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# Brocade VDX 6940

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## Hardware Installation Guide

**BROCADE** 

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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 Brocade technical documentation.

### Text formatting conventions

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

| Format             | Description  |
|--------------------|--|
| <b>bold text</b>   | Identifies command names<br>Identifies keywords and operands<br>Identifies the names of user-manipulated GUI elements<br>Identifies text to enter at the GUI |
| <i>italic text</i> | Identifies emphasis<br>Identifies variables<br>Identifies document titles  |
| Courier font       | Identifies CLI output<br>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  |
|--------------------|--|
| <b>bold text</b>   | 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, <b>--show</b> WWN. |

| Convention    | Description   |
|---------------|---|
| [ ]           | Syntax components displayed within square brackets are optional.<br>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.<br>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[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.   |

## 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.

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### NOTE

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

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### ATTENTION

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

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### CAUTION

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

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### 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.

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## Brocade resources

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

You can download additional publications supporting your product at [www.brocade.com](http://www.brocade.com). Select the Brocade Products tab to locate your product, then click the Brocade product name or image to open the individual product page. The user manuals are available in the resources module at the bottom of the page under the Documentation category.

To get up-to-the-minute information on Brocade products and resources, go to [MyBrocade](#). You can register at no cost to obtain a user ID and password.

Release notes are available on [MyBrocade](#) under Product Downloads.

White papers, online demonstrations, and data sheets are available through the [Brocade website](#).

## Contacting Brocade Technical Support

As a Brocade customer, you can contact Brocade Technical Support 24x7 online, by telephone, or by e-mail. Brocade OEM customers contact their OEM/Solutions provider.

### Brocade customers

For product support information and the latest information on contacting the Technical Assistance Center, go to <http://www.brocade.com/services-support/index.html>.

If you have purchased Brocade product support directly from Brocade, use one of the following methods to contact the Brocade Technical Assistance Center 24x7.

| Online   | Telephone  | E-mail   |
|--|--|--|
| <p>Preferred method of contact for non-urgent issues:</p> <ul style="list-style-type: none"> <li>• <a href="#">My Cases</a> through MyBrocade</li> <li>• <a href="#">Software downloads</a> and licensing tools</li> <li>• <a href="#">Knowledge Base</a></li> </ul> | <p>Required for Sev 1-Critical and Sev 2-High issues:</p> <ul style="list-style-type: none"> <li>• Continental US: 1-800-752-8061</li> <li>• Europe, Middle East, Africa, and Asia Pacific: +800-AT FIBREE (+800 28 34 27 33)</li> <li>• For areas unable to access toll free number: +1-408-333-6061</li> <li>• <a href="#">Toll-free numbers</a> are available in many countries.</li> </ul> | <p><a href="mailto:support@brocade.com">support@brocade.com</a></p> <p>Please include:</p> <ul style="list-style-type: none"> <li>• Problem summary</li> <li>• Serial number</li> <li>• Installation details</li> <li>• Environment description</li> </ul> |

### Brocade OEM customers

If you have purchased Brocade product support from a Brocade OEM/Solution Provider, contact your OEM/Solution Provider for all of your product support needs.

- OEM/Solution Providers are trained and certified by Brocade to support Brocade® products.
- Brocade provides backline support for issues that cannot be resolved by the OEM/Solution Provider.

- Brocade Supplemental Support augments your existing OEM support contract, providing direct access to Brocade expertise. For more information, contact Brocade or your OEM.
- For questions regarding service levels and response times, contact your OEM/Solution Provider.

## Document feedback

To send feedback and report errors in the documentation you can use the feedback form posted with the document or you can e-mail the documentation team.

Quality is our first concern at Brocade 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:

- Through the online feedback form in the HTML documents posted on [www.brocade.com](http://www.brocade.com).
- By sending your feedback to [documentation@brocade.com](mailto:documentation@brocade.com).

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.

# About This Document

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## Supported hardware and software

This document is applicable to the following devices and operating systems.

| Device                | First supported OS |
|-----------------------|--------------------|
| Brocade VDX 6940-36Q  | Network OS v6.0.0  |
| Brocade VDX 6940-144S | Network OS v6.0.1  |

The following tables provide information on supported Field Replaceable Units (FRUs).

### Fan assemblies and power supplies

The following tables provide information on supported fan assemblies and power supplies.

**TABLE 1** Fan assemblies

| Part number           | Short description              | Where used            | First supported (OS) | Last supported (OS) |
|-----------------------|--------------------------------|-----------------------|----------------------|---------------------|
| <b>Fan assemblies</b> |                                |                       |                      |                     |
| XBR-FAN-40-F          | 40 MM nonport side exhaust fan | Brocade VDX 6940-36Q  | Network OS 6.0.0     | Active              |
| XBR-FAN-40-R          | 40 MM port-side exhaust fan    | Brocade VDX 6940-36Q  | Network OS 6.0.0     | Active              |
| XBR-FAN-80-01-F       | 80 MM nonport side exhaust fan | Brocade VDX 6940-144S | Network OS 6.0.1     | Active              |
| XBR-FAN-80-01-R       | 80 MM port side exhaust fan    | Brocade VDX 6940-144S | Network OS 6.0.1     | Active              |

**TABLE 2** Power supplies

| Part number        | Short description                           | Where used                              | First supported (OS) | Last supported (OS) |
|--------------------|---|---|----------------------|---------------------|
| XBR-500WPSAC-01-R  | AC 500W power supply, port side exhaust     | Brocade VDX 6940-36Q, Brocade VDX 6740T | Network OS 6.0.0     | Active              |
| XBR-500WPSAC-01-F  | AC 500W power supply, nonport side exhaust  | Brocade VDX 6940-36Q, Brocade VDX 6740T | Network OS 6.0.0     | Active              |
| RPS9DC             | DC 500W power supply, exhaust               | Brocade VDX 6940-36Q                    | Network OS 6.0.0     | Active              |
| RPS9DC+1           | DC 500W power supply, intake                | Brocade VDX 6940-36Q                    | Network OS 6.0.0     | Active              |
| XBR-1100WPSAC-F    | AC 1100W power supply, nonport side exhaust | Brocade VDX 6940-144S                   | Network OS 6.0.1     | Active              |
| XBR-1100WPSAC-R    | AC 1100W power supply, port side exhaust    | Brocade VDX 6940-144S                   | Network OS 6.0.1     | Active              |
| XBR-1100WPSDC-01-F | DC 1100W power supply, nonport side exhaust | Brocade VDX 6940-144S                   | Network OS 6.0.1     | Active              |
| XBR-1100WPSDC-01-R | DC 1100W power supply, port side exhaust    | Brocade VDX 6940-144S                   | Network OS 6.0.1     | Active              |

## Rack mount kits

The following table provides information on supported rack mount kits.

**TABLE 3** Rack mount kits

| Part number | Short description            | Device where used                              | First supported (OS) | Last supported (OS) |
|-------------|------------------------------|--|----------------------|---------------------|
| XBR-R000296 | Universal four-post rack kit | Brocade VDX 6940-144S and Brocade VDX 6940-36Q | N/A                  | Active              |
| XBR-R000294 | Universal two-post rack kit  | Brocade VDX 6940-144S and Brocade VDX 6940-36Q | N/A                  | Active              |

## What's new in this document

This document has been updated to include the following new information:

- Details on the Brocade VDX 6940-144S throughout most sections of this guide.
- Universal Four-Post Rack Kit and Universal Two-Post Rack Kit Installation Procedures.
- NEBS-compliant grounding procedures using the two-hole ground lug.

What's new in this document

# Device Overview

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## Hardware features

The following Brocade VDX 6940 devices extend VCS technology in a spine and leaf architecture:

- The Brocade VDX 6940-36Q provides up to 36 40 GbE quad small form-factor pluggable (QSFP) ports for connecting devices in a VCS fabric. The base model of this 1U form-factor device contains twenty-four 40 GbE ports. A single 40G Port Upgrade license can add 12 additional ports to provide the full complement of 36 40 GbE ports. Each 40 GbE port can be reconfigured as four 10 GbE ports in QSFP breakout mode to provide a total of 144 10 GbE ports for the device.
- The Brocade VDX 6940-144S provides up to 12 40 GbE quad small form-factor pluggable (QSFP) ports and 96 fixed 10 GbE ports for connecting devices in a VCS fabric. The base model of this 2U form-factor device contains 64 fixed 10 GbE base ports and no 40 GbE ports. Two 10G Port Upgrade licenses can provide the full complement of 96 fixed 10 GbE ports in two 16-port increments. Two 40G Port Upgrade licenses provide up to 12 40 GbE ports in two six-port increments.

Multiple fan and power supply field replaceable units (FRUs) in these devices allow redundant operation in the event of FRU failure.

A key feature of these devices is Brocade VCS™ technology, which includes virtual cluster switching, a set of technologies that allows users to create flatter, virtualized, and converged data center networks. VCS fabrics are scalable, permitting users to expand at their own pace, and simplified, allowing users to manage the fabric as a single entity. VCS-based Ethernet fabrics are convergence-capable with technologies such as Fibre Channel over Ethernet (FCoE) for storage.

### 4x10 GbE breakout mode support

Each 40 GbE port on the Brocade VDX 6940-36Q can be configured for breakout mode to provide four 10 GbE interfaces. The Brocade VDX 6940-144S does not support breakout mode at Network OS 6.0.1 release.

You can administer and operate the 10 GbE interfaces as any other SFP port. Optical and twinaxial copper 4x10 GbE breakout cables provide a connection from the 40 GbE port to four 10 GbE SFP ports on other devices. Breakout connections are primarily used for edge port connectivity, but can also support ISL trunking with VDX 8770 and VDX 6740 platforms.

The 40 GbE ports support dynamic QSFP breakout configuration. For more information on configuring breakout mode, refer to the *Network OS Layer 2 Switching Configuration Guide*.

For a information on QSFP transceivers that support 4x10 GbE breakout mode, refer to the online matrices and data sheets referenced in [Supported transceivers](#) on page 17.

## Brocade trunking support

Network OS supports Brocade trunks (hardware-based link aggregation groups, or LAGs). These trunks are dynamically formed between two adjacent devices with connected interswitch link (ISL) ports unless trunking is disabled on connecting ports. Traffic is evenly distributed along all links in a trunk.

Brocade trunking is supported on the following port types:

- 10 GbE ports
- 40 GbE ports in 40 GbE mode
- 10 GbE interfaces when 4x10 GbE breakout mode is configured on 40 GbE ports. Note that 4x10 GbE breakout mode is only supported on the Brocade VDX 6940-36Q with Network OS 6.0.1.

Following are general limitations and considerations of this feature:

- Ports forming a trunk must be configured at the same speed as follows:
  - 40 GbE ports configured in 40 GbE mode - 40 Gbps
  - 10 GbE interfaces on 40 GbE ports configured in 4x10 GbE breakout mode - 10 Gbps. Note that 4x10 GbE breakout mode is only supported on the Brocade VDX 6940-36Q with Network OS 6.0.1.
  - 10 GbE ports - 10 Gbps
- Ports forming a trunk must be in the same trunk group. Trunk groups are different for the Brocade VDX 6940-36Q and Brocade VDX 6940-144S.
- Any port in a trunk group can belong to a specific trunk, but ports do not need to be contiguous. For example, port 1, 2, and 7 can form a trunk with a remote device. If ports 3 and 4 are connected later, they will form a separate trunk.
- The maximum number of ports that can form a trunk are as follows:
  - 12 fixed 10 GbE ports
  - 12 10 GbE interfaces on 40 GbE ports on Brocade VDX 6940-36Q in 4 x 10 GbE breakout mode.
  - Three 40 GbE ports (40 GbE mode)
- Trunking is not supported between Brocade VDX 6940 device 40 GbE ports and Brocade VDX 8770 devices when the 40 GbE ports are configured in 40 GbE mode. Trunking is supported on 40 GbE ports in 4x10 GbE breakout mode between the Brocade VDX 8770 and Brocade VDX 6940-36Q.
- 40 GbE and 10 GbE trunking is supported between Brocade Brocade VDX 6940 and Brocade VDX 6740 devices.
- MCAST LAG spraying is not supported on trunks.
- Standard 802.1ag LAG and Brocade vLAG functions are supported on fixed 10 GbE ports, 40 GbE ports in 40 GbE mode, and on 10 GbE interfaces on 40 GbE ports when in 4x10 GbE breakout mode. However, all ports in the LAG or vLAG must be configured at the same speed, 10 GbE or 40 GbE. If the port speeds do not match, the port will not be logically online and will fail to become a member of the LAG or vLAG.

Ports forming a trunk must be in the same trunk group. The following tables show the port numbers that belong to each trunk group for Brocade VDX 6940 devices. Colored labels attached above and below ports on the port-side of the device designate ports that belong to the same trunk group.

**TABLE 4** Trunk groups in the Brocade VDX 6940-36Q

| Trunk group | Color label by port | GbE port number | Port speeds   |
|-------------|---------------------|-----------------|---|
| TG1         | Blue                | 1 through 9     | 40 Gbps - 40 GbE mode<br>10 Gbps - 4x10 GbE breakout mode |



**TABLE 4** Trunk groups in the Brocade VDX 6940-36Q (Continued)

| Trunk group | Color label by port | GbE port number | Port speeds   |
|-------------|---------------------|-----------------|---|
| TG2         | Yellow              | 10 through 18   | 40 Gbps - 40 GbE mode<br>10 Gbps - 4x10 GbE breakout mode |
| TG3         | Purple              | 19 through 27   | 40 Gbps - 40 GbE mode<br>10 Gbps - 4x10 GbE breakout mode |
| TG4         | Green               | 28 through 36   | 40 Gbps - 40 GbE mode<br>10 Gbps - 4x10 GbE breakout mode |

**TABLE 5** Trunk groups in the Brocade VDX 6940-144S

| Trunk group | Color label by port | GbE port number | Port speeds           |
|-------------|---------------------|-----------------|-----------------------|
| TG-1        | Blue                | 1 through 24    | 10 Gbps               |
|             |                     | 61 through 72   | 10 Gbps               |
| TG-2        | Yellow              | 25 through 48   | 10 Gbps               |
|             |                     | 73 through 84   | 10 Gbps               |
| TG-3        | Green               | 85 through 96   | 10 Gbps               |
| TG-3A       | Green               | 103 through 108 | 40 Gbps - 40 GbE mode |
| TG-4        | Purple              | 49 through 60   | 10 Gbps               |
| TG-4A       | Purple              | 97 through 102  | 40 Gbps - 40 GbE mode |

**NOTE**

Ports in this group cannot be trunked with TG-4 ports.

**NOTE**

For a diagram and information on Brocade VDX 6940 device port numbering, refer to [VDX 6940-36Q port numbering](#) on page 27.

For more information on Brocade trunking and enabling and disabling trunking, refer to the "Configuring Brocade VCS Fabrics" chapter in the *Network OS Administration Guide*.

## Supported transceivers

For details on supported transceivers, refer to the following publications on [www.brocade.com](http://www.brocade.com):

- *Brocade VDX Transceiver Support Matrix.*
- *Brocade Fibre Channel Transceiver Support Matrix.*



**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 825-2. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.***

## License support

Brocade VDX 6940-36Q supports devices the following licenses:

- 40 GbE Port Upgrade - Increases the number of 40 GbE ports provided in a base configuration. For the Brocade VDX 6940-36Q, a single license increases the 24 ports enabled in a base configuration to 36.
- FCoE Base - Enables FCoE functionality on the 10 GbE links formed when configuring 40 GbE ports in 4x10 GbE breakout mode.

The Brocade VDX 6940-144S supports the following licenses:

- 40 GbE Port Upgrade - Increases the number of 40 GbE ports provided in a base configuration. For the Brocade VDX 6940-144S, each license increases the 0 ports enabled in a base configuration to 12 in two 6-port increments.
- 10 GbE Port Upgrade - Increases the number of fixed 10 GbE ports provided in a base configuration. For the Brocade VDX 6940-144S, each license increases the 64 ports enabled in a base configuration to 96 in two 16-port increments.
- FCoE Base - Enables FCoE functionality on the fixed 10 GbE ports.

Additional licenses supported by Brocade VDX 6940 devices:

- Layer 3 - enables Layer 3 features.
- Advanced Services - Single license that provides a combination of FCoE Base and Layer 3 license functionality.

For more information on these licenses, refer to the *Network OS Software Licensing Guide*.

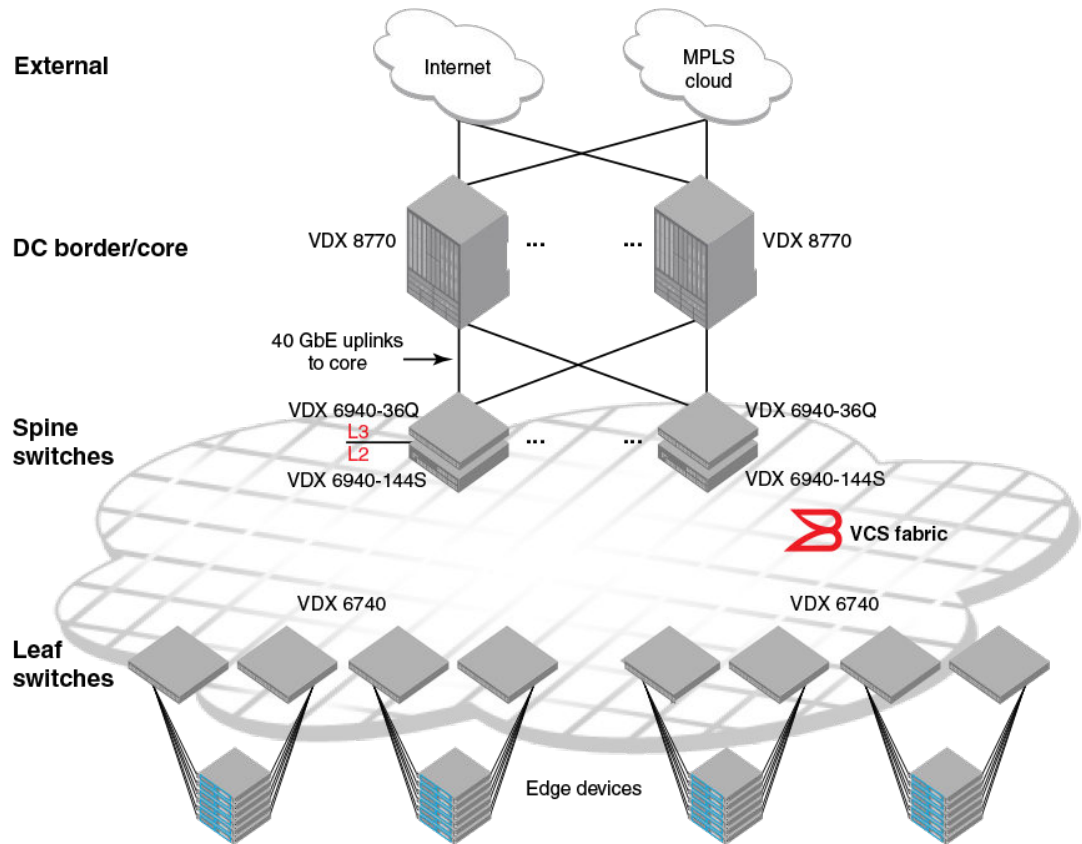
## Example deployments

Smaller data-center deployments can initially deploy the Brocade VDX 6940-36Q as spine devices and Brocade VDX 6740 as leaf devices, and as the data center grows, easily transition to a heterogeneous deployment using Brocade VDX 6940-144S, Brocade VDX 6940-36Q. and Brocade VDX 6740 devices to provide a scalable solution.

Following are example deployments for the Brocade VDX 6940-36Q and Brocade VDX 6940-144S:

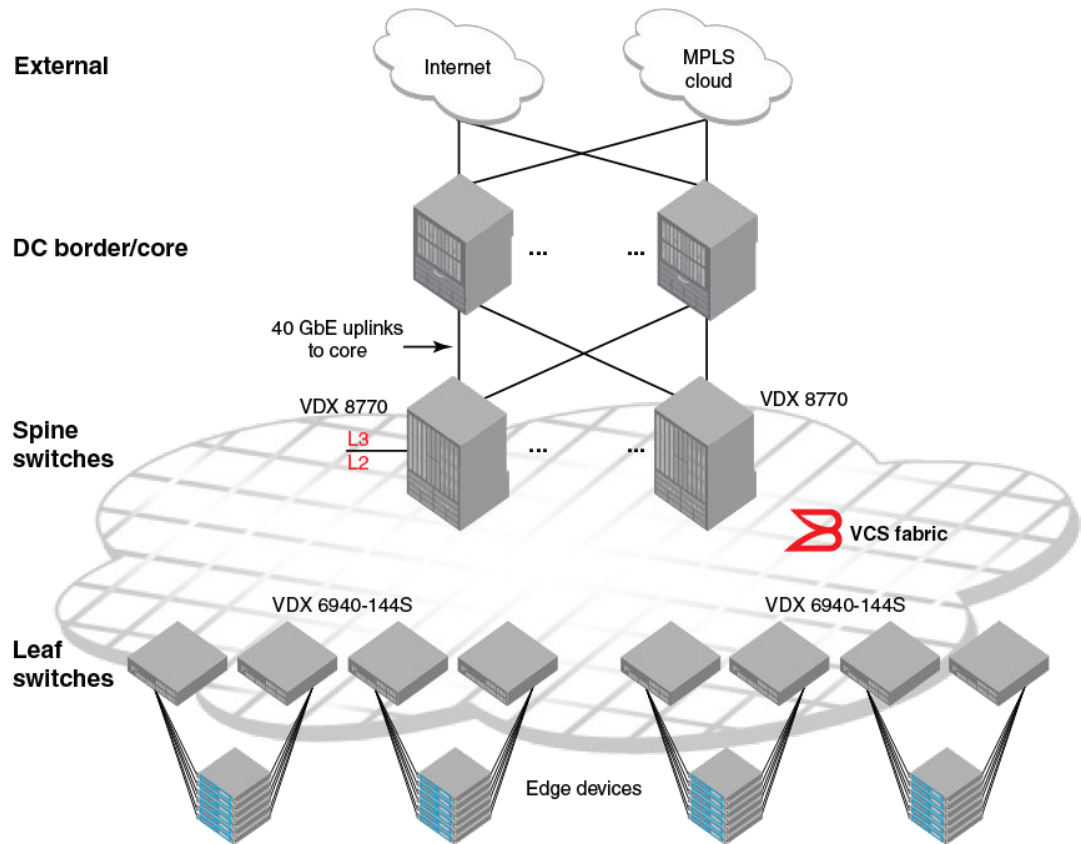
- *Using the Brocade VDX 6940-36Q or Brocade VDX 6940-144S as a spine device in smaller VCS deployments.* The Brocade VDX 6940-36Q 40 GbE ports in 40 GbE mode can uplink to core devices, such as the Brocade VDX 8770. 40 GbE ports configured in 4x10 GbE breakout mode to provide 10 GbE links and the fixed 10 GbE ports ( Brocade VDX 6940-144S only) can downlink through a leaf device, such as the Brocade VDX 6740, to edge nodes, such as servers.

