug the power cord into the power supply receptacle.

FIGURE 27 AC power supply



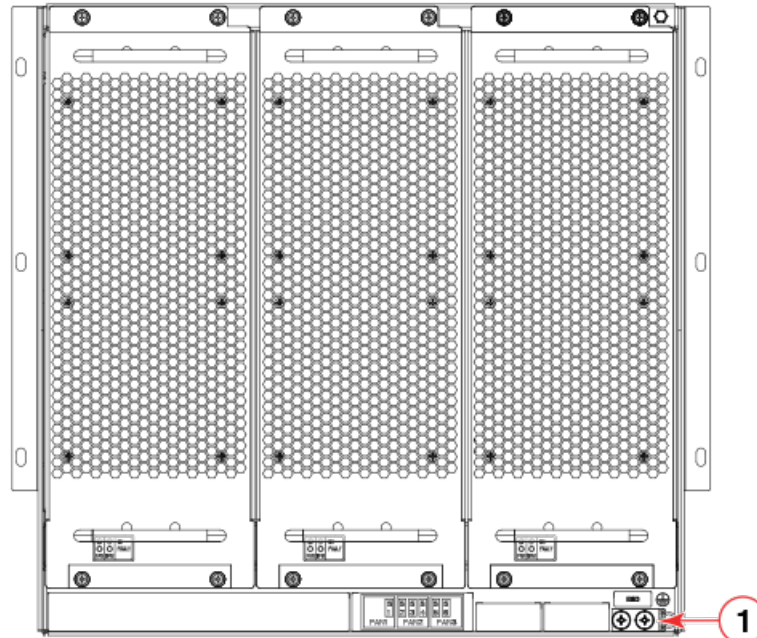
1. Power supply receptacle

3. Route the cable so it will be out of the way when connected to the power source.
4. Plug the other end of the cable into the power source.

Connecting a DC power cord

To connect a DC power cord to the power supply module, complete the following steps.

1. Attach the chassis ground lug to the chassis ground.



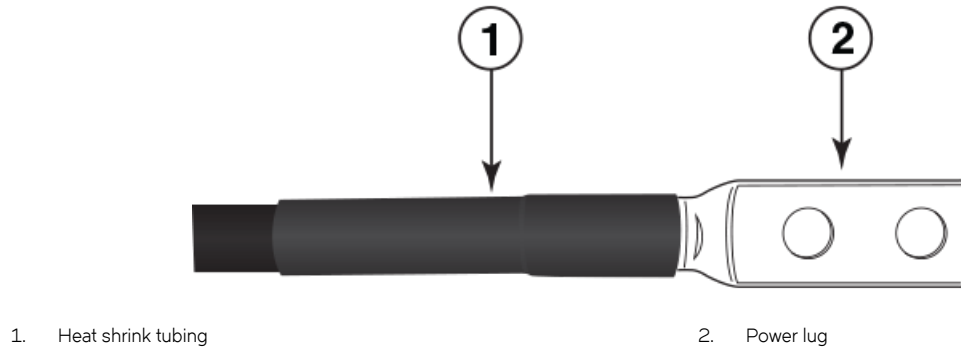
1. Chassis ground lug

2. Use a #2 Phillips screwdriver to unscrew the power lugs.
3. Obtain heat shrink tubing with the following specifications to install on the #2 AWG power supply input wire:
 - Inside diameter: 1.27 cm (.5 in.)
 - Minimum 2:1/50% shrink ratio
 - Nominal recommended wall thickness: 30480 mm (.012 in.) minimum
 - Dielectric strength: 800V/mil
 - Tensile strength: Greater than or equal to 5000 psi
 - Operating temperature: -40°C to +150°C (-40°F to 302°F) minimum
 - RoHS-compliant
4. Cut off a 5.08 cm (2 in.) length for each #2 AWG power supply wire.
5. Slide the tubing over the #2 AWG power supply wire.
6. Crimp the #2 AWG power supply wire into the power lug.
7. Slide the tubing over the lug to the brown strip closest to the power lug holes.

8. Apply heat to shrink the tubing over the power lug and wire insulation.

The installed tubing on the power lug should appear similar to the example in the following figure.

FIGURE 28 Heat shrink tubing and power lug on DC power supply cable



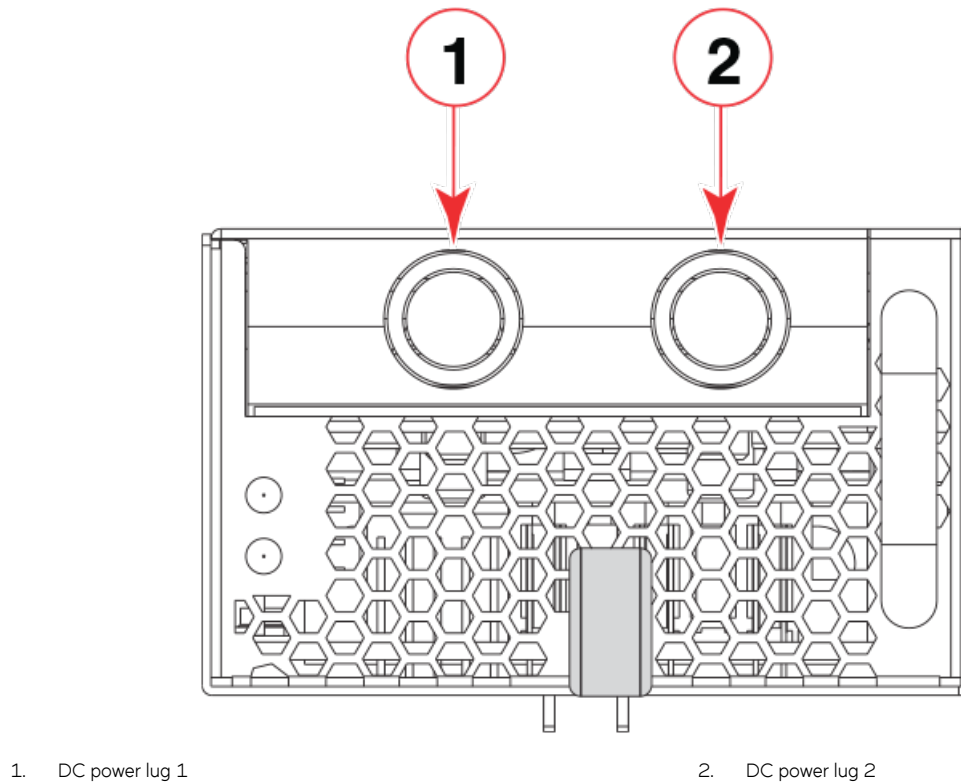
9. Connect the power lugs to the power supply module.

Connect the -48V wire to the negative terminal and the 0V wire to the positive terminal.

NOTE

The DC return must be isolated from the chassis ground (DC-I) when making connections to the power supply.

FIGURE 29 DC power supply



10. Plug the other end of the cable into the power source.

NOTE

Do not connect the device to the network until the IP addresses are configured.

For information about power supply LED patterns, refer to [Interpreting power supply module LEDs](#) on page 80.

For NEBS-compliant installation with AC and DC

For the NEBS-compliant installation of the Brocade device with AC and DC systems, use a copper ground wire of at least 2 American Wire Gauge (AWG). The ground wire should have an agency-approved crimped 2-hole lug (provided with the device) attached to one end, with the other end attached to building ground.

The connector must be crimped with the proper tool, allowing it to be connected to both ground screws on the enclosure. Before crimping the ground wire into the provided ground lug, ensure the bare copper wire has been cleaned and antioxidant is applied to the bare wire.

To ensure adequate bonding when attaching the ground lug, a minimum of 55-65 in-lbs of torque is required to be applied to the mounting hardware used to attach the ground lug.

All bare grounding connection that points to the Brocade device shall be cleaned and coated with an anti-oxidant solution before connections are made.

Establishing a serial connection

To establish a serial connection to the console port on the device, complete the following steps.

1. Verify that the device is powered on by verifying that all power LED indicators on the management, interface, power supply, and fan modules display a steady green light.

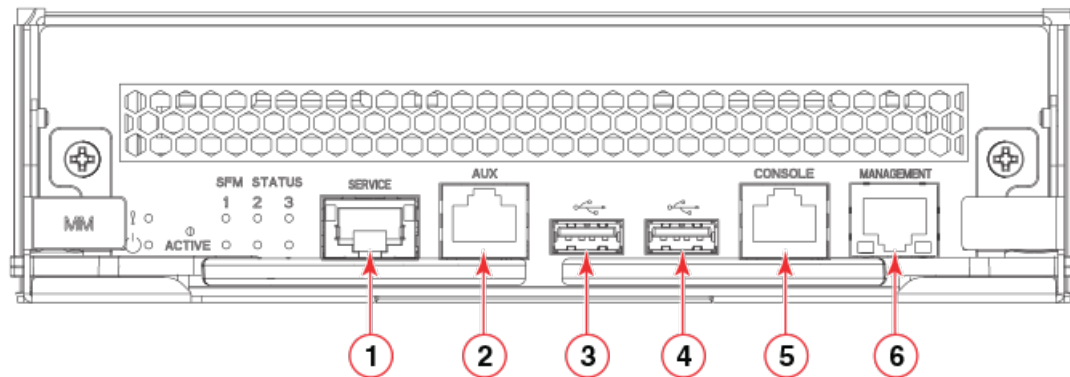
2. Connect the RJ-45 serial cable provided with the device to the console port on the active management module.

NOTE

The active management module has the LED labeled ACTIVE on the front panel illuminated in blue.

Use the port labeled CONSOLE, as shown in the following figure.

FIGURE 30 Management module front panel



- | | |
|---------------------------------------|--|
| 1. Service Ethernet port, 10G/1G/100M | 4. USB port |
| 2. Auxiliary console port | 5. Console port |
| 3. USB port | 6. Management Ethernet port, 1G/100M/10M |

NOTE

The console or serial port is intended primarily for the initial setting of the IP address.

3. Access the device using a terminal emulator application (such as HyperTerminal in a Windows environment or Tip in a UNIX environment).
4. Disable any serial communication programs running on the workstation (such as synchronization programs).

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

- In a Windows environment:

Parameter	Value
Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

NOTE

Flow control is not supported on the serial consoles when attached to remote terminal servers and must be disabled to ensure proper operation.

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

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

If ttyb is already in use, use ttya instead and enter the following string at the prompt:

```
tip /dev/ttya -9600
```

When the terminal emulator application stops reporting information, press **Enter**. You receive the following login prompt:

```
SLX login:
```

6. Log in to the console using *admin* as the default login name and *password* as the default password.

As login to the device occurs, you are prompted to change the device passwords.

```
Please change passwords for switch default accounts now.
Use Control-C to exit or press 'Enter' key to proceed.
```

7. Press **Enter** to step through a procedure to change the passwords as shown in the following example. To skip modifying the password, press **Ctrl+C**.

```
Warning: Access to the Root and Factory accounts may be
required for proper support of the switch. Please ensure the Root
and Factory passwords are documented in a secure location. Recovery of
a lost Root or Factory password will result in fabric downtime.
```

```
for user - admin
Changing password for admin
Enter old password:
Enter new password:
Re-type new password:
passwd: all authentication tokens updated successfully
```

Passwords can be 8 through 40 characters long. They must begin with an alphabetic character. They can include numeric characters, the period (.), and the underscore (_) only. Passwords are case-sensitive, and they are not displayed when you enter them on the command line. For more information on passwords, refer to *Brocade SLX-OS Security Configuration Guide* for the Brocade SLX 9850 Router.

Configuring a static IP address

Complete the following steps to set a static IP address.

NOTE

You can also use DHCP to configure a chassis static IP address on the management module.

1. Log in to the device using an account that has the admin role.
2. Enter global configuration mode using the **configure terminal** command.
3. Use the **chassis virtual-ip** command to set the IP address for the chassis.

```
device(config)# chassis virtual-ip 10.20.236.132/20
```

4. Use the **ip address** command to set the Ethernet IP address for the management modules.

If you are going to use an IPv4 IP address, enter the IP address in dotted decimal notation.

When you have assigned the IP address to management interface 1, you should also assign the IP address to management interface 2 if you have installed a second management module.

```
device(config)# interface Management 1
device(config-Management-1)# no ip address dhcp
device(config-Management-1)# ip address 10.24.85.81/20
```

5. Return to privileged EXEC mode by entering **exit**.

```
device(config)# exit
device#
```

6. To display the configuration, use the **show running-config interface Management** command.

```
device# show running-config interface Management 1
interface Management 1
  no ip address dhcp
  ip address 10.24.85.81/20
!
```

Configuring IPv6 address

Following are the basic prerequisites for configuring IPv6 address on SLX platform:

- SLX chassis with management modules.
- PC with reachability to the serial port of the active management module (MM).
- IPv6 network assignment with a netmask and router address from the network administrators. This will generally be a /64 network.

NOTE

If you are provided an IPv6 prefix with a /65 to /128 netmask, assign the addresses according to your network administrator's direction, and do NOT follow this procedure.

NOTE

SLX platforms without redundant management modules only need to configure the M 1 interface.

To configure IPv6 addresses, perform the following steps:

1. Enter the **show system** command to know the STACK MAC and the BURNED IN MAC for each MM present in the system.

```
device# show system
Stack MAC           : 60:9c:9f:60:88:00

-- UNIT 0 --
Unit Name           : 9850-8
Switch Status       :
Hardware Rev        :
Up Time             : up 21:00
Current Time        : 23:08:49 GMT
SLX-OS Version      : 17r.1.00
Jumbo Capable       : yes
Burned In MAC       : MM1[60:9c:9f:46:e2:06]MM2[60:9c:9f:47:10:7a]
Management IP       : 10.25.101.4
Management Port Status : UP
```

The MAC addresses are used to create the IPv6 SLAAC address for the following mapping:

- MM1 MAC - IPv6 address for interface M 1
- MM2 MAC - IPv6 address for interface M 2
- Stack MAC - IPv6 address for chassis virtual-ipv6

2. Convert each MAC address to a modified EUI-64 format, and then into the final IPv6 address for the interfaces by performing the following steps:

- a) Remove any punctuation from the MAC.

```
609c9f46e206
```

- b) Insert **fffe** after the first 6 characters.

```
609c9ffffe46e206
```

- c) Using a calculator application in HEX Mode on a PC, do a Bitwise OR operation of the modified MAC with 0200000000000000.

```
629c9ffffe46e206
```

- d) Convert the result to IPv6 format by inserting colons after every 4 characters from the right hand side.

```
629c:9fff:fe46:e206
```

- e) Prepare the IPv6 network information for use. This example uses a sample network of 2001:DB8::/32 provided by the Admin.

- Normalize the address to a fully expanded format.

```
2001:0DB8:0000:0000:0000:0000:0000:0000/32
```

- Remove the cidr notation.

```
2001:0DB8:0000:0000:0000:0000:0000:0000
```

- Remove the host portion of the address based on a /64 netmask.

```
2001:0DB8:0000:0000:
```

- Contract the remaining portion of the address of any leading zeros.

```
2001:DB8::
```

- f) Combine the IPv6 network prefix from step 2e and the result of step 2d to make the IPv6 address.

```
2001:DB8::629c:9fff:fe46:e206/32
```

- g) Repeat steps 2a to 2f for each MAC address.

3. Apply the addresses to the appropriate interfaces and configure the default route using the router address provided by the network administrator.

For more information on configuring management addresses, refer to *Brocade SLX-OS Management Guide* .

Establishing an Ethernet connection

After using a serial connection to configure the IP addresses for the device, you can connect the active management module to the local area network (LAN).

NOTE

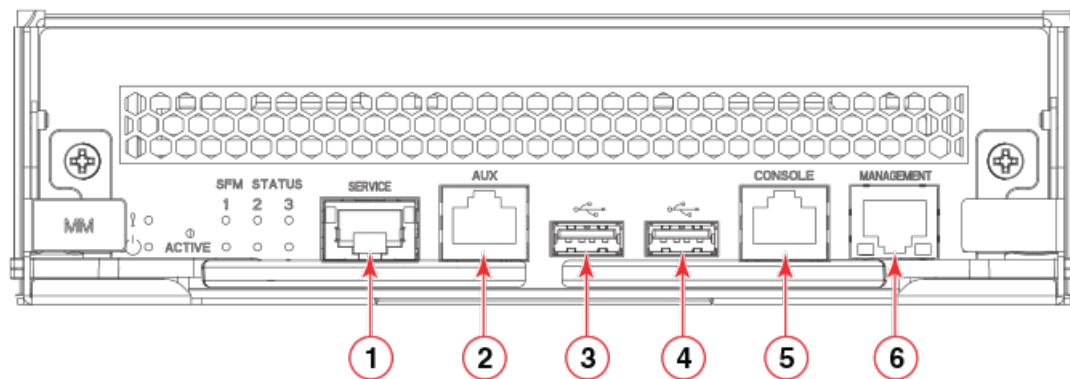
Connecting interface modules to a private network or VLAN is recommended.

After establishing an Ethernet connection, you can complete the device configuration using a serial console connection, Telnet connection, or existing management applications.

Perform the following steps to establish an Ethernet connection to the device.

1. Remove the shipping plug from the Ethernet port on the active management module.
The active management module has the LED labeled ACTIVE on the front panel illuminated in blue.
2. Insert one end of an Ethernet cable into the Management Ethernet port.

FIGURE 31 Management module front panel



- | | |
|---------------------------------------|--|
| 1. Service Ethernet port, 10G/1G/100M | 4. USB port |
| 2. Auxiliary console port | 5. Console port |
| 3. USB port | 6. Management Ethernet port, 1G/100M/10M |

3. Connect the other end to 1 G, 100 MbE, or 10 MbE Ethernet LAN.
4. Complete any additional device configuration procedures for the device using one of the following steps:
 - Log in to the device using a serial console connection and admin login.
 - Log in to the device through a Telnet or SSH session using the chassis management IP address and admin login.

Customizing the chassis and host names

To configure a chassis and host name, complete the following task.

The chassis and host names can be up to 30 characters long; can include letters, numbers, hyphens, and underscore characters; and must begin with a letter.

The default chassis name is "BR-SLX9850-4". The default host name is "SLX". The host name is shown at the SLX-OS prompt.

Brocade recommends that you customize the chassis name for each platform because some of the system logs refer to the platform by its chassis name.

1. Log in to the device using one of the following methods:
 - A serial console connection to the active management module. The active management module has the LED labeled ACTIVE on the front panel illuminated in blue.
 - A Telnet session using the chassis management IP address.
2. Log in to the device using *admin* as your login name. If you have not changed the default password, use *password*.

3. Change the chassis name by completing the following steps.
 - a) Enter **configure terminal** to enter global configuration mode.
 - b) Enter **switch-attributes chassis-name** *chassis-name*, where *chassis-name* is the new chassis name.
 - c) Enter **exit** to return to privileged EXEC mode.
 - d) To verify the new chassis name, enter the **show chassis** command.
4. Change the host name by completing the following steps.
 - a) Enter **configure terminal** to enter global configuration mode.
 - b) Enter **switch-attributes host-name** *host-name*, where *host-name* is the new host name.
 - c) Enter **exit** to return to privileged EXEC mode.
 - d) To verify the new host name, enter the **show running-config | include host** command.
5. Record the new names for future reference.

Configuring the DNS service

To view the current DNS configuration, enter the **show ip dns** command. To manually configure a unique domain name for your device, complete the following steps.

1. Log in to the device using one of the following methods:
 - A serial console connection to the active management module. The active management module has the LED labeled ACTIVE on the front panel illuminated in blue.
 - A Telnet session using the chassis management IP address.
2. Log in to the device using *admin* as your login name. If you have not changed the default password, use *password* for password.
3. Enter the **ip dns domain-name** *domain-name* command, where *domain-name* is the domain name for your device.
4. (Optional) Enter **ip dns name-server** *ip-address*, where *ip-address* is the IP address of the DNS server.

Setting the date and time

Date and time are used for logging events. The operation of the device does not depend on the date and time; a Brocade device with an incorrect date and time value functions properly. Because the date and time are used for logging, error detection, and troubleshooting, you should set them correctly.

Setting the clock (date and time)

The following procedure sets the local clock date and time. An active NTP server, if configured, automatically updates and overrides the local clock time. Time values are limited to between January 1, 1970 and January 19, 2038.

NOTE

You should set the clock only if there are no NTP servers configured. Time synchronization from NTP servers overrides the local clock.

1. Log in to the device using an account that has the admin role.

2. Enter **clock set** *dateTime (CCYY-MM-DDTHH:MM:SS)* command while in privileged EXEC mode.

The following example sets the clock to August 17, 2016, 12:15 p.m.

```
device# clock set 2016-08-17T12:15:00
```

If you want to show the clock and time zone settings, use the **show clock** command.

```
device# show clock
2016-08-29 12:15:00 location/GMT
```

Time zones

You can set the time zone for a device by using the **clock timezone** command. The time zone setting has the following characteristics:

- The time zone setting automatically adjusts for Daylight Savings Time.
- Changing the time zone on a device updates the local time zone setup and is reflected in local time calculations.
- By default, all devices are in the Greenwich Mean Time (GMT) time zone (0,0).
- System services that have already started will reflect the time zone changes only after the next reboot.
- Time zone settings persist across failover for high availability.
- Time zone settings are not affected by Network Time Protocol (NTP) server synchronization.

The following regions are supported: Africa, America, Arctic, Antarctica, Asia, Atlantic, Australia, Europe, Indian, and Pacific. One of these, along with a city name, establishes the time zone. Refer to [Setting the time zone](#) on page 72.

Time synchronization

To keep the time in your network current, it is recommended that each device has its time synchronized with at least one external NTP server.

The device maintains the current clock server value in nonvolatile memory. By default, this value is the local device clock.

The **ntp server** command accepts multiple server addresses in either IPv4 or IPv6 format. When multiple NTP server addresses are passed, **ntp server** sets the first obtainable address as the active NTP server. If there are no reachable time servers, then the local time is the default time.

Synchronizing local time using NTP

Perform the following steps to synchronize the local time using NTP.

1. Log in to the device using the admin account (the default password is *password*).
2. Enter **configure terminal** to enter global configuration mode.
3. Set the clock manually within 1000 seconds of the current time before setting up NTP on the device. Refer to [Setting the clock \(date and time\)](#) on page 70 for more information.
4. Enter **ntp server** *IPv4 address*, where *IPv4 address* is the IP address of the first NTP server in IPv4 format, which the device must be able to access. By default, this value is LOCL, which uses the local clock as the clock server.

```
device(config)# ntp server "132.163.135.131"
```

To display the NTP server IP address, use the **show ntp status** command. If you are in global configuration mode, enter **do** before the **show** command.

5. (Optional) To remove an NTP server, use the **no ntp server** command.

Setting the time zone

You must set the time zone on *all* devices for which the time zone must be set. However, you only need to set the time zone once on each device because the value is written to nonvolatile memory. While not necessary for device operation, setting a time zone is part of ensuring accurate logging and audit tracking. Time zone changes persist through a reboot without having to save the current running configuration.

To set the time zone, complete the following steps.

1. Log in to the device using an account that has the admin role.
2. Enter the **clock timezone** *region/city* command while in global configuration mode.

The following example changes the time zone to US/Pacific Standard Time.

```
device# configure terminal
Entering configuration mode terminal

device(config)# clock timezone America/Los_Angeles
```

Verifying correct operation

Perform the following steps to verify correct operation of the device.

1. Check the LEDs of all power supplies, fans, and modules to verify that all are functional. For a more detailed description of the LEDs on each system component, refer to [Monitoring the Device](#) on page 75.

NOTE

The switch fabric module status LEDs are located on the management module, as well as the switch fabric module. For more information, refer to [Verifying switch fabric module operation](#) on page 124.