**FIGURE 1** Brocade VDX 6940 in smaller deployments



- Using the Brocade VDX 6940-144S as a spine device and Brocade VDX 6940-36Q as a leaf device in medium-size VCS deployments. As a spine device, the Brocade VDX 6940-144S can uplink to a core device, such as the Brocade VDX 8770, using its 40 GbE ports in 40 GbE mode. The fixed 10 GbE ports can downlink through a Brocade VDX 6940-36Q, functioning as a leaf device, to edge nodes, such as servers.



**FIGURE 3** Brocade VDX 6940 in larger deployments

Although the main function of 40 GbE ports in 40 GbE mode is to uplink data to platforms in a VCS fabric, such as the Brocade VDX 8770, or to uplink data to non-VCS-capable devices, these ports can be also connect to edge devices, including FCoE devices.

Although FCoE virtual fabric (VF) ports are created for 40 GbE ports, FCoE configuration is not supported on 40 GbE ports configured in 40 GbE mode. FCoE configuration is supported on 10 GbE ports in breakout mode on the Brocade VDX 6940-36Q when the appropriate FCoE license is installed. Refer to the *Network OS Software Licensing Guide* for details on FCoE licensing.

## Hardware components

Interface ports, component status LED indicators, and field replaceable units (FRUs) are located on the port side and non-port side of Brocade VDX 6940 devices.

The following components are on the port side of the device:

- A USB connector for firmware upgrades and system log downloads.
- A RJ-45 Ethernet management port for out-of-band management.
  - The Brocade VDX 6940-36Q port supports 10/100/1000 MB.
  - The Brocade VDX 6940-144S port supports 1000 MB.
- An RJ-45 serial (RS-232) console port for terminal access and debugging.
- GbE ports for fabric connections:

- Brocade VDX 6940-36Q - up to 36 40 GbE QSFP ports.
- Brocade VDX 6940-144S - up to 96 fixed 10 GbE ports and 12 40 GbE QSFP ports.
- For 40 GbE ports, four green LEDs are located above each upper 40 GbE port and below each lower 40 GbE port. In 40 GbE mode, the first of the four LEDs illuminates to indicate 40 GbE status. In 4x10 GbE breakout mode (Brocade VDX 6940-36Q only), each of the four LEDs illuminate to indicate status of individual 10 GbE lanes.
- For fixed 10 GbE ports on the Brocade VDX 6940-144S) - Two triangle-shaped bicolor (green and amber) port status LEDs are arrayed between each row of ports. One LED indicates status of the upper 10 GbE port one indicates status of the lower 10 GbE port.
- System power LED - Indicates system power on or off.
- System status LED - Indicates normal operation, internal diagnostics operation, and device fault state.
- Ethernet status LED - Indicates management Ethernet management port online and offline status and traffic activity.

The following components are on the non-port side of the Brocade VDX 6940-36Q:

- Dual, hot-swappable 500W AC or DC power supplies. Each power supply FRU contains a fan and can be ordered with front-to-back or back-to-front airflow. Although the two power supplies provide redundancy for required power, both must be installed to provide sufficient airflow from their fans.
- Five hot-swappable fan assemblies, each with two fans. These fan FRUs can be ordered with front-to-back or back-to-front airflow.
- Fan status LED on each fan FRU.
- Power supply status LED on each power supply FRU.

The following components are on the non-port side of the Brocade VDX 6940-144S:

- Dual, hot-swappable 1100W AC or DC power supplies. Each power supply FRU contains a fan and can be ordered with front-to-back or back-to-front airflow. Although the two power supplies provide redundancy for required power, both must be installed to provide sufficient airflow from their fans.
- Four hot-swappable fan assemblies, each with one fan. These fan FRUs can be ordered with front-to-back or back-to-front airflow.
- Fan status LED on each fan FRU.
- Two power supply status LEDs on each power supply FRU.

The following transceivers and QSFP breakout cables are available for Brocade VDX 6940 GbE ports:

- Short-range and long-range 40 GbE QSFP transceivers.
- Optical or twinaxial breakout cable for 40 GbE ports when configured in 4x10 GbE breakout mode (Brocade VDX 6940-36Q only).
- Short-range and long-range 10 GbE SFP+ transceivers (Brocade VDX 6940-144S).

The Brocade VDX 6940 contains non-volatile random access memory (NVRAM) with integrated real-time clock (RTC) function.



#### **CAUTION**

**Ensure that the airflow direction of the power supply unit matches that of the installed fan tray. The power supplies and fan trays are clearly labeled with either a green arrow with an "E", or an orange arrow with an "I."**

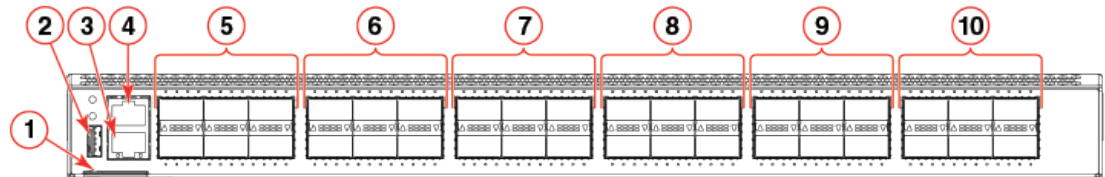
## **Port-side view**

Use the following illustrations to locate ports, LED indicators, and other components on the port side of devices.

**Port-side view of VDX 6940-36Q**

The port side of the Brocade VDX 6940-36Q includes the USB port, RJ-45 serial console and Ethernet management port, 40 GbE QSFP ports, and system status, power, and port operation LED indicators. Colored labels above and below ports designate ports that belong to the same trunk group.

The following illustration shows device ports. Refer to [LED locations](#) on page 73 for details on port-side LED locations.



- |   |                                |    |                         |
|---|--------------------------------|----|-------------------------|
| 1 | Switch ID pull-out tab         | 6  | 40 GbE QSFP ports 7-12  |
| 2 | USB port                       | 7  | 40 GbE QSFP ports 13-18 |
| 3 | RJ-45 Ethernet management port | 8  | 40 GbE QSFP ports 19-24 |
| 4 | RJ-45 serial console port      | 9  | 40 GbE QSFP ports 25-30 |
| 5 | 40 GbE QSFP ports 1-6          | 10 | 40 GbE QSFP ports 31-36 |

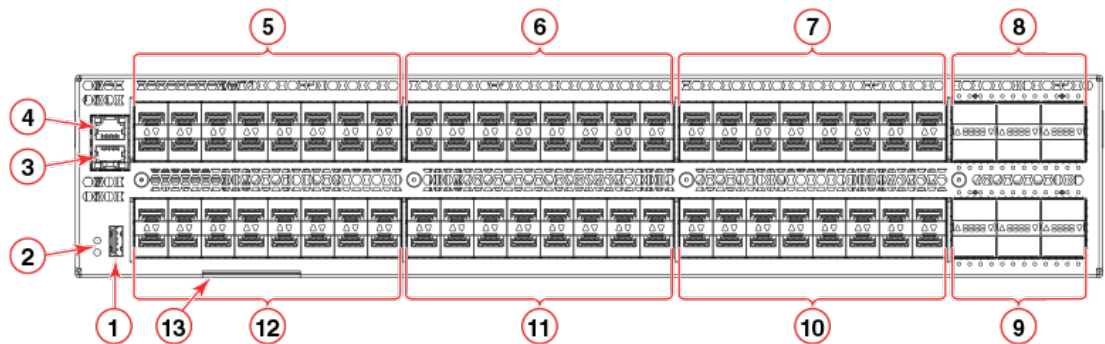
**FIGURE 4** Port-side view of the Brocade VDX 6940-36Q

**Port-side view of VDX 6940-144S**

The port side of the Brocade VDX 6940-144S includes the USB port, RJ-45 serial console and Ethernet management port, fixed 10 SFP+ ports, 40 GbE QSFP ports, and system status, power, and port operation LED indicators. Colored labels above and below ports designate ports that belong to the same trunk group.

The following illustration shows device ports. Refer to [LED locations](#) on page 73 for details on port-side LED locations.

**FIGURE 5** Port-side view of Brocade VDX 6940-144S



1. USB port
2. System and power status LEDs
3. RJ-45 serial console port
4. RJ-45 Ethernet management port
5. Fixed 10 GbE SFP+ ports 1-16
6. Fixed 10 GbE SFP+ ports 17-32
7. Fixed 10 GbE SFP+ ports 33-48

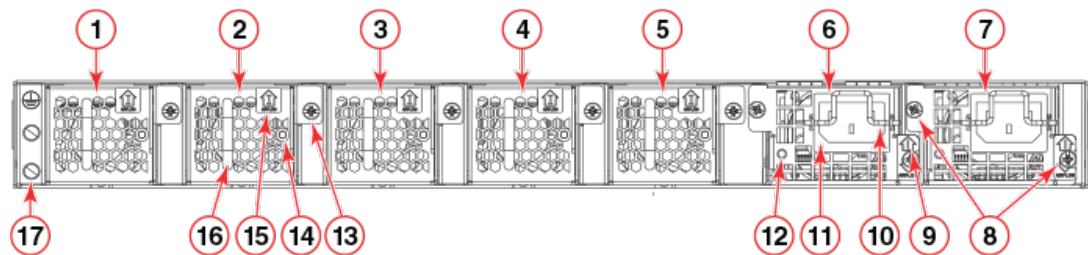
- 8. 40 GbE QSFP ports 97-102
- 9. 40 GbE QSFP ports 103-108
- 10 Fixed 10 GbE SFP+ ports 81-96
- 11 Fixed 10 GbE SFP+ ports 65-80
- 12 Fixed 10 GbE SFP+ ports 49-64
- 13 Switch ID pull-out tab

## Non-port-side views

Use the following illustrations to locate fan assemblies, AC or DC power supplies, LED status indicators, and other components on devices.

### *Non-port-side view of VDX 6940-36Q*

The following illustration shows the fan assemblies, AC power supplies, and other components on the non-port side of the Brocade VDX 6940-36Q. Refer to [LED locations](#) on page 73 for details on LED locations.

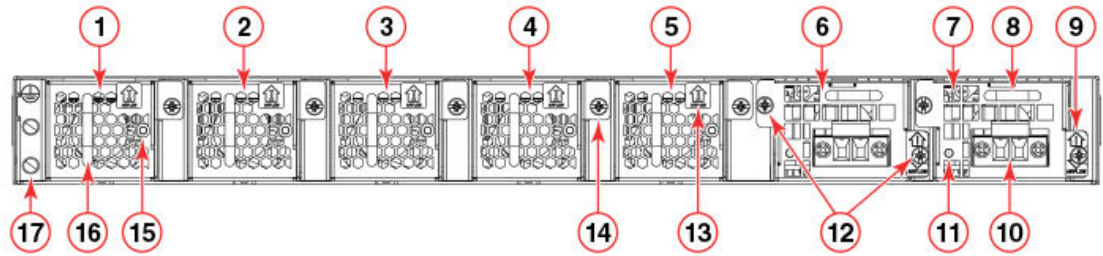


- |                   |                                 |
|-------------------|---------------------------------|
| 1 Fan #1          | 10 Plug retainer                |
| 2 Fan #2          | 11 Plug receptacle              |
| 3 Fan #3          | 12 Status LED                   |
| 4 Fan #4          | 13 Captive screw                |
| 5 Fan #5          | 14 Status LED                   |
| 6 Power supply #1 | 15 Airflow label                |
| 7 Power supply #2 | 16 Handle                       |
| 8 Captive screws  | 17 Ground lug attachment screws |
| 9 Airflow label   |                                 |

**FIGURE 6** Non-port-side view showing AC power supplies

The following illustration shows the fan assemblies, DC power supplies, and other components on the non-port side of the Brocade VDX 6940-36Q. Refer to [LED locations](#) on page 73 for details on LED locations.



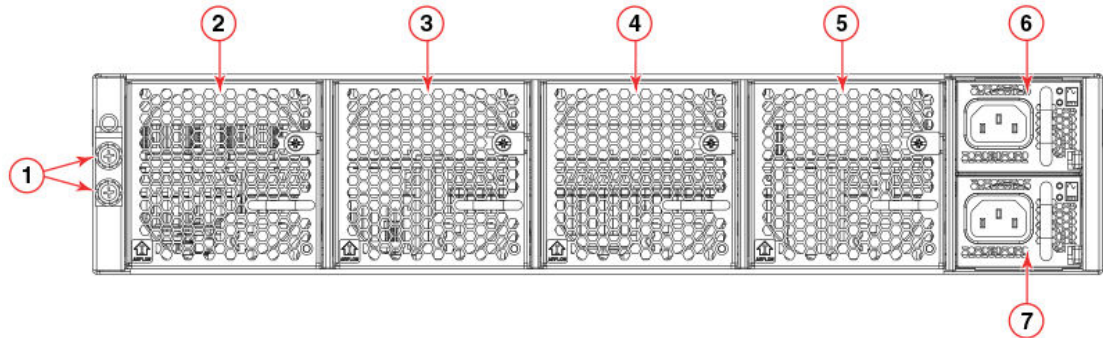


- |                   |                                 |
|-------------------|---------------------------------|
| 1 Fan #1          | 10 DC wire connectors           |
| 2 Fan #2          | 11 Status LED                   |
| 3 Fan #3          | 12 Captive screws               |
| 4 Fan #4          | 13 Airflow label                |
| 5 Fan #5          | 14 Fan captive screw            |
| 6 Power supply #1 | 15 Status LED                   |
| 7 Power supply #2 | 16 Handle                       |
| 8 Handle          | 17 Ground lug attachment screws |
| 9 Airflow label   |                                 |

**FIGURE 7** Non-port-side view showing DC power supplies

***Non-port-side view of VDX 6940-144S***

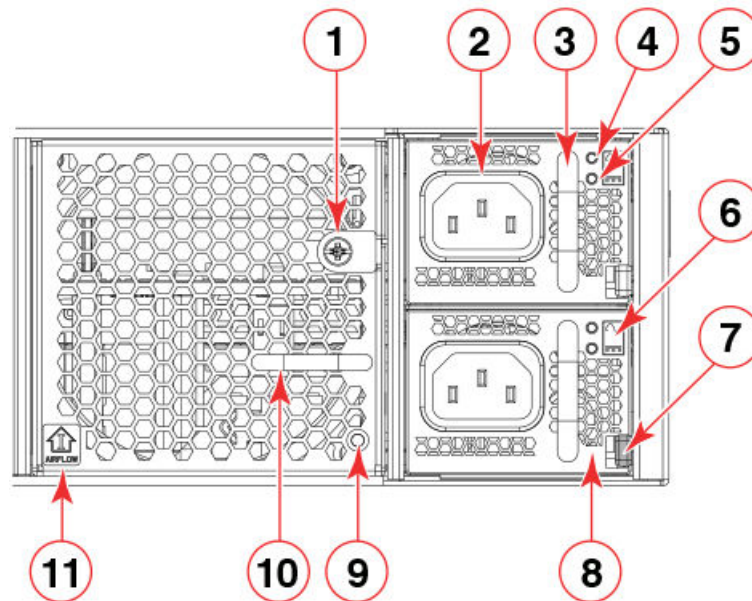
The following illustration shows the fan assemblies, AC power supplies, and other components on the non-port side of the Brocade VDX 6940-144S. Refer to [LED locations](#) on page 73 for details on LED locations.



- |                                |                      |
|--------------------------------|----------------------|
| 1 Ground lug attachment screws | 5 Fan #4             |
| 2 Fan #1                       | 6 AC power supply #1 |
| 3 Fan #2                       | 7 AC power supply #2 |
| 4 Fan #3                       |                      |

**FIGURE 8** Non-port-side view showing AC power supplies

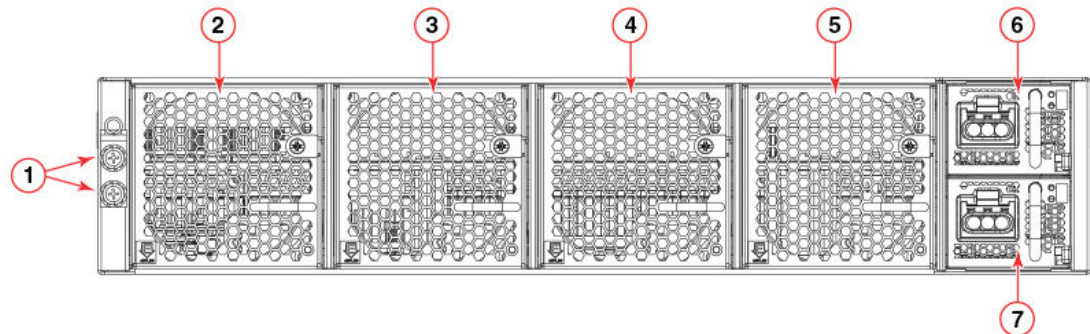
The following illustration shows more detail of the AC power supplies and fans.



- |                              |                          |
|------------------------------|--------------------------|
| 1 Fan captive screw          | 7 Locking tab            |
| 2 AC plug receptacle         | 8 Integral fan air inlet |
| 3 Power supply handle        | 9 Fan status LED         |
| 4 DC output status LED       | 10 Fan handle            |
| 5 AC input status LED        | 11 Fan airflow label     |
| 6 Power supply airflow label |                          |

**FIGURE 9** AC power supply and fan details

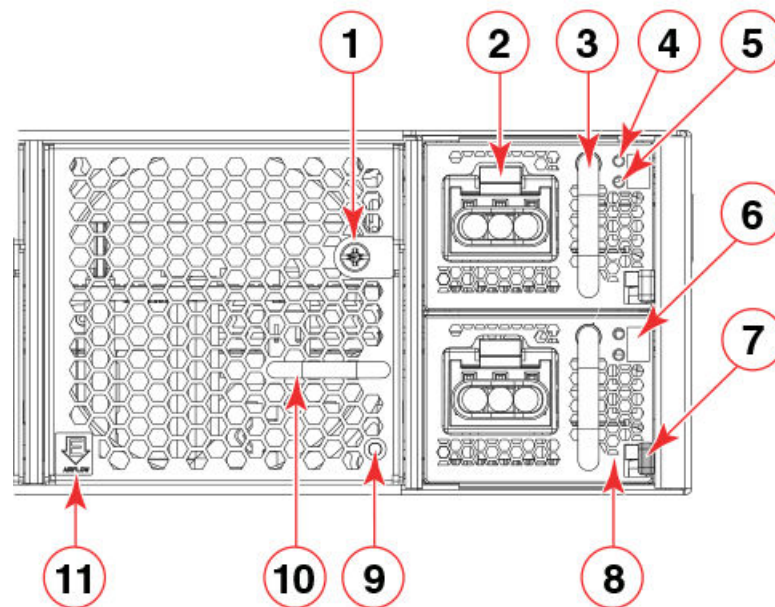
The following illustrations show the fan assemblies, DC power supplies, and other components on the non-port side of the Brocade VDX 6940-144S. Refer to [LED locations](#) on page 73 for details on LED locations.



- |                                |                      |
|--------------------------------|----------------------|
| 1 Ground lug attachment screws | 5 Fan #4             |
| 2 Fan #1                       | 6 DC power supply #1 |
| 3 Fan #2                       | 7 DC power supply #2 |
| 4 Fan #3                       |                      |

**FIGURE 10** Non-port-side view showing DC power supplies

The following illustration shows more detail of the fans and DC power supplies.



- |                              |                          |
|------------------------------|--------------------------|
| 1 Fan captive screw          | 7 Locking tab            |
| 2 Power cable connector      | 8 Integral fan air inlet |
| 3 Power supply handle        | 9 Fan status LED         |
| 4 DC input status LED        | 10 Fan handle            |
| 5 DC output status LED       | 11 Fan airflow label     |
| 6 Power supply airflow label |                          |

**FIGURE 11** DC power supply and fan details

## Port numbering

Port numbers for GbE ports are required for Network OS commands and management applications to configure connections and features and determine port operation. Use the following illustrations to determine physical port numbering for Brocade VDX 6940 devices.