2. Log into the device using one of the following methods:
 - A serial console connection to the active management module. The active management module has the LED labeled ACTIVE on the front panel illuminated in blue.
 - A Telnet session using the chassis management IP address.
3. Log in to the device using *admin* as your login name. If you have not changed the default password, use *password* for password.

- Verify the correct operation of the device by entering the following commands. Copy output to a file to save the information.

TABLE 18 Commands to verify correct operation

Command	Description
show environment power	Displays power supply status and information
show environment fan	Displays fans status and information
show chassis or show system	Displays router status and information
show slots	Displays the current status of each slot in the chassis
show environment temp or show environment sensor	Displays temperature status and information
show environment history	Displays the history of the installed modules
show history	Displays CLI history
show logging auditlog , and show logging raslog	Displays any errors

Backing up the configuration

Brocade recommends backing up the configuration on a regular basis to ensure that a complete configuration is available for downloading to a replacement device.

Observe the following notes about configuration data:

- Passwords are not saved in the configuration file, and are not uploaded during a configuration upload.
 - It is recommended that the configuration be backed up on a regular basis to ensure that a complete configuration is available for downloading to a replacement chassis.
- Log in to the device using one of the following methods:
 - A serial console connection to the active management module. The active management module has the LED labeled ACTIVE on the front panel illuminated in blue.
 - A command line interface (CLI) session using the chassis management IP address.
 - Log in to the device using *admin* as your login name. If you have not changed the default password, use *password*.
 - Enter **copy running-config { startup-config | flash:// | ftp:// | scp:// | sftp:// | tftp:// | usb:// }**, where:
 - startup-config** saves the running configuration to the startup configuration.
 - flash://** saves the running configuration to the flash drive in the specified location.
 - ftp://** saves the running configuration to the specified FTP server address.
 - scp://** saves the running configuration to the specified secure copy (SCP) server location.
 - sftp://** saves the running configuration to the specified Secure FTP (SFTP) server address.
 - tftp://** saves the running configuration to the specified TFTP server address.
 - usb://** saves the running configuration to the USB drive attached to the device (for example, plugged into the USB port in the management module).

Powering down the device

Power off the chassis by disconnecting all power cords to the power supplies or switching off the rack power source.

Note that power supply LEDs will continue to flash green briefly after disconnecting power until the power supply is completely off.

NOTE

In the case of scheduled device power-cycles with the chassis configuration database running normally, it is recommended to use the **system power-cycle-db-shutdown** command before actual rebooting the device. This command shuts down the chassis configuration database, without rebooting the device. All commands (except for the reload command) are blocked on this device until the device is rebooted. The device also informs its HA-peer to shut-down its database gracefully and not handle any database requests moving forward. The device is not fully functional until it reboots. This command should be run as part of any planned power outages.

Installing cable management kit

For more information about cable management, refer to [Managing cables](#) on page 127.

Monitoring the Device

- [Monitoring Overview.....](#)75
- [Interpreting management module LEDs.....](#)75
- [Interpreting interface module LEDs.....](#)77
- [Interpreting power supply module LEDs.....](#)80
- [Interpreting fan module LEDs.....](#)83
- [Interpreting switch fabric module LEDs.....](#)84

Monitoring Overview

The Brocade device is engineered for reliability and requires no routine operational steps or maintenance. You can monitor the device by paying attention to the following information:

- The LEDs showing the status of system components
- A description of the operations that the device performs when you power it on

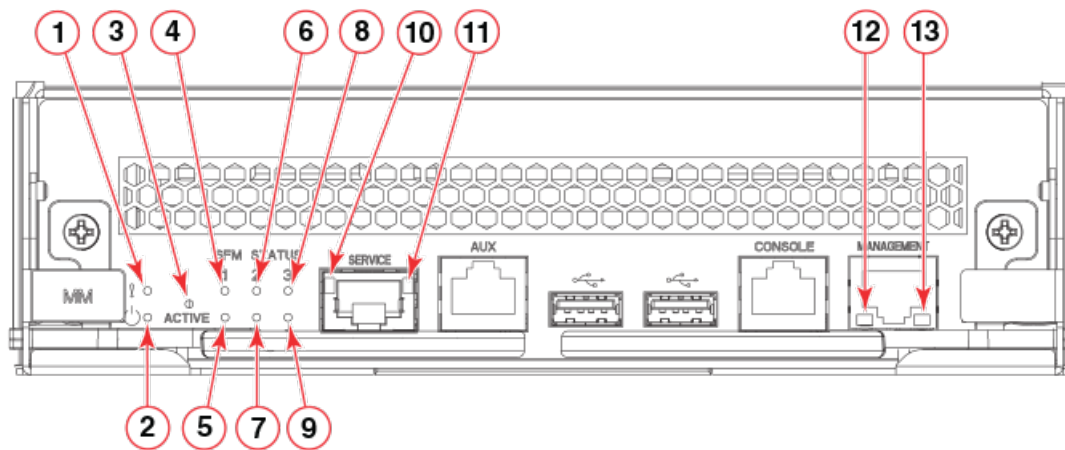
The following commands can be especially helpful in monitoring the health status of various device components. For details about these commands, refer to the *Brocade SLX-OS Monitoring Configuration Guide* for the Brocade SLX 9850 Router.

- **show chassis**
- **show system**
- **show slots**
- **show linecard**
- **show environment fan**
- **show environment power**
- **show environment sensor**
- **show environment temp**

Interpreting management module LEDs

Refer to the following figure and table to interpret the LED patterns on the management module. The LED patterns may temporarily change during device diagnostic tests.

FIGURE 32 Management module LEDs



- | | |
|---|----------------|
| 1. Status | 8. SFM5 status |
| 2. Power | 9. SFM6 status |
| 3. Active | 10. Ethernet |
| 4. Switch fabric module 1 (SFM1) status | 11. Ethernet |
| 5. SFM2 status | 12. Ethernet |
| 6. SFM3 status | 13. Ethernet |
| 7. SFM4 status | |

The following table describes the management module LED patterns and the recommended actions for those patterns.

TABLE 19 Management module LED descriptions

LED purpose	Color	Status	Recommended action
Status 	No light (LED is off)	Module is either not operational or does not have power.	Ensure that the module is firmly seated, that both ejectors (arms on the side of the module) are pushed in fully, and that both captive screws are tightened.
	Amber	Module is faulty or initializing.	Check the module status by entering the show slots command. If the LED remains amber, consult the device supplier.
	Green	Module is powered on.	No action is required.
Power 	No light (LED is off)	Module is not powered on.	Ensure that the module is firmly seated, that both ejectors are pushed in fully, and that both captive screws are tightened.
	Green	Module is operational.	No action is required.
Active	Blue	This is the active management module.	No action is required.
	Off	This is the standby management module.	No action is required.
SFM Status 1-6 These LEDs correspond to the SFMs that are located behind each management module. Since the	No light (LED is off)	An SFM is not installed in that slot, or the SFM does not have power.	Verify that an SFM is installed in the slot that corresponds to the LED. If there is no SFM installed in that slot, no action is required.

TABLE 19 Management module LED descriptions (continued)

LED purpose	Color	Status	Recommended action
SFMs are hidden behind the fans in the chassis, use these LEDs to determine SFM operation. For more information, refer to Interpreting switch fabric module LEDs on page 84.		The Brocade SLX 9850 contains a maximum of six SFMs, but ships with five, so not all slots are used.	
	Steady amber	SFM is faulty or initializing.	Ensure that the SFM is firmly seated and check the status by entering the show chassis command. If the LED remains amber, consult the device supplier.
	Green	Switch fabric module (SFM) module is operational.	No action is required.
Ethernet	Steady green	Port is online (connected to an external device) but has no traffic.	No action is required.
	Flickering green	Port is online, with traffic flowing through port.	No action is required.
	No light (LED is off)	Port has no incoming power, or there is no light or signal carrier detected.	Verify that the power LED is on. Check the transceiver and cable.
		Connected device is configured in an offline state.	Verify the status of the connected device.
	Slow flash (one second on, one second off)	Device is set to beaconing using the chassis beacon enable command.	Disable the beaconing feature by entering the chassis beacon disable command.

Interpreting interface module LEDs

Refer to the following illustrations and table to interpret the LED patterns on the interface module. The LED patterns may temporarily change during device diagnostic tests.

The following two figures show the power and status LEDs in the interface modules.

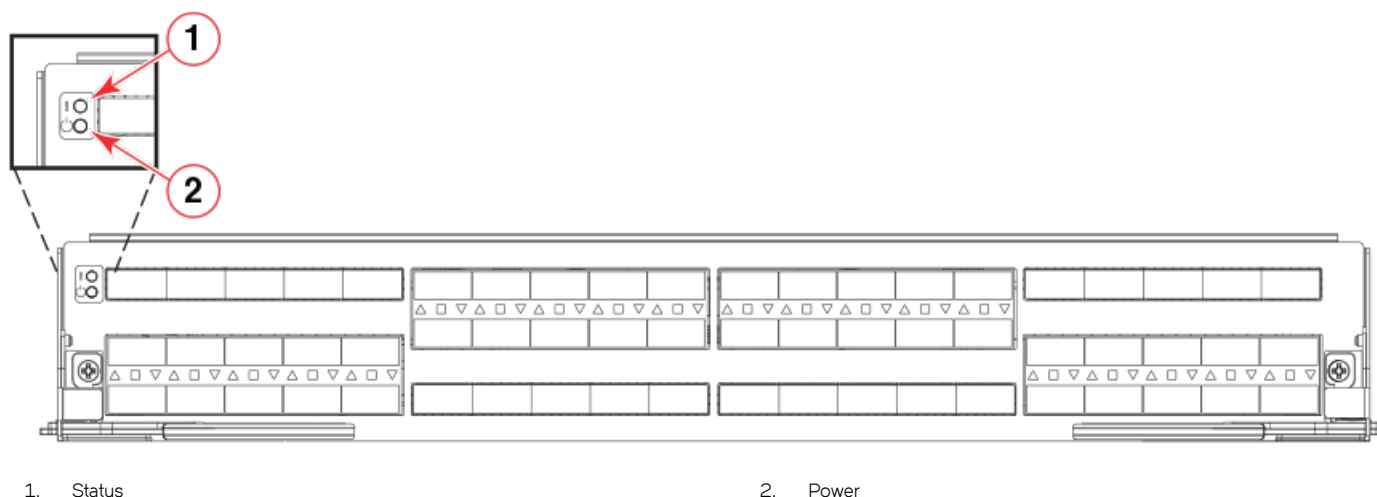
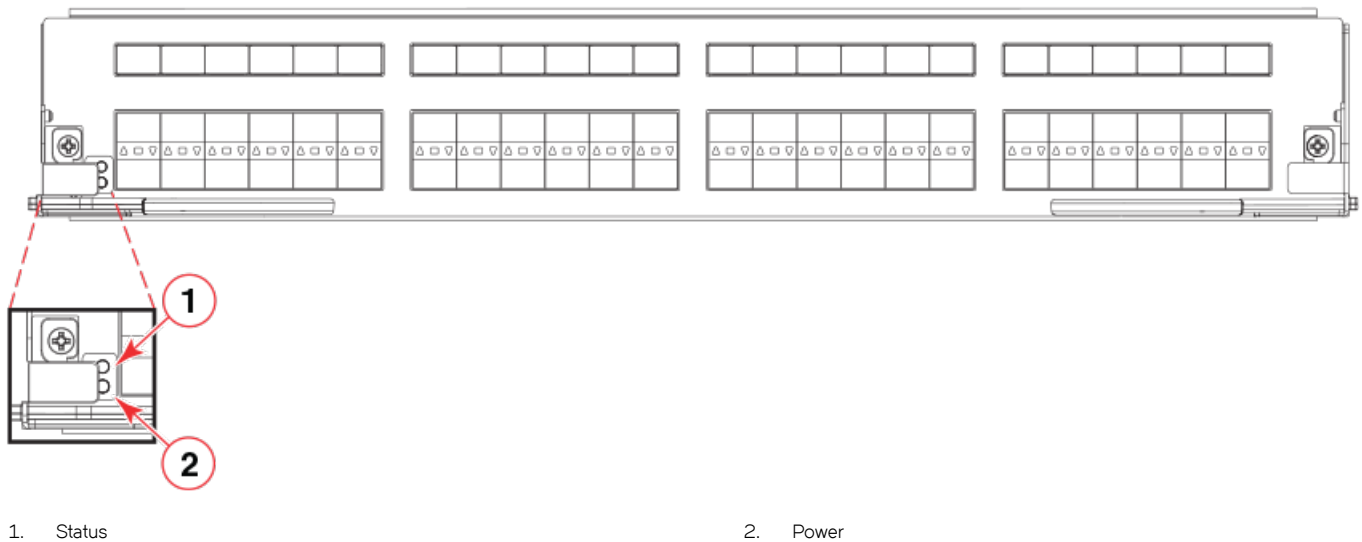
FIGURE 33 Front panel LEDs for the 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module

FIGURE 34 Front panel LEDs for the 72-port 10GbE/1GbE interface module



The following two figures show the placement of the Ethernet port LEDs and the port to which they refer. There is one row of Ethernet LEDs per three rows of Ethernet ports.

FIGURE 35 Interface module port LEDs (used for the 72-port 10GbE/1GbE interface module and similar for the other half of the flex-speed interface module ports)

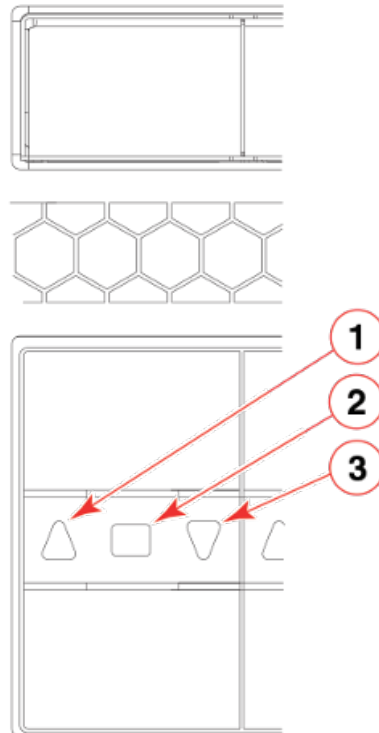
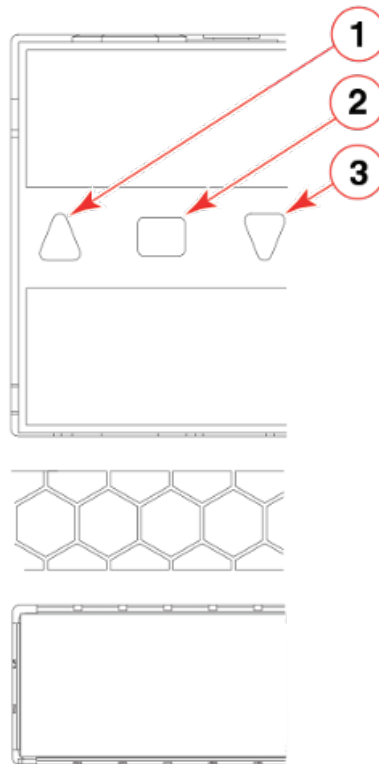


FIGURE 36 Interface module port LEDs (similar for the other half of the flex-speed interface module ports)

1. LED for the port in the top row
2. LED for the port in the center row (directly below the LED)
3. LED for the port in the bottom row

TABLE 20 Interface module LED descriptions

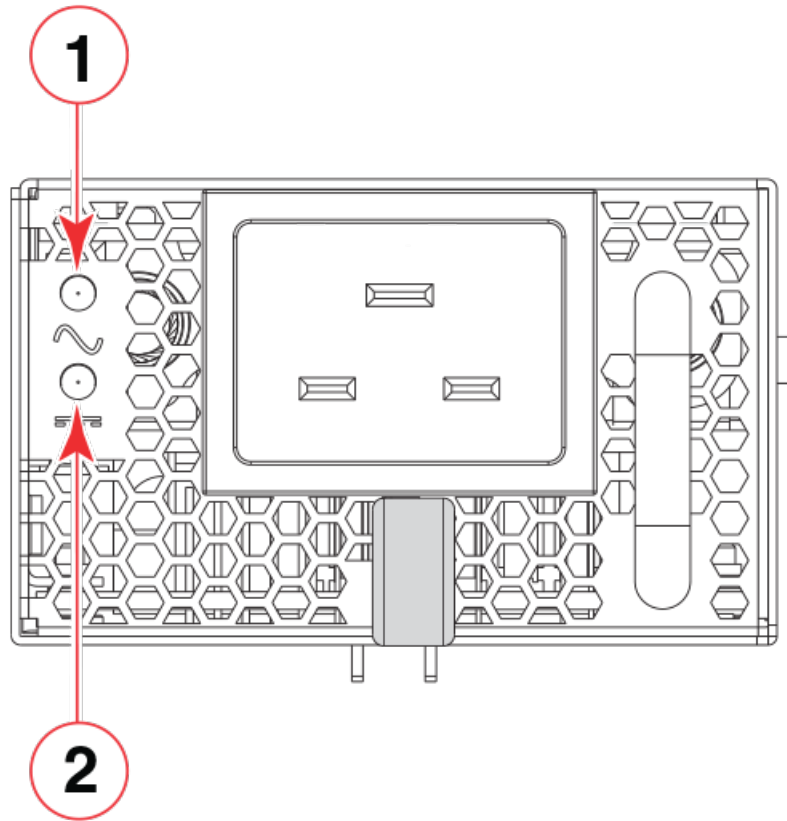
LED purpose	Color	Status	Recommended action
Status 	No light (LED is off)	Module is either not operational or does not have power.	Ensure that the module is firmly seated, that both ejectors (arms on the side of the module) are pushed in fully, and that both captive screws are tightened. Enter the power-on linecard slot_number command to make sure that the module is powered on in software.
	Amber	Module is faulty or initializing.	Check the module status by entering the show slots command. If the LED remains amber, consult the device supplier.
	Green	Module is operational.	No action is required.
Power 	No light (LED is off)	Module is not powered on.	Ensure that the module is firmly seated, that both ejectors are pushed in fully, and that both captive screws are tightened.
	Green	Module is operational.	No action is required.
Ethernet for 72-port 10GbE/1GbE interface module	Steady green	Port is online (connected to an external device) but has no traffic.	No action is required.

TABLE 20 Interface module LED descriptions (continued)

LED purpose	Color	Status	Recommended action
	Flickering green	Port is online, with traffic flowing through port.	No action is required.
	No light (LED is off)	Port has no incoming power, or there is no light or signal carrier detected.	Verify that the power LED is on. Check the transceiver and cable.
		Polling is in progress.	Allow 60 seconds for polling to complete.
		Connected device is configured in an offline state.	Verify the status of the connected device.
Ethernet for 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module	Steady green	Port is online (connected to an external device) but has no traffic.	No action is required.
	Flickering green	Port is online, with traffic flowing through port.	No action is required.
	No light (LED is off)	Port has no incoming power, or there is no light or signal carrier detected.	Verify that the power LED is on. Check the transceiver and cable.
		Polling is in progress.	Allow 60 seconds for polling to complete.
		Connected device is configured in an offline state.	Verify the status of the connected device.
	Amber (24 of the 60 ports only)	The port is inactive because the port group has been set to 100G mode.	The 100G/40G mode is set per port group. A port group is in fact a tower. There are 10 ports in a port group. When a port group is configured as 100G mode, 4 ports in the port group are active, and their Amber LEDs are on.

Interpreting power supply module LEDs

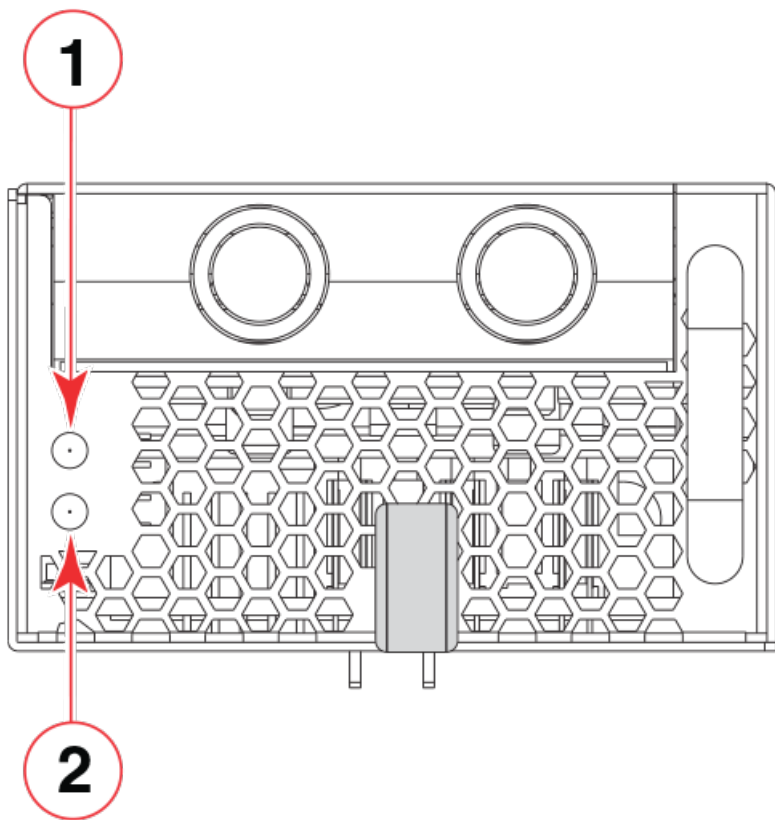
Refer to the following illustrations and table to interpret the LED patterns on the power supply module. The LED patterns may temporarily change during device diagnostic tests.

FIGURE 37 AC Power supply module LEDs

1. LED 1 - AC in good

2. LED 2 - AC out good

FIGURE 38 DC power supply LEDs



1. LED 1 - DC in good

2. LED 2 - DC out good

TABLE 21 PS module LED descriptions

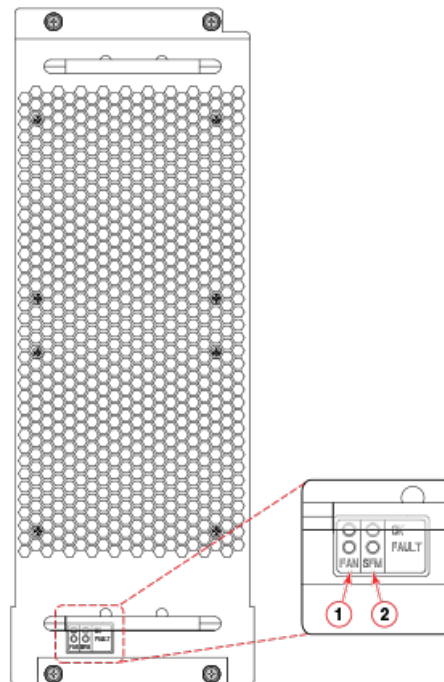
LED purpose	Color	Status	Recommended action
Power supply module status	LED 1 and LED 2: Steady green	Input and output voltages are within range	No action is required.
	LED 1: Off LED 2: Flashing yellow	Power supply does not have incoming power and is not providing power to the device, or the Input AC voltage is out of range.	Ensure that the power supply is firmly seated, the power cable is connected, and that the power cable is connected to a power source. Disconnect the power cable from the power supply, remove and reinsert the power supply, and then reconnect the power cable to restart. If this condition persists, replace the power supply assembly.
	LED 1: Green LED 2: Yellow	Output voltage is out of range	If this condition persists, replace the power supply assembly.
	LED 1: Green LED 2: Flashing Yellow/Green	Over-temperature warning or fan error	Check the fan.

TABLE 21 PS module LED descriptions (continued)

LED purpose	Color	Status	Recommended action
			Check the environmental temperature.

Interpreting fan module LEDs

Refer to the following illustration and table to interpret the LED patterns on the power supply module. The LED patterns may temporarily change during device diagnostic tests.

FIGURE 39 Fan and switch fabric module LEDs - Brocade SLX 9850-4

1. Fan LEDs (Top LED - power; Bottom LED - status).

2. Switch fabric module LED (Top LED - power; Bottom LED - status).

NOTE

There are two sets of LEDs, one for the fan and one for the switch fabric module (SFM). This table describes both sets of LEDs.

TABLE 22 Fan module LED descriptions

LED purpose	Color	Status	Recommended action
Power (Fan)	No light (LED is off)	Fan assembly does not have power.	Ensure that the fan assembly is firmly seated and has power.
	Steady green	Fan assembly has power.	No action is required.
Status (Fan)	No light (LED is off)	Fan assembly is either healthy or does not have power.	Ensure that the fan assembly has power.

TABLE 22 Fan module LED descriptions (continued)

LED purpose	Color	Status	Recommended action
	Steady amber	Fan assembly is being initialized or has a failure (full or partial).	Wait to see if the fan fully initializes. If the LED remains amber, replace the fan assembly.
Power (SFM)	No light (LED is off)	Module is not powered on.	Ensure that the module is firmly seated, that both ejectors are pushed in fully, and that both captive screws are tightened.
	Green	Module is operational.	No action is required.
Status (SFM)	No light (LED is off)	Module is either not operational or does not have power.	Ensure that the module is firmly seated, that both ejectors (arms on the side of the module) are pushed in fully, and that both captive screws are tightened.
	Amber	Module is faulty or initializing.	Check the module status by entering the show slots command. If LED remains amber, consult the device supplier.
	Green	Module is operational.	No action is required.

Interpreting switch fabric module LEDs

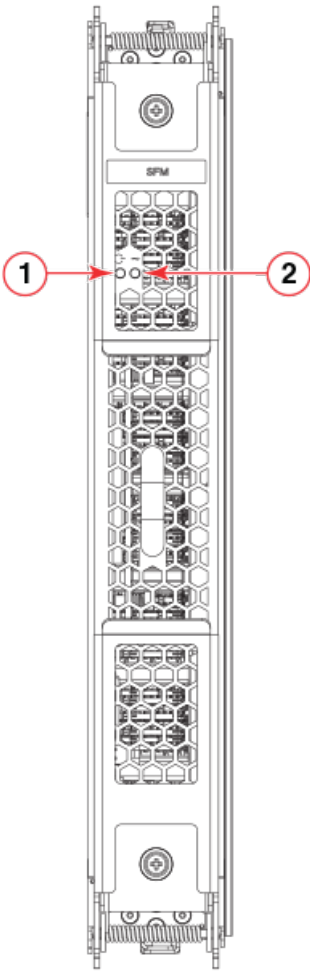
Refer to the following illustrations and table to interpret the LED patterns for the switch fabric module (SFM). The LED patterns may temporarily change during device diagnostic tests.

Since the SFM is located behind the fan modules, LEDs are provided on the fan and management modules to check SFM status. For the location of the SFM LEDs on the management module, refer to [Interpreting management module LEDs](#) on page 75. For the location of the SFM LEDs on the fan module, refer to [Interpreting fan module LEDs](#) on page 83.

There is also a label on the bottom center of the chassis that shows the SFM locations behind the fan modules.

If the fan module is removed, you can check the LEDs on the SFM, as shown in the following figure.

FIGURE 40 SFM LEDs - Brocade SLX 9850-4



1. Power LED
2. Status LED

All SFM LEDs have the same colors and meaning, regardless of their location (on the fan module, management module, or SFM). The following table provides a description of the SFM LEDs.

NOTE

The Brocade SLX 9850 contains a maximum of six SFMs, but ships with five, so not all slots are used. An SFM status LED on the management or fan module that is unlit could indicate that no SFM is installed in that slot, or if it is powered off, it does not indicate a problem on the device.

TABLE 23 SFM LED descriptions

LED purpose	Color	Status	Recommended action
Power 	No light (LED is off)	Module is not powered on.	Ensure that the module is firmly seated, that both ejectors are pushed in fully, and that both captive screws are tightened.
	Green	Module is operational.	No action is required.
Status	No light (LED is off)	Module is either not operational or does not have power.	Ensure that the module is firmly seated, that both ejectors (arms on the side of the module) are pushed

TABLE 23 SFM LED descriptions (continued)

LED purpose	Color	Status	Recommended action
			in fully, and that both captive screws are tightened.
	Amber	Module is faulty or initializing.	Check the module status by entering the show slots command. If LED remains amber, consult the device supplier.
	Green	Module is operational.	No action is required.

Management Modules

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Management module overview

Management modules control the hardware components, run the networking protocols, and run the operating system. For a description of the supported interface modules, refer to [Supported hardware](#) on page 11.

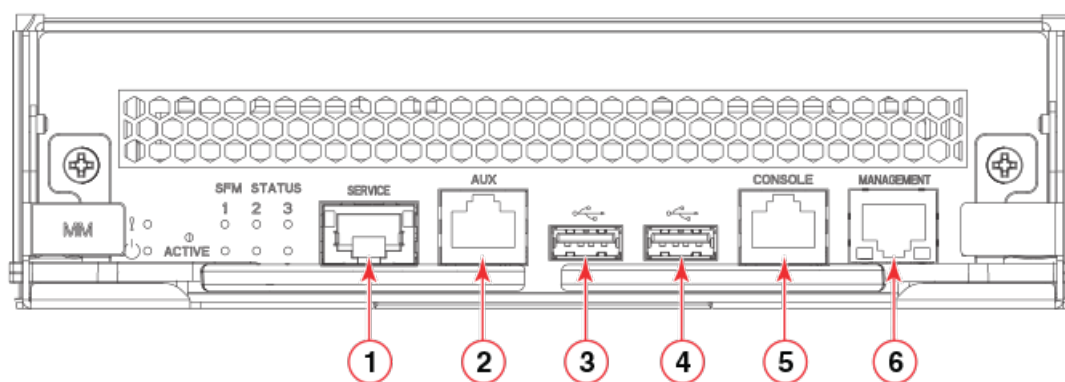
Each router requires one management module, and can accommodate a second module for redundancy. A redundant management module works in conjunction with the active management module. If the active module becomes unavailable, the redundant management module automatically takes over the system operation, minimizing system downtime.

Management modules are hot-swappable, which means you can remove and replace them without powering down the system.

Front panel and port description

The following figure shows the front panel of the management module. The numbered callouts on the illustration are explained in the callout descriptions after the figure.

FIGURE 41 Management module front panel



- | | |
|---------------------------------------|--|
| 1. Service Ethernet port, 10G/1G/100M | 4. USB port |
| 2. Auxiliary console port | 5. Console port |
| 3. USB port | 6. Management Ethernet port, 1G/100M/10M |

For description of the LEDs, refer to [Interpreting management module LEDs](#) on page 75.

Precautions specific to the management modules

Be sure to perform the following procedures before you remove or replace a management module.

- Be sure to back up the configuration before you replace the management module by following the steps in [Backing up the configuration](#) on page 73.
- The management module is sensitive to electrostatic discharge (ESD). When working with any Brocade module, use correct electrostatic discharge (ESD) procedures.
- Any slot that is not occupied by a management module should be occupied by a filler panel to ensure correct cooling of the chassis and protection from dust.
- Wear a wrist grounding strap connected to chassis ground (if the device is plugged in) or a bench ground. Refer to [ESD ground strap connection points](#) on page 88 for the location of the ESD jack.



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megaohm resistor.

- Store ESD-sensitive components in anti-static packaging.



CAUTION

Static electricity can damage the chassis and other electronic devices. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

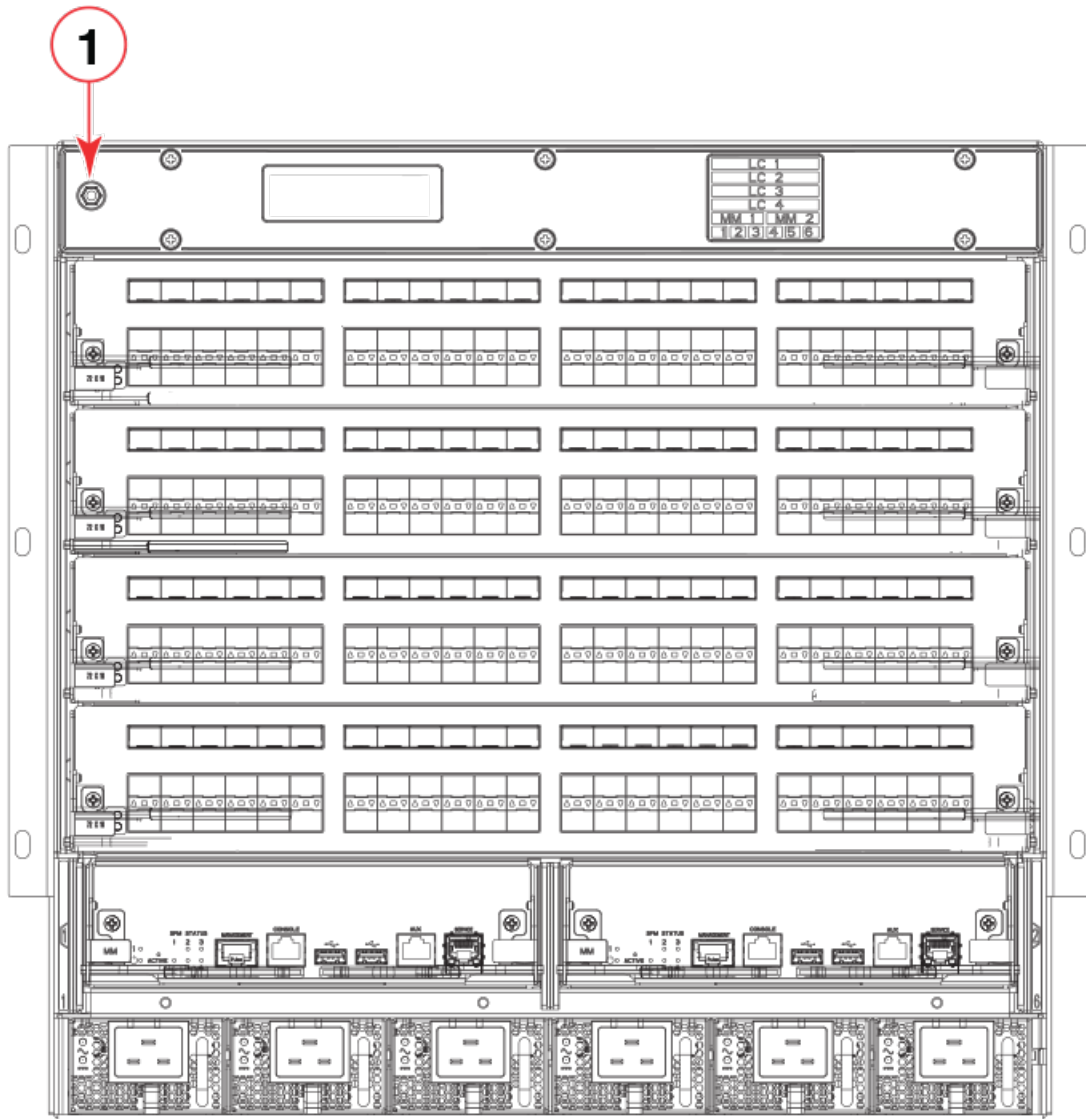
-  **CAUTION**
The 1GbE Management Port is suitable for connection to intrabuilding or unexposed wiring or cabling only. The 1GbE Management Port **MUST NOT** be metalically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 6) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metalically to OSP wiring.

ESD ground strap connection points

Many device components, such as interface modules, management modules, or switch fabric modules, require the use of an electrostatic discharge (ESD) ground strap before removal or insertion.

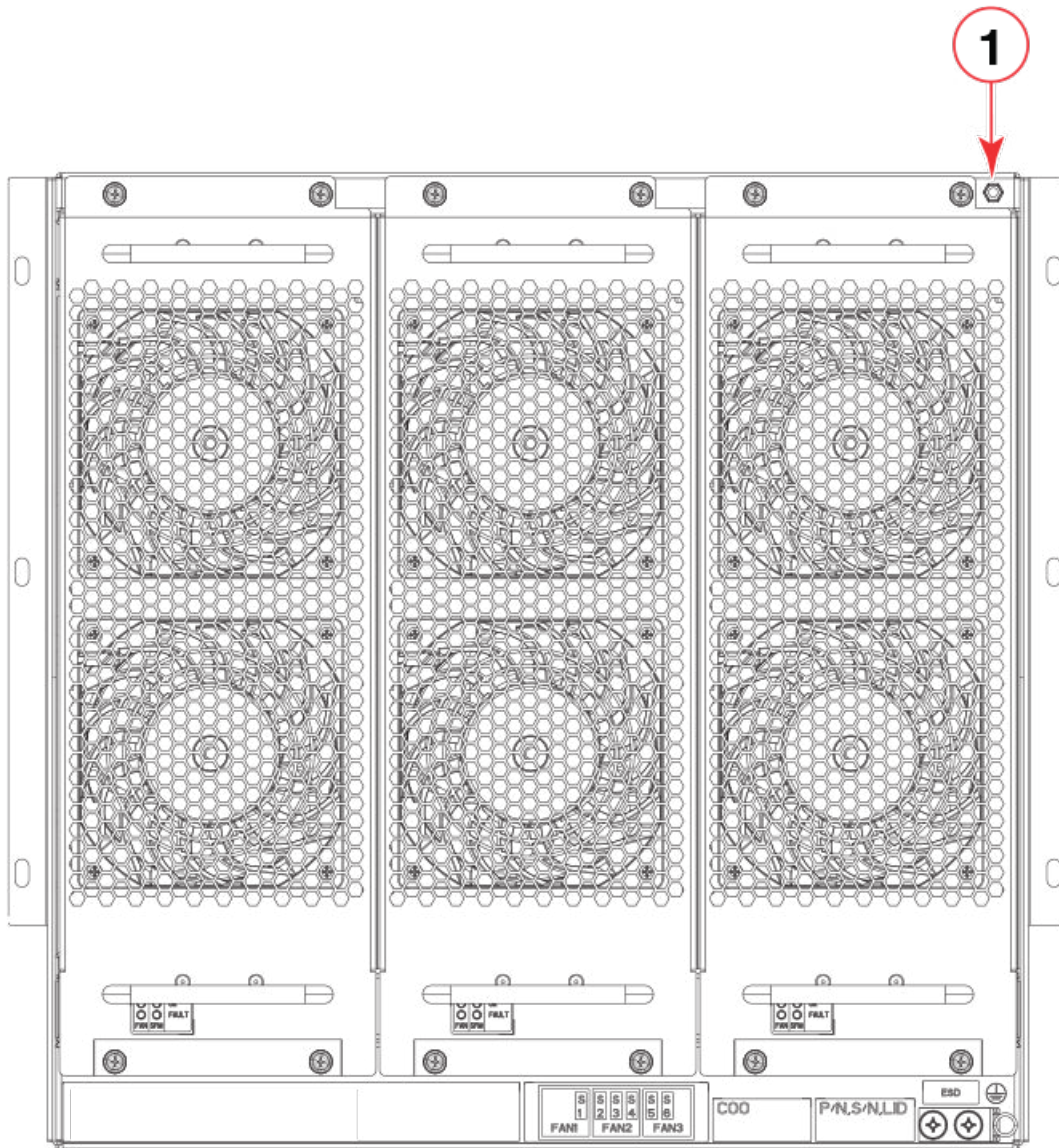
Connect the ESD ground strap to the chassis as shown in the following figures. You can connect the strap to the connection on either the front or back of the chassis.

FIGURE 42 ESD ground strap chassis connection - front



1. ESD ground strap connection point

FIGURE 43 ESD ground strap chassis connection - back



1. ESD ground strap connection point

Time and items required for installation and replacement

The replacement procedure for the management module takes approximately 30 minutes. The following items are required for the management module replacement:

- ESD grounding strap
- Workstation or laptop computer
- Serial cable

- IP address of an FTP server for backing up the configuration
- #2 Phillips screwdriver
- Replacement management module

Removing a management module

Refer to [Precautions specific to the management modules](#) on page 88 before removing a management module.

The chassis continues to operate while an active management module is being replaced if the redundant management module is installed and initialized.

Complete the following steps to remove a management module. Refer to the illustration provided with the procedure.

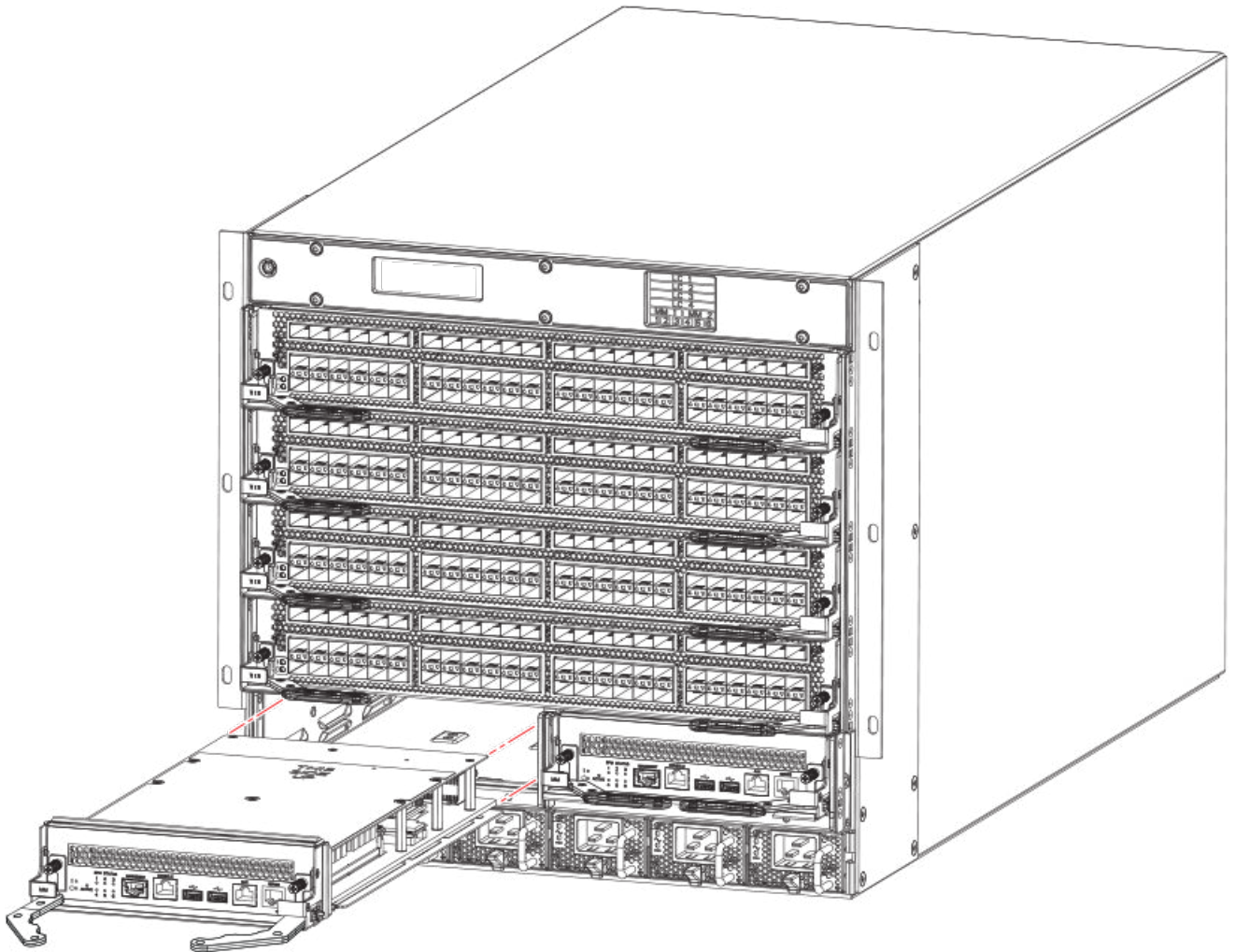
1. Remove any cables connected to the module.
2. Unscrew the captive screws from both ejectors using the #2 Phillips screwdriver.
3. Rotate both ejectors simultaneously outward, away from the center of the module.

4. Pull the management module out of the chassis by the ejectors.

NOTE

Carry the management module by lifting it from its underside, and do not place your fingers in the side of the module.

FIGURE 44 Removal and replacement of the management module



Installing a management module

Refer to [Precautions specific to the management modules](#) on page 88 before replacing a management module.

Complete the following steps to insert a management module. Refer to the illustration provided in [Removing a management module](#) on page 91.

1. Unpack the new management module and remove it from the anti-static bag.
2. Inspect the module for damage.

3. Remove the protective caps from the backplane connectors, if present.
4. Rotate the ejectors outward.
5. Align the module with the guides in the slot.

NOTE

Carry the module from its underside, and do not place your fingers in the side of the module.

6. Slide the management module into the slot until it is firmly seated.
7. Move the ejectors inward until the ejectors are parallel with the face of the module and the module is firmly seated.
8. Tighten the 2 captive screws using the #2 Phillips screwdriver.
9. If the device is powered on, verify that the power LED is green. If not, ensure that the management module has power and is firmly seated and that the ejectors are in the locked position.
10. Reconnect any cables that were attached to the old module.

Verifying management module operation

To verify proper operation of a management module, perform the following procedure.

1. Check the LEDs on the management module front panel. For information about interpreting LED patterns, refer to [Interpreting management module LEDs](#) on page 75.
2. If necessary, log in to the device by Telnet, using the **admin** account.
3. Enter the following commands and note any error conditions:
 - **show system** - Displays information about each component in the system.
 - **show slots** - Displays the current status of the components in each slot of the chassis.

Interface Modules

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Interface module overview

The following section describes the interface modules used with the Brocade SLX 9850, and the procedure you use to insert and replace them in the chassis.

Interface modules provide network interface connectivity, packet processing, and traffic management for the Brocade SLX 9850. For a description of the supported interface modules, refer to [Supported hardware](#) on page 11.

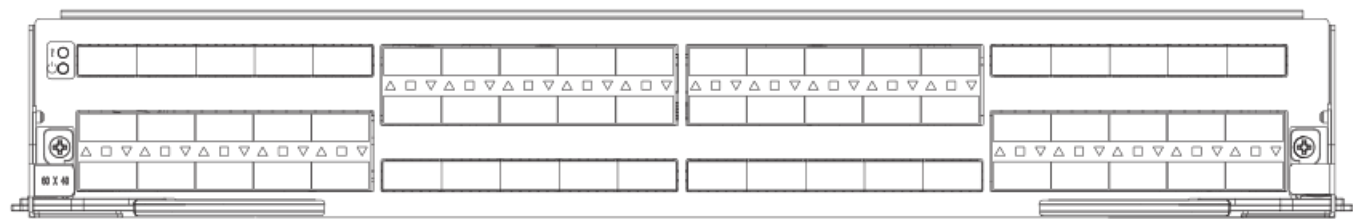
Front panel and port description

There are two interface modules supported for the Brocade SLX 9850:

- 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module
- 72-port 10GbE/1GbE interface module

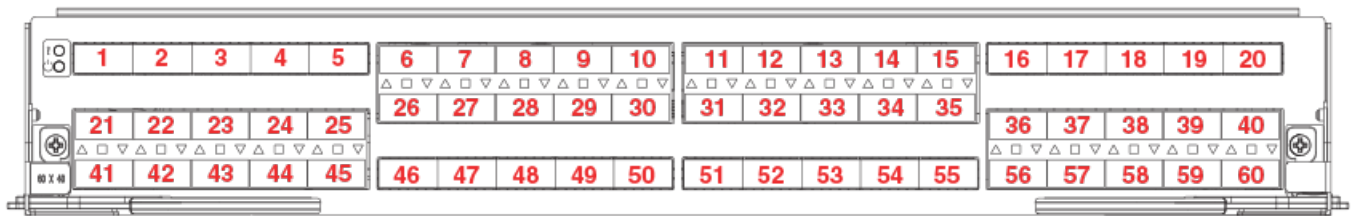
The following figure shows the front panel of the 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module.