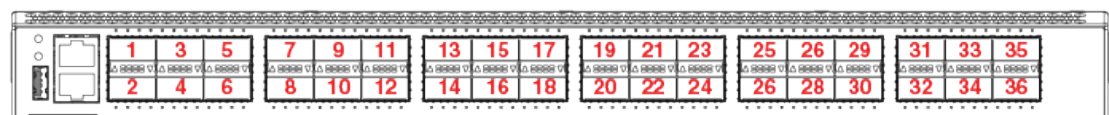
### *VDX 6940-36Q port numbering*

For the Brocade VDX 6940-36Q, ports are numbered as follows:

- 40 GbE ports are numbered 1 through 36
- 10 GbE interfaces for the 40 GbE ports when in 4x10 GbE breakout mode are numbered X:1, X:2, X:3, and X:4, where X is the 40 GbE port number 1 through 36.

As shown in the following illustration, odd-numbered 40 GbE QSFP+ ports are on the top row and even-numbered ports are on the bottom row.

**FIGURE 12** Brocade VDX 6940-36Q port numbering



A 40 GbE port configured in 4x10 GbE breakout mode creates four individual 10 GbE interfaces using the 40 GbE port number. For example, four 10 GbE interfaces for port 36 are numbered as follows:

- 36:1
- 36:2
- 36:3
- 36:4

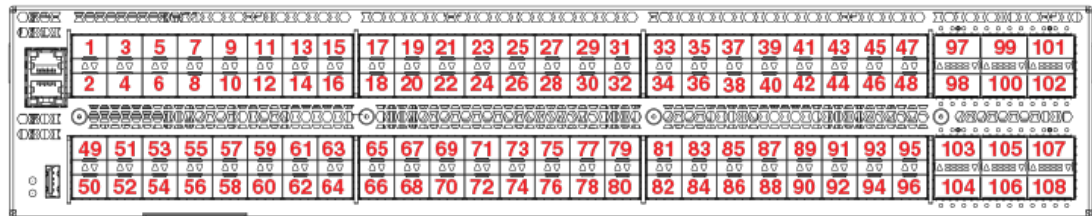
***VDX 6940-144S port numbering***

For the Brocade VDX 6940-144S, ports are numbered as follows:

- Fixed 10 GbE ports are numbered 1 through 96.
- 40 GbE ports are numbered 97 through 108.

As shown in the following illustration, the odd-numbered 10 GbE SFP+ and 40 GbE QSFP+ ports are on the top row and even-numbered ports are on the bottom row.

**FIGURE 13** Brocade VDX 6940-144S port numbering



# Device Installation

---

- Items included with the device..... 29
- Site preparation and installation requirements..... 29
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- Universal Four-Post Rack Kit Installation Procedure..... 39
- Universal Two-Post Rack Kit Installation Procedure..... 52
- Standalone installation ..... 62
- Verifying operation..... 63

## Items included with the device

The following items are included with the standard shipment of a fully-configured Brocade VDX 6940. When you open the packaging, verify that the items are included in the package and that no damage has occurred during shipping.

- The Brocade VDX 6940 chassis.
- Transceivers and cables as ordered
- One accessory kit, containing the following items:
  - Serial cable with an RJ-45 connector
  - 6 ft. AC power cords (2)
  - 8 ft. DC harness assembly (2) for Brocade VDX 6940-144S with DC power supplies.
  - Ground lug kit
  - Rubber feet, required for setting up the device as a standalone unit
  - China RoHS hazardous/toxic substance content chart
  - EULA/Read-Me document
  - USB drive, 4G
  - Web pointer card for documentation

## Site preparation and installation requirements

You can install this device in the following locations:

- In a four-post EIA rack
- In a two-post telecommunications (Telco) rack
- On a table top as a standalone device

Follow these precautions during installation:



### **CAUTION**

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



**DANGER**

***The procedures in this manual are for qualified service personnel.***

---

**NOTE**

It is strongly recommended that you review the Technical Specifications for this device before installation.

---

## Items required for the installation

The following items are required for installing, configuring, and connecting the device for use in a network and fabric:

- A workstation with an installed terminal emulator, such as HyperTerminal.
- An unused IP address and corresponding subnet mask and gateway address.
- A serial cable (provided).
- An Ethernet cable.
- Power cord (provided).
- (Optional) Access to an FTP server or Brocade-branded USB device for backing up the device configuration.
- (Optional) If mounting in the iDataplex IBM 15.5-inch depth rack, the Brocade iDataplex rack mount kit.

## Power precautions

To install and operate the device successfully, ensure compliance with the following safety requirements:

- The power supply standards provided in the product Technical Specifications are met.
- The primary outlets are correctly wired, protected by a circuit breaker, and grounded in accordance with local electrical codes.



**DANGER**

***Connect the power cord only to a grounded outlet.***

- The supply circuit, line fusing, and wire size are adequate, as specified by the electrical rating on the device nameplate.
- This device might have more than one power cord. To reduce the risk of electric shock, disconnect both power cords before servicing.



**DANGER**

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



**DANGER**

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

**CAUTION**

All devices with DC power supplies are intended for installation in restricted access areas only. A restricted access area is where access can be gained only by 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.

For the 500W DC power supply used on the Brocade VDX 6940-36Q, use the following caution.

**CAUTION**

For the DC input circuit to the system, make sure there is a 20 Amp circuit breaker, minimum -48 VDC, double pole, on the input terminal block to the power supply. The input wiring for connection to the product should be copper wire, 12 AWG, marked VW-1, and rated minimum 90°C.

For the 1100W DC power supply used on the Brocade VDX 6940-144S, use the following caution.

**CAUTION**

For the DC input circuit to the system, make sure there is a 40-amp circuit breaker, minimum 60 VDC, double pole, on the input to the terminal block. The input wiring for connection to the product should be copper wire, 8 AWG, marked VW-1, and rated a minimum of 90 degrees celsius.

## Environmental precautions

For successful installation and operation of the device, ensure that the following environmental requirements are met:

- Fans supplied with the device move air either front to back (exhaust) or back to front (intake). Be sure to align the device with the airflow pattern of any other devices in the rack. All equipment in the rack should force air in the same direction to avoid intake of exhaust air.

**CAUTION**

Ensure that the airflow direction of the power supply unit matches that of the installed fan tray. The power supplies and fan trays are clearly labeled with either a green arrow with an "E", or an orange arrow with an "I."

- Ensure that the airflow available at intake vents allows the maximum airflow as specified in the product Technical Specifications.
- Ensure that the ambient air temperature does not exceed that specified for maximum operational temperature in the product Technical Specifications.

## EIA rack considerations

For successful installation and operation of the device in a rack, ensure the following rack requirements are met:

- The rack must be a standard EIA rack.
- For 1U devices, the rack space required is one rack unit (1U) 44.45 mm (1.75 in.) high and 482.60 mm (19 in.) wide.
- The equipment in the rack is grounded through a reliable branch circuit connection and maintains ground at all times. Do not rely on a secondary connection to a branch circuit, such as a power strip.

- Ensure that the rack mounting does not impede airflow or negatively affect temperature requirements, particularly if the device is installed in a closed or multitrack assembly. Ensure that airflow openings on the port and nonport side of the device are not obstructed.



**CAUTION**

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

- The additional weight of the device does not exceed the rack's weight limits or unbalance the rack in any way.
- The rack is secured to ensure stability in case of unexpected movement, such as an earthquake.



**DANGER**

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

## Recommendations for cable management

The minimum radius to which 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, use cable channels on the sides of the EIA rack or patch panels to reduce the potential for tangling the cables. The following list provides some recommendations for cable management:

---

**NOTE**

You should not use tie wraps with optical cables because they are easily overtightened and can damage the optic fibers. Velcro-like wraps are recommended.

---

- Plan for the 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 cables and record the devices to which they are connected.
- Keep LEDs visible by routing port cables and other cables away from the LEDs.

## Providing power to the device

Perform the following steps to provide power to the Brocade VDX 6940-36Q.

---

**NOTE**

Refer to "Power Precautions before connecting power."

---

### *Connecting an AC power cord*

:

Use the supplied power cords. Ensure the facility power receptacle is the correct type, supplies the required voltage, and is properly grounded.

Perform the following steps to connect to AC power:



1. Connect the power cords to both power supplies.
2. Route the cords so they will be out of the way when connected to the power source. Ensure that the power cords have a minimum service loop of 15.2 cm (6 in.) available and are routed to avoid stress.
3. Plug the other end of the cable into a power source on separate circuits to protect against failure. The power supplies power up as soon as they are plugged in.

---

**NOTE**

Power is supplied to the device as soon as the first power supply is connected and powered on.

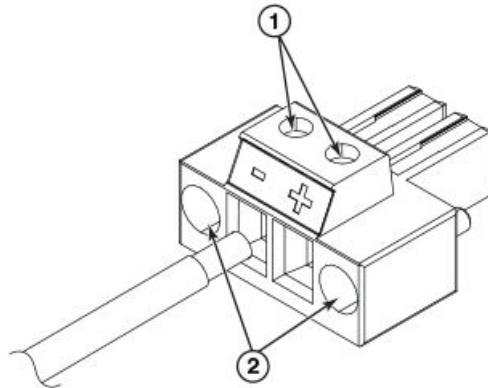
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### ***Connecting a power cord to a 500W DC power supply***

Use the following steps to connect DC power cords to 500W DC power supplies.

This power supply is used in the Brocade VDX 6940-36Q.

1. Remove the DC wiring assembly from the front of each DC power supply by loosening the two assembly screws.



- 1 Wire tightening screws  
2 Assembly screws

**FIGURE 14** DC wiring assembly and power source wires

2. Loosen the wire tightening screws and insert wires from the DC power source into the wiring assembly. Connect the -48V source cable to the negative terminal and the 0V cable to the positive terminal as marked on the harness assembly.
3. Tighten the wire tightening screws and reinstall the wiring assembly onto the power supply.
4. Tighten the assembly screws on the wiring assembly to secure it to the power supply.
5. Connect the wires from the power supply wiring assembly to your DC power source.

---

**NOTE**

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

---

6. Ground the chassis by attaching the ground wire from building ground to an appropriate crimp connector and attaching the connector to a ground lug attaching screw located on the leftmost side of the nonport side of the device.



**CAUTION**

For a DC system, use a grounding wire of at least 12 American Wire Gauge (AWG). The 12 AWG wire should be attached to an agency-approved crimp connector crimped with the proper tool.

---

**NOTE**

To ensure adequate bonding when attaching the ground lug, a minimum of 20 in-lb (2.76 Nm) of torque is required to be applied to the mounting hardware used to attach the ground lug.

7. Refer to "Power Precautions."
8. Follow these additional precautions when making connections to DC power supplies:

---

**NOTE**

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



**CAUTION**

For the DC input circuit to the system, make sure there is a 20 Amp circuit breaker, minimum -48 VDC, double pole, on the input terminal block to the power supply. The input wiring for connection to the product should be copper wire, 12 AWG, marked VW-1, and rated minimum 90°C.



**CAUTION**



**CAUTION**

DC return shall be isolated from the chassis ground (DC-I) when connections to the power supply are made.

### ***Connecting a power cord to a 1100W DC power supply***

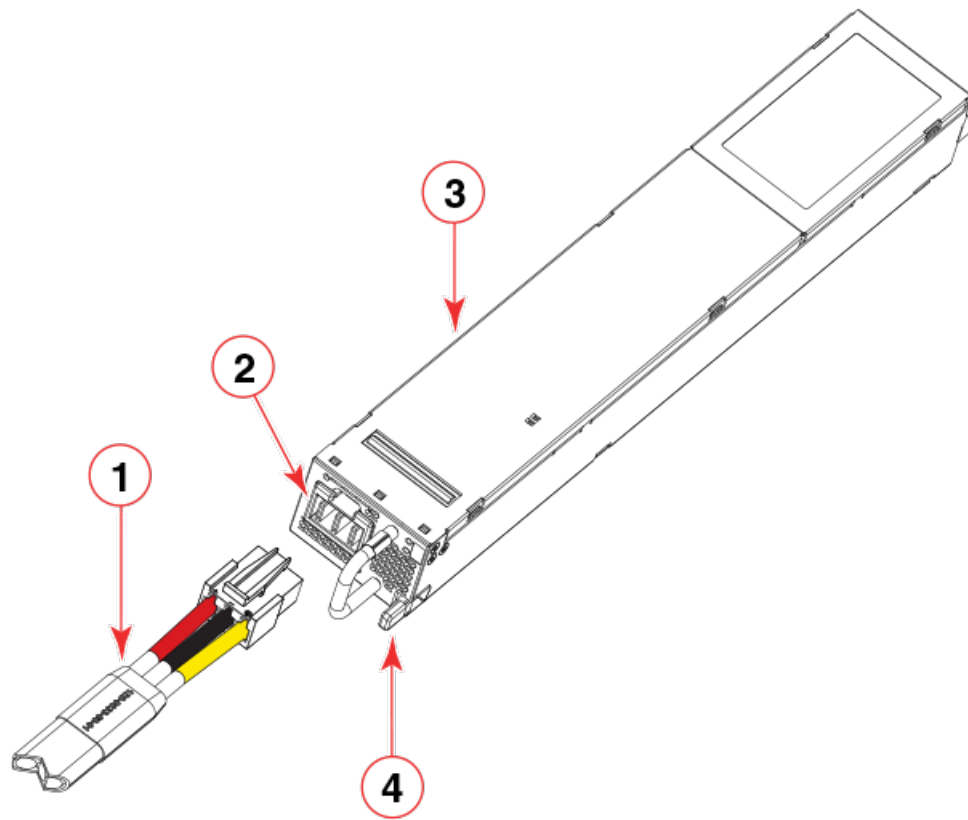
Perform the following steps to provide power to the Brocade device.

These power supplies are used on the Brocade VDX 6940-144S.

1. Plug the DC input wiring harness (XBR-DC-CBL-HRNS) into the power supply connector.

The connector is keyed so that it fits only one way into the power supply.

The following figure shows the DC wiring harness and power supply removed from the device chassis for illustration purposes. The harness can be plugged into the power supply with the power supply installed in the chassis.



- |  |                   |
|--|-------------------|
| 1 DC wiring harness from power source      | 3 DC power supply |
| 2 Wiring harness connector on power supply | 4 Locking tab     |

**FIGURE 15** DC power cable and power supply

2. Terminate the negative (-) and positive (+) wires at the other end of harness at DC power source and the ground wire to building ground.

Wires in the harness are labeled and colored as follows:

**TABLE 6** DC harness wiring

| Label (color) | Meaning             |
|---------------|---------------------|
| GND (yellow)  | Earth ground (PE)   |
| -48V (black)  | Negative (-)        |
| RTN (red)     | Return positive (+) |



**CAUTION**

**For a DC system, use grounding wire of at least 8 American Wire Gauge (AWG). The grounding wire should be attached to the DC input connector, the other end connects to the building ground.**

3. Refer to the "Power Precautions" section of this guide.
4. Observe the following additional requirements and precautions when making connections to DC power supplies:

---

**NOTE**

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

---



**CAUTION**

For the DC input circuit to the system, make sure there is a 40-amp circuit breaker, minimum 60 VDC, double pole, on the input to the terminal block. The input wiring for connection to the product should be copper wire, 8 AWG, marked VW-1, and rated a minimum of 90 degrees celsius.

---



**CAUTION**

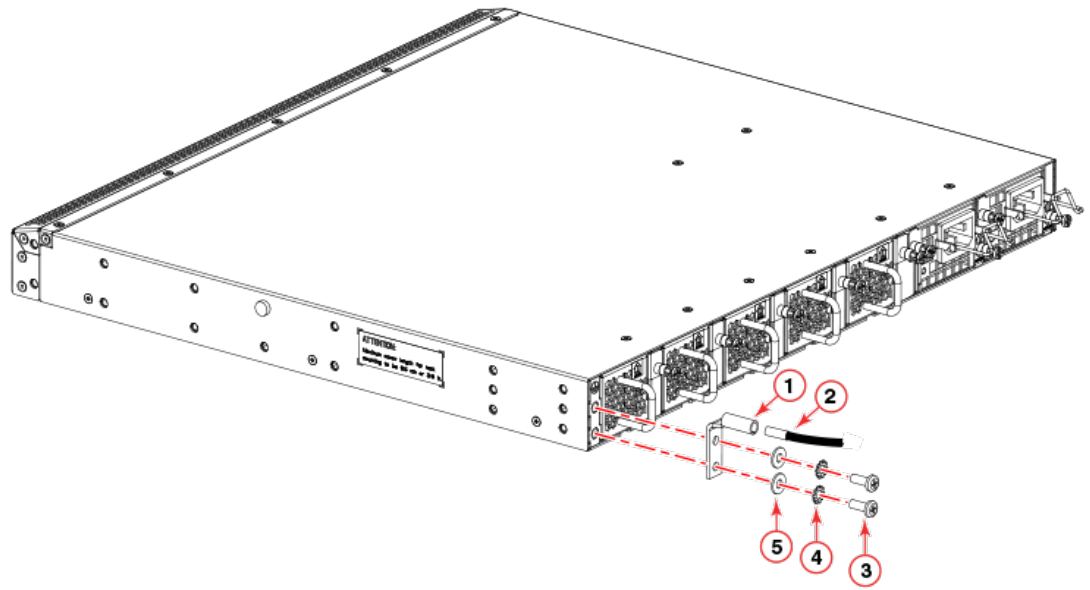
DC return shall be isolated from the chassis ground (DC-I) when connections to the power supply are made.

---

***Grounding the device using two-hole ground lug***

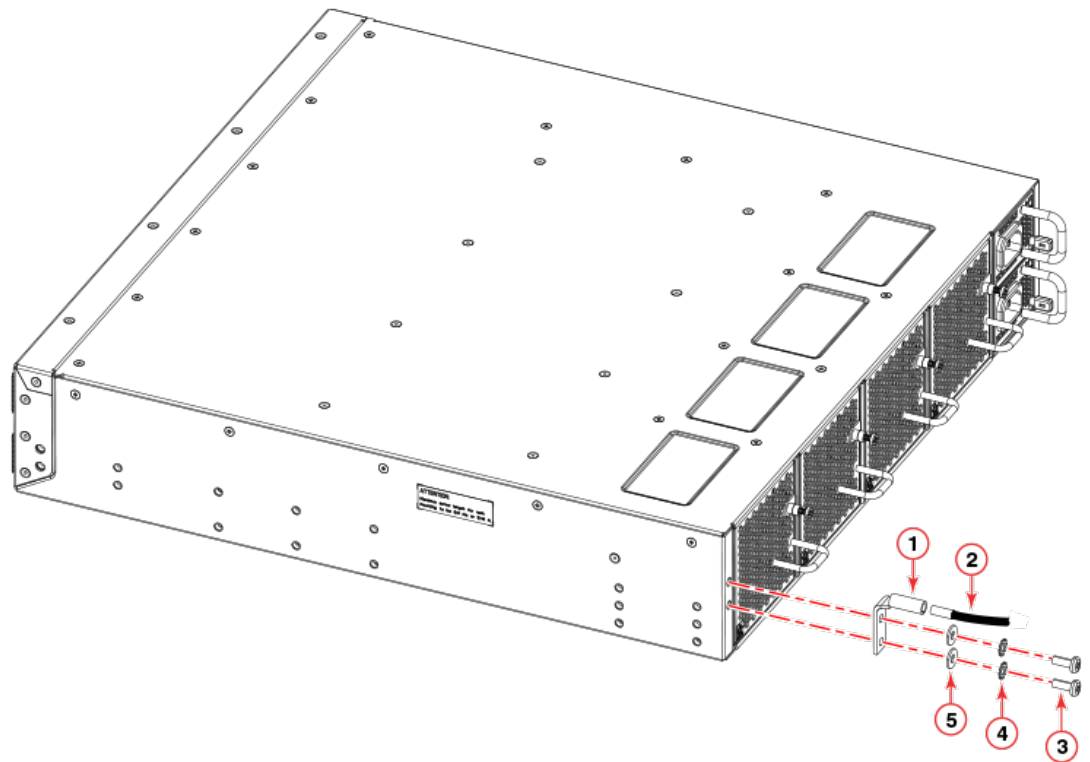
Use the following procedure to ground the device using the two-hole ground lug provided in the ground lug kit shipped with the device. This lug is for a NEBS-compliant grounding connection using 6 AWG wire.

1. Route grounding wire from a building ground connection to the nonport side of device.
2. Crimp the ground wire to the ground lug.
3. Attach the ground lug to the device as shown in the following illustrations using the two 10-32 x ½ in. screws, flat washers, and lock washers provided with the ground lug kit.



- |   |                        |   |              |
|---|------------------------|---|--------------|
| 1 | Two-hole grounding lug | 4 | Lock washers |
| 2 | Ground wire            | 5 | Flat washers |
| 3 | 10-32 x 1/2 in. screws |   |              |

**FIGURE 16** Installing ground lug on Brocade VDX 6940-36Q



- |   |                        |   |              |
|---|------------------------|---|--------------|
| 1 | Two-hole grounding lug | 4 | Lock washers |
| 2 | Ground wire            | 5 | Flat washers |
| 3 | 10-32 x 1/2 in. screws |   |              |

**FIGURE 17** Installing ground lug on Brocade VDX 6940-144S

4. Observe the following requirements and precautions when grounding this device:

---

• **NOTE**

To ensure adequate bonding when attaching the ground lug, a minimum of 20 in-lb (2.76 Nm) of torque is required to be applied to the mounting hardware used to attach the ground lug.

---



**CAUTION**

For the NEBS-compliant installation of a Brocade device with AC or DC systems, use a ground wire of at least 6 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.

---

### ***Observing power supply function***

The following should occur after you apply power to the power supplies:

---

**NOTE**

Power is supplied to the device as soon as the first power supply is connected and powered on.

---

- The power supplies power up as soon as they are plugged in.
- The power supply LEDs display green.
- The power LED on the port-side of the device displays green.
- The system status LED on the port-side of the device displays amber until POST completes, and then displays green.

After POST is complete, verify that the device power and status LEDs on the port side of the device remain green.

## **Rack installation**

You can install this device in the following racks:

- Four-post EIA rack
- Two-post Telco rack

Follow installation instructions shipped with the following rack-mount kits:

- Universal Four-Post Rack Kit (XBR-R000296) - Use this kit to install devices in EIA racks that are between L-13.7 to 81.28 cm deep (L-5.0 to 32.0 in.), where L is the chassis depth. For installation procedures, refer to the *Universal Four-Post Rack Kit Installation Procedures*.
- Universal Two-Post Rack Kit (XBR-R000294) - Use this kit to install 1U and 2U devices in a two-post telecommunications (Telco) rack. For installation procedures, refer to the *Universal Two-Post Rack Kit Installation Procedures*.

# Universal Four-Post Rack Kit Installation Procedure

## Contents

This document provides instructions to install switches in EIA racks that are between L-12.7 to 81.28 cm deep (L-5.0 to 32.0 in.), where L is the chassis depth, using the Universal Four-Post Rack Kit (XBR-R000296).

## Introduction

The rack kit allows the device to be installed so that the port side is either flush with the front posts or recessed with the nonport side flush with the rear posts. A recessed position allows a more gradual bend in the fiber-optic cables connected to the switch and less interference in the aisle at the front of the rack.

---

### NOTE

Although this document describes how to install both single height (1U) and double height (2U) switches, the illustrations show a 1U switch as a typical installation.

---

## Installation requirements

Allow 15 to 30 minutes to complete this procedure. Provide space in an EIA rack with the following minimum and maximum distances between the front and back posts.

**TABLE 7** Space requirements

| Chassis with port-side vents | Notes   | Chassis depth | Minimum rack depth  | Maximum rack depth |
|------------------------------|---|---------------|---------------------|--------------------|
| No                           | Applicable to portside and non-portside flush mounts. | L             | L-12.7 cm (L-5 in.) | 81.28 cm (32 in.)  |
| Yes                          | Applicable to portside flush mounts.                  | L             | L-12.7 cm (L-5 in.) | 81.28 cm (32 in.)  |
| Yes                          | Applicable to non-portside flush mounts.              | L             | L                   | 81.28 cm (32 in.)  |

Note that if chassis depth (L) is less than 40.64 cm (16 in.), the chassis will not fit into a rack with a maximum depth of 81.28 cm (32 in.) using this rack kit. The maximum rack depth for a chassis less than 40.64 cm (16 in.) is 81.28 cm (32 in.) minus the difference between the chassis depth and 40.64 cm (16 in.). For example, a chassis with a depth (L) of 35.56 cm (14 in.) is 5.08 cm (2 in.) smaller than 40.64 cm (16 in.), so it will install into a rack with a maximum depth of 81.28 cm (32 in.) - 5.08 cm (2 in.) = 76.2 cm (30 in.).

- Verify that the additional weight of the switch does not exceed the rack weight limits.
- Ensure that an electrical branch circuit with the following characteristics is available:

- Required voltage and frequency as indicated in the hardware reference manual (200-240 VAC is always preferred).
- Protection by a circuit breaker in accordance with local electrical codes.
- Supply circuit, line fusing, and wire size that conform to the electrical rating on the switch nameplate.
- Grounded outlet compatible with the power cord and installed by a licensed electrician.
- Ensure that all equipment installed in the rack is grounded through a reliable branch circuit connection. Do not rely on a secondary connection to a branch circuit, such as a power strip.
- Ensure that the rack is mechanically secured to ensure stability.
- Ensure that the air temperature at the fan inlet is less than 40°C (104°F) during switch operation.
- Ensure that the airflow available at the air vents meets the minimum requirements for the switch.

---

### NOTE

Install the switch with the airflow aligned with any other switches in the rack. Some switches have airflow running from port side to fan side and others have the opposite arrangement. Make sure that the airflow for all switches moves in the same direction to maximize cooling.

---

## Lifting requirements

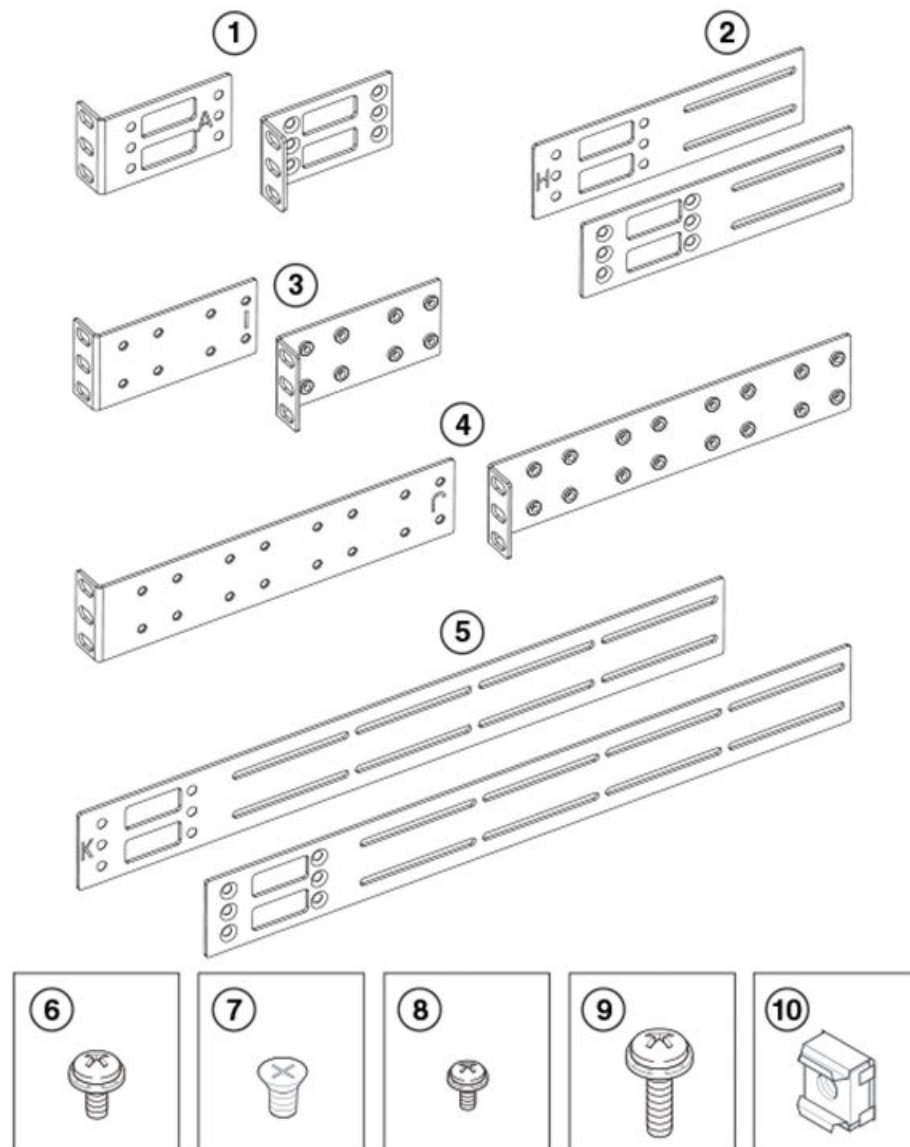
For 1U and 2U switches, two people will be required to install the switch to a rack. One person holds the switch, while the other screws in the "L" brackets.

## Tool requirements and parts list

The following items are required to install a switch using the Universal Four-Post Rack Kit:

- #2 Phillips torque screwdriver
- 1/4-inch slotted-blade torque screwdriver





- |   |  |    |  |
|---|--|----|--|
| 1 | Front brackets (2)                           | 7  | Screw, 8-32 x 5/16-in., flathead Phillips (16) |
| 2 | Extension brackets, medium (2)               | 8  | Screw, 6-32 x 1/4-in., panhead Phillips (8)    |
| 3 | Rear brackets, short (2)                     | 9  | Screw, 10-32 x 5/8-in., panhead Phillips (8)   |
| 4 | Rear brackets, long (2)                      | 10 | Retainer nut, 10-32 (8)                        |
| 5 | Extension brackets, long (2)                 |    |  |
| 6 | Screw, 8-32 x 5/16-in., panhead Phillips (8) |    |  |

**FIGURE 18** Items in the Universal Four-Post Rack Kit

Ensure that the items listed and illustrated in [Figure 18](#) are included in the kit. Note that not all parts may be used with certain installations depending on the switch type.

---

**NOTE**

Use the screws specified for use with the switch. Longer screws can damage the switch.

---

## Installation procedure for flush-front mounting

---

**NOTE**

The switch must be turned off and disconnected from the fabric during this procedure.

---

---

**NOTE**

The illustrations in this document show a 1U switch, but the instructions are the same for a 2U switch.

---

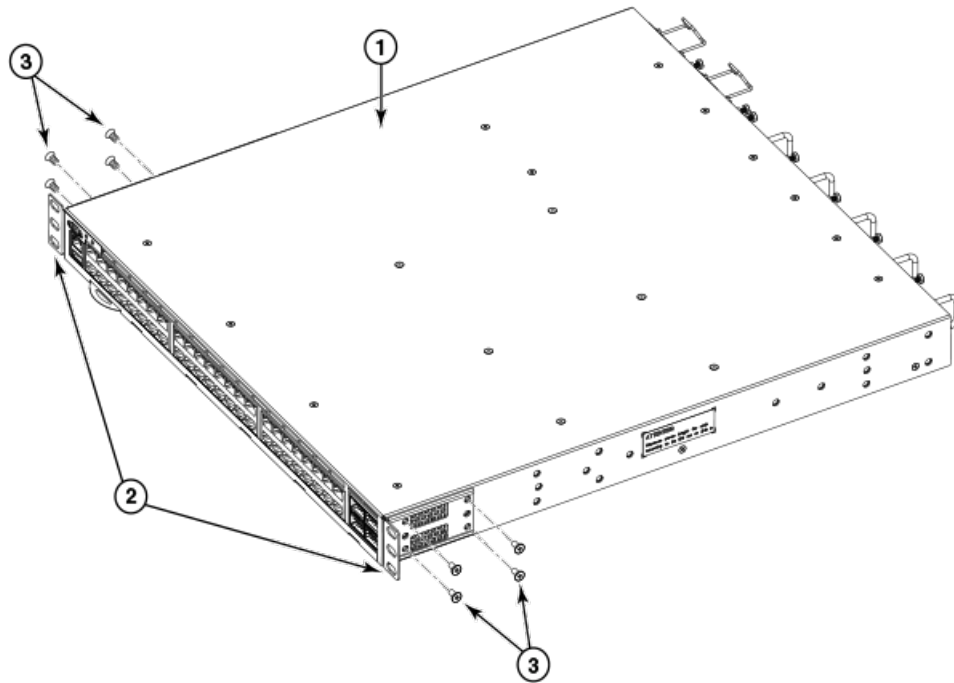
Complete these tasks to install the switch in a four-post rack:

- [Attaching the front brackets](#) on page 42
- [Attaching the extension brackets to the switch](#) on page 43
- [Installing the switch in the rack](#) on page 44
- [Attaching the rear brackets to the extensions](#) on page 45
- [Attaching the rear brackets to the rack posts](#) on page 46

### ***Attaching the front brackets***

Complete the following steps to attach the front brackets to the switch.

1. Position the right front bracket with the flat side against the right side of the switch at the front of the switch, as shown in [Figure 19](#).
2. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the bracket and then into the holes on the side of the switch. Use the upper and lower screw holes, leaving the center holes empty.
3. Repeat step 1 and step 2 to attach the left front bracket to the left side of the switch.
4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).



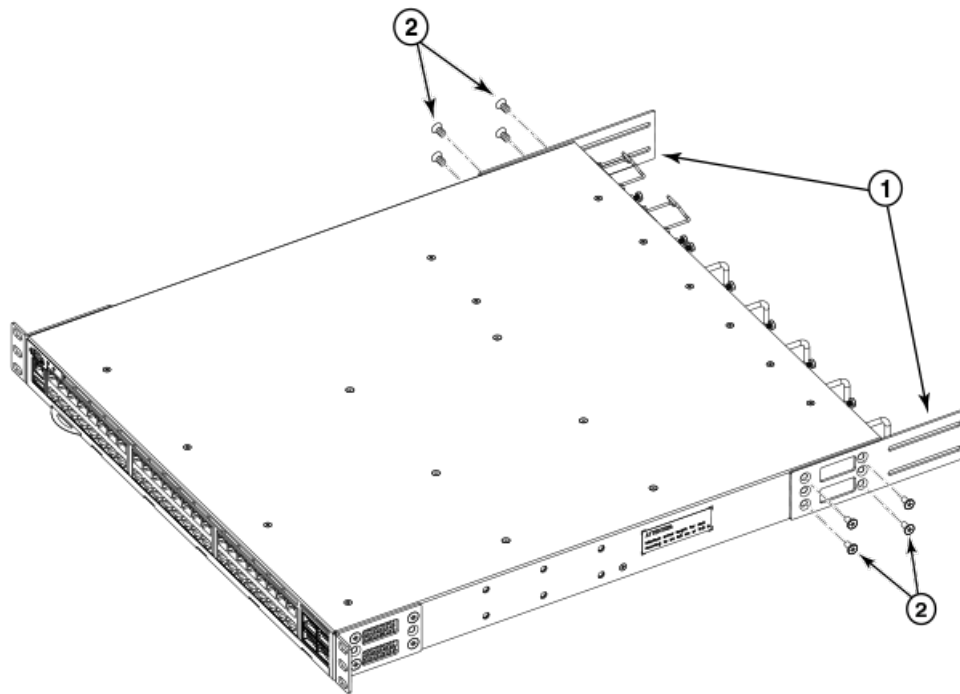
- 1 Switch
- 2 Front brackets
- 3 Screws, 8-32 x 5/16-in., flathead Phillips

**FIGURE 19** Attaching the front brackets

### ***Attaching the extension brackets to the switch***

Complete the following steps to attach the extension brackets to the switch. There are medium and long extension brackets that you can use for this step. Choose the correct extension bracket for the depth of your rack.

1. Select the proper length extension bracket for your rack depth.
2. Position the right extension bracket along the side of the switch as shown in [Figure 20](#) .
3. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the extension bracket and then into the holes on the side of the switch. Use the upper and lower screw holes, leaving the center holes empty.
4. Repeat step 1 and step 2 to attach the left extension bracket to the left side of the switch.
5. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).



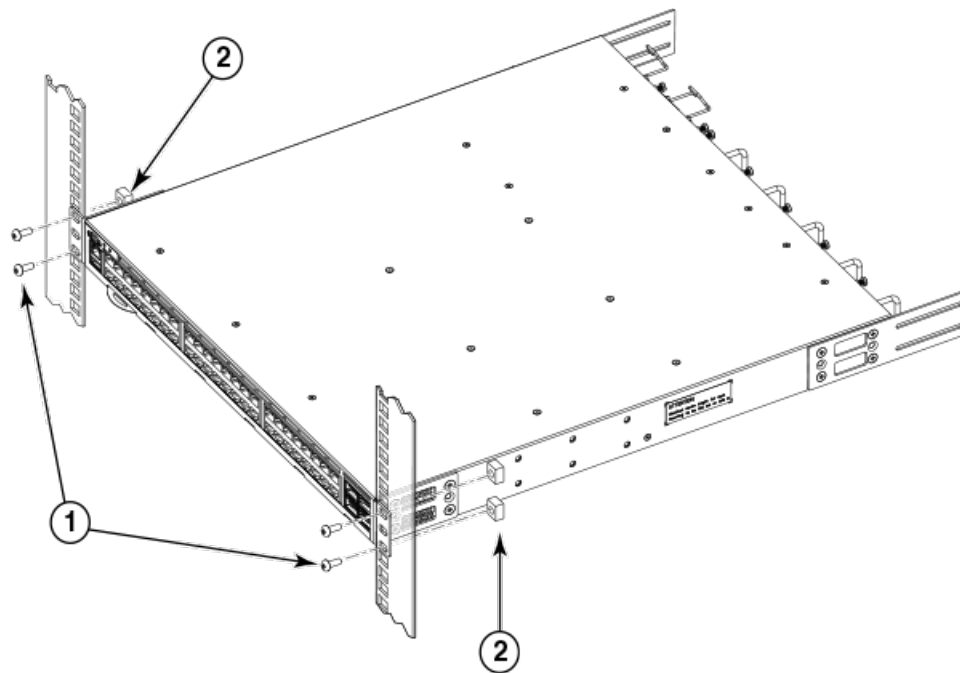
- 1 Extension brackets
- 2 Screws, 8-32 x 5/16-in., flathead Phillips

**FIGURE 20** Attaching the extension brackets to the switch

### ***Installing the switch in the rack***

Complete the following steps to install the switch in the rack.

1. Position the switch in the rack, as shown in [Figure 21](#) , providing temporary support under the switch until the rail kit is secured to the rack.
2. Attach the right front bracket to the right front rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.
3. Attach the left front bracket to the left front rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.
4. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lbs (29 cm-kgs).



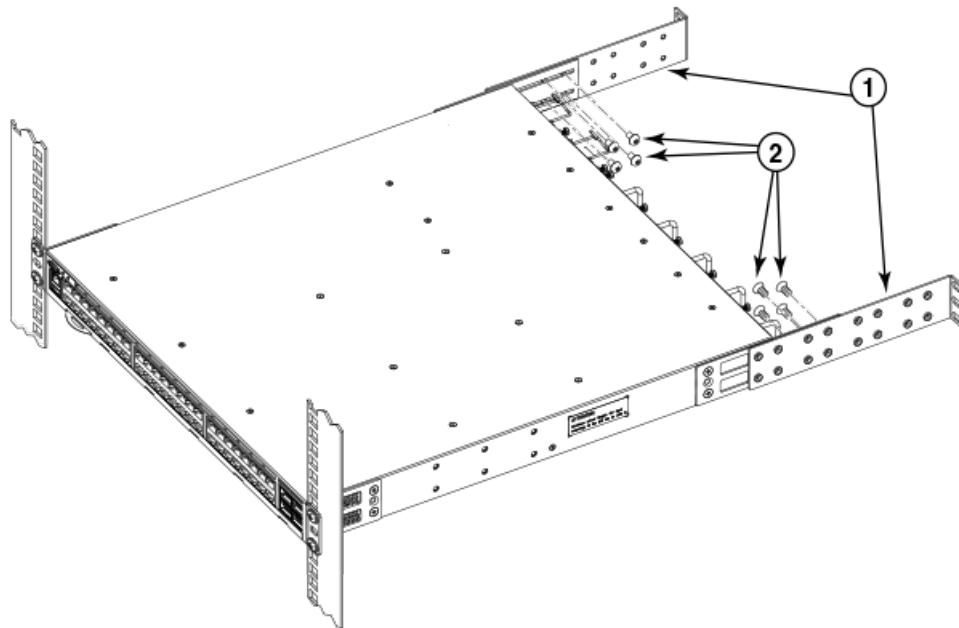
- 1 Screws, 10-32 x 5/8-in., panhead Phillips
- 2 Retainer nuts, 10-32

**FIGURE 21** Positioning the switch in the rack

***Attaching the rear brackets to the extensions***

Complete the following steps to attach the rear brackets to the extensions. There are short and long rear brackets that you can use for this step. Choose the correct bracket for the depth of your rack.

1. Select the proper length rear bracket for your rack depth.
2. Slide the right rear bracket onto the right extension and attach to the extension by inserting four 6-32 x 1/4-in. panhead screws through the bracket holes. If possible, leave at least one empty vertical pair of holes between the screws for better support.
3. Repeat Step 2 to attach the left rear bracket to the left extension.
4. Adjust the brackets to the rack depth and tighten all the 6-32 x 1/4-in. screws to a torque of 9 in-lbs (10 cm-kgs).