FIGURE 45 Front panel - 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module



When the flex-speed interface module is set to 40GbE or 10GbE, all 60 ports on the front panel are used. To use 240 10GbE ports, the 60 ports are connected to 40GbE-to-10GbE breakout cables. For more information, refer to [Breakout cables](#) on page 134.

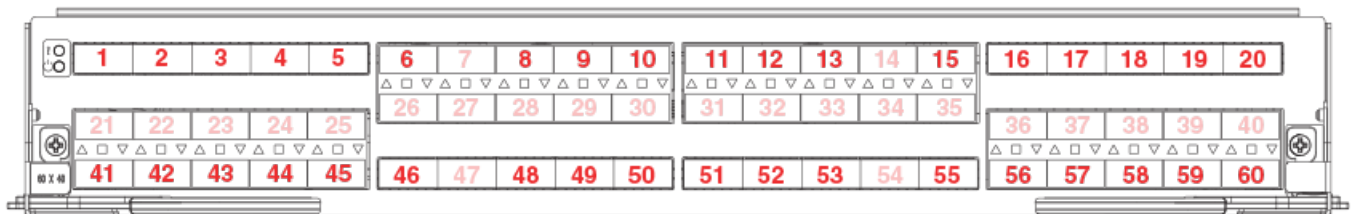
The following figure shows the port numbering when the module is set to 40GbE. For 10GbE, a single Ethernet port on the module is converted into four ports. For example, a breakout cable on the device to Port 1 would convert that port to Ports 1, 2, 3, and 4.

FIGURE 46 Port numbering for the flex-speed module when port speed is set to 10GbE or 40GbE

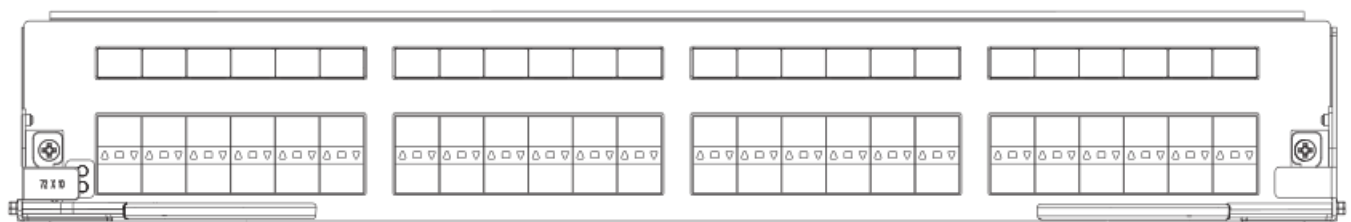
When the module is set to 100GbE, 36 of the 60 ports are active. The following figure shows you the active ports when the module is set to 100GbE. The inactive ports are dimmed in the figure.

NOTE

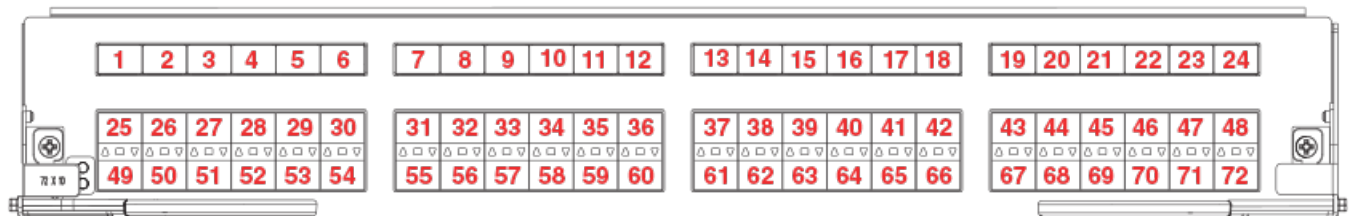
You can also enter the **chassis beacon enable** command to determine the active ports. This command causes the LEDs associated with the active ports to blink amber. To turn off the blinking LEDs, enter the **chassis beacon disable** command.

FIGURE 47 Port numbering for the flex-speed module when port speed is set to 100GbE

The following figure shows the front panel of the 72-port 10GbE/1GbE interface module.

FIGURE 48 Front panel - 72-port 10GbE/1GbE interface module

The following figure shows the port numbering for the 72-port 10GbE/1GbE interface module.

FIGURE 49 Port numbering for the 72-port 10GbE/1GbE interface module

For a description of the module LEDs, refer to [Interpreting interface module LEDs](#) on page 77.

Precautions specific to the interface modules

Before removing or replacing an interface module, make a note of the following precautions.

- If you are replacing a line card with a different type of line card, after removing the original line card, you must enter the **no linecard slot-number** command to clear the current slot configuration. You must also select the new line card type using the **linecard slot_number linecard_type** command before installing the new line card. For more detailed command steps, refer to [Inserting an interface module](#) on page 97.
- Install a new line card only if it is supported by the firmware running in the chassis. Inserting a line card into a chassis running firmware that does not support the line card may result in unexpected behavior. The list of supported line cards is provided in [Supported hardware](#) on page 11.
- Any slot that is not occupied by a line card should be occupied by a filler panel to ensure correct cooling of the chassis and protection from dust.

The line cards are sensitive to electrostatic discharge (ESD). When working with any Brocade module, use correct electrostatic discharge (ESD) procedures.

- Wear a wrist grounding strap connected to chassis ground (if the device is plugged in) or a bench ground. Refer to [ESD ground strap connection points](#) on page 88 for the location of the ESD jack.



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megaohm resistor.

- Store ESD-sensitive components in anti-static packaging.

Time and items required for installation and replacement

The replacement procedure for each interface module takes less than 10 minutes. Removing and restoring transceivers and cables may take longer depending on how many must be changed. The following items are required for the interface module replacement:

- Replacement interface module or filler panel
- #2 Phillips screwdriver
- SFP+ or QSFP28 transceivers (as needed)
- Optical and copper cables (as needed)

Inserting an interface module

Review [Precautions specific to the interface modules](#) on page 97 before replacing an interface module.

Complete this procedure to insert a new interface module. Refer to the illustration provided with the procedure.

1. Unpack the new interface module and remove it from the anti-static bag.

NOTE

During installation of multiple line cards in chassis slots, it is recommended to install the blades from the bottom to the top. Using this procedure, the last blade to be installed would be LC 1.

NOTE

When handling or lifting the module, place your hands on the areas that are noted in writing on the outer edges of the top cover. Do not place your fingers into the side of the module.

2. Inspect the interface module for damage.
3. Remove the protective covers from the backplane connectors.
4. Unscrew the captive screw on the ejectors (the levers on the side of the module) and rotate the ejectors outward.
5. Orient the interface module so that the ports are at the front of the device.

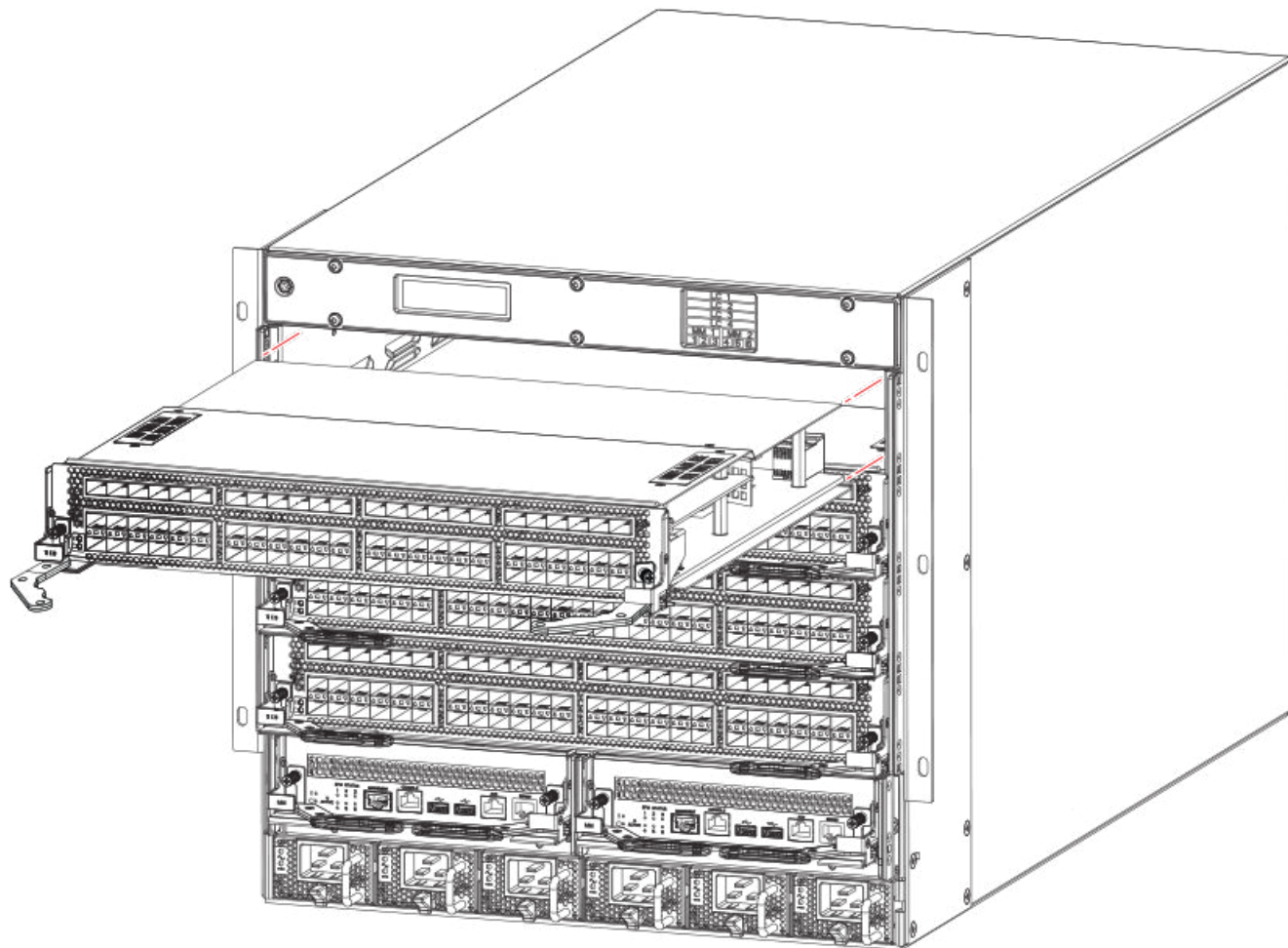
NOTE

When handling or lifting the module, place your hands on the areas that are noted in writing on the outer edges of the top cover. Do not place your fingers into the side of the module.

6. Align the flat side of the interface module inside the top and bottom rail guides in the slot.

7. Slide the interface module all the way into the slot.

FIGURE 50 Inserting an interface module



8. Close the ejectors by rotating them inward.
The levering action of the ejectors seats the interface module in the slot.
9. Tighten the captive screws using the #2 Phillips screwdriver.

NOTE

The interface module will not function unless the captive screws are tightened.

10. Install the transceivers and cables in the interface module.
11. Group and route the cables using a cable management comb.

Removing or replacing an interface module

This section describes the physical procedure for removing or replacing an interface module in chassis slots. It does not cover management modules or switch fabric modules.

Complete the following steps to remove or replace an interface module.

Review [Precautions specific to the interface modules](#) on page 97 before replacing an interface module.

1. Check for adequate cable slack. Ensure there is plenty of cable slack to remove an interface module without cable obstruction.
2. If you are replacing an interface module of the same type, ensure that the part number on the interface module being replaced matches the replacement part number.

NOTE

Before removing any cables from an interface module, note the cable order (identify each cable by its physical port). It is a good practice to keep a table of cable to port mapping.

3. Optional: power down the existing interface module using the **power-off linecard slot_number** command.
If you do not perform this step, the module powers down when you unscrew the outer captive screws.
4. If you are replacing the interface module with an interface module of a different type, make sure that you clear the configuration for the original interface module from the chassis database.
5. If you are replacing the interface module with an interface module of a different type, make sure that you clear the configuration for the original interface module from the chassis database by following these steps:
 - a) Enter the **configure terminal** command to enter global configuration mode
 - b) Enter the **no linecard slot_number** command. This command removes the interface module configuration and its associated interface configuration from the chassis database so a different type of interface module can be used in the slot. To find the slot numbering for your chassis, refer to [Device slot numbering: port-side](#) on page 17.
 - c) Configure the chassis for the interface module by entering the **linecard slot_number** command followed by a question mark (?) to display the current interface module types.
 - d) Enter the **linecard slot_number linecard_type** command using the proper interface module type for the new interface module.
 - e) Enter the **exit** command twice to return to privileged EXEC mode.
6. Disconnect all cables and transceivers from the interface module.
7. Unscrew the two captive screws at the ends of the interface module using the #2 Phillips screwdriver.
8. Open the ejectors by rotating them outward and pull the interface module out of the chassis using the ejectors.

NOTE

When handling or lifting the module, place your hands on the areas that are noted in writing on the outer edges of the top cover. Do not place your fingers into the side of the module.

9. If you are replacing an interface module, unpack the new interface module and insert into the chassis using the procedure in [Inserting an interface module](#) on page 97

Verifying interface module operation

To verify proper operation of an interface module, perform the following procedure.

1. Check the LEDs on the interface module front panel. For information about interpreting LED patterns, refer to [Interpreting interface module LEDs](#) on page 77.
2. Enter the following commands and note any error conditions:
 - **show linecard** - Displays the current status of each interface module.
 - **show system** - Displays information of each component in the system.
 - **show slots** - Displays the current status of the components in each slot of the chassis.

Power Supply Modules

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- Precautions specific to the power supply module.....106
- Time and items required for removal and replacement.....106
- Removing an AC power supply module.....106
- Inserting an AC power supply module.....108
- Removing a DC power supply module.....109
- Inserting a DC power supply module.....109
- Verifying power supply module operation.....110
- High Voltage Power Supply Unit supporting AC and DC Voltages.....110

Power supply module overview

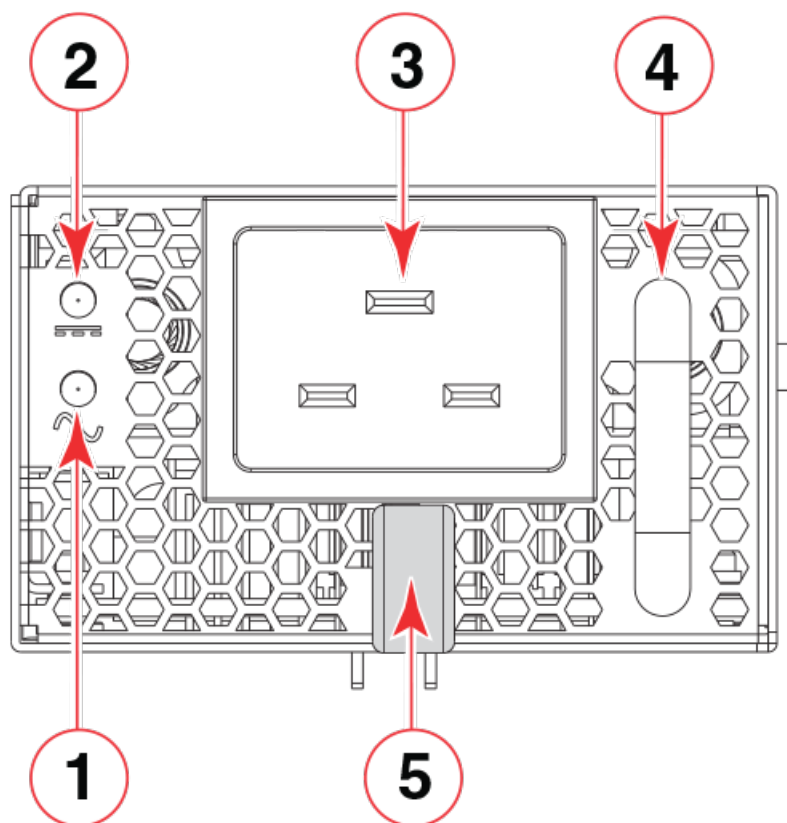
Power supplies can be removed and replaced without special tools. If replacing one power supply, the device can continue operating during replacement if procedures are followed in this guide.

NOTE
Depending on the module configuration of the chassis and the number of power supplies installed, the device may be able to continue operating during the replacement. Refer to the [Brocade SLX 9850 Router Technical Specifications](#) on page 137 to determine your power requirements. If insufficient power is present, the chassis will start powering down modules until the power demand can be met.

For a list of supported power supplies, refer to [Supported hardware](#) on page 11. For a description of the power supply module LEDs, refer to [Interpreting power supply module LEDs](#) on page 80.

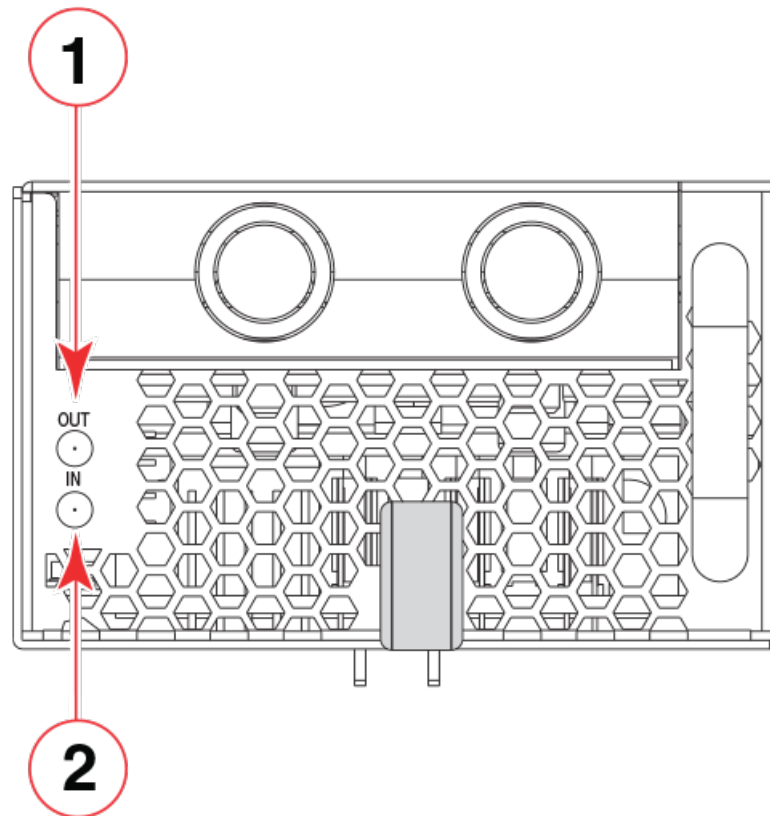
The following figure shows the components of the AC power supply.

FIGURE 51 AC power supply module



- | | |
|------------------------------|-------------------|
| 1. AC In LED | 4. Handle |
| 2. DC Out LED | 5. Securing latch |
| 3. AC power cable receptacle | |

The following figure shows the components of the DC power supply.

FIGURE 52 DC power supply module LEDs

1. DC In LED

2. DC out LED

Power input and cable options

For a list of supported AC and DC power supplies and High Voltage AC and High Voltage DC PSU, refer to [Supported hardware](#) on page 11. For the voltages required for AC and DC power supplies and High Voltage AC and High Voltage DC PSU, refer to [Brocade SLX 9850 Router Technical Specifications](#) on page 137.

Power cables are not supplied with the Brocade SLX 9850 devices.

Power supply numbering

To see the power supply numbering in the chassis, refer to the [Device slot numbering: port-side](#) on page 17. There are six slots for power supplies.

Precautions specific to the power supply module

Before installing or replacing a power supply, make a note of the following precautions.



CAUTION

If you do not install a module or a power supply in a slot, you must keep the slot filler panel in place. If you run the chassis with an uncovered slot, the system will overheat.



CAUTION

Do not force the installation. If the power supply and fan assembly does not slide in easily, ensure that it is correctly oriented before continuing.



CAUTION

The device shall be connected to an external Special Protection Device (SPD) when installed and connected to commercial AC power.

Time and items required for removal and replacement

The replacement procedure for each power supply takes less than 5 minutes. The following items are required for the power supply replacement:

- New power supply unit or filler panel
- #2 Phillips screwdriver

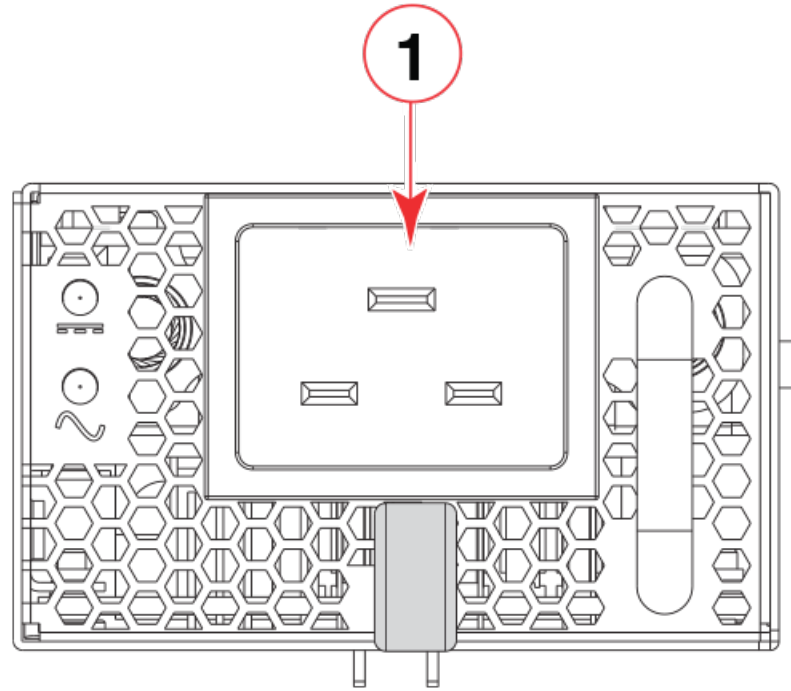
Removing an AC power supply module

To remove an AC power supply, complete the following steps. Refer to the illustration provided with the procedure.

1. Perform the appropriate following action based on whether the device is operating:
 - If the device is not operating during the replacement procedure, go to step 2.
 - If the device is operating and will continue to operate during the replacement, check the power LEDs to verify that the minimum number of power supplies is functioning. Refer to the Technical Specifications to check your power requirements.