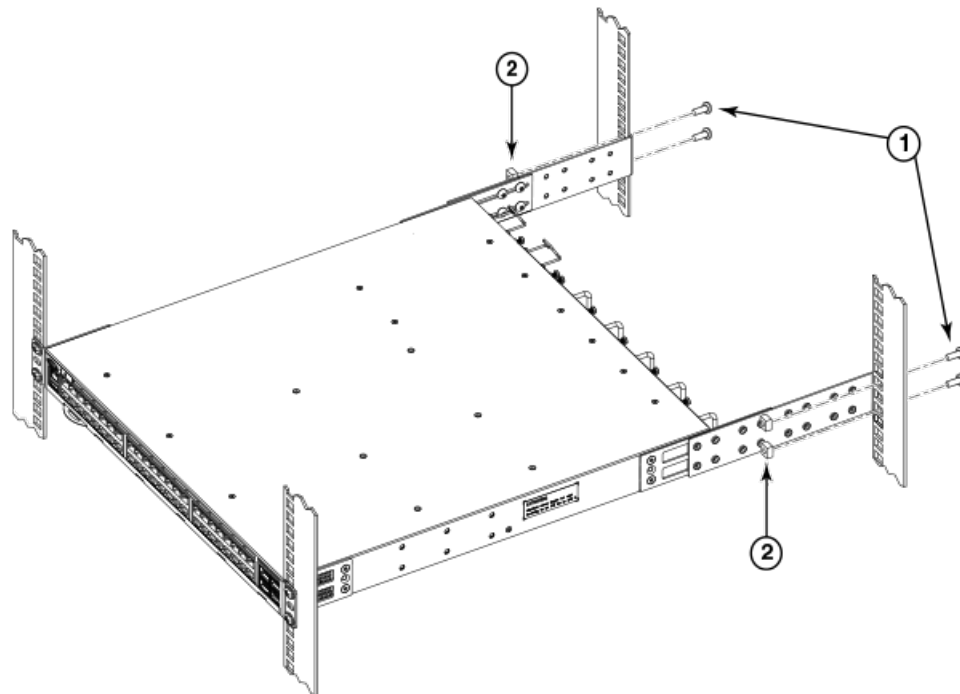
- 1 Rear brackets
- 2 Screws, 6-32 x 1/4-in., panhead Phillips

**FIGURE 22** Attaching the rear brackets to the extensions

### ***Attaching the rear brackets to the rack posts***

Complete the following steps to attach the rear brackets to the rack posts.

1. Attach the right rear bracket to the right rear rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts, as shown in [Figure 23](#) . Use the upper and lower holes in the bracket.
2. Attach the left rear bracket to the left rear rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.
3. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lb (29 cm-kg).



- 1 Screws, 10-32 x 5/8-in., panhead Phillips
- 2 Retainer nuts, 10-32

**FIGURE 23** Attaching the rear brackets to the rack posts

## Installation procedure for flush-rear (recessed) mounting

The flush-rear (recessed) mounting is similar to the flush-front mounting except that the brackets are reversed on the switch.

---

### NOTE

The switch must be turned off and disconnected from the fabric during this procedure.

---

Complete these tasks to install the switch in a four-post rack:

- [Attaching the front brackets to the rear of the switch](#) on page 47
- [Attaching the extensions to the front of the switch](#) on page 48
- [Installing the switch in the rack](#) on page 49
- [Attaching the rear brackets to the extensions at the front of the switch](#) on page 50
- [Attaching the rear brackets to the front rack posts](#) on page 52

### ***Attaching the front brackets to the rear of the switch***

---

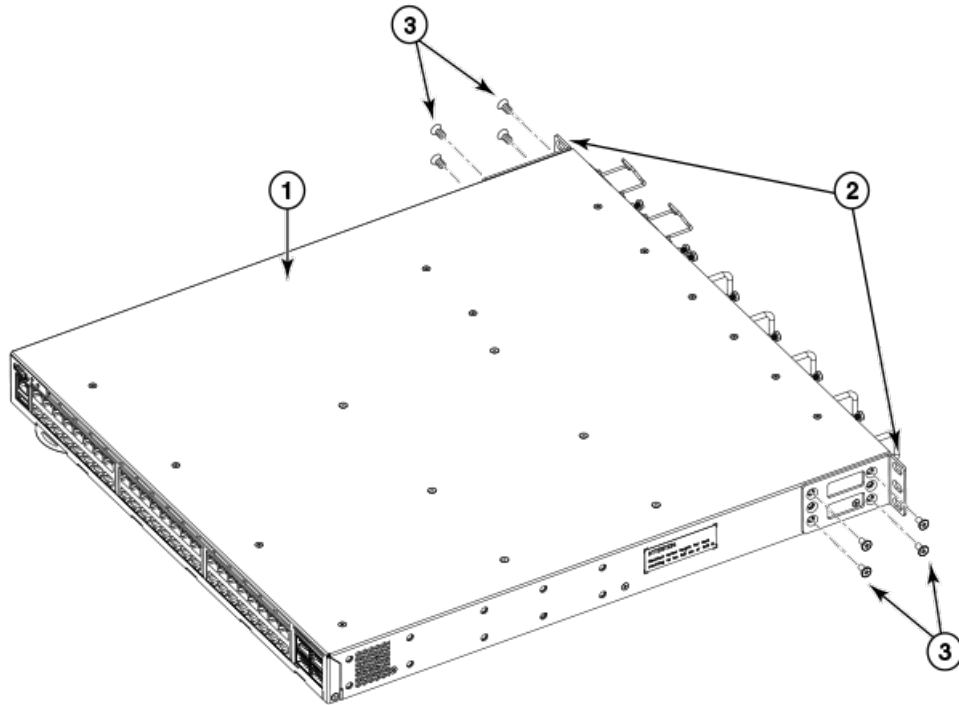
### NOTE

In this installation, the brackets are named as called out in the parts list even though the installation of the brackets is reversed from the flush-front installation.

---

Complete the following steps to attach the front brackets to the rear of the switch.

1. Position the right front bracket with the flat side against the right rear side of the switch, as shown in [Figure 24](#) .
2. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the bracket and then into the holes on the side of the switch. Use the upper and lower screw holes, leaving the center holes empty.
3. Repeat step 1 and step 2 to attach the left rear bracket to the left side of the switch.
4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).



- 1 Switch
- 2 Screws, 8-32 x 5/16-in., flathead  
Phillips
- 3 Front brackets

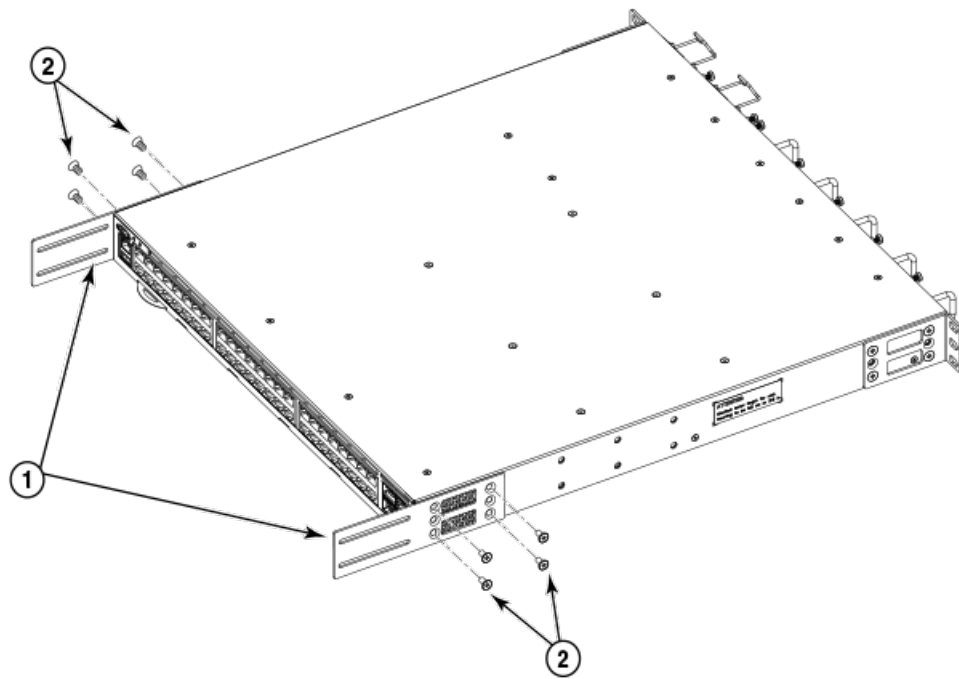
**FIGURE 24** Attaching the front brackets to the rear of the switch

### ***Attaching the extensions to the front of the switch***

Complete the following steps to attach the extension brackets to the front of the switch. There are medium and long extension brackets that you can use for this step. Choose the correct extension for the depth of your rack.

1. Select the proper length extension bracket for your rack depth.
2. Position the right extension along the side of the switch as shown in [Figure 25](#) .
3. Attach the bracket using four 8-32 x 5/16-in. flathead screws.
4. Repeat Step 1 and Step 2 to attach the left front extension to the left side of the switch.
5. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lbs (17 cm-kgs).





- 1 Extension brackets
- 2 Screws, 8-32 x 5/16-in., flathead  
Phillips

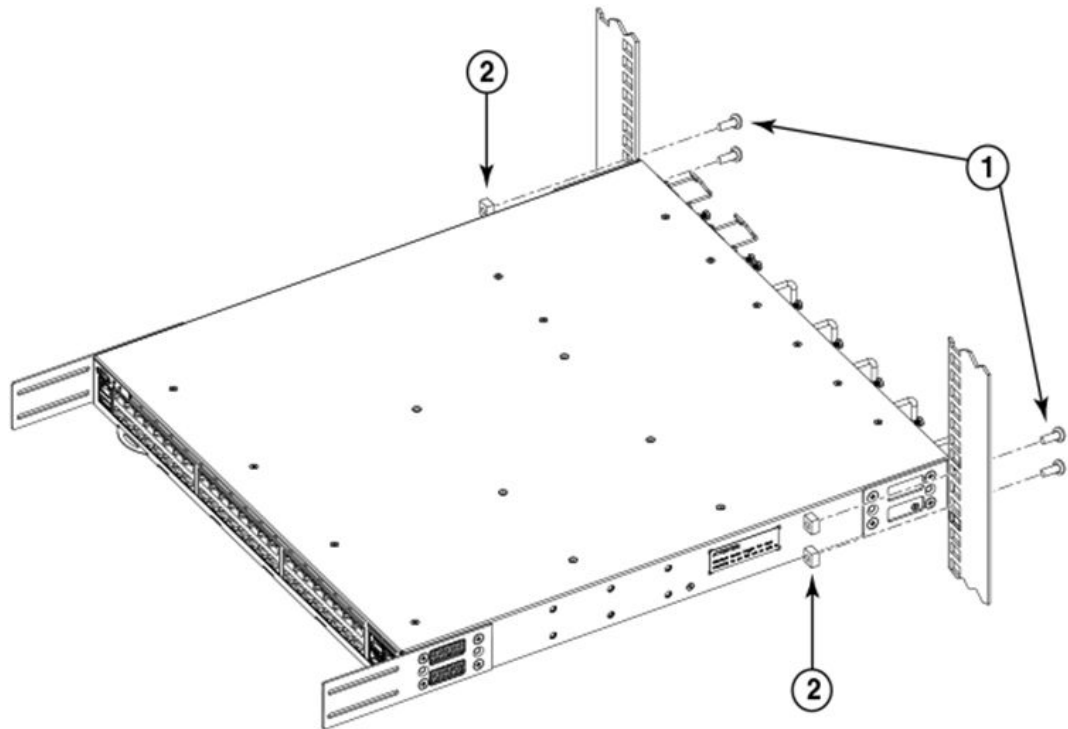
**FIGURE 25** Attaching the bracket extensions to the switch

### ***Installing the switch in the rack***

Complete the following steps to install the switch in the rack.

1. Position the switch in the rack, as shown in [Figure 26](#) , providing temporary support under the switch until the rail kit is secured to the rack.
2. Attach the right front bracket to the right rear rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.
3. Attach the left front bracket to the left rear rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.
4. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lbs (29 cm-kgs).

Attaching the rear brackets to the extensions at the front of the switch



- 1 Screws, 10-32 x 5/8-in., panhead Phillips
- 2 Retainer nuts, 10-32

**FIGURE 26** Positioning the switch in the rack

### ***Attaching the rear brackets to the extensions at the front of the switch***

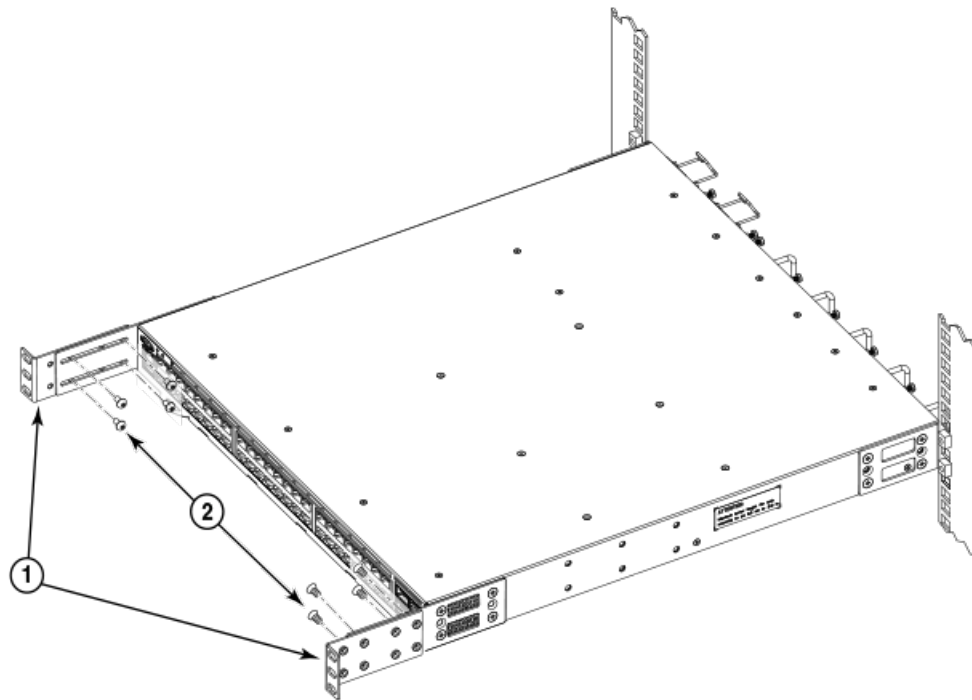
Complete the following steps to attach the rear brackets to the extensions. There are short and long front brackets that you can use for this step. Choose the correct bracket for the depth of your rack.

1. Select the proper length rear bracket for your rack depth.
2. Slide the right rear bracket onto the right extension, as shown in [Figure 27](#) .

The short rear brackets are shown. Use the first and third vertical pairs of holes for the screws.

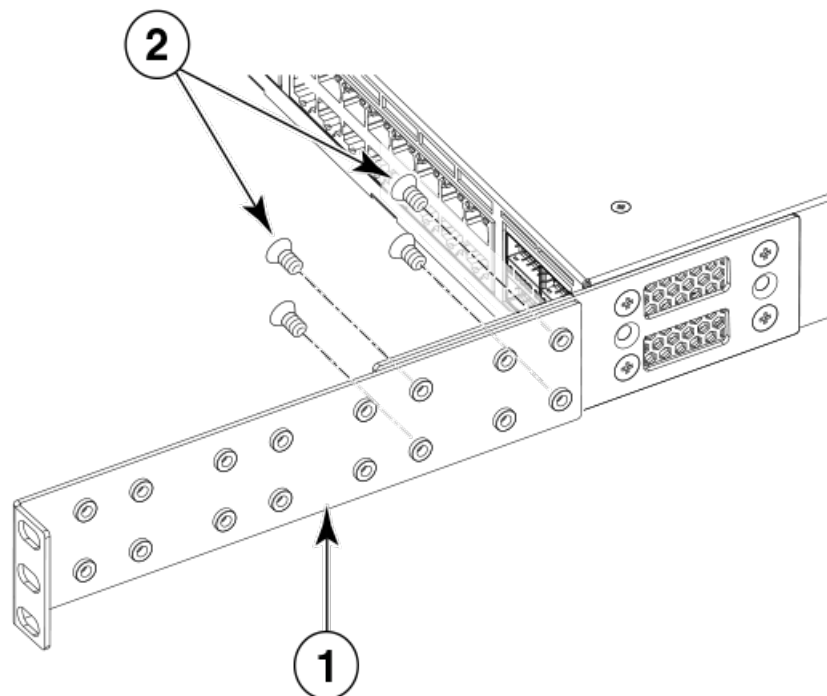
Refer to [Figure 28](#) for the positioning of the short or long brackets and screws.

3. Attach the brackets using four 6-32 x 1/4-in. screws.
4. Repeat Step 2 and Step 3 to attach the left rear bracket to the left extension.
5. Adjust the brackets to the rack depth and tighten all the 6-32 x 1/4-in. screws to a torque of 9 in-lbs (10 cm-kgs).



- 1 Rear brackets, short
- 2 Screws, 6-32 x 1/4-in., panhead Phillips

**FIGURE 27** Attaching the rear brackets to the extensions at the front of the switch



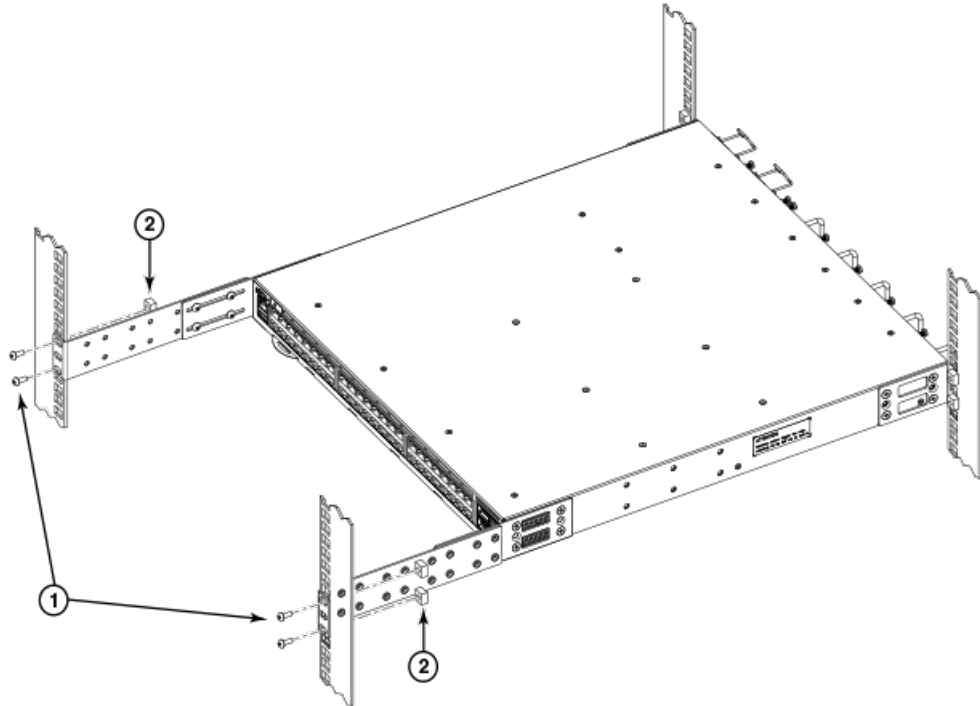
- 1 Rear bracket, short or long
- 2 Screws, 6-32 x 1/4-in., panhead Phillips

**FIGURE 28** Attaching the short or long rear brackets to the extensions

### ***Attaching the rear brackets to the front rack posts***

Complete the following steps to attach the rear brackets to the front rack posts.

1. Attach the right rear bracket to the right front rack post using two 10-32 x 5/8-in. screws and two retainer nuts, as shown in [Figure 29](#) . Use the upper and lower holes in the bracket.
2. Attach the left rear bracket to the left front rack post using two 10-32 x 5/8-in. screws and two retainer nuts. Use the upper and lower holes in the bracket.
3. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lbs (29 cm-kgs).



- 1 Screws, 10-32 x 5/8-in., panhead Phillips
- 2 Retainer nuts, 10-32

**FIGURE 29** Attaching the rear brackets to the front rack posts

## **Universal Two-Post Rack Kit Installation Procedure**

### **Contents**

This document provides instructions to install a Brocade 1U or 2U switch in a two-post telecommunications (Telco) rack using the Universal Two-Post Rack Kit (XBR-R000294).

## Installation requirements

Allow 15 to 30 minutes to complete this procedure. Note the following requirements to ensure correct installation and operation:

- Verify that the additional weight of the switch does not exceed the rack's weight limits.
- Ensure that an electrical branch circuit with the following characteristics is available:
  - Required voltage and frequency as indicated in the hardware reference manual (200-240 VAC is always preferred).
  - Protection by a circuit breaker in accordance with local electrical codes.
  - Supply circuit, line fusing, and wire size that conform to the electrical rating on the switch nameplate.
  - Grounded outlet compatible with the power cord and installed by a licensed electrician.
- Ensure that all equipment installed in the rack is grounded through a reliable branch circuit connection. Do not rely on a secondary connection to a branch circuit, such as a power strip.
- Ensure that the rack is mechanically secured to ensure stability.
- Ensure that the air temperature at the fan inlet is less than 40°C (104°F) during switch operation.
- Ensure that the airflow available at the air vents meets the minimum requirements for the switch.

---

### NOTE

Install the switch with the airflow aligned with any other switches in the rack. Some switches have airflow running from port side to fan side and others have the opposite arrangement. Make sure that the airflow for all switches moves in the same direction to maximize cooling.

---

## Tool requirements and parts list

The following items are required to install a switch using the Universal Two-Post Rack Kit:

- #2 Phillips torque screwdriver
- 1/4-inch slotted-blade torque screwdriver

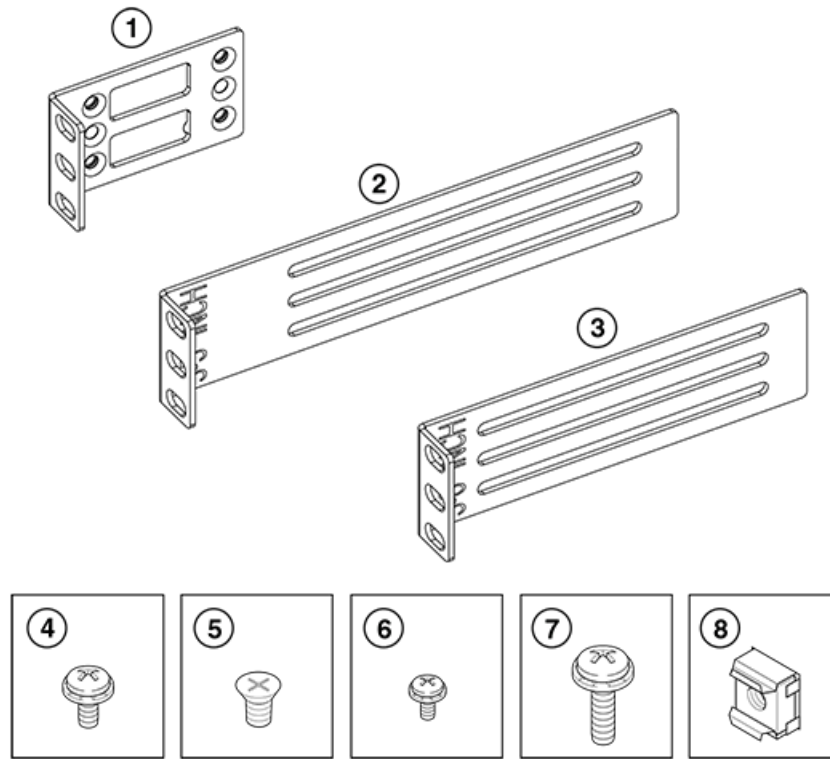
---

### NOTE

Use the screws specified for use with the switch. Longer screws can damage the switch.

---

Ensure that the items listed and illustrated in [Figure 30](#) are included in the kit. Note that not all parts may be used with certain installations depending on the switch type.



- |   |  |   |  |
|---|--|---|--|
| 1 | Front brackets (2)                             | 6 | Screw, 6-32 x 1/4-in., panhead Phillips (8)  |
| 2 | Rear brackets, 3-5 inch post (2)               | 7 | Screw, 10-32 x 5/8-in., panhead Phillips (8) |
| 3 | Rear brackets, 5-6 inch post (2)               | 8 | Retainer nut, 10-32 (8)                      |
| 4 | Screw, 8-32 x 5/16-in., panhead Phillips (8)   |   |  |
| 5 | Screw, 8-32 x 5/16-in., flathead Phillips (16) |   |  |

**FIGURE 30** Items in the Universal Two-Post Rack Kit

## Installation procedure for flush mounting

Observe the following notes when using this procedure:

- The illustrations for this procedure show a two-post rack with narrow posts (3- to 5-inch) as an example.

---

### NOTE

The switch must be turned off and disconnected from the fabric during this procedure.

- Although this document describes how to install both single height (1U) and double height (2U) switches, the illustrations show a 1U switch as a typical installation.

Complete these tasks to install the switch in a rack:

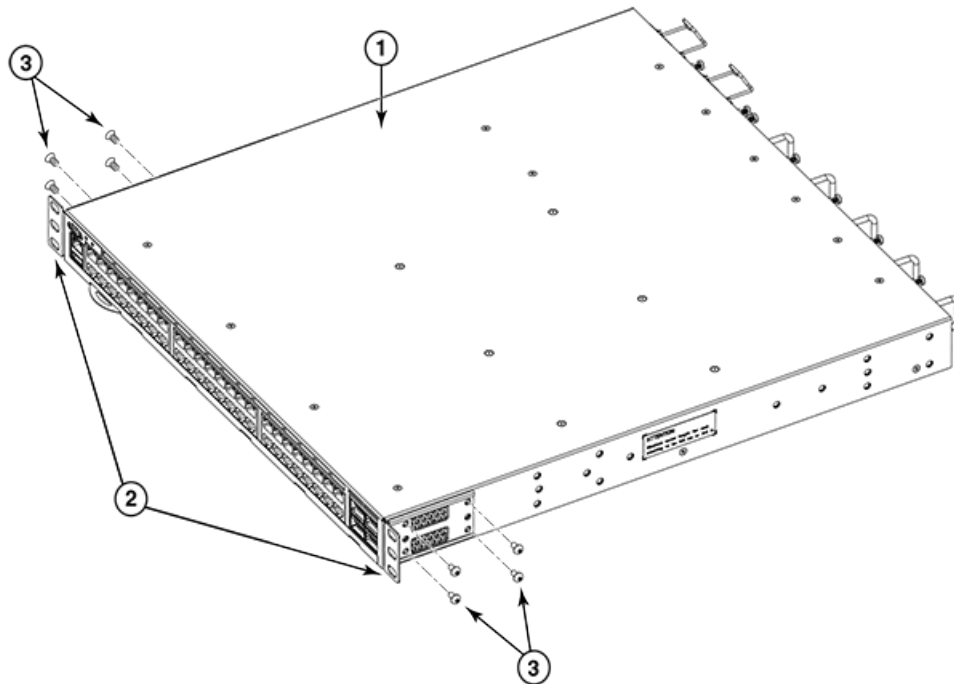
- [Attaching front brackets to the switch](#) on page 55
- [Attaching front brackets to the rack](#) on page 55
- [Attaching rear brackets to the rack](#) on page 56
- [Attaching rear brackets to the switch](#) on page 57

### ***Attaching front brackets to the switch***

Complete the following steps to attach the front brackets to the switch.

1. Position the right front bracket with the flat side against the right side of the switch as shown in [Figure 31](#).
2. Insert four 8-32 x 5/16-in. flathead screws through the top and bottom holes of the two vertically aligned series of holes in the bracket and then into the pair of holes on the side of the switch.
3. Repeat step 1 and step 2 to attach the left front bracket to the left side of the switch.
4. Tighten all 8-32 x 5/16-in. screws to a torque of 15 in-lb. (17 cm-kg).

**FIGURE 31** Attaching the front brackets



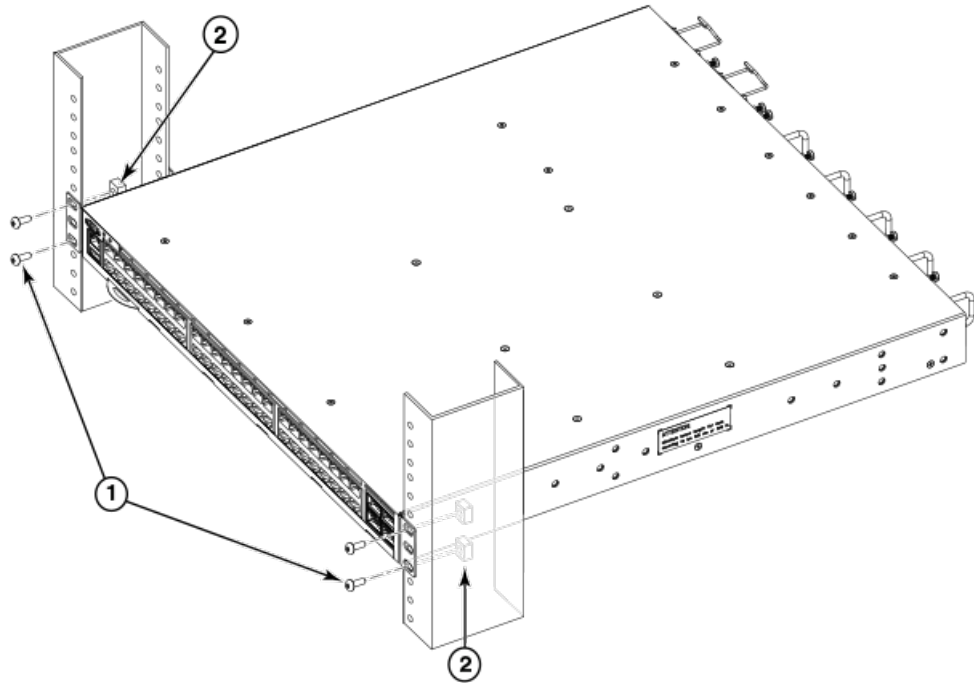
1. Switch
2. Front brackets, right and left
3. Screws, 8-32 x 5/16-in., flathead Phillips

### ***Attaching front brackets to the rack***

Complete the following steps to install the switch in the rack.

1. Position the switch in the rack ([Figure 32](#)), providing temporary support under the switch until the rack kit is fully secured to the rack.
2. Attach the right front bracket to the right rack upright using two 10-32 x 5/8-in. screws and two retainer nuts as shown in [Figure 32](#). Use the top and bottom holes in the bracket.
3. Attach the left front bracket to the left rack upright using two 10-32 x 5/8-in. screws and two retainer nuts.
4. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lbs. (29 cm-kgs).

**FIGURE 32** Attaching front brackets to a rack



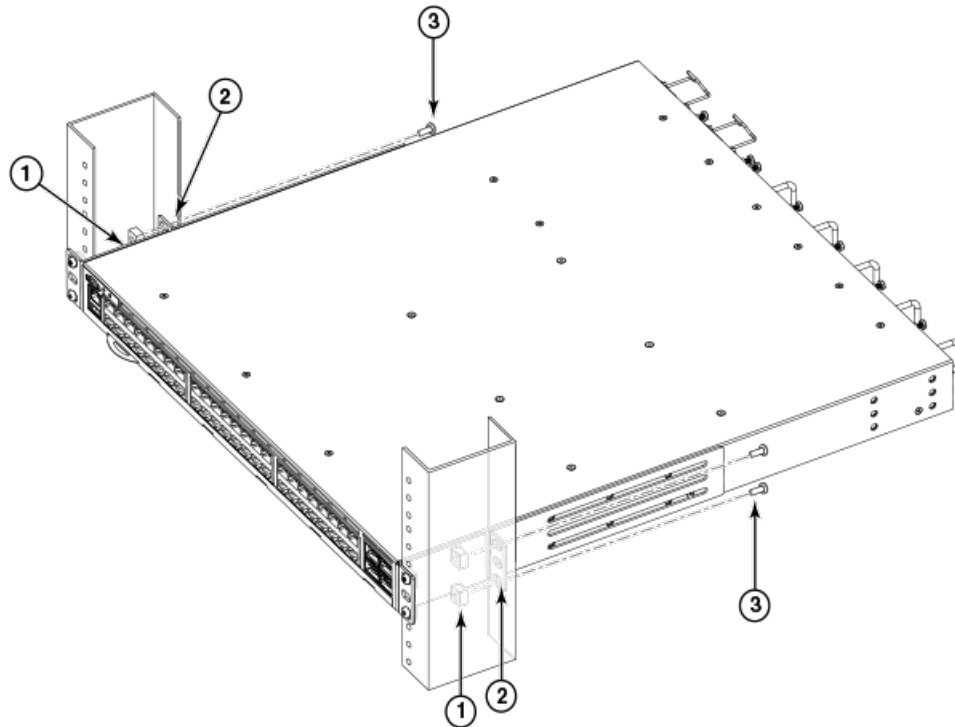
1. Screws, 10-32 x 5/8-in., panhead Phillips
2. Retainer nuts, 10-32

### ***Attaching rear brackets to the rack***

Complete the following steps to attach the rear brackets to the rack.

1. Select the proper length bracket for your post width. If your posts are three to five inches wide, use the brackets marked 3-5 INCH. If your posts are five to six inches wide, use the brackets marked 5-6 INCH.
2. Position the right rear bracket in the right rear of the switch as shown in [Figure 33](#).
3. Attach the brackets to the right rack upright using two 10-32 x 5/8-in. screws and two retainer nuts. Use the top and bottom holes in the bracket.
4. Repeat Step 2 and Step 3 to attach the left rear bracket to the left rack upright.
5. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lbs. (29 cm-kgs).



**FIGURE 33** Attaching the rear brackets to a rack

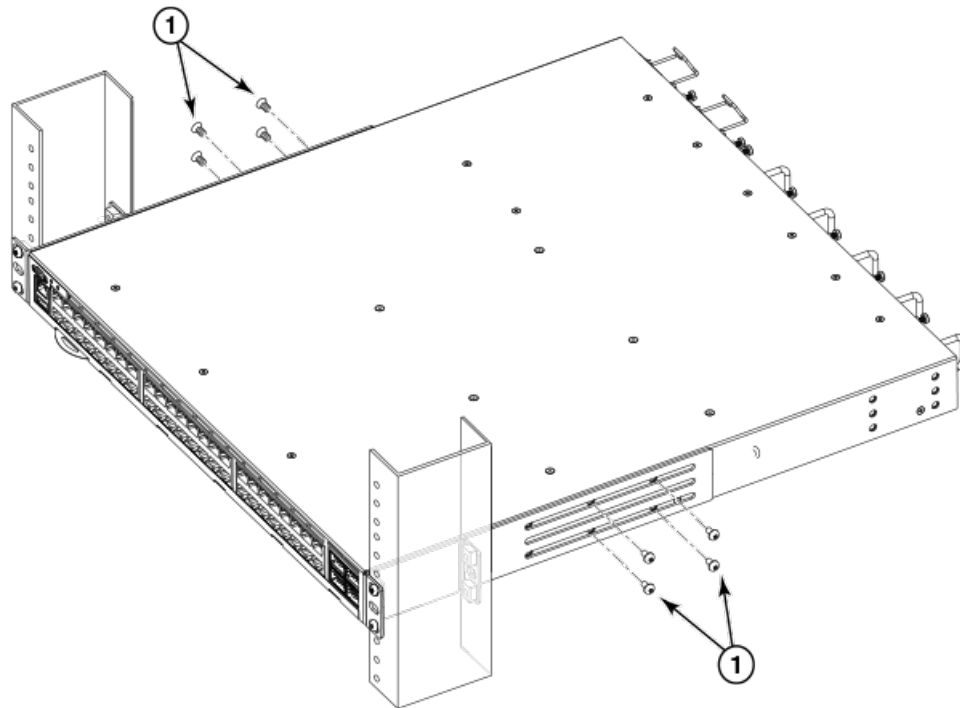
1. Retainer nuts, 10-32
2. Rear brackets
3. Screws, 10-32 x 5/8-in., panhead Phillips

### ***Attaching rear brackets to the switch***

Complete the following steps to attach the rear brackets to the switch.

1. Align the right rear bracket to the right rear of the switch and use four 8-32 x 5/16-in. panhead screws to attach the bracket to the switch as shown in [Figure 34](#) . Be sure to insert the screws through the upper and lower slots in the bracket.
2. Align the left rear bracket to the left rear of the switch and use four 8-32 x 5/16-in. panhead screws to attach the bracket to the switch. Again, use the upper and lower slots in the bracket.
3. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb. (17 cm-kg).

**FIGURE 34** Attaching the rear brackets to the switch



1. Screws, 8-32 x 5/16-in., panhead Phillips

## Installation procedure for mid-mounting the switch

Observe the following notes when using this procedure:

- Although this document describes how to install both single height (1U) and double height (2U) switches, the illustrations show a 1U switch as a typical installation.

---

### NOTE

The switch must be turned off and disconnected from the fabric during this procedure.

---

Complete these tasks to install the switch in a rack:

- [Attaching front brackets to the switch](#) on page 58
- [Attaching front brackets to the rack](#) on page 59
- [Attaching rear brackets to the rack](#) on page 60
- [Attaching rear brackets to the switch](#) on page 61

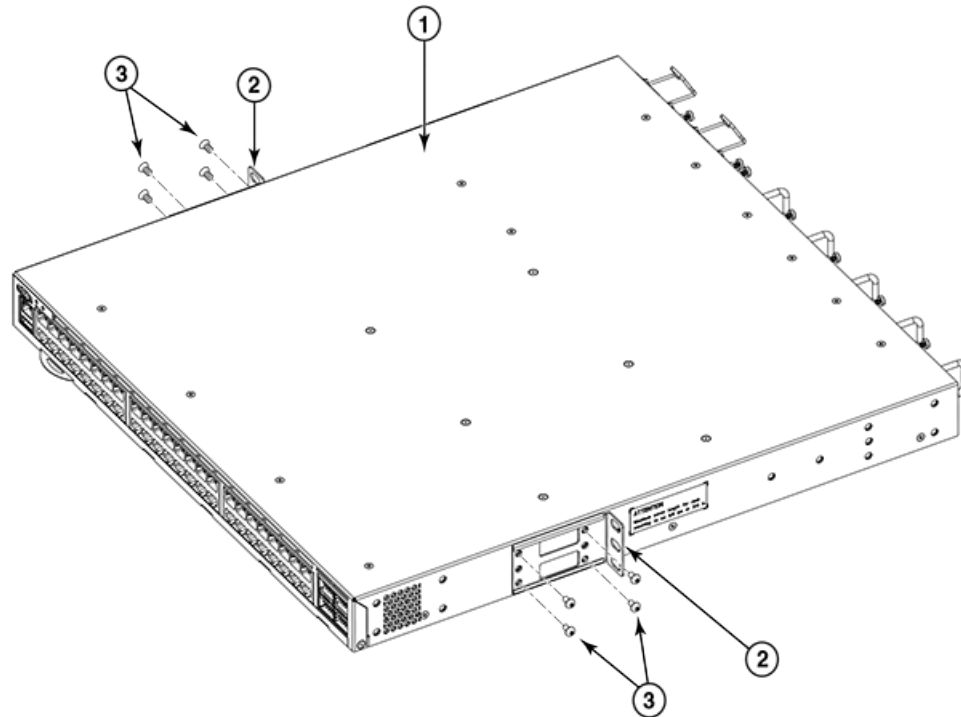
### ***Attaching front brackets to the switch***

Complete the following steps to attach the front brackets to the switch.

1. Position the right front bracket with the flat side against the right side of the switch as shown in [Figure 35](#).
2. Insert four 8-32 x 5/16-in. flathead screws through the top and bottom holes of the vertically aligned series of holes in the bracket and then into the pair of holes on the side of the switch.

3. Repeat step 1 and step 2 to attach the left front bracket to the left side of the switch.
4. Tighten all 8-32 x 5/16-in. screws to a torque of 15 in-lb. (17 cm-kg).

**FIGURE 35** Attaching the front brackets



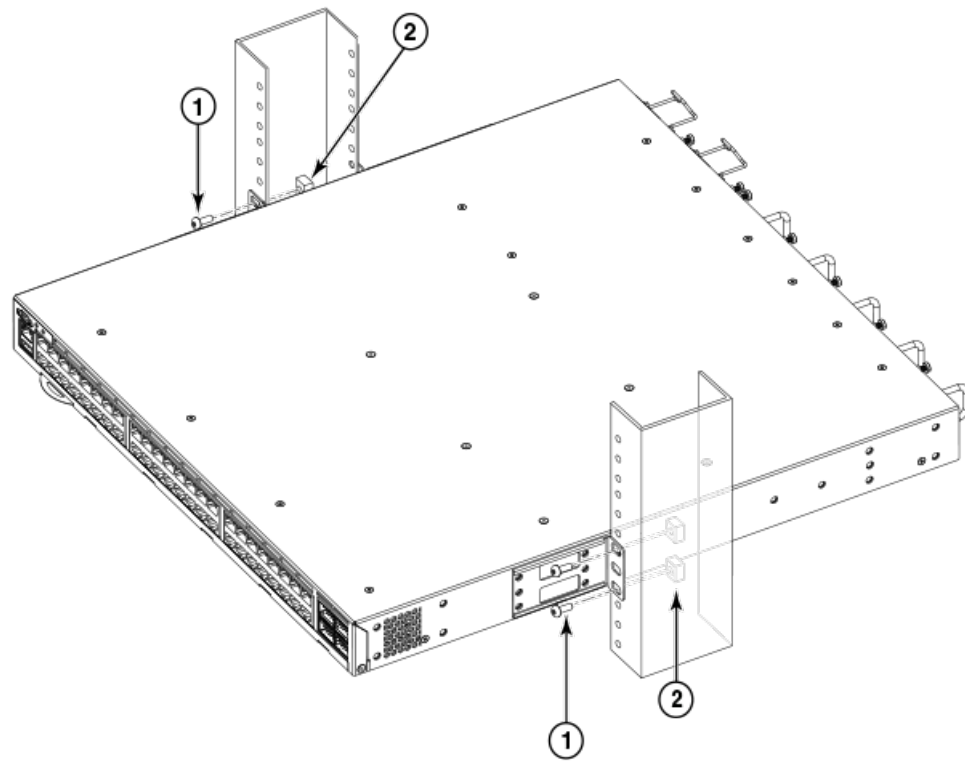
1. Switch
2. Front brackets, right and left
3. Screws, 8-32 x 5/16-in., flathead Phillips

### ***Attaching front brackets to the rack***

Complete the following steps to install the switch in the rack.

1. Position the switch in the rack ([Figure 36](#)), providing temporary support under the switch until the rack kit is fully secured to the rack.
2. Attach the right front bracket to the right rack upright using two 10-32 x 5/8-in. screws and two retainer nuts as shown in [Figure 36](#).
3. Attach the left front bracket to the left rack upright using two 10-32 x 5/8-in. screws and two retainer nuts.
4. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lbs. (29 cm-kgs).