2. Remove the power cord from the power supply AC connector.

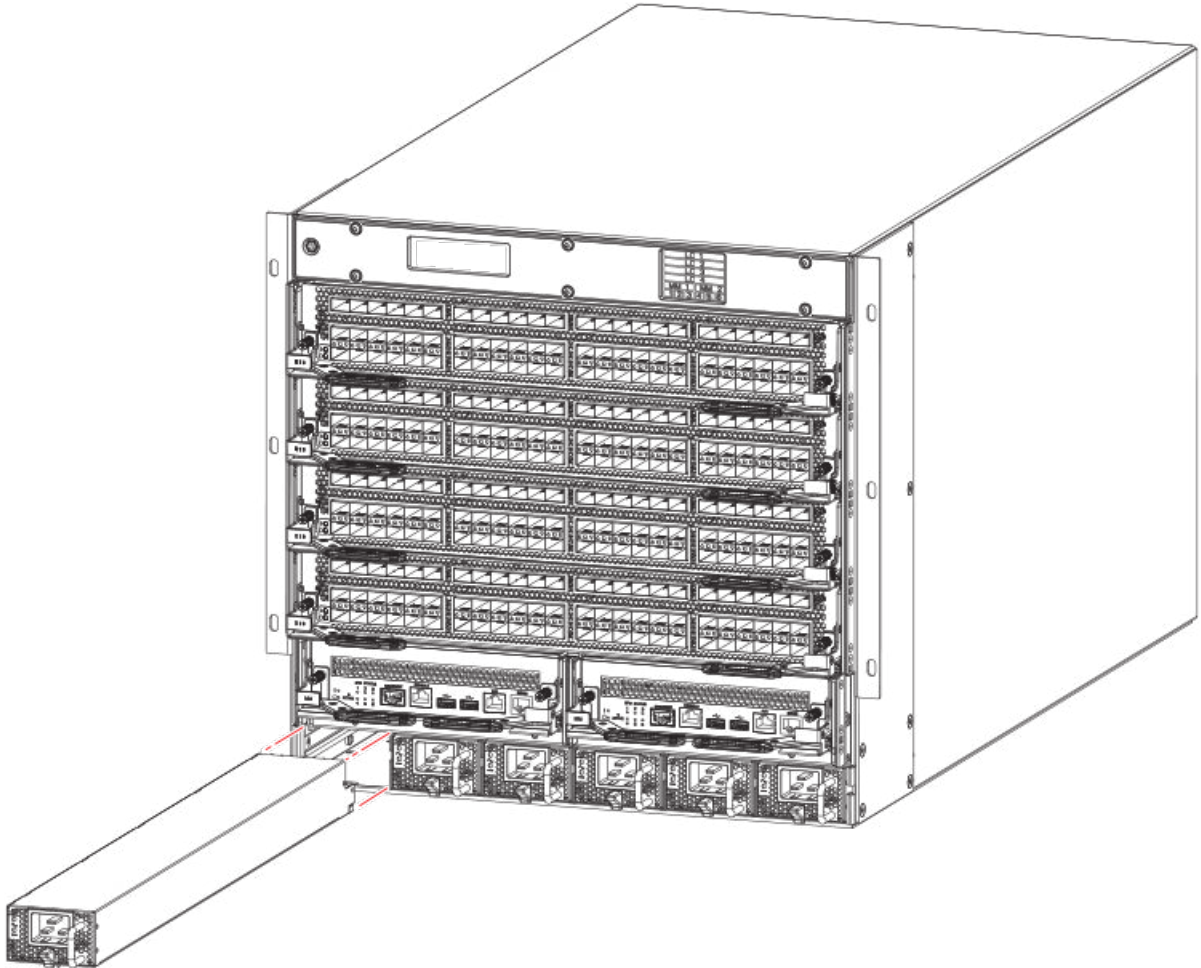
FIGURE 53 AC power supply



1. Power supply AC connector
3. Lift the latch on the lower part of the power supply to release the power supply from the chassis.

4. Grasp the handle and pull, sliding the power supply from the chassis and supporting the power supply from beneath as you remove it.

FIGURE 54 Removing the power supply



Inserting an AC power supply module

To replace an AC power supply, complete the following steps. Refer to the illustration provided with the procedure.

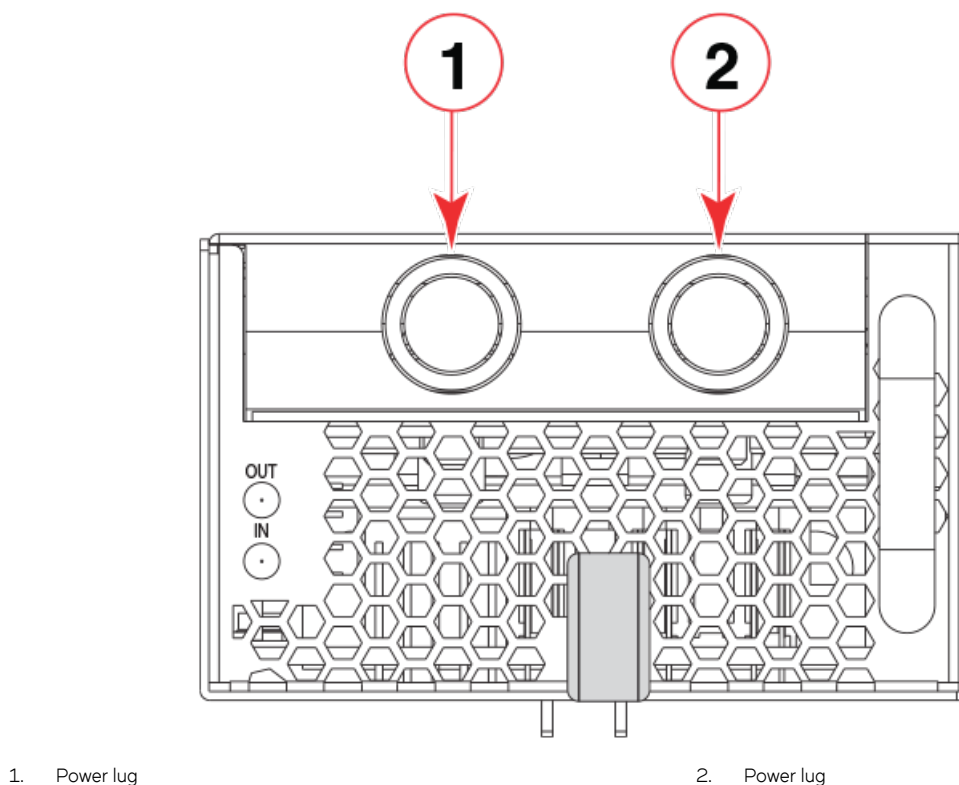
1. Unpack the new power supply and remove it from the anti-static bag.
2. Inspect the power supply for damage.
3. Insert the power supply into the slot.
4. Make sure that the latch snaps into place in the chassis.
5. Attach the power cord.
6. Verify that the power LED on the power supply displays a steady green light.

Removing a DC power supply module

To remove a DC power supply, complete the following steps.

1. If the device is operating and will continue to operate during the replacement, check the power LEDs to verify that the minimum number of power supplies is functioning. Refer to the [Brocade SLX 9850 Router Technical Specifications](#) on page 137 to check your power requirements.
2. Disconnect the power supply from the power source.
3. Use a #2 Phillips screwdriver to unscrew the power lugs.

FIGURE 55 DC power supply lugs



4. Depress the latch on the lower part of the power supply to release the power supply from the chassis.
5. Grasp the handle and pull, sliding the power supply from the chassis and supporting the power supply from beneath as you remove it.

Inserting a DC power supply module

To insert a DC power supply module, complete the following steps.

1. Unpack the new power supply and remove it from the anti-static bag.
2. Inspect the power supply for damage.
3. Insert the power supply into the slot.

4. Make sure that the latch snaps into place in the chassis.
5. Reconnect the power lugs to the power supply unit by connecting the -48V wire to the negative terminal and the 0V wire to the positive terminal.

NOTE

The DC return must be isolated from the device ground (DC-I) when making connections to the power supply.

6. Replace the safety cover.
7. Reattach the power cord to the power source.
8. Verify that the power LED on the power supply displays a steady green light.

NOTE

This equipment installation must meet NEC/CEC code requirements. Consult local authorities for regulations.

Verifying power supply module operation

To verify operation of a power supply assembly, perform the following procedure.

1. Check the LEDs on the power supply module front panel. For information about interpreting LED patterns, refer to [Interpreting power supply module LEDs](#) on page 80.
2. Enter the following commands and note any error conditions:
 - **show environment power** - Displays the current status of the power supply.
 - **show system** - Displays information of each component in the system.

High Voltage Power Supply Unit supporting AC and DC Voltages

The Brocade SLX 9850-4 supports High Voltage Power Supply Unit (PSU). It is a single PSU that can operate both High Voltage AC (HV AC) and High Voltage DC (HV DC) in the ranges shown below:

TABLE 24 HV PSU Rating

Type	Rated Input Voltage	Supported Input Voltage Range
High Voltage DC (HVDC)	240V - 380VDC	192V-400VDC
High Voltage AC (HVAC)	100V - 120VAC, 200V - 277VAC	90V - 132VAC, 180-305VAC

Similar to the AC PSU that is already supported and released, the HV PSU have an integrated fan in it and therefore will need to match airflow of the PSU fan to the base chassis airflow. There is only one air direction version and it will intake air from the port side and exhaust to the non-port side. This PSU is offered to match airflow of the chassis. In summary, following are two HV PSU offerings made available for Brocade SLX 9850-4 .

TABLE 25 HV PSU

Input Voltage	Air-flow Type	Input Connector
HV DC, 240V-380V DC &	Intake - NPI	SAF-D Type

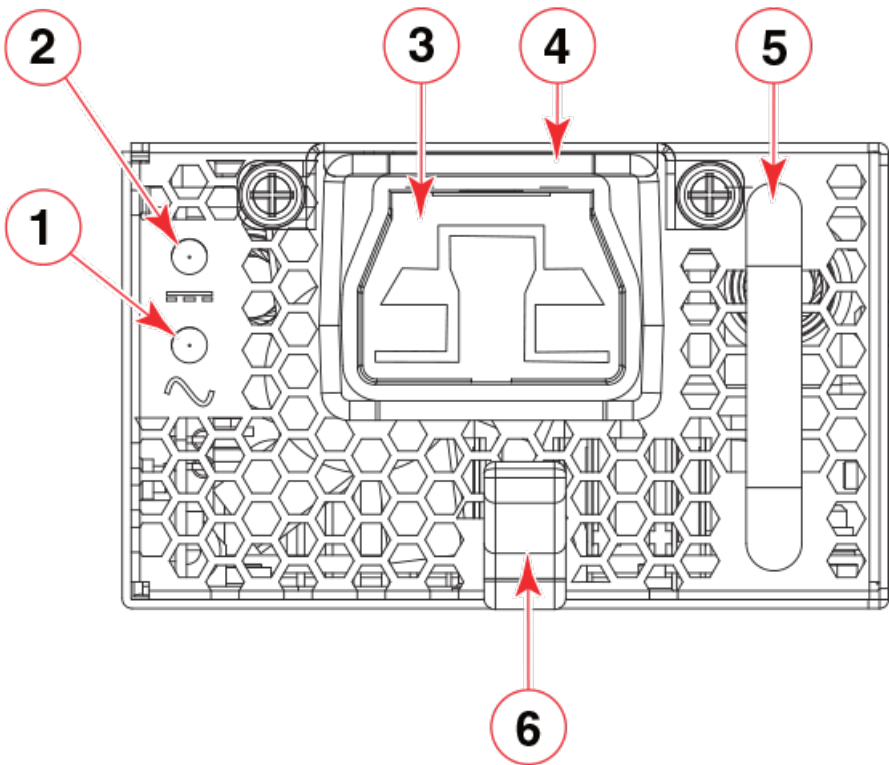
TABLE 25 HV PSU (continued)

Input Voltage	Air-flow Type	Input Connector
HV AC, 100V-120V AC, 200V-277V AC		

This PSU is 80+ platinum generating output DC power of 3000W for system usage.

The following figure shows the Input side of the 3000W HV PSU:

FIGURE 56 3000W HV PSU Input Side



1. OUTPUT LED

2. INPUT LED

3. Cover Plate
4. Handle

5. Input Plug SAFD-D

6. Latch of the PSU

The PSU supports one INPUT and one OUTPUT LED for status indication of PSU. The table below indicates the status LED color and their meaning.

TABLE 26 HV PSU Status LED Definitions

Type	LED Definitions
Power supply LEDs	- LED 1 and LED 2: Steady Green - Input and output voltages are within range - LED 1: Off and LED 2: Flashing Yellow - Power supply does not have incoming power and is not providing power to the device, or the Input AC voltage is out of range. - LED 1: Green and LED 2: Yellow - Output voltage is out of range

TABLE 26 HV PSU Status LED Definitions (continued)

Type	LED Definitions
	LED 1: Green and LED 2: Flashing Yellow/Green - Over-temperature warning or fan error

This PSU will provide full output power of 3000W when operating with input voltage of 192 to 400 VDC. Operation at low line (90 - 132 VAC) will deliver reduced power.

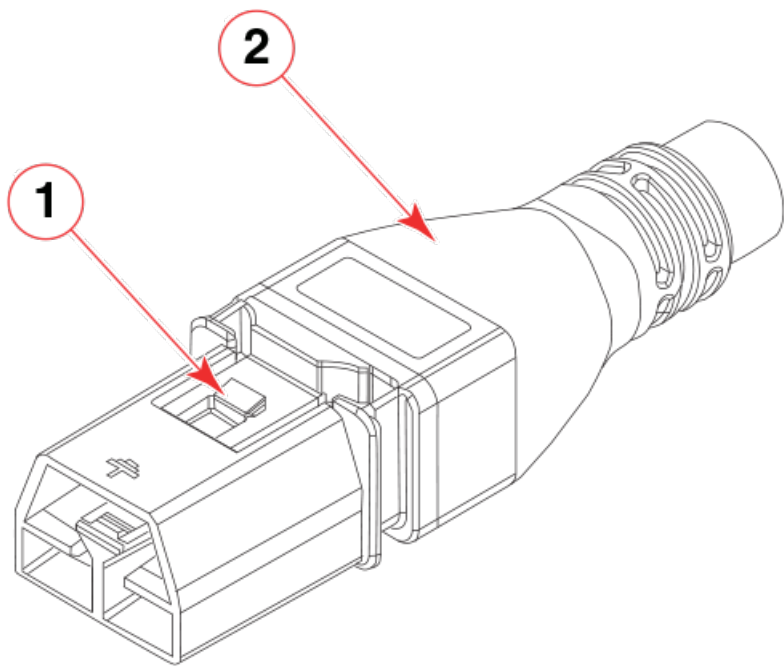
Connector Type

High Voltage power supply unit have Anderson SAF-D connector. SAF-D connector types is size compatible with the IEC 320 C13 and C14 AC connector types. Note that connector on HV PSU is not flush to the PSU as in the 240V AC PSU.

Power Cords

The HV PSU uses the SAF-D-Grid connector on the line side (HVAC/DC Input side) currently made by Anderson Power Products as described in the connector type section. High Voltage input power is provided to the chassis by means of up to 6 detachable power cords for F4 and up to 12 detachable line cords for F8. This power cord will have Saf-D-Grid® 400 plug on PSU side and unterminated 3 wires to the outlet. The plug on PSU side is shown below:

FIGURE 57 Power Cord Connector PSU side



1. Latch
2. Cord plug

Integral latch on plug prevents accidental disconnect of connectors under load thus ensuring that connectors remain properly mated. On SAF-D connector on PSU, power cord is latched at bottom of plug in connector picture.

Unterminated wires enables full customization by the customers based on application (HVAC/HVDC) and country plug type.

Brocade SLX 9850-4 can accommodate up to 6 PSUs in 3+3 fully redundant PSU configuration. Both PSUs in the chassis must of same kind i.e. both PSUs must be 240V AC PSUs or both PSUs must be High Voltage PSUs. Mixing of 240V AC and High Voltage PSUs in same chassis is not supported.

NOTE

Mixing of Regular AC and HV PSUs in a single chassis is not supported.

NOTE

HV PSUs will be supported only on "build to order" base chassis SKU namely [Fusion Chassis P/Ns]. These offerings do not include PSUs or Fans. PSUs and Fans must be added based on the customer power requirements. This arrangement allows assembling chassis as per customer requirements (HV PSU or 240V AC PSU). No new base director chassis P/Ns will be created that includes HV PSUs.

Fan Modules

• Fan module overview.....	115
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• Time and items required for replacement.....	115
• Removing a fan module.....	116
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Fan module overview

The fan modules provide air cooling for the device. Each device contains three fan modules. Each fan module for the Brocade SLX 9850-4 contains two fans. The fan airflow enters from the port side and exits from the fan side of the device.

For a description of the fan module LEDs, refer to [Interpreting fan module LEDs](#) on page 83.

This section describes the procedures you perform to remove and insert a fan module.

Precautions specific to the fan module

The device can continue to operate during the fan replacement procedure for 20 minutes. If the system reaches an over temperature condition, it automatically sends a warning message. When the critical temperature is reached, the system shuts down.

NOTE

The ambient intake temperature of the system must be less than 35 deg C (95 deg F) at sea level to prevent overheating. If the ambient temperature is greater than 35 deg C, the module installation time must be reduced. Refer to the specific module removal and installation instructions in this guide for more details.

Time and items required for replacement

The replacement procedure for each fan takes less than 5 minutes. The following items are required for the fan replacement:

- Replacement fan
- #2 Phillips screwdriver

NOTE

The ambient intake temperature of the system must be less than 35 deg C (95 deg F) at sea level to prevent overheating. If the ambient temperature is greater than 35 deg C, the module installation time must be reduced. Refer to the specific module removal and installation instructions in this guide for more details.

Removing a fan module

Complete the following steps to remove a fan from the chassis. Refer to the illustration provided with the procedure.

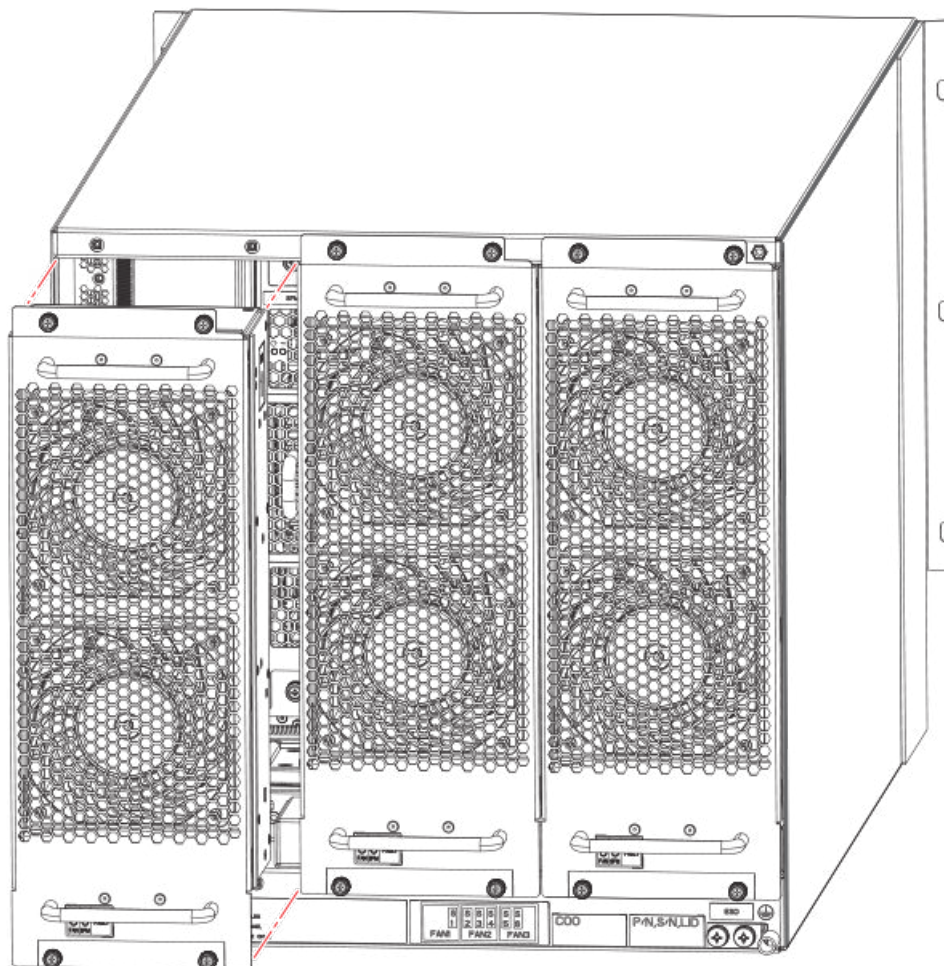
1. Before removing a fan, verify that the other fans are functioning properly. The power LEDs should be steady green and the fault LEDs should be unlit.
2. Use the screwdriver to loosen the four captive screws at the top and bottom of the fan.

NOTE

The fan needs to be replaced within 2 minutes if the ambient temperature exceeds 35 deg C (95 deg F).

3. Grasp the handles and pull, sliding the fan from the chassis and supporting the fan from beneath as you remove it.

FIGURE 58 Removing the fan module



Inserting a fan module

Complete the following steps to replace the fan in a chassis. Refer to the illustration provided in [Figure 58](#) on page 116.

NOTE

The SFM LED should transit to the OK state after approximately 30 seconds if all SFMs are OK on insertion.

1. Orient the fan and slide it into the chassis, supporting the fan from beneath as you install it, and pushing firmly to ensure that it is seated.
2. Use the screwdriver to tighten the four captive screws (two each at the top and bottom of the module).
3. Verify that the fan module power LED displays a green light.

Verifying fan module operation

To verify fan module operation, complete the following steps.

1. Check the LEDs on the fan module to verify correct operation. For information about interpreting LED patterns, refer to [Interpreting fan module LEDs](#) on page 83.
2. Enter the **show environment fan** command and note any error conditions.

Air filter replacement schedule

The air filter is only used with systems that include a NEBS kit for NEBS compliance.

You can remove and replace an air filter when it gets too clogged with dirt and dust to operate efficiently. You should perform regular physical inspections to determine how often to replace the air filter. Maintaining clean air filters ensures optimal airflow through the devices.

Based on the traffic and particulate levels of the installation location, the site operator should determine the appropriate replacement intervals for the air filter. If the air filter were to become sufficiently blocked, the thermal policy of the device would notify the administrator of an environmental issue with the system.

If a site-specific interval cannot be determined by the site operator, the filter should be replaced on an interval of every 3 months.

For more information about replacing the fan filter, refer to the NEBS manual for this device.

Switch Fabric Modules

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- Time and items required for replacement..... 121
- Removing a switch fabric module..... 121
- Inserting a switch fabric module..... 122
- Verifying switch fabric module operation..... 124

Switch fabric module overview

The switch fabric modules (SFMs) forward traffic between ports and the interface modules.

By default, five SFMs are installed in a device chassis. At least one SFM is required for system operation. A failure of any single SFM does not cause the system to completely fail.

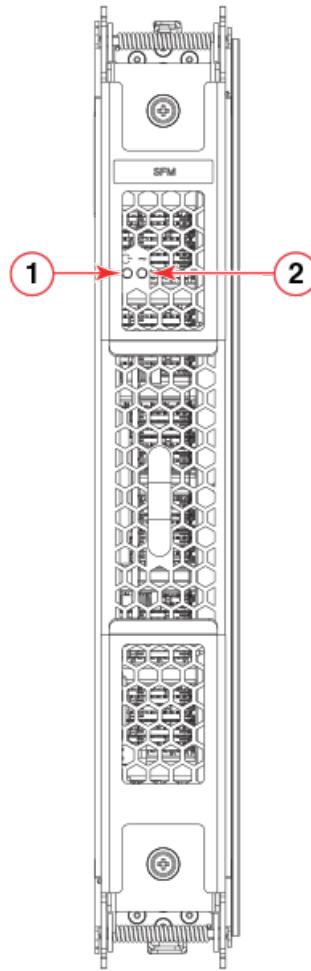
If an SFM fails, the SFM LED on the management module and fan module displays amber, showing which SFM has failed, and a syslog message is created. System traffic is automatically re-balanced to other SFMs.