**FIGURE 36** Attaching front brackets to a rack

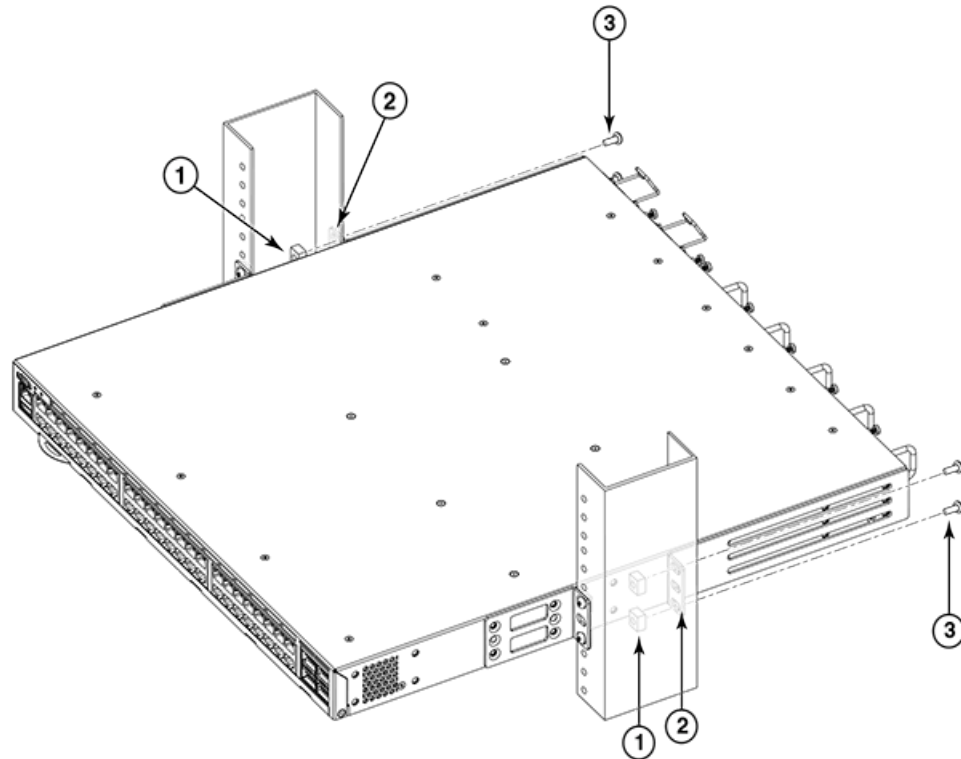


1. Screws, 10-32 x 5/8-in., panhead Phillips
2. Retainer nuts, 10-32

### ***Attaching rear brackets to the rack***

Complete the following steps to attach the rear brackets to the rack.

1. Select the proper length bracket for your post width. If your posts are three to five inches wide, use the brackets marked 3-5 INCH. If your posts are five to six inches wide, use the brackets marked 5-6 INCH.
2. Position the right rear bracket in the right rear of the switch as shown in the following figure. Whether you are using the 3-5 inch or 5-6 inch bracket, the rear end of the bracket will be flush with the back of the switch.
3. Attach the brackets to the right rack upright using two 10-32 x 5/8-in. screws and two retainer nuts.
4. Repeat step 2 and step 3 to attach the left rear bracket to the left rack upright.
5. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lb. (29 cm-kg).

**FIGURE 37** Attaching the rear brackets to a rack

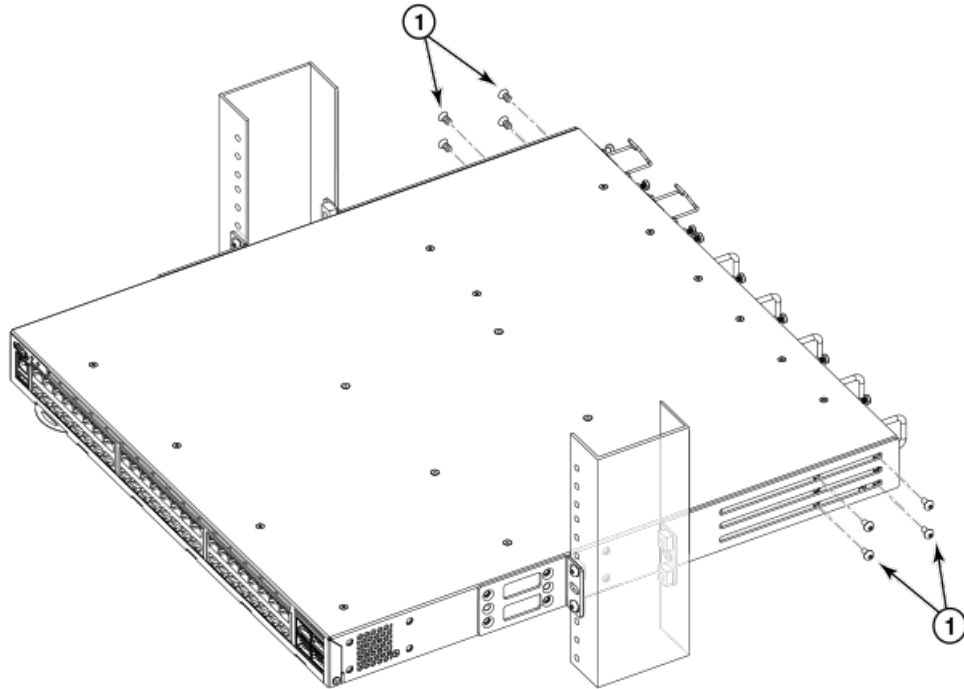
1. Retainer nuts, 10-32
2. Rear brackets (in right and left sides)
3. Screws, 10-32 x 5/8-in., panhead Phillips

### ***Attaching rear brackets to the switch***

Complete the following steps to attach the rear brackets to the switch.

1. Align the right rear bracket to the right rear of the switch and use four 8-32 x 5/16-in. panhead screws to attach the bracket to the switch as shown in [Figure 38](#). Be sure to insert the screws through the upper and lower slots in the bracket.
2. Align the left rear bracket to the left rear of the switch and use four 8-32 x 5/16-in. panhead screws to attach the bracket to the switch. Again, use the upper and lower slots in the bracket.
3. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb. (17 cm-kg).

**FIGURE 38** Attaching the rear brackets to the switch



1. Screws, 8-32 x 5/16-in., panhead Phillips

## Standalone installation

Complete the following steps to install the device as a standalone unit on a table top.

1. Unpack the device and verify the items listed under "Items included with this device" are present and undamaged.
2. Apply the adhesive rubber feet to the device. The rubber feet help prevent the device from sliding off the supporting surface.
  - a) Clean the indentations at each corner of the bottom of the device to ensure that they are free of dust or other debris that might lessen the adhesion of the feet.
  - b) With the adhesive side against the chassis, place one rubber foot in each indentation and press into place.
3. Place the device on a flat, sturdy surface.
4. Provide power to the device as described under "Providing power to the device."

---

### NOTE

Do not connect the device to the network until the IP address is correctly set. For instructions on how to set the IP address, refer to "Configuring the device IP address."

---

## Verifying operation

After you have powered the system on and POST is complete, verify that the device is working properly.

1. Verify that the power supply LEDs are solid green. Refer to the "LED Locations" section of this guide for the location of these LEDs.
2. Verify that the system power LED and the system status LED is solid green. Refer to the "LED Locations" section of this guide for the location of these LEDs.
3. The port LEDs should be lit during POST activities. When POST is complete, only the LEDs for ports connected to other devices should be green. Refer to the "LED Locations" section of this guide for the location of these LEDs.

Refer to the appropriate "LED Patterns" section of this guide for the meaning of LED displays.

Verifying operation



# Initial Configuration

---

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- [Establishing a serial connection.....](#)65
- [Assigning permanent passwords .....](#)66
- [Configuring the device IP address.....](#)67
- [Changing the RBridge ID.....](#)68
- [Changing the VCS ID.....](#)69
- [Setting the date and time .....](#)70
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## Configuration overview

This device can be configured in VCS mode, which is enabled by default.

In VCS mode, the device is part of an Ethernet fabric involving two or more VCS-enabled devices. VCS technology embodies the concepts of distributed intelligence and logical chassis. Distributed intelligence means that all configuration and destination information is automatically distributed to each member in the fabric. Distributed intelligence has three major characteristics:

- The fabric is self-forming. When two VCS-enabled devices are connected, the fabric is automatically created and the devices discover the common fabric configuration.
- The fabric is masterless. No single device stores configuration information or controls fabric operations. Any device can fail or be removed without causing disruptive fabric downtime or delayed traffic.
- The fabric is aware of all members, devices, and Virtual Machines (VMs). Automatic Migration of Port Profiles (AMPP) supports VM migration to another physical server. If the VM moves, it is automatically reconnected to all of its original resources.

Logical chassis means that the entire VCS fabric appears and can be managed as a single Layer 2 device. There are three major characteristics to logical chassis:

- Each physical device in the fabric can be managed as if it were a blade in a chassis. When a VCS-enabled device is connected to the fabric, it inherits the configuration of the fabric and the new ports become available immediately.
- You can manage the entire fabric from any device.
- You can manage the edge devices in the fabric as if they were a single device.

## Establishing a serial connection

Perform all configuration tasks in this guide using a serial connection from a workstation or terminal. The serial port can be used to connect to a workstation to configure the IP address for the device before connecting it to a fabric or IP network.

Complete the following steps to create a serial connection to the device.

1. Connect the serial cable to the serial port on the device and to an RS-232 serial port on the workstation or terminal device.

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

2. 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, enter the following values: 9600 bits per second, 8 databits, no parity, 1 stop bit, and no flow control.
- In a UNIX environment using TIP, enter the following string at the prompt:  
`tip /dev/ttyb -9600`

If ttyb is already in use, use ttya instead.

The serial port is located on the port side of the chassis and uses an RJ-45 connector. An RJ-45 to DB9 adapter is also provided with each model. The cable supplied is a rollover cable.



**CAUTION**

**To protect the serial port from damage, keep the cover on the port when not in use.**

Refer to the product Technical Specifications for a listing of serial cable pinouts.

## Assigning permanent passwords

When you log in for the first time, Brocade recommends that you change the passwords for the default accounts.

The factory-configured default accounts are admin, user, and root. Use the default administrative account as shown in the following table to log in to the device for the first time and to perform the basic configuration tasks.

The root account, disabled by default, is reserved for development and manufacturing. The user account is read-only and used primarily for system monitoring.

**TABLE 8** Default administrative account names and passwords

| Account type             | Login name | Password |
|--------------------------|------------|----------|
| Administrative           | admin      | password |
| User account (read-only) | user       | password |

## Changing the default account passwords

When you change the default account password after you log in for the first time, only the default password rule is in effect. The rule specifies a minimum password length of eight characters. For advanced user and role management, including setting password rules, refer to the *Network OS Security Configuration Guide*.

1. Enter the **configure terminal** command to enter global configuration mode.
2. Enter the **username** command followed by the account name and the password parameter.
3. When prompted, enter the new password. and press **Enter** .

```
device# configure terminal
Entering configuration mode terminal
device(config)# username admin password
(<WORD>;User password satisfying password-attributes):*****
```

## Configuring the device IP address

You can configure this device with a static IP address, or you can use a Dynamic Host Configuration Protocol (DHCP) server to set the device IP address. DHCP is enabled by default. Devices support both IPv4 and IPv6 format addresses.

### Using DHCP to set the IP address

When using DHCP, the Brocade devices obtain the IP address, subnet mask, and default gateway address from the DHCP server. The DHCP client can only connect to a DHCP server that is on the same subnet as the device. If your DHCP server is not on the same subnet as the Brocade device, use a static IP address.

To set an IPv4 IP address using DHCP, complete the following steps.

1. Log in to the device using the admin account.
2. Configure the management interface with the following command:

```
device(config)# interface Management 1/0
```

3. Configure the IP address using the following command:

```
device(config-Management-1/0)# ip address dhcp
```

### Setting a static IP address

Complete the following steps to set a static IP address.

1. Log in to the device using the default password (the default password is **password**).
2. Use the **ip address** command to set the Ethernet IP address.

If you are going to use an IPv4 IP address, enter the IP address in dotted decimal notation. You should also disable DHCP and enter a gateway address as well.

```
device(config)# interface Management 1/0
device(config-Management-1/0)# no ip address dhcp
device(config-Management-1/0)# ip address 10.24.85.81/20
```

To set up a default gateway, add an IP route in RBridge mode.

```
device(config-rbridge-id-10)# vrf mgmt-vrf
device (config-vrf-mgmt-vrf)# address-family ipv4 unicast
device (vrf-ipv4-unicast)# ip route 0.0.0.0/0 10.24.80.1
device (vrf-ipv4-unicast)# exit
device (config-vrf-mgmt-vrf)# exit
device#(config)# copy running-config startup-config
```

If you are going to use an IPv6 address, enter the network information in semicolon-separated notation as prompted after the **ipv6 address** operand.

```
device(config)# interface Management 1/0
device(config-Management-1/0)# no ip address dhcp
device(config-Management-1/0)# ipv6 address \
fd00;60;69bc;832;e61f;13ff;fe67;4b94/64
```

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

```
device# show running-config interface Management 1/0
interface Management 1/0
 no ip address dhcp
 ip address 10.24.85.81/20
 ipv6 address fd00;60;69bc;832;e61f;13ff;fe67;4b94/64
 no ipv6 address autoconfig
!
```

## Stateless IPv6 autoconfiguration

IPv6 allows assignment of multiple IP addresses to each network interface. Each interface is configured with a link local address in almost all cases, but this address is only accessible from other hosts on the same network. To provide for wider accessibility, interfaces are typically configured with at least one additional global scope IPv6 address. IPv6 autoconfiguration allows more IPv6 addresses, the number of which is dependent on the number of routers serving the local network and the number of prefixes they advertise.

When IPv6 autoconfiguration is enabled, the platform will engage in stateless IPv6 autoconfiguration. When IPv6 autoconfiguration is disabled, the platform will relinquish usage of any autoconfigured IPv6 addresses that it may have acquired while IPv6 autoconfiguration was enabled. This same enabled or disabled state also enables or disables the usage of a link local address for each managed entity (though a link local address will continue to be generated for each device) because those link local addresses are required for router discovery.

The enabled or disabled state of autoconfiguration does not affect any static IPv6 addresses that may have been configured. Stateless IPv6 autoconfiguration and static IPv6 addresses can coexist.

## Setting stateless IPv6 autoconfiguration

To configure stateless IPv6 autoconfiguration, complete the following steps.

1. Enter the **configure terminal** command to enter global configuration mode.
2. Take the appropriate action based on whether you want to enable or disable IPv6 autoconfiguration:
  - Enter the **ipv6 address autoconfig** command to enable IPv6 autoconfiguration for all managed entities on the target platform.
  - Enter the **no ipv6 address autoconfig** command to disable IPv6 autoconfiguration for all managed entities on the target platform.

## Changing the RBridge ID

If you are planning to have more than one device in a fabric, each device must have a unique RBridge ID. The default RBridge ID for the device is 1. Use the **vcs rbridge-id rbridge-id** command while in privileged executive mode (device# prompt) to change the default RBridge ID. Observe the following notes and recommendations when using this command:

- 
- **NOTE**  
Changing the Rbridge-ID will reboot the switch and erase existing running-configuration.
  - You should be in privileged EXEC mode (device# prompt) to run the command.
  - If you have made any other configuration changes you want to persist, be sure to save your running configuration to the startup configuration before running the **vcs rbridge-id** command as this command reboots the device.

Enter the **vcs rbridge-id rbridge-id** command.

```
device# vcs rbridge-id 2
This operation will change the configuration to default and reboot the switch. Do you
want to continue? [y/n]:y
```

When the confirmation question appears, enter **Y**.

The reply to the command will include a line about the setting of the RBridge ID.

```
Successfully set rbridge-id.
```

For more information on changing the Rbridge ID and the *rbridge-id* command, refer to the *Network OS Command Reference* and *Network OS Administration Guide*.

## Changing the VCS ID

If you are planning more than one VCS fabric, each fabric must have a unique VCS ID. The default VCS ID for any VCS fabric is 1. Enter the **vcs vcs-id ID** command while in privileged executive mode (device# prompt) to change the default VCS ID. Observe the following notes and recommendations when using this command:

- 
- **NOTE**  
Changing the VCS ID will reboot the switch and erase existing running-configuration.
  - You should be in privileged EXEC mode (device# prompt) to run the command.
  - If you have made any other configuration changes you want to persist, be sure to save your running configuration to the startup configuration before running the **vcs vcs-id** command as this command reboots the device.

Enter the **vcs vcs-id ID** command.

```
device# vcs vcs-id 2
This operation will change the configuration to default and reboot the switch. Do you
want to continue? [y/n]:y
```

When the confirmation question appears, enter **Y**.

The reply to the command will include a line about the setting of the VCS ID.

```
Successfully set vcs-id.
```

For more information on changing the VCS ID and the **vcs vcs-id** command, refer to the *Network OS Command Reference* and *Network OS Administration Guide*.

## Setting the date and time

Brocade devices maintain the current date and time inside a real-time clock (RTC) circuit. Date and time are used for logging events. The device does not depend on the date and time for its operation; even with an incorrect date and time value, the device functions properly. However, because the date and time are used for logging, error detection, and troubleshooting, you should set them correctly.

### Time zones

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

- The **clock timezone** 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). If all devices in a fabric are in one time zone, it is possible for you to keep the time zone setup at the default setting.
- 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, Antarctica, Asia, Atlantic, Australia, Europe, Indian, and Pacific. One of these, along with a city name, establishes the time zone.

### Time synchronization

To keep the time in your network current, it is recommended that the principal switch has its time synchronized with at least one external NTP server. The other devices in the fabric will automatically take their time from the principal switch.

All devices in the fabric maintain the current clock server value in nonvolatile memory. By default, this value is the local clock server of the principal switch. Changes to the clock server value on the principal switch are propagated to all switches in the fabric.

When a new device enters the fabric, the time server daemon of the principal switch sends out the addresses of all existing clock servers and the time to the new device.

The **ntp server** command accepts multiple server addresses in IPv4 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 change to global configuration mode

```
device# configure terminal
Entering configuration mode terminal
```

3. Enter the **ntp server IPv4 address** command, where *IPv4 address* is the IP address of the first NTP server in IPv4 format, which the device must be able to access. The *IPv4 address* variable is

optional. By default, this value is LOCL, which uses the local clock of the principal switch as the clock server.

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

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

```
device(config)# show ntp status rbridge-id 1
```

The request is for the local RBridge unless an RBridge ID is specified.

If you need to remove an NTP server, use the **no** form of the **ntp server** command.

```
device(config)# no ntp server "132.163.135.131"
```

## Setting the clock (date and time) manually

You should set the clock only if there are no NTP servers configured. Time synchronization from NTP servers overrides the local clock. Date values are limited to between January 1, 1970 and January 19, 2038.

1. Log in to the device using the admin account.
2. Enter the **clock set CCYY-MM-DDTHH:MM:SS** command while in privileged EXEC mode.

The following example sets the clock to March 17, 2010, 15 minutes past noon:

```
device# clock set 2010-03-17T12:15:00
```

3. To show the clock and time zone settings, use the **show clock rbridge-id rbridge-id|all** command.

```
device# show clock
rbridge-id 1: 2012-03-17 12:15:00 America/Los_Angeles
```

## Setting the time zone

You must perform this procedure 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 take effect after a reboot.

Use the **clock timezone** command to set the time zone.

1. Log into the device using an account that has the admin role.
2. Enter the **clock timezone region/city** command.

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

```
device# clock timezone America/Los_Angeles
```

3. Reboot the device.

# Network device connections

Refer to the product Technical Specifications for a listing of supported cables.



**CAUTION**

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

## Ethernet or Fast Ethernet hubs

For copper connections to Ethernet hubs, a 1000Base-T device, or another Brocade device, a crossover cable is required. If the hub is equipped with an uplink port, it requires a straight-through cable instead of a crossover cable.

---

**NOTE**

The 802.3ab standard (automatic MDI or MDIX detection) calls for automatic negotiation of the connection between two 1000Base-T ports. Therefore, a crossover cable may not be required; a straight-through cable may work as well.

---

## Workstations, servers, or routers

Straight-through UTP cabling is required for direct UTP attachment to workstations, servers, or routers using network interface cards (NICs).

Fiber cabling is required for direct attachment to Gigabit NICs or switches and routers through fiber ports.

## Network device

For direct attachment from the Brocade device to a Gigabit NIC, switch, or router, you can use either a fiber cabling with an LC connector or a copper cable with an RJ-45 connector.

## Testing connectivity

After you install the network cables, you can test network connectivity to other devices by observing the LEDs related to network connection and performing trace routes. Refer to the LED patterns section of this guide for a description of the port states.



# Operation

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- Interpreting POST results..... 82
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- Powering off the device..... 83
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## Interpreting LED activity

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

There are three possible LED states: off (no light), a steady light, and a flashing light. Flashing lights may be slow, fast, or flickering. The LED colors are either green or amber. Refer to [Port-side LED patterns](#) on page 76 and [Non-port-side LED patterns](#) on page 78 for details on LED behavior.

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

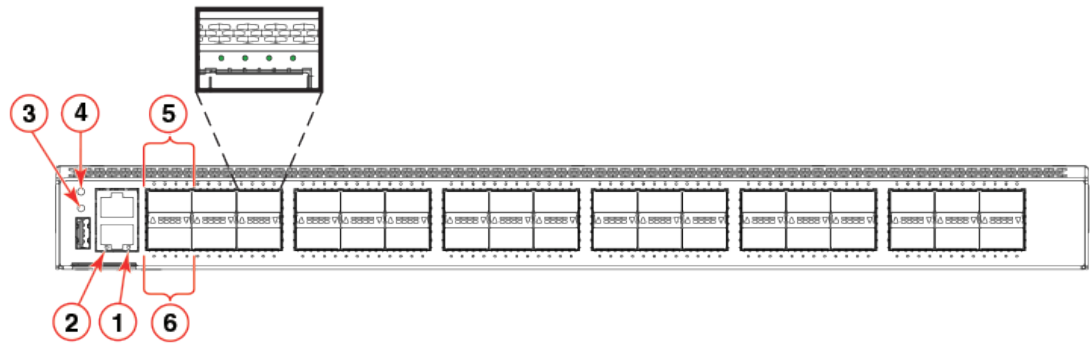
### LED locations

LEDs are located on the port side of the device to indicate power, system, and port status. LEDs on the non-port side of the device indicate fan assembly and power supply status.