The following figure shows a SFM and the LEDs on the SFM. Since the SFM is behind the fan, these LEDs cannot be seen unless the fan is removed.

NOTE

To check the status of the SFM without removing the fan, SFM status LEDs are provided on the fan and management modules. For information about the SFM LEDs on the fan module, refer to [Interpreting switch fabric module LEDs](#) on page 84. For information about the SFM LEDs on the management module, refer to [Interpreting management module LEDs](#) on page 75.

FIGURE 59 Switch fabric module - Brocade SLX 9850-4



1. Power LED: Green - Power OK; Off - No power

2. Status LED: Green - Status OK; Amber - Alert; Off - Unexpected error

Precautions specific to the switch fabric module

Before you remove a switch fabric module, you must first remove the fan module. For more information, refer to [Removing a fan module](#) on page 116.

NOTE

The fan module must be reinstalled within 20 minutes to prevent overheating.

NOTE

The ambient intake temperature of the system must be less than 35 deg C (95 deg F) at sea level to prevent overheating. If the ambient temperature is greater than 35 deg C, the module installation time must be reduced. Refer to the specific module removal and installation instructions in this guide for more details.

In addition, wear a wrist grounding strap connected to chassis ground (if the device is plugged in) or a bench ground. Refer to [ESD ground strap connection points](#) on page 88 for the location of the ESD jack.

**DANGER**

For safety reasons, the ESD wrist strap should contain a series 1 megaohm resistor.

Time and items required for replacement

The replacement procedure for the switch fabric module takes approximately 15 minutes (5 minutes to remove the fan module, and 10 minutes to remove the switch fabric module). Brocade recommends replacement to approximately 20 minutes to include inserting the replacement switch fabric module.

The following items are required for the switch fabric module replacement:

- ESD grounding strap
- #2 Phillips screwdriver
- Replacement switch fabric module

NOTE

The ambient intake temperature of the system must be less than 35 deg C (95 deg F) at sea level to prevent overheating. If the ambient temperature is greater than 35 deg C, the module installation time must be reduced. Refer to the specific module removal and installation instructions in this guide for more details.

Removing a switch fabric module

You can continue to operate the device while a switch fabric module (SFM) is being replaced.

Complete the following steps to remove an SFM. Refer to the illustration provided with the procedure.

1. Determine which fan module needs to be removed by performing one or both of the following steps.
 - Refer to the sticker on the rear of the chassis, below the fans, that provides a graphic representation of the SFMs behind each fan module.
 - Find the fan module that has the SFM Fault LED lit, and remove this fan module.
2. Remove the fan module to access the SFM. Refer to [Removing a fan module](#) on page 116 for this procedure.

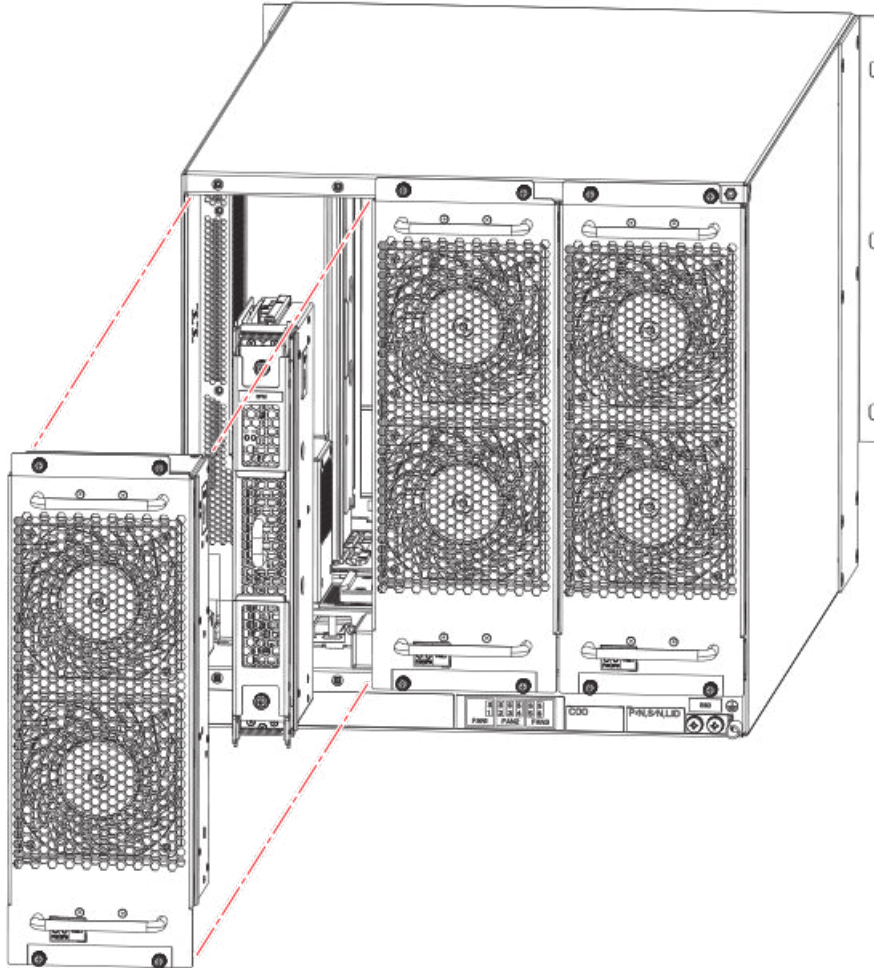
NOTE

The fan needs to be replaced within 2 minutes if the ambient temperature exceeds 35 deg C (95 deg F).

3. Unscrew the two captive screws on the top and the bottom of the SFM using the #2 Phillips screwdriver.
 - The use of a long handled #2 Phillips screwdriver is recommended although not required.
 - While operating or turning the thumbscrew on SFMs during installation and removal of the blade, insure that the ejector is held in the closed position. This insures ease of operation of the thumbscrew and insures that the screw is either fully seated while installing or is fully disengaged while removing the blade. In order to insure the ejector is held in the closed position, the user may need to hold the ejector down by hand during operation or turning the thumbscrew.
4. Open the ejectors on the top and bottom of the SFM by rotating them outward towards you.

5. Pull the handle to guide the SFM out of the chassis.

FIGURE 60 Removal and replacement of the switch fabric module



6. Replace the fan module in the chassis and insure it is fully seated.
 - The fan FRU captive screws do not need to be secured.

NOTE

The fan needs to be replaced within 2 minutes if the ambient temperature exceeds 35 deg C (95 deg F).

Inserting a switch fabric module

Complete the following steps to insert the switch fabric module (SFM) similar to the procedure and illustration for [Removing a switch fabric module](#) on page 121 .

1. Unpack the new SFM and remove it from the anti-static bag.
2. Inspect the SFM for damage.

3. Remove the protective caps from the backplane connectors.
 - Undo the captive ejector screws using a #2 Phillips screwdriver.
4. Open the ejectors on the new SFM by unscrewing the captive screws in each ejector and then pulling them outward. Orient the SFM so that the ejectors are toward you.
5. Remove the fan module from the chassis.

NOTE

The fan module needs to be re-installed within 2 minutes of removal if the ambient temperature exceeds 35 deg C (95 deg F).

6. Align the SFM with the guides in the slot.
7. Push the SFM firmly into the slot.

NOTE

Push firmly at both the top and bottom of the SFM with the ejectors open.

8. Close the ejectors by rotating them inward.
9. Tighten the captive screws using the #2 Phillips screwdriver.

NOTE

While operating or turning the thumbscrew on SFMs during installation and removal of the blade, insure that the ejector is held in the closed position. This insures ease of operation of the thumbscrew and insures that the screw is either fully seated while installing or is fully disengaged while removing the blade. In order to insure the ejector is held in the closed position, the user may need to hold the ejector down by hand during operation or turning the thumbscrew.

NOTE

The SFM will not function unless the captive screws are tightened.

10. Check that the Power LED (green) for the SFM lights after a short time.

NOTE

You cannot check this LED after you replace the fan because they are hidden behind the fans.

You can check the Power LED for the SFM with the duplicate LED set on the management module or on the fans themselves. Once the fan is replaced, the fan has a yellow and green LED that indicates the status of all the SFMs that are behind it. On the management module, there is a green/yellow LED pair for each SFM.

11. Replace the fan module by following the steps in the [Inserting a fan module](#) on page 117.
12. If you are replacing an SFM, pack the faulty SFM in the packaging provided with the new SFM, and contact your supplier to determine the return procedure.

NOTE

Place the connector covers on the connectors before shipment, or the connectors could be damaged.

13. Replace the fan module by following the steps in the [Inserting a fan module](#) on page 117.

Verifying switch fabric module operation

To verify switch fabric module (SFM) operation, complete the following steps.

1. Check the LEDs on the fan module, management module, and SFM front panel. Since the SFM is behind the fan module, LEDs are provided on the fan and management modules to check SFM status. For information about interpreting LED patterns, refer to [Interpreting switch fabric module LEDs](#) on page 84.
2. Enter the following commands and note any error conditions:
 - **show chassis**
 - **show system**
 - **show environment sensor**
 - **show environment temp**

NOTE

For details about these commands, refer to the *Brocade SLX-OS Monitoring Configuration Guide* for Brocade SLX 9850 Router.

Transceivers and cables

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- Precautions specific to transceivers and cables..... 126
- Cleaning the fiber-optic connectors..... 126
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Supported transceivers and cables

The 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module requires QSFP28 optics for 100GbE connectivity, QSFP+ optics for 40GbE connectivity, and 40GbE-to-10GbE breakouts for 10GbE connectivity.

The 72-port 10GbE/1GbE interface module requires SFP+ optics for 10GbE connectivity and SFP optics for 1GbE connectivity.

For current information about transceivers and cables that is supported by this device, refer to the *Brocade Ethernet Optics Family Datasheet* on www.brocade.com and to the current *SLX-OS17r.1.00 for SLX 9850 Release Notes* .

Time and items required

The installation or replacement procedure for one transceiver takes less than 5 minutes. Ensure that the following items are available:

- Required number of compatible power cables
- Required number of supported Brocade-branded transceivers
- Required number of compatible fiber-optic cables
- Optical transceiver extraction tool (for 10 Gbps transceiver only)

NOTE

Most Brocade devices come with a transceiver extraction tool and holster. The extraction tool is designed to remove transceivers from modules where the space is limited.

FIGURE 61 Optical transceiver extraction tool



Precautions specific to transceivers and cables



DANGER

All fiber-optic interfaces use Class 1 lasers.



DANGER

Use only optical transceivers that are qualified by Brocade Communications Systems, Inc. and comply with the FDA Class 1 radiation performance requirements defined in 21 CFR Subchapter I, and with IEC 60825 and EN60825. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.



CAUTION

Do not use the port cover tabs to lift the module. They are not designed to support the weight of the module, which can fall and be damaged.



CAUTION

Before plugging a cable into any port, be sure to discharge the voltage stored on the cable by touching the electrical contacts to ground surface.

Cleaning the fiber-optic connectors

To avoid problems with the connection between the fiber-optic transceiver (SFP+, QSFP, or QSFP28) and the fiber cable connectors, Brocade strongly recommends cleaning both connectors each time you disconnect and reconnect them. Dust can accumulate on the connectors and cause problems such as reducing the optic launch power.

To clean the fiber cable connectors, Brocade recommends using a fiber-optic reel-type cleaner. When not using an SFP+ or QSFP connector, make sure to keep the protective covering in place.

Managing cables

The minimum radius that a 50 micron cable can be bent under full tensile load is 5.1 cm (2 in.). For a cable under no tensile load, that minimum is 3.0 cm (1.2 in.). Cables can be organized and managed in a variety of ways, for example, using cable channels on the sides of the rack or patch panels to minimize cable management. Following is a list of additional recommendations:

- Plan for rack space required for cable management before installing the device.
- Leave at least 1 m (3.28 ft) of slack for each port cable. This provides room to remove and replace the device, allows for inadvertent movement of the rack, and helps prevent the cables from being bent to less than the minimum bend radius.
- 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 route the cables in front of air vents.
- Use Velcro[®] type straps to secure and organize fiber-optic cables.
- Route the cables away from LEDs to keep them visible.
- Use the cable management comb that attaches to the chassis for simple cable management. The comb can be installed without service disruption.



CAUTION

Before plugging a cable into any port, be sure to discharge the voltage stored on the cable by touching the electrical contacts to ground surface.

NOTE

Do not use tie wraps with optical cables because they are easily overtightened and can damage the optic fibers.

Installing an SFP+ transceiver

While non-Brocade optics are supported, Brocade-qualified transceivers are recommended. The port might not become operational using unqualified transceivers.

To insert an SFP+ transceiver, complete the following steps.

NOTE

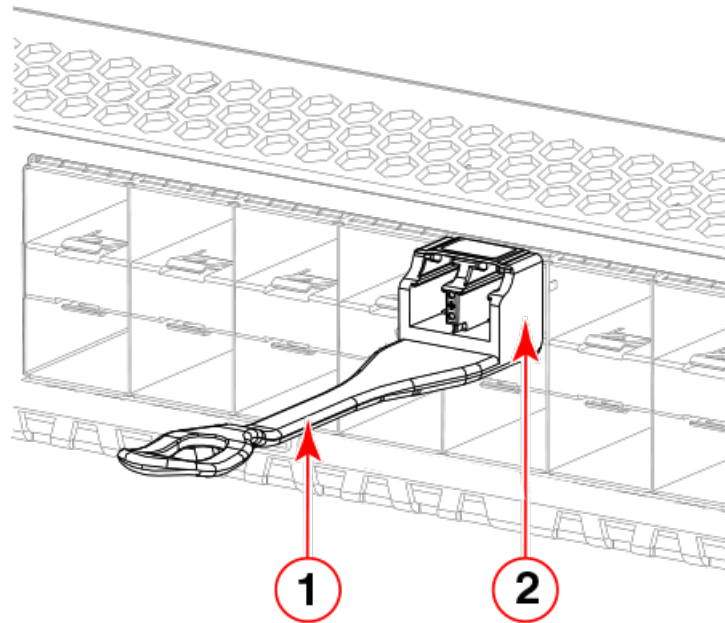
Route cables to the side so that the line cards can be removed without disturbing the cables to the other line cards.

NOTE

Always use the pull tab to insert or remove transceivers as they might be hot.

1. Perform one of the following steps, depending on your transceiver type.
 - If the transceiver uses a pull tab, use the pull tab to help push the transceiver into the port until it is firmly seated and the latching mechanism clicks.

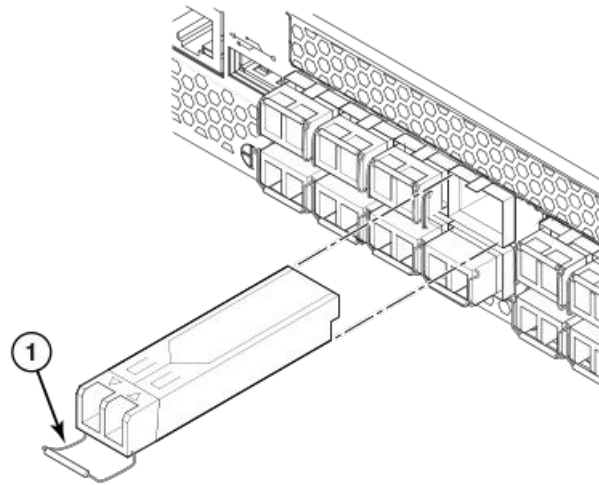
FIGURE 62 Installing an SFP+ transceiver with pull tab into the interface module port



1. Pull tab

2. Transceiver

- If the transceiver uses a bail latch mechanism (10 GbE transceivers only), ensure that the bail (wire handle) is in the unlocked position, grasp the transceiver, and push it into the port until firmly seated. Close the bail to latch the transceiver in the slot.

FIGURE 63 Installing an SFP+ transceiver with bail latch into the interface module port

1. Bail

Transceivers are keyed so that they can only be inserted with the correct orientation. If a transceiver does not slide in easily, ensure that it is correctly oriented.

2. Position a cable so that the key (the ridge on one side of the cable connector) is aligned with the slot in the transceiver. Insert the cable into the transceiver until the latching mechanism clicks.

NOTE

Cables are keyed so that they can be inserted in only one way. If a cable does not slide in easily, ensure that it is correctly oriented. Do not insert any unsupported cable intended for an other type of transceiver into a regular SFP+ transceiver. You may damage the cable as well as the transceiver.

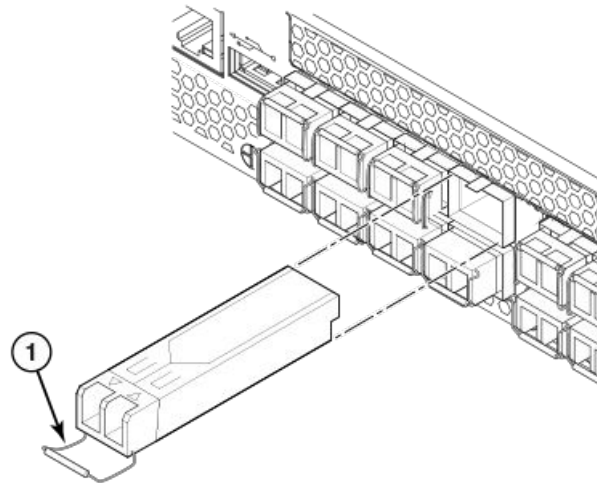
Replacing an SFP+ transceiver

Complete the following steps to remove and then install a new SFP+ transceiver.

1. Remove any cables that are inserted into the transceiver.

2. To remove the transceiver, perform one of the following steps, depending on your transceiver type.
 - If transceiver has a bail latch mechanism (10 GbE transceivers), unlatch from the port by pulling the bail (wire handle) away from its pivot point using your fingers or the hooked end of the transceiver extraction tool. Pull the transceiver out from the port slightly using the bail, and then grasp the transceiver with your fingers and slide it straight out of the port.

FIGURE 64 Installing an SFP+ transceiver with bail latch into the interface module port

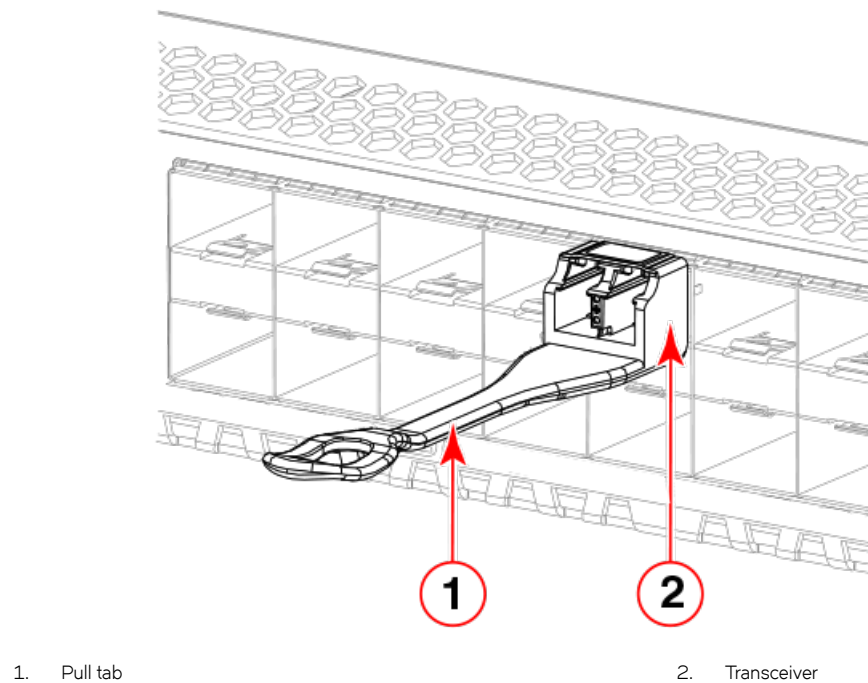


1. Bail

- If transceiver has a pull tab, grasp the pull tab and pull the transceiver straight out from the port.

NOTE

Grasp the pull tab near the body of the transceiver to reduce the chances of bending the pull tab. As the transceiver may be hot, avoid touching it.

FIGURE 65 Replacing a SFP+ optical transceiver with pull tab into the interface module port

3. To install the transceiver, perform one of the following steps depending on your transceiver type:
 - If transceiver has a pull tab, use the pull tab to help push the transceiver into the port until it is firmly seated and the latching mechanism clicks.
 - If transceiver has a bail latch mechanism, ensure that the bail (wire handle) is in the unlocked position, grasp the transceiver, and push it into the port until firmly seated. Close the bail to latch the transceiver in the slot.

Transceivers are keyed so that they can only be inserted with the correct orientation. If a transceiver does not slide in easily, ensure that it is correctly oriented.

4. Position a cable so that the key (the ridge on one side of the cable connector) is aligned with the slot in the transceiver. Insert the cable into the transceiver until the latching mechanism clicks.

Cables are keyed so that they can be inserted in only one way. If a cable does not slide in easily, ensure that it is correctly oriented.

Installing a QSFP28 transceiver

While non-Brocade optics are supported, Brocade-qualified transceivers are recommended. The port might not become operational or it may have a higher error rate using unqualified transceivers.

The following additional notes apply to the QSFP28 transceivers:

- While non-Brocade optics are supported, Brocade-qualified transceivers are recommended.
If using 40GbE-to-10GbE breakouts, each QSFP28 transceiver contains four individual 10 GbE ports. Be aware that any problems with one port could affect all four ports in the quad if the QSFP28 must be replaced.
- Some QSFP28 transceivers have an integrated cable attached. You do not need to install a separate cable.

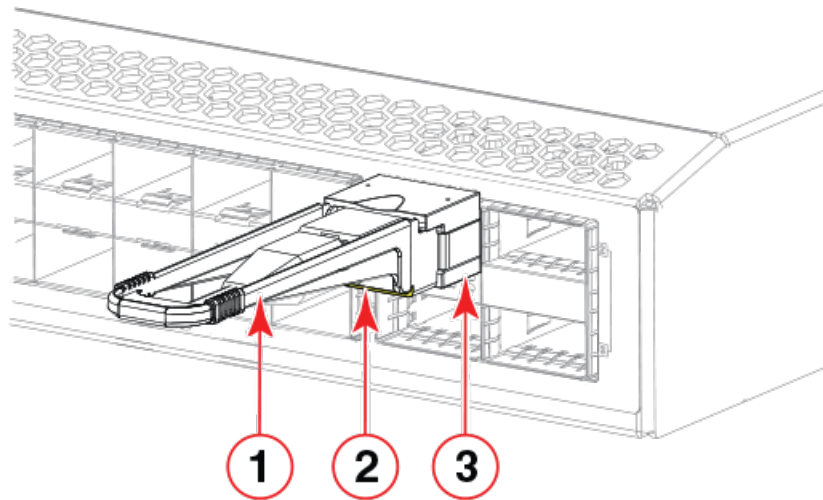
To insert an QSFP28 transceiver and cable, complete the following steps.

1. Push the transceiver into the port using the pull tab. Transceivers are keyed so that they can only be inserted with the correct orientation. If a transceiver does not slide in easily, ensure that it is correctly oriented. Push the correctly oriented transceiver into the port until it is firmly seated and the latching mechanism clicks.

NOTE

Always use the transceiver pull tab to insert or remove the QSFP28 transceivers, as the transceiver might be hot.

FIGURE 66 Installing a QSFP28 transceiver into the interface module port



1. Pull tab
2. QSFP28 cable

3. QSFP28 transceiver

After insertion, the LEDs have the following status:

- Off - no link
 - On - link, no traffic
 - Rapid flash - link with traffic
 - Slow flash (one second on, one second off) - beaconing feature
2. Position the cable so that the key (the ridge on one side of the cable connector) is aligned with the slot in the transceiver. Insert the cable into the transceiver until the latching mechanism clicks.

NOTE

If your transceiver has an integrated cable, you do not need to install a cable.

NOTE

Cables are keyed so that they can be inserted in only one way. If a cable does not slide in easily, ensure that it is correctly oriented. Do not insert any unsupported cable intended for another type of transceiver into a regular QSFP28 transceiver. You may damage the cable as well as the transceiver.

3. Organize cables to avoid covering LEDs and air vents so that LCs can be removed. Refer to [Managing cables](#) on page 127 for more information.

Replacing a QSFP28 transceiver

Complete the following steps to remove and then install a new QSFP28 transceiver.

1. Remove any cables that are inserted into the transceiver.

NOTE

If your transceiver has an integrated cable, you cannot remove the cable.

2. Grasp the transceiver pull tab and gently pull the transceiver straight out from the port.

NOTE

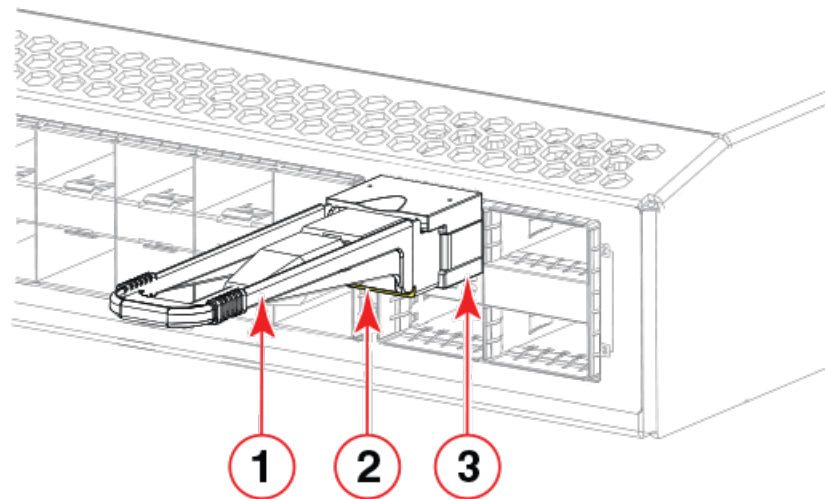
Grasp the pull tab near the body of the transceiver to reduce the chances of bending the pull tab. As the transceiver may be hot, always use the pull tab and avoid touching the transceiver body.

3. To insert the replacement transceiver, use the pull tab to carefully push the transceiver into the port. Transceivers are keyed so that they can only be inserted with the correct orientation. If a transceiver does not slide in easily, ensure that it is correctly oriented. Gently push the correctly oriented QSFP28 transceiver until the latching mechanism clicks.

NOTE

The following figure uses a generic interface module. Your interface module might look different.

FIGURE 67 Replacing a QSFP28 optical transceiver into blade port



1. Pull tab

2. QSFP28 cable connector

3. QSFP28 transceiver

- Position a cable so that the key (the ridge on one side of the cable connector) is aligned with the slot in the transceiver. Insert the cable into the transceiver until the latching mechanism clicks.

NOTE

If your transceiver has an integrated cable attached, you will not install a cable.

When both ends of the cable are inserted and the link is fully established, the LED displays steady green.

NOTE

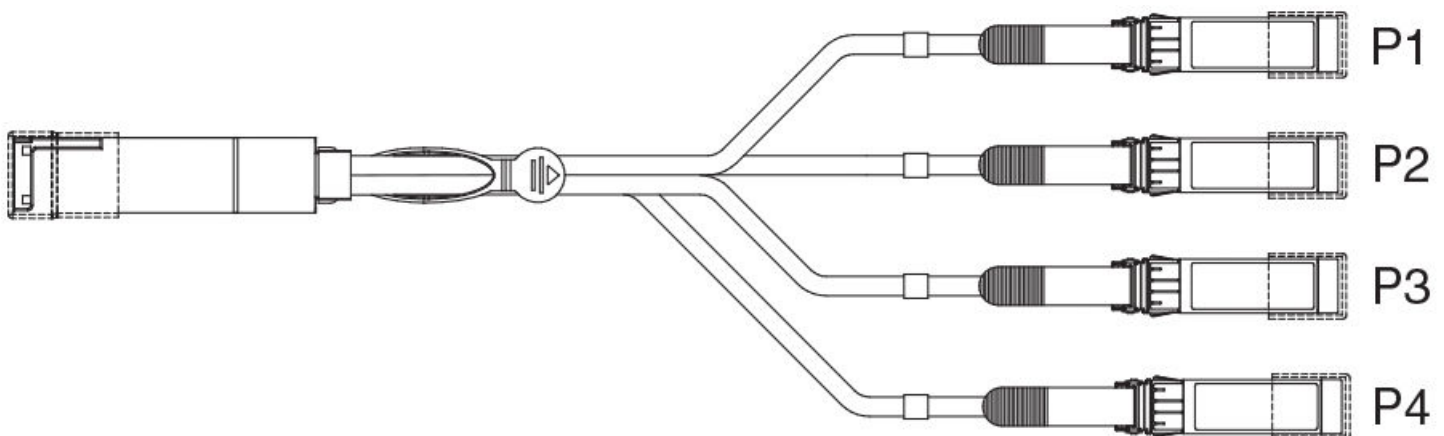
Cables are keyed so that they can be inserted in only one way. If a cable does not slide in easily, ensure that it is correctly oriented.

- Organize cables to avoid covering LEDs and air vents. Refer to [Managing cables](#) on page 127 for more information.

Breakout cables

The 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module supports 240 10GbE ports per module by using QSFP to 4 SFP+ 40GbE-to-10GbE copper breakout cables, or 40G-QSFP-SR4-INT and 40G-QSFP-ESR4 optics for use with fiber breakout cables. The copper breakout cables are terminated with optical connectors and are available in 1m, 3m, 5m, and greater lengths. No additional connectors or cabling are required when using the copper breakout. When using the fiber breakout cables, additional 10Gb optics are required.

FIGURE 68 QSFP+ to 4 SFP+ (4 x 10 GbE) direct-attach copper breakout cable



Verifying transceiver operation

To verify operation of a transceiver, view the LEDs on the transceiver. To find the LED locations on the interface modules, refer to [Interpreting interface module LEDs](#) on page 77. After you have connected and configured the ports for Ethernet connectivity and connected the cable to another active port, the LED becomes solid green. When traffic is detected on the port, the light becomes blinking green.

You can also enter the **show interface status** and **show ip interface brief** commands to verify proper transceiver operation.

Hardware Maintenance Schedule

- [Hardware maintenance schedule.....](#)135

Hardware maintenance schedule

Brocade routers require minimal maintenance for hardware components. It is recommended that you perform the following regular maintenance tasks:

- Clean the fiber-optic connectors on a fiber-optic transceiver port and the connected fiber cable each time you disconnect the cable.
- Replace the air filters (included with NEBS kits) quarterly or as needed.

You can also replace the following hardware components, as needed:

- All modules (management, interface, and switch fabric modules).
- Fiber-optic transceivers.
- AC power supply modules.
- AC or DC power supply modules.
- Fan modules.

NOTE

The management, interface, and switch fabric modules are dedicated modules, which means that you must install them in Brocade routers only. If you install these modules in another Brocade device, or you install a module intended for another Brocade device in a Brocade router, the device and modules will not function properly.

Brocade SLX 9850 Router Technical Specifications

System specifications

System component	Description
Enclosure	Brocade SLX 9850-4: 10 rack unit (RU) height X 17.22 inches (43.7 cm) width x 30 inches (76.2 cm) depth. Each chassis contains the following Field-replaceable units (FRUs): • Interface module (4 maximum) • Switch fabric module (SFM) (6 maximum) • Management modules (MM) (2 maximum) • Power supply assemblies (6 maximum) • Fan assemblies (3 maximum) Brocade SLX 9850-8: 17 rack unit (RU) height X 17.22 inches (43.7 cm) width x 30 inches (76.2 cm) depth. Each chassis contains the following components: • Interface module (8 maximum) • Switch fabric module (SFM) (6 maximum) • Management modules (MM) (2 maximum) • Power supply assemblies (12 maximum) • Fan assemblies (3 maximum)
Power inlet	C20; power from port side
Power supplies	Brocade SLX 9850-4: Up to six hot-swappable power supplies. • AC power supply: 2915W@200-240V or 1390W@100-120V • DC power supply: 3000W@48V DC • SAF-D on HV Brocade SLX 9850-8: Up to twelve hot-swappable power supplies • AC power supply: 2915W@200-240V or 1390W@100-120V • DC power supply: 3000W@48V DC • SAF-D on HV
Fan modules	Three fan modules per chassis
Cooling	Front-to-back airflow
System architecture	Non-blocking fabric
System processors	4 core, 8 thread x86 processor
Port-to-port latency	<4 microseconds for 64-byte packets

Ethernet

System component	Description
QSFP28 ports	The QSFP28 ports are available on 36-port 100GbE flex-speed interface module. The 36-port 100GbE interface modules supports 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE and requires QSFP28 optics for connectivity.
SFP+ ports	The SFP+ ports are available on 72-port 10GbE/1GbE interface module. The 72-port 10GbE/1GbE interface module requires SFP+ ports for connectivity.
Management RJ-45 port	The management RJ-45 port on the MM management interface labeled MANAGEMENT for 1G/100M/10M connectivity.
Service RJ-45 port	The service RJ-45 port on the MM service interface labeled SERVICE for 10G/1G/100M connectivity

LEDs

System component	Description
Interface module LEDs	- Power: Green - Power OK, off - No power - Status: Green- Status OK, Amber - Error; Off - Unexpected error - Link status (1 LED per physical port): Green (Solid) - Link is up; Green (Blinking) - Link is up and running traffic; Off - No link
Management module LEDs	- Power: Green - Power OK, off - No power - Status: Green- Status OK, Amber - Error, Off - Unexpected error - Active: Off - This management module is in Standby mode; Blue - This is the active management module. - Switch fabric module status: Green - switch fabric module OK; Amber - error; Off - Unexpected error - Ethernet: Green (Solid) - Link is up; Green (Blinking) - Link is up and running traffic; Off - No link; Amber (some flex module ports): module is in 100G mode and these ports are inactive
Switch fabric module LEDs	- Power: Green - Power OK; off - No power - Switch fabric module status: Amber - Error NOTE There is a switch fabric module status LED on the front panel of the Fan module.
Power supply LEDs	- LED 1 and LED 2: Steady Green - Input and output voltages are within range - LED 1: Off and LED 2: Flashing Yellow - Power supply does not have incoming power and is not providing power to the device, or the Input AC voltage is out of range. - LED 1: Green and LED 2: Yellow - Output voltage is out of range - LED 1: Green and LED 2: Flashing Yellow/Green - Over-temperature warning or fan error
Fan module LEDs	- Power (Fan) LED: No light (LED is off) - Fan assembly does not have power. Steady green - Fan assembly has power. - Status (Fan) LED: No light (LED is off) - Fan assembly is either healthy or does not have power. Steady amber - Fan assembly is being initialized or has a failure (full or partial). - Power (SFM) LED: No light (LED is off) - One or more SFM module is not powered on. Green - Module is operational. - Status (SFM) LED: No light (LED is off) - One or more SFM module is either not operational or does not have power. Amber - Module is faulty or initializing. Green - Module is operational. NOTE Since the switch fabric module is behind the fan, the fan contains an LED that indicates problems with one of the switch fabric modules behind the fan.

Other

System component	Description
Serial Cable	RJ-45 console cable
RJ-45 connector	Uses an RJ-45 connector for the serial port

Weight and physical dimensions

"Fully loaded" SLX 9850-4 device: 144 -100 Gig port configuration with four interface modules, including two management modules, six switch fabric modules, two fans, two power supplies, and two cable management combs.

"Fully loaded" SLX 9850-8 device: 288 - 100 Gig port configuration with eight interface modules, including two management modules, six switch fabric modules, three fans, four power supplies, and two cable management combs.

Model	Height	Width	Depth	Weight (empty)	Weight (fully loaded)
Brocade SLX 9850-4	10 rack units (RU)	43.7 cm 17.2 inches	76.2 cm 30 inches	107 lb (48.5 kg)	Chassis without interface modules: 212 lb (96.2 kg) Chassis with four SLX9850-100Gx36 CQ-M interface modules: 283 lb (128.4 kg)
Brocade SLX 9850-8	17 RU	43.7 cm 17.2 inches	76.2 cm 30 inches	179 lb (81.2 kg)	Including chassis, 2 management modules, 5 power supplies, 5 switch fabric modules, and filler panels for the interface modules: 359 lb (162.84 kg) Including chassis, 2 management modules, 5 power supplies, 5 switch fabric modules, and 8 SLX9850-100Gx36 CQ-M interface modules: 503 lb (228.16 kg)

Card or module	Description	Height	Width	Depth	Weight (no optics)
Management module, part number BR-SLX9850-MM	Management module	54.5 mm 1.79 in	201.0 mm 7.91 in	376.386 mm 14.82 in	6.7 lb 3.04 kg
	Management module	54.5 mm 1.79 in	201.0 mm 7.91 in	376.386 mm 14.82 in	6.7 lb 3.04 kg
Switch fabric module for Brocade SLX 9850-4, part	Switch fabric module	46.6 mm 1.835 in	321.5 mm 12.66 in	146.823 mm 5.78 in	6.7 lb 3.04 kg

Card or module	Description	Height	Width	Depth	Weight (no optics)
number BR-SLX9850-4-SFM					
Switch fabric module for Brocade SLX 9850-8, part number BR-SLX9850-8-SFM	Switch fabric module	46.6 mm 1.835 in	596.176 mm 23.47 in	146.823 mm 5.78 in	11.5 lb 5.22 kg
72-port 10GbE/1GbE interface module, part number BR-SLX9850-10Gx72 S-M	Interface module with 72 10GbE/1GbE ports (requires SFP+ optics)	64.0 mm 2.52 in	411 mm 16.18 inches	376.386 mm 14.82 in	13.1 lb 5.94 kg
36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module, part number BR-SLX9850-100Gx3 6CQ-M	Interface module with 36 100GbE ports (requires QSFP28 optics), 40GbE ports (requires QSFP+ optics), or 240 10GbE ports (requires 40GbE-to-10GbE breakout)	64.0 mm 2.52 in	411 mm 16.18 inches	376.386 mm 14.82 in	22.1 lb 10.02 kg

Environmental requirements

Condition	Operational	Non-operational
Ambient temperature	0°C to 40°C (32°F to 104°F) outside device	-25°C to 55°C (-13°F to 131°F) outside device
Relative humidity (non-condensing)	5% to 95%	5% to 95%
Altitude (above sea level)	0 to 3000 m (10,000 feet)	0 to 12,000 m (40,000 feet)
Shock	5G, 11ms, half sine shock	10G, 10ms trapezoid shock
Vibration	0.2 G, 5-500 Hz at 1.0 octave/minute	0.5 G, 5-500 Hz at 1.0 octave/minute
Airflow	SLX 9850-4 - Maximum: 2336 cmh (1375 cfm) SLX 9850-8 - Maximum: 4035 cmh (2375 cfm)	N/A
Heat dissipation	Refer to values under "Power consumption (maximum configuration)".	N/A

Power supply specifications (per PSU)

Power supply model	Maximum output power rating (DC)	Input voltage	Input line frequency	Maximum input current	Input line protection	Maximum inrush current
BR-SLX9850-ACPWR-3000	1390W@100-120V 2915W@200-240V	1390W Output: 100-120V (nominal) 90-132 V (range)	50/60 Hz	16 A	Line & Neutral Fused	60 A peak for <10 ms, 10 ms - 150 ms <25 A peak, >150 ms <16 A

Power supply model	Maximum output power rating (DC)	Input voltage	Input line frequency	Maximum input current	Input line protection	Maximum inrush current
		2915W Output: 200 - 240 VAC (nominal) 180-264 V (range)				
BR-SLX9850-DCPWR-3000	3000 W	—48 VDC (nominal) —40-60 VDC (range)	N/A	90 A	Input fuse on —48 VDC input	<70 A peak initial current surge or spike of <10 ms
High Voltage AC (HVAC)	3000 W	HV AC, 100V-120VAC. 200V-277VAC				
High Voltage DC (HVDC)	3000 W	HV DC, 240V-380V DC				

Power consumption (typical configuration)

Configuration of Brocade SLX 9850-4: One 4-slot chassis with one management module, five switch fabric modules, two power supplies, three fan modules, and four 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules set in 60x40 mode. Interface cards are enabled and optics/Traffic are at 50% line rate. Random packets, fans at nominal speed, ambient temperature 25 deg C.

Configuration of Brocade SLX 9850-8: One 8-slot chassis with one management module, five switch fabric modules, four power supplies, three fan modules, and eight 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules set in 60x40 mode. Interface cards are enabled and optics/Traffic are at 50% line rate. Random packets, fans at nominal speed, ambient temperature 25 deg C.

Model name	Power used in watts	Minimum number of power supplies	Notes
Brocade SLX 9850-4	3958	2	200 VAC amps, watts, and BTU/hr are calculated with 0.98 power factor and 2 PSUs
Brocade SLX 9850-8	7773	4	200 VAC amps, watts, and BTU/hr are calculated with 0.98 power factor and 4 PSUs

Power consumption (maximum configuration)

Configuration of Brocade SLX 9850-4: One 4-slot chassis with two management modules, six switch fabric modules, six power supplies, three fan modules, and eight 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules set in 60x40 mode. Interface cards are enabled and optics/Traffic are at full line rate. Random packets, fans at nominal speed, ambient temperature 40 deg C.

Configuration of Brocade SLX 9850-8: One 8-slot chassis with two management modules, six switch fabric modules, twelve power supplies, three fan modules, and eight 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules set in 60x40 mode. Interface cards are enabled and optics/Traffic are at full line rate. Random packets, fans at nominal speed, ambient temperature 40 deg C.

Model name	Power used in watts	Minimum number of power supplies	Notes
Brocade SLX 9850-4	5947	2	200 VAC amps, watts, and BTU/hr are calculated with 0.98 power factor and 2 PSUs
Brocade SLX 9850-8	11492	4	200 VAC amps, watts, and BTU/hr are calculated with 0.98 power factor and 4 PSUs

Power consumption (modules) (typical configuration)

NOTE

Typical configuration is 50% traffic with fans operating normally. Ambient temperature 25 deg C.

Module	Typical power consumption
Management Module	97 W
Switch Fabric Module	Brocade SLX 9850-4: 102 W Brocade SLX 9850-8: 200 W
Fan module	Brocade SLX 9850-4: 175 W Brocade SLX 9850-8: 346W
72-port 10GbE/1GbE interface module	250 W
36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module	617 W

Power consumption (modules) (maximum configuration)

NOTE

Maximum configuration is 100% traffic with fans operating normally. Ambient temperature 40 deg C.

Module	Maximum power consumption
Management Module	100W
Switch Fabric Module	Brocade SLX 9850-4: 124 W Brocade SLX 9850-8: 220 W
Fan module	Brocade SLX 9850-4: 175 W Brocade SLX 9850-8: 346 W
72-port 10GbE/1GbE interface module	299 W
36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface module	848 W

Data port specifications (Ethernet)

Model	Port type	Number of ports	Description
Brocade SLX 9850-4	1 GbE	288	Supports up to 288 1-GbE ports with four 72-port 10GbE/1GbE interface modules
	10 GbE	288	Supports up to 288 10-GbE ports with four 72-port 10GbE/1GbE interface modules
		960	Supports up to 960 10-GbE ports with four 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules (requires 40GbE-to-10GbE breakout)
	40 GbE	240	Supports up to 240 40-GbE ports with four 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules
	100 GbE	144	Supports up to 144 100-GbE ports with four 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules
Brocade SLX 9850-8	1 GbE	576	Supports up to 576 1-GbE ports with eight 72-port 10GbE/1GbE interface modules
	10 GbE	576	Supports up to 576 1-GbE ports with eight 72-port 10GbE/1GbE interface modules
		1920	Supports up to 1920 10-GbE ports with eight 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules (requires 40GbE-to-10GbE breakout)
	40 GbE	480	Supports up to 480 40-GbE ports with eight 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules
	100 GbE	288	Supports up to 288 100-GbE ports with eight 36-port 100GbE, 60-port 40GbE, or 240-port 10GbE flex-speed interface modules

Serial port specifications (pinout RJ-45)

Pin	Signal	Description
1	Not supported	N/A
2	Not supported	N/A
3	RXD	Receive data
4	GND	Logic ground
5	Not supported	N/A
6	TXD	Transmit data
7	Not supported	N/A
8	Not supported	N/A

Serial port specifications (protocol)

Parameter	Value
Baud	9600
Data bits	8
Parity	None
Stop bits	1

Parameter	Value
Flow control	None

Memory specifications

Memory	Type	Size
Non-volatile storage	Solid-state drive (SSD)	Management module: 2x256GB multi-level cell (MLC) Interface module: 1x128GB MLC
Main memory	SDRAM	Management module: 16 GB DRAM Interface module: 16GB DRAM

Regulatory compliance (EMC)

- FCC Part 15, Subpart B (Class A)
- EN 55022 (CE mark) (Class A)
- EN 55024 (CE mark) (Immunity) for Information Technology Equipment
- ICES-003 (Canada) (Class A)
- AS/NZ 55022 (Australia) (Class A)
- VCCI (Japan) (Class A)
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-6-1

Regulatory compliance (safety)

- CAN/CSA-C22.2 No. 60950/UL 60950
- EN 60825 Safety of Laser Products
- EN 60950/IEC 60950 Safety of Information Technology Equipment

Regulatory compliance (environmental)

- 2011/65/EU - Restriction of the use of certain hazardous substance in electrical and electronic equipment (EU RoHS).
- 2012/19/EU - Waste electrical and electronic equipment (EU WEEE).
- 94/62/EC - packaging and packaging waste (EU).
- 2006/66/EC - batteries and accumulators and waste batteries and accumulators (EU battery directive).
- 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (EU REACH).
- Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 - U.S. Conflict Minerals.
- 30/2011/TT-BCT - Vietnam circular.

- SJ/T 11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in EIPs (China).
- SJ/T 11364-2006 Marking for the Control of Pollution Caused by EIPs (China).

Regulatory Statements

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BSMI statement (Taiwan)

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。

Warning:

This is 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.

Canadian requirements

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations, ICES-003 Class A.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CE statement

ATTENTION

This is a Class A product. In a domestic environment, this product might cause radio interference, and the user might be required to take corrective measures.

The standards compliance label on this device 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 2004/108/EEC
- Low Voltage Directive (LVD) 2006/95/EC
- EN50082-2/EN55024:1998 (European Immunity Requirements)
 - EN61000-3-2/JEIDA (European and Japanese Harmonics Spec)
 - EN61000-3-3

China ROHS

Refer to the latest revision of the China ROHS document (P/N 53-1000428-xx) which ships with the product.

FCC warning (US 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, might 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.

Germany statement

Machine noise information regulation - 3. GPSGV, the highest sound pressure level value is 78.0 dB(A) in accordance with EN ISO 7779.

Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 78.0 dB(A) gemäss EN ISO 7779.

KCC statement (Republic of Korea)

A급 기기 (업무용 방송통신기기): 이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Class A device (Broadcasting Communication Device for Office Use): This device obtained EMC registration for office use (Class A), and may be used in places other than home. Sellers and/or users need to take note of this.