#### *VDX 6940-36Q LED locations*

The following figure illustrates status LEDs on the port side of the Brocade VDX 6940-36Q. These LEDs perform the following functions:

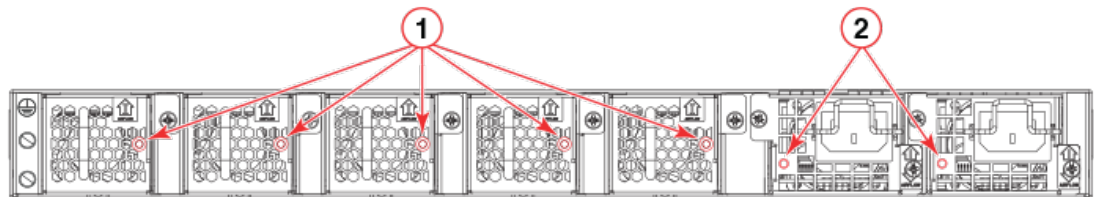
- Two LEDs under the RJ-45 Ethernet port indicate link activity and status.
- Two LEDs in the upper left corner of the panel (above the USB port) indicate system status and power-on status.
- Four LEDs above the upper 40 GbE ports and below the lower 40 GbE ports indicate GbE port status and activity. When in 40 GbE mode, the first LED indicates 40 GbE port status and activity. When in 4x10 GbE breakout mode, each LED indicates status and activity of individual 10 GbE interfaces.



- |                             |   |
|-----------------------------|---|
| 1 Ethernet port activity    | 5 Upper 40 GbE QSFP port and 10 GbE breakout interface status |
| 2 Ethernet port link status | 6 Lower 40 GbE QSFP port and 10 GbE breakout interface status |
| 3 System power              |   |
| 4 System status             |   |

**FIGURE 39** LEDs on the port side of the Brocade VDX 6940-36Q

The following figure illustrates LEDs on the non-port side of the Brocade VDX 6940-36Q. LEDs indicate operation and status on the five fan assemblies and two power supplies.



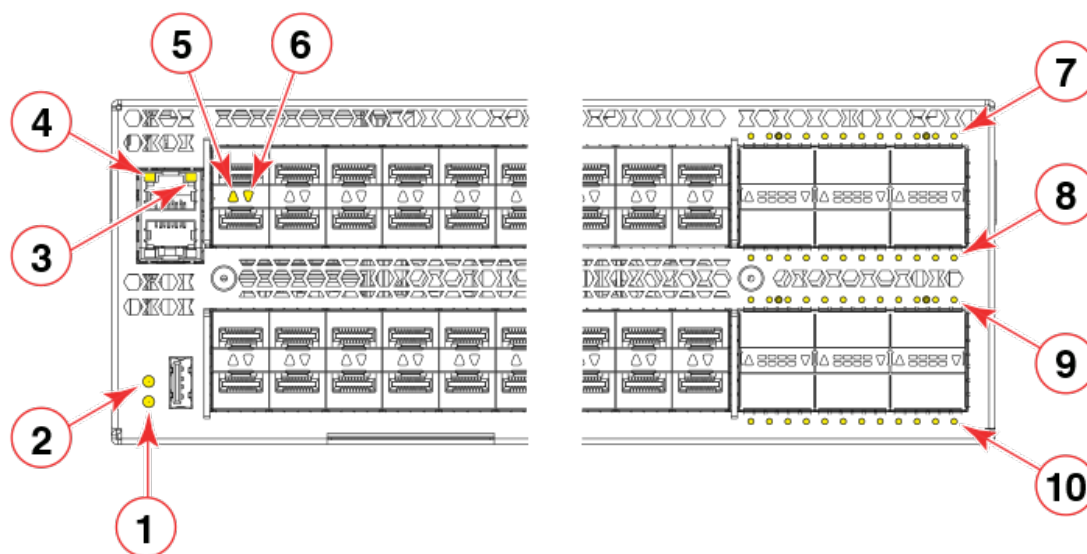
- |                            |
|----------------------------|
| 1 Fan assembly status LEDs |
| 2 Power supply status LEDs |

**FIGURE 40** LEDs on the non-port side of the Brocade VDX 6940-36Q

***VDX 6940-144S LED locations***

The following figure illustrates status LEDs on the port side of the Brocade VDX 6940-144S. These LEDs perform the following functions:

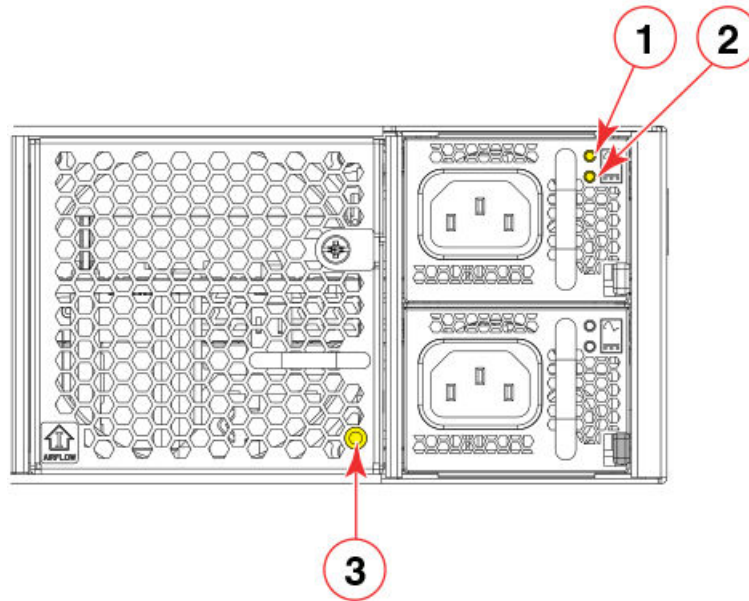
- Two LEDs to the left of the USB port indicate system status and power-on status.
- Two LEDs under the RJ-45 Ethernet port indicate link activity and status.
- Two triangle-shaped bicolor (green and amber) port status LEDs are arrayed between each row of ports. One LED indicates status of the upper 10 GbE port one indicates status of the lower 10 GbE port.
- Four green LEDs above the upper 40 GbE ports and below the lower 40 GbE ports indicate GbE port status and activity. The first LED indicates 40 GbE port status and activity.



- |   |                           |    |                               |
|---|---------------------------|----|-------------------------------|
| 1 | System power              | 6  | Lower 10 GbE port status      |
| 2 | System status             | 7  | Upper 40 GbE QSFP port status |
| 3 | Ethernet port activity    | 8  | Lower 40 GbE QSFP port status |
| 4 | Ethernet port link status | 9  | Upper 40 GbE QSFP port status |
| 5 | Upper 10 GbE port status  | 10 | Lower 40 GbE QSFP port status |

**FIGURE 41** LEDs on port side of Brocade VDX 6940-144S

The following figure illustrates LEDs on the non-port side of the Brocade VDX 6940-144S. LEDs indicate operation and status on the four fan assemblies and two power supplies.



- 1 Output power status
- 2 Input power status
- 3 Fan status

**FIGURE 42** LEDs on non-port side of Brocade VDX 6940-144S

---

**NOTE**

Although the previous figure illustrates AC power supplies, DC power supplies have the same LED indicators.

---

## Port-side LED patterns

LEDs for Ethernet management ports and GbE ports indicate port status and activity. LEDs for the system indicate power on/off and system status.

The normal operation of port-side LEDs during normal operation (no faults) is as follows:

- The power LED is solid green when the system is powered on and turns black or off when system is powered off.
- The system status LED is steady amber for about 10 seconds after power is applied, and then transitions to a steady green. The LED blinks amber until diagnostics are complete, and then turns steady green.
- The management port link activity LED blinks green for activity.
- The management port link status LED is steady green if link is present.
- The port LEDs blink green when there is traffic. The LEDs remain steady green when port is online.

The following table describes detailed port-side LED behavior and recommended user actions.

**TABLE 9** Port-side LED patterns during operation

| LED name   | LED color  | Status of hardware  | Recommended action   |
|--|--|---|--|
| System power (one LED green)   | Off (no light)   | No power  | Verify the system is powered on, the power cables are attached, and your power source is live.<br><br>Contact your service provider.       |
|  | Steady green   | Valid power. All monitored voltages are nominal.  | No action required.  |
| System status (one bicolor LED, green-amber)   | Off (no light)   | System is off or there is no power.   | Verify the system is on.   |
|  | Alternating amber and green (Brocade VDX 6940-36Q)<br>Blinking green (Brocade VDX 6940-144S) | A component requires attention. Most likely a power supply or fan assembly has faulted.             | Verify the component status and check all messages.  |
|  | Steady green   | System is on and functioning properly.  | No action required.  |
| Ethernet management port status (one green LED)  | Off (no light)   | There is no link.   | No action required.  |
|  | Steady green   | Link is present (1G link on management port).   | No action required.  |
| Ethernet management port link activity (one green LED)   | Off (no light)   | There is no activity.   | No action required.  |
|  | Blinking green   | There is activity (traffic).  | No action required.  |
| 40 GbE port status in 40 GbE mode. Indicated by first of four LEDs above or below 40 GbE port. | Off (no light)   | No module or cable. The 40 GbE port is offline - either disabled, faulted, or enabled, but no link. | Install module or connect cable.<br>Enable the port.<br>Check messages for faults and take necessary action.<br>Establish link connection. |
|  | Steady green   | 40 GbE port is online. Link is present, but no activity.  | No action required.  |
|  | Flashing green.  | Beaconing is enabled.   | No action required.  |

**TABLE 9** Port-side LED patterns during operation (Continued)

| LED name  | LED color        | Status of hardware  | Recommended action   |
|---|------------------|---|--|
|   | Flickering green | Activity on 40 GbE port.  | No action required.  |
| For Brocade VDX 6940-36Q, each of four LEDs above or below the 40 GbE ports indicate status of the individual 10 GbE lanes when in port is in 4x10 GbE breakout mode. | Off (no light)   | 10 GbE lane is offline - either disabled, faulted, or enabled but no link.              | Enable the port.<br>Check messages for faults and take necessary action.<br>Establish link connection.                                     |
|   | Steady green     | 10 GbE lane is online. Link is present, but no activity.                                | No action required.  |
|   | Flashing green   | Beaconing is enabled.   | No action required.  |
|   | Flickering green | Activity on 10 GbE port.  | No action required.  |
| Fixed 10 GbE ports (Brocade VDX 6940-144S)  | Off (no light)   | No module or cable. Port is offline - either disabled, faulted, or enabled but no link. | Install module or connect cable.<br>Enable the port.<br>Check messages for faults and take necessary action.<br>Establish link connection. |
|   | Steady green     | Port is online. Link is present, but no activity.                                       | No action required.  |
|   | Blinking green   | Activity on port  | No action required.  |
|   | Flashing amber   | Port has faulted.   | Check messages for faults and take necessary action.   |

## Non-port-side LED patterns for VDX 6940-36Q

The general operation of non-port-side LEDs during normal operation (no faults) is as follows:

- The power supply status LED displays steady green when the power supply is receiving power.
- The fan status LED displays amber when the device is first powered on until POST completes.

The following table describes detailed non-port-side LED behavior and recommended user actions.

**TABLE 10** Non-port-side LED patterns during operation

| LED name   | LED color      | Status of hardware                             | Recommended action  |
|--|----------------|--|---|
| Power supply status. One green LED per power supply. | Off (no light) | Power supply is not receiving power or is off. | Verify the assembly is on and seated and the power cord is connected to a functioning power source. |

**TABLE 10** Non-port-side LED patterns during operation (Continued)

| LED name  | LED color                              | Status of hardware  | Recommended action  |
|---|--|---|---|
|   | Steady green                           | Power supply is operating normally.<br>Also, airflow mismatch or fault may have been detected.  | No action required.<br>Check messages or use the <b>show environment</b> command to check the state of the power supply.  |
|   | Blinking green                         | Power supply is faulty.   | Try the following: <ul style="list-style-type: none"> <li>• Check the power cable connection.</li> <li>• Verify that the power supply is powered on.</li> <li>• Replace the power supply.</li> </ul>  |
| Fan status. One bicolor (green and amber) LED per fan assembly. | Off (no light)                         | Fan assembly is not receiving power.  | Try the following: <ul style="list-style-type: none"> <li>• Verify the fan assembly is seated correctly.</li> <li>• Verify the device is powered on.</li> </ul>   |
|   | Steady green                           | Fan assembly is operating normally.   | No action required.   |
|   | Steady amber (for more than 5 seconds) | Fan fault for one of the following reasons: <ul style="list-style-type: none"> <li>• Mismatched airflow on fan assemblies.</li> <li>• One or more of the fans in the fan assembly has failed.</li> <li>• The fan assembly was disabled by the user.</li> </ul> <hr/> <b>NOTE</b><br>When the device is first powered on, the fan status LED will show amber until POST has completed. | Try the following: <ul style="list-style-type: none"> <li>• Verify that the airflow symbol and part number on the replacement fan matches the fans in the chassis. Replace if necessary.</li> <li>• Replace the fan assembly.</li> <li>• Verify the fan assembly is enabled (use the <b>show environment fan</b> command). Re-enable if necessary.</li> </ul> |

## Non-port-side LED patterns for VDX 6940-144S

The general operation of non-port-side LEDs during normal operation (no faults) is as follows:

- The two power supply status LEDs display steady green when the power supply is receiving and transmitting power. The top LED indicates status of input voltage, which is AC for an AC power supply or DC for a DC power supply. The bottom LED indicates status of DC output voltage.
- The fan status LED displays amber when the device is first powered on until POST completes.

The following table describes detailed non-port-side LED behavior and recommended user actions.

**TABLE 11** Non-port-side LED patterns during operation

| LED name   | LED color                  | Status of hardware                                   | Recommended action  |
|--|----------------------------|--|---|
| Power supply input voltage status:<br><ul style="list-style-type: none"> <li>AC voltage for AC power supply</li> <li>DC voltage for DC power supply</li> </ul> One green LED per power supply. | Off (no light)             | Power supply is not receiving input voltage.         | Verify the assembly is on and seated and the power cord is connected to a functioning power source.   |
|  | Steady green               | Input voltage is within operational range.           | No action required.   |
| Power supply DC output voltage status. One bi-color (green and amber) LED per power supply.  | Flashing amber (1:1)       | Output voltage is not enabled.                       | Verify that the power supply is fully seated and latched in the chassis.  |
|  | Flashing amber/green (2:1) | Over temperature warning.                            | Verify that ambient temperature is less than 40°C (104°F) and check for intake airflow blockage.  |
|  | Flashing amber/green (1:1) | Internal fan is out of regulation.                   | Replace the power supply.   |
|  | Steady amber               | Power supply is faulty or not plugged in completely. | Check the power cord, current, voltage, and temperature to determine the problem.   |
|  | Steady green               | DC output OK.  | No action required.   |
| Fan status. One bicolor (green and amber) LED per fan assembly.  | Off (no light)             | Over temperature warning.                            | Try the following: <ul style="list-style-type: none"> <li>Verify the fan assembly is seated correctly.</li> <li>Verify the device is powered on.</li> </ul> |
|  | Steady green               | Fan assembly is operating normally.                  | No action required.   |



**TABLE 11** Non-port-side LED patterns during operation (Continued)

| LED name | LED color                              | Status of hardware   | Recommended action  |
|----------|--|--|---|
|          | Steady amber (for more than 5 seconds) | Fan fault for one of the following reasons: <ul style="list-style-type: none"> <li>Mismatched airflow on fan assemblies.</li> <li>One or more of the fans in the fan assembly has failed.</li> <li>The fan assembly was disabled by the user.</li> </ul> | Try the following: <ul style="list-style-type: none"> <li>Verify that the airflow symbol and part number on the replacement fan matches the fans in the chassis. Replace if necessary.</li> <li>Replace the fan assembly.</li> <li>Verify the fan assembly is enabled (use the <b>show environment fan</b> command). Re-enable if necessary.</li> </ul> |
|          |  | <b>NOTE</b><br>When the device is first powered on, the fan status LED will show amber until POST has completed.   |   |

## POST and boot specifications

When the device is turned on or rebooted, the device performs a power-on, self-test (POST). Total boot time with POST can be several minutes. POST can be omitted after subsequent reboots by using the **fastboot** command or entering the **no diag post** command to persistently disable POST.

For more information about these commands, refer to the *Network OS Command Reference*.

### POST

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

POST includes the following tasks:

- Conducts preliminary POST diagnostics.
- Initializes the operating system.
- Initializes hardware.
- Runs diagnostic tests on several functions, including circuitry, port functionality, memory, statistics counters, and serialization.

### Boot

In addition to POST, boot includes the following tasks after POST is complete:

- Performs port configuration.
- Initializes links.
- Analyzes fabric. If any ports are connected to other devices, the device participates in a fabric configuration.
- Obtains a domain ID and assigns port addresses.

- Constructs unicast routing tables.
- Enables normal port operation.

## Interpreting POST results

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

Complete the following steps to determine whether POST completed successfully and whether any errors were detected.

1. Verify that the device LEDs indicate that all components are healthy.

Refer to "LED patterns" for descriptions and interpretations of LED patterns.

2. Verify that the device prompt displays on the terminal of a computer workstation connected to the device.

If there is no device prompt when POST completes, press **Enter**. If the device prompt still does not display, try opening a Telnet session or accessing the device through another management tool. If this is not successful, the device did not successfully complete POST. Contact your service provider for repair.

3. Review the device system log for errors. Any errors detected during POST are written to the system log, accessible through the **show logging raslog** command.

For information about all referenced commands, and on accessing the error log, refer to the *Network OS Administration Guide*. For information about error messages, refer to the *Network OS Message Reference*.

## Diagnostic tests

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

The tests are implemented by command, either through a Telnet session or through a console set up to the serial connection to the device. Some tests require the ports to be connected by external cables to allow diagnostics to verify the serializer/deserializer interface, transceiver, and cable. Some tests require loopback plugs. Refer to the *Network OS Administration Guide* and the *Network OS Command Reference* for more details about diagnostic tests and commands.

Diagnostic tests run at link speeds of 1 or 10 Gbps depending on the speed of the link being tested and the type of port.

---

### NOTE

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

---

To monitor the transceivers, the **show media** command output provides transceiver information for all interfaces on the device. Any unqualified transceiver is disabled and a log message is generated.

## Device management

You can use the management functions built into the device to monitor the fabric topology, port status, physical status, and other information to help you analyze device performance and to accelerate system debugging.

For information about upgrading the version of Network OS installed on your device, refer to the *Network OS Administration Guide*.

You can manage this device using any of the management options listed in the following table.

**TABLE 12** Management options

| Management tool  | Out-of-band support                                      | In-band support                                     |
|--|--|---|
| <b>Command line interface (CLI)</b><br>For more information, refer to the <i>Network OS Administration Guide</i> and the <i>Network OS Command Reference</i> . | Ethernet or serial (console port) connection             | In standalone mode only. Not available in VCS mode. |
| <b>Standard SNMP applications</b><br>For information, refer to the <i>Network OS Administration Guide</i> .  | Ethernet or serial (console port) connection             | N/A   |
| <b>Brocade Network Advisor</b><br>For information, refer to the <i>Brocade Network Advisor SAN+IP User Manual</i> .  | Ethernet (preferred) or serial (console port) connection | N/A   |

## Powering off the device

To power off the device, unplug both power supplies from their power sources.

## Thermal operations

Thermal sensors located in the device sense temperature levels during operation to drive fan speed. In cases of extreme temperature, a RASlog message is generated warning of automatic system shutdown in two minutes, at which time the system shuts down.



# Removal and Replacement Procedures

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## Before beginning replacement

The field-replaceable units (FRUs) can be removed from the device and replaced without special tools. The device can continue operating during the FRU replacements if the conditions specified in the procedures are followed.

---

### NOTE

Read the "Caution and Danger Notices" in this guide before servicing.

---



### CAUTION

This document describes how to change field-replaceable units (FRUs) for units with either a port-side air exhaust or a port-side air intake. You must replace a failed FRU with a FRU of the same type. This applies to both power supplies and fan assemblies. A new FRU must have the same part number (P/N) as the FRU being replaced. The manufacturing P/N is located on the top of the FRU. The P/N ends in either -F (front-to-rear airflow) or -R (rear-to-front airflow). You must use a replacement FRU that has the same airflow designator with the part number.



### DANGER

*The procedures in this manual are for qualified service personnel.*

If a mismatched power source or fan assembly is installed by mistake, a warning is sent to the console. Warning messages will be similar to the following:

- For a fan mismatch: WARNING, [product name] , MISMATCH in FAN Air Flow direction. Replace FRU with fan air flows in same direction.
- For a power supply or combined power supply and fan mismatch: WARNING, [product name], MISMATCH in PSU-FAN FRUS Air Flow direction. Replace PSU with fan air flow in same direction.

You can use external labels as a guide. The power supply and fan assemblies are labeled with an airflow symbol on the faceplate to indicate whether the FRU takes in or exhausts air. The symbol also appears on the top of the FRU. All FRUs in a chassis must have the same label affixed so that airflow direction is consistent. The following illustration shows examples of the airflow labels.



### CAUTION

Ensure that the airflow direction of the power supply unit matches that of the installed fan tray. The power supplies and fan