Cautions and Danger Notices

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Cautions

A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.

Ein Vorsichtinweis warnt Sie vor potenziellen Personengefahren oder Beschädigung der Hardware, Firmware, Software oder auch vor einem möglichen Datenverlust

Un message de mise en garde vous alerte sur des situations pouvant présenter un risque potentiel de dommages corporels ou de dommages matériels, logiciels ou de perte de données.

Un mensaje de precaución le alerta de situaciones que pueden resultar peligrosas para usted o causar daños en el hardware, el firmware, el software o los datos.

General cautions



CAUTION

Changes or modifications made to this device that are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

VORSICHT	Falls dieses Gerät verändert oder modifiziert wird, ohne die ausdrückliche Genehmigung der für die Einhaltung der Anforderungen verantwortlichen Partei einzuholen, kann dem Benutzer der weitere Betrieb des Gerätes untersagt werden.
MISE EN GARDE	Les éventuelles modifications apportées à cet équipement sans avoir été expressément approuvées par la partie responsable d'en évaluer la conformité sont susceptibles d'annuler le droit de l'utilisateur à utiliser cet équipement.
PRECAUCIÓN	Si se realizan cambios o modificaciones en este dispositivo sin la autorización expresa de la parte responsable del cumplimiento de las normas, la licencia del usuario para operar este equipo puede quedar anulada.



CAUTION

Disassembling any part of the power supply and fan assembly voids the warranty and regulatory certifications. There are no user-serviceable parts inside the power supply and fan assembly.

VORSICHT	Das Zerlegen von Netzteilen oder Lüftereinheiten macht die Garantie und die gesetzlichen Zertifizierungen ungültig. Die Netzteile und Lüftereinheiten enthalten keine Teile, die vom Benutzer gewartet werden können.
MISE EN GARDE	Le démontage d'une pièce du bloc d'alimentation ou du ventilateur annule la garantie et les certificats de conformité. Aucune pièce du bloc de l'alimentation ou du ventilateur ne peut être réparée par l'utilisateur.
PRECAUCIÓN	Si se desmonta cualquier pieza del módulo de fuente de alimentación y ventiladores, la garantía y las certificaciones normativas quedan anuladas. En el interior del módulo de fuente de alimentación y ventiladores no hay piezas que pueda reparar el usuario.



CAUTION

Make sure the airflow around the front, and back of the device is not restricted.

VORSICHT	Stellen Sie sicher, dass an der Vorderseite, den Seiten und an der Rückseite der Luftstrom nicht behindert wird.
MISE EN GARDE	Vérifiez que rien ne restreint la circulation d'air devant, derrière et sur les côtés du dispositif et qu'elle peut se faire librement.

PRECAUCIÓN	Asegúrese de que el flujo de aire en las inmediaciones de las partes anterior, laterales y posterior del instrumento no esté restringido.
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**CAUTION**

Never leave tools inside the chassis.

VORSICHT	Lassen Sie keine Werkzeuge im Chassis zurück.
MISE EN GARDE	Ne laissez jamais d'outils à l'intérieur du châssis
PRECAUCIÓN	No deje nunca herramientas en el interior del chasis.

**CAUTION**

Use the screws specified in the procedure. Using longer screws can damage the device.

VORSICHT	Verwenden Sie die in der Anleitung aufgeführten Schrauben. Mit längeren Schrauben wird das Gerät möglicherweise beschädigt.
MISE EN GARDE	Utilisez les vis mentionnées dans les instructions. L'utilisation de vis plus longues peut endommager l'appareil.
PRECAUCIÓN	Utilice los tornillos especificados en el procedimiento. Si utiliza tornillos de mayor longitud, podría dañar el dispositivo.

Electrical cautions

**CAUTION**

Before plugging a cable into any port, be sure to discharge the voltage stored on the cable by touching the electrical contacts to ground surface.

VORSICHT	Bevor Sie ein Kabel in einen Anschluss einstecken, entladen Sie jegliche im Kabel vorhandene elektrische Spannung, indem Sie mit den elektrischen Kontakten eine geerdete Oberfläche berühren.
MISE EN GARDE	Avant de brancher un câble à un port, assurez-vous de décharger la tension du câble en reliant les contacts électriques à la terre.
PRECAUCIÓN	Antes de conectar un cable en cualquier puerto, asegúrese de descargar la tensión acumulada en el cable tocando la superficie de conexión a tierra con los contactos eléctricos.

**CAUTION**

For the NEBS-compliant installation of a Brocade device , use a ground wire of at least 2 AWG. The ground wire should have an agency-approved crimped connector (provided with the device) attached to one end, with the other end attached to building ground. The connector must be crimped with the proper tool, allowing it to be connected to both ground screws on the enclosure. Before crimping the ground wire into the provided ground lug, ensure that the bare copper wire has been cleaned and antioxidant is applied to the bare wire. In addition, anti-rotation devices or lock washers must be used with all screw connections for the grounding wire.

VORSICHT	Zur NEBS-konformen Installation eines Brocade Geräts muss zur Erdung ein Kabel der Stärke von mindestens 2 AWG verwendet werden. Das Erdungskabel muss an einem Ende mit einem zugelassenen Crimp-Anschluss (im Lieferumfang des Geräts) versehen sein und mit dem anderen Ende an die Gebäude-Erde angeschlossen werden. Der Anschluss muss mit einem geeigneten Werkzeug gecrimpt werden, damit er mit den beiden Erdungsschrauben auf dem Gehäuse verbunden werden kann. Bevor das Erdungskabel an die Erdungsöse angeschlossen wird, muss der blanke Kupferdraht gereinigt und mit einem Antioxidationsmittel behandelt werden. Außerdem müssen bei allen Schraubverbindungen des Erdungskabels Drehsicherungen oder Sicherungsscheiben verwendet werden.
MISE EN GARDE	Pour garantir la conformité de l'installation d'un dispositif Brocade à la norme NEBS, utilisez un câble de mise à la terre d'au moins 2 AWG. Le câble de mise à la terre doit être muni d'une cosse sertie homologuée (fournie avec l'appareil) à une extrémité, l'autre extrémité étant reliée à la terre. La cosse doit être sertie avec l'outil adéquat, ce qui permet de la relier aux deux vis de mise à la terre du boîtier. Avant de serrer le câble de mise à la terre dans la cosse fournie, assurez-vous que le fil

	de cuivre dénudé a été nettoyé et qu'un antioxydant a été appliqué. De plus, des dispositifs antirotation ou des rondelles de frein doivent être utilisés avec tous les raccords vissés au câble de mise à la terre.
PRECAUCIÓN	Para que la instalación de un dispositivo sea conforme a la certificación NEBS, utilice un cable de conexión a tierra de calibre AWG 2 como mínimo. El cable de conexión a tierra debe disponer de un conector engarzado homologado (suministrado con el dispositivo) unido a un extremo de modo que el otro extremo se conecte a la toma de tierra. El conector se debe engarzar con la herramienta adecuada de forma que se pueda conectar a los dos tornillos de conexión a tierra del compartimento. Antes de engarzar el cable de conexión a tierra a la patilla de conexión a tierra proporcionada, asegúrese de limpiar y aplicar antioxidante al alambre pelado de cobre. Además, deben emplearse los seguros contra giro o las arandelas de sujeción en todas las uniones atornilladas del cable de toma de tierra.

**CAUTION**

All devices with AC power sources are intended for installation in restricted access areas only. A restricted access area is a location where access can be gained only by trained service personnel through the use of a special tool, lock and key, or other means of security.

VORSICHT	Alle Geräte mit Wechselstromquellen sind nur zur Installation in Sperrbereichen bestimmt. Ein Sperrbereich ist ein Ort, zu dem nur ausgebildetes Wartungspersonal mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer anderen Schutzvorrichtung Zugang hat.
MISE EN GARDE	Tous les équipements dotés de sources d'alimentation C.A. sont destinés à être installés uniquement dans des zones à accès réglementé. Une zone à accès réglementé est une zone dont l'accès n'est possible qu'au personnel de service qualifié utilisant un verrou, une clé ou un outil spécial, ou d'autres moyens de sécurité.
PRECAUCIÓN	Todos los dispositivos con fuentes de alimentación de corriente alterna (AC), están diseñados únicamente para su instalación en zonas de acceso restringido. Se entiende como área de acceso restringido un lugar al que solo puede acceder personal de servicio mediante el uso de una herramienta especial, llave y cerrojo u otro medio de seguridad similar, y que esté controlado por la autoridad responsable de esa ubicación.

**CAUTION**

All devices with DC power supplies are intended for installation in restricted access areas only. A restricted access area is a location where access can be gained only by trained service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

VORSICHT	Alle Geräte mit DC-Netzteil sind nur für die Installation in Bereichen mit beschränktem Zugang gedacht. Ein Bereich mit beschränktem Zugang ist ein Ort, zu dem nur ausgebildetes Wartungspersonal mit Spezialwerkzeug, Schloss und Schlüssel oder anderen Sicherheitsvorrichtungen Zugang hat. Dieser Zugang wird von für den Bereich zuständigen Personen überwacht.
MISE EN GARDE	Tous les équipements dotés de sources d'alimentation C.C. sont destinés à être installés uniquement dans des zones à accès réglementé. Une zone à accès réglementé est une zone dont l'accès n'est possible qu'au personnel de service qualifié utilisant un verrou, une clé ou un outil spécial, ou d'autres moyens de sécurité, et qui est contrôlée par les autorités responsables du site.
PRECAUCIÓN	Todos los dispositivos con fuentes de alimentación de corriente continua (CC) han sido diseñados únicamente para su instalación en áreas restringidas/ zonas de acceso restringido. Se entiende como área de acceso restringido un lugar al que solo puede acceder personal de servicio mediante el uso de una herramienta especial, llave y cerrojo u otro medio de seguridad similar, y que esté controlado por la autoridad responsable de esa ubicación.

**CAUTION**

For the DC input circuit to the system, make sure there is a 80 amp circuit breaker, minimum 60VDC, double pole, on the input lugs to the power supply. The input wiring for connection to the product should be copper wire, 2 AWG, marked VW-1, and rated minimum 90 °C. This equipment installation must meet NEC/CEC code requirements. Consult local authorities for regulations.

VORSICHT	Verwenden Sie für die Gleichspannungsversorgung des Systems einen bipolaren 80-A-Schutzschalter an den Anschlussklemmen des Eingangs mit mindestens 60 V Gleichstrom. Die Verkabelung am Eingang des Produkts sollte aus Kupferkabel mit einem Querschnitt von 33,6 cm² (2 AWG), VW-1-Kennzeichnung und mindestens 90°C Belastbarkeit bestehen. Die Installation dieses Geräts muss den NEC/CEC-Anforderungen entsprechen. Wenden Sie sich für Bestimmungen an Ihre Behörden vor Ort.
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MISE EN GARDE	Pour le circuit CC d'entrée du système, assurez-vous qu'il existe un disjoncteur bipolaire de 80 ampères, 60 VCC minimum, sur les pattes d'entrée de l'alimentation. Le câblage d'entrée pour la connexion au produit doit être un fil de cuivre, 2 AWG, marqué VW-1, et avec une température nominale minimum de 90 °C. Cette installation de l'équipement doit être conforme aux exigences du code NEC/CEC. Pour la conformité aux règlements, consulter les autorités locales.
PRECAUCIÓN	Para el circuito de entrada al Sistema DC, asegúrese de que haya un interruptor de circuito de 80 amperios, de mínimo 60 VCC y dos polos en las terminales de entrada a la fuente de alimentación. El cableado de entrada para la conexión con el producto debe ser alambre de cobre, 2 AWG, VW-1 marcado y con calificación mínima de 90 °C. La instalación de este equipo debe cumplir con los requisitos del código NEC/CEC. Consulte a las autoridades locales sobre las regulaciones.



CAUTION

The maximum input voltage for connection to the HVAC power supply must not exceed 305VAC.

VORSICHT	Die maximale Eingangsspannung für die Verbindung mit der HLK-Stromversorgung darf 305 V Wechselstrom nicht übersteigen.
MISE EN GARDE	La tension maximale d'entrée pour la connexion à l'alimentation CVC ne doit pas dépasser 305 VCA.
PRECAUCIÓN	La tensión máxima de entrada para la conexión a la fuente de alimentación HVAC no debe exceder de 305VAC.

Cautions related to equipment weight



CAUTION

Do not use the port cover tabs to lift the module. They are not designed to support the weight of the module, which can fall and be damaged.

VORSICHT	Verwenden Sie nicht die Laschen der Anschlussabdeckungen um ein Modul anzuheben. Diese sind nicht auf das Gewicht des Moduls ausgelegt, welches herunterfallen und dabei beschädigt werden kann.
MISE EN GARDE	N'utilisez pas les languettes du boîtier du port pour soulever le module. Elles ne sont pas conçues pour supporter le poids du module, qui peut tomber et être endommagé.
PRECAUCIÓN	No utilice las pestañas de la tapa del puerto para levantar el módulo. No están diseñadas para soportar el peso del módulo, por lo que este podría caerse y resultar dañado.

Danger Notices

A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Ein Gefahrenhinweis warnt vor Bedingungen oder Situationen die tödlich sein können oder Sie extrem gefährden können.

Sicherheitsetiketten sind direkt auf den jeweiligen Produkten angebracht um vor diesen Bedingungen und Situationen zu warnen.

Un énoncé de danger indique des conditions ou des situations potentiellement mortelles ou extrêmement dangereuses. Des étiquettes de sécurité sont posées directement sur le produit et vous avertissent de ces conditions ou situations.

Una advertencia de peligro indica condiciones o situaciones que pueden resultar potencialmente letales o extremadamente peligrosas. También habrá etiquetas de seguridad pegadas directamente sobre los productos para advertir de estas condiciones o situaciones.

General dangers



DANGER

The procedures in this manual are for qualified service personnel.

GEFAHR	Die Vorgehensweisen in diesem Handbuch sind für qualifiziertes Servicepersonal bestimmt.
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DANGER	Les procédures décrites dans ce manuel doivent être effectuées par un personnel de maintenance qualifié.
PELIGRO	Los procedimientos de este manual deben llevarlos a cabo técnicos cualificados.

Dangers related to equipment weight



DANGER

Use safe lifting practices when moving the product.

GEFAHR	Beim Bewegen des Produktes ist auf eine sichere Hubtechnik zu achten.
DANGER	Utiliser des techniques de levage sûres pour déplacer le produit.
PELIGRO	Tenga mucho cuidado al levantar el producto para moverlo



DANGER

Mount the devices you install in a rack as low as possible. Place the heaviest device at the bottom and progressively place lighter devices above.

GEFAHR	Montieren Sie die Geräte im Gestell so tief wie möglich. Platzieren Sie das schwerste Gerät ganz unten, während leichtere Geräte je nach Gewicht (je schwerer desto tiefer) darüber untergebracht werden.
DANGER	Montez les dispositifs que vous installez dans un bâti aussi bas que possible. Placez le dispositif le plus lourd en bas et le plus léger en haut, en plaçant tous les dispositifs progressivement de bas en haut du plus lourd au plus léger.
PELIGRO	Monte los instrumentos que instale en un bastidor lo más bajos posible. Ponga el instrumento más pesado en la parte inferior y los instrumentos progresivamente más livianos más arriba.



DANGER

Do not attempt to lift the chassis. It is extremely heavy. Use a mechanical lifting device to lift the chassis. Four or more people are required to position the unpopulated chassis into the rack.

GEFAHR	Nicht versuchen, ein Brocade SLX Chassis anzuheben. Es ist sehr schwer. Das Chassis mit Hilfe einer mechanischen Hebevorrichtung anheben. Mindestens vier Personen sind erforderlich, um das unbeladene Chassis im Rack zu positionieren.
DANGER	Ne jamais tenter de soulever un châssis Brocade SLX car il est alors extrêmement lourd. Pour soulever le châssis, utiliser un appareil élévateur. Quatre personnes au moins sont nécessaires pour positionner dans le rack le châssis vidé de ses éléments.
PELIGRO	No trate de levantar un chasis Brocade SLX. Es extremadamente pesado. Utilice un elevador mecánico para levantar el chasis. Hacen falta cuatro personas o más para colocar el chasis no poblado en el interior del armazón.



DANGER

A fully populated Brocade SLX 9850-4 weighs approximately 137.4 kg (303 lb) and requires a hydraulic or assisted lift to install it.

GEFAHR	Ein vollständig bestückter Brocade SLX 9850-4 wiegt etwa 137.4 kg und erfordert zur Installation eine hydraulische oder Servo-Hebevorrichtung.
DANGER	Un commutateur Brocade SLX 9850-4 complet pèse environ 137.4 kg et requiert un dispositif de levage hydraulique ou électrique pour l'installation.
PELIGRO	Un Brocade SLX 9850-4 con la configuración completa pesa aproximadamente 137.4 kg (303 libras) y requiere un elevador hidráulico o asistido para realizar su instalación.

Electrical dangers



DANGER

Make sure that the power source circuits are properly grounded, then use the power cord supplied with the device to connect it to the power source.

GEFAHR	Stellen Sie sicher, dass die Stromkreise ordnungsgemäß geerdet sind. Benutzen Sie dann das mit dem Gerät gelieferte Stromkabel, um es an die Stromquelle anzuschließen.
DANGER	Vérifiez que les circuits de sources d'alimentation sont bien mis à la terre, puis utilisez le cordon d'alimentation fourni avec le dispositif pour le connecter à la source d'alimentation.
PELIGRO	Verifique que circuitos de la fuente de corriente están conectados a tierra correctamente; luego use el cordón de potencia suministrado con el instrumento para conectarlo a la fuente de corriente



DANGER

Disconnect the power cord from all power sources to completely remove power from the device.

GEFAHR	Ziehen Sie das Stromkabel aus allen Stromquellen, um sicherzustellen, dass dem Gerät kein Strom zugeführt wird.
DANGER	Débranchez le cordon d'alimentation de toutes les sources d'alimentation pour couper complètement l'alimentation du dispositif.
PELIGRO	Para desconectar completamente la corriente del instrumento, desconecte el cordón de corriente de todas las fuentes de corriente.



DANGER

High Touch Current. Earth connection essential before connecting supply.

GEFAHR	Hoher Ableitstrom. Vor Anschluss ans Netz Schutzterdung herstellen.
DANGER	Courant de fuite élevé. Mise à la terre obligatoire avant la connexion de l'alimentation.
PELIGRO	Alta tensión al tacto. La conexión a tierra es esencial antes de conectar la alimentación.



DANGER

Before beginning the installation, see the precautions in "Power precautions."

GEFAHR	Vor der Installation siehe Vorsichtsmaßnahmen unter "Power Precautions" (Vorsichtsmaßnahmen in Bezug auf elektrische Ablagen).
DANGER	Avant de commencer l'installation, consultez les précautions décrites dans "Power Precautions" (Précautions quant à l'alimentation).
PELIGRO	Antes de comenzar la instalación, consulte las precauciones en la sección "Power Precautions" (Precauciones sobre corriente).



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megaohm resistor.

GEFAHR	Aus Sicherheitsgründen sollte ein EGB-Armband zum Schutz von elektronischen gefährdeten Bauelementen mit einem 1 Megaohm-Reihenwiderstand ausgestattet sein.
DANGER	Pour des raisons de sécurité, la dragonne ESD doit contenir une résistance de série 1 méga ohm.
PELIGRO	Por razones de seguridad, la correa de muñeca ESD deberá contener un resistor en serie de 1 mega ohmio.

**DANGER**

If the installation requires a different power cord than the one supplied with the device, make sure you use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the device.

GEFAHR	Falls für die Installation ein anderes Stromkabel erforderlich ist (wenn das mit dem Gerät gelieferte Kabel nicht passt), müssen Sie sicherstellen, dass Sie ein Stromkabel mit dem Siegel einer Sicherheitsbehörde verwenden, die für die Zertifizierung von Stromkabeln in Ihrem Land zuständig ist. Das Siegel ist Ihre Garantie, dass das Stromkabel sicher mit Ihrem Gerät verwendet werden kann.
DANGER	Si l'installation nécessite un cordon d'alimentation autre que celui fourni avec le dispositif, assurez-vous d'utiliser un cordon d'alimentation portant la marque de l'organisation responsable de la sécurité qui définit les normes et réglementations pour les cordons d'alimentation dans votre pays. Cette marque vous assure que vous pouvez utiliser le cordon d'alimentation avec le dispositif en toute sécurité.
PELIGRO	Si la instalación requiere un cordón de corriente distinto al que se ha suministrado con el instrumento, verifique que usa un cordón de corriente que venga con la marca de la agencia de seguridad que defina las regulaciones para cordones de corriente en su país. Esta marca será su garantía de que el cordón de corriente puede ser utilizado con seguridad con el instrumento.

**DANGER**

When removing the metal cover over the high voltage power supply inlet, remove only the 2 Torx screws.

GEFAHR	Wenn Sie die Metallabdeckung über dem Anschluss für den Starkstrom entfernen, drehen Sie nur die 2 Torx-Schrauben heraus.
DANGER	Lorsque vous retirez le couvercle métallique de l'entrée d'alimentation à haute tension, retirez uniquement les 2 vis Torx.
PELIGRO	Cuando se retire la cubierta metálica sobre la entrada de la fuente de alimentación de alta tensión, retire únicamente los 2 tornillos Torx.

Laser dangers

**DANGER**

All fiber-optic interfaces use Class 1 lasers.

GEFAHR	Alle Glasfaser-Schnittstellen verwenden Laser der Klasse 1.
DANGER	Toutes les interfaces en fibre optique utilisent des lasers de classe 1.
PELIGRO	Todas las interfaces de fibra óptica utilizan láser de clase 1.

**DANGER**

Use only optical transceivers that are qualified by Brocade Communications Systems, Inc. and comply with the FDA Class 1 radiation performance requirements defined in 21 CFR Subchapter I, and with IEC 60825 and EN60825. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.

GEFAHR	Verwenden Sie nur optische Transceiver, die von Brocade Communications Systems zugelassen sind und die die Anforderungen gemäß FDA Class 1 Radiation Performance Standards in 21 CFR, Unterkapitel I, sowie IEC 60825 und EN60825 erfüllen. Optische Produkte, die diese Normen nicht erfüllen, können Strahlen aussenden, die für das menschliche Auge gefährlich sind.
DANGER	Utilisez uniquement des émetteurs-récepteurs optiques certifiés par Brocade Communications Systems, Inc. et conformes aux exigences sur la puissance de rayonnement de catégorie 1 de la FDA définies au sous-chapitre 21 CFR I et à les normes IEC 60825 et EN60825. Les produits optiques non-conformes à ces normes sont susceptibles d'émettre une lumière dangereuse pour les yeux.
PELIGRO	Utilice sólo transceptores ópticos aprobados por Brocade Communications Systems, Inc. y que cumplan con las normas IEC 60825 y EN60825, y con los estándares de rendimiento Clase 1 de FDA definidos en el subcapítulo I de 21 CFR. Los productos ópticos que no cumplan con estos estándares pueden emitir luz dañina para los ojos.



DANGER

Laser Radiation. Do Not View Directly with Optical Instruments. Class 1M Laser Products.

GEFAHR	Laserstrahlung! Schauen Sie nicht direkt mit optischen Instrumenten in den Laserstrahl herein. Klasse 1M Laserprodukte.
DANGER	Rayonnement de laser. Ne regardez pas directement avec des instruments optiques. Produits de laser de classe 1M.
PELIGRO	Radiacion de Laser. No vea directamente con Instrumentos Opticos. Clase 1M de Productos de Laser.
警告	レーザ放射 光学器具で直接ビームを見ないこと クラス 1 M レーザ製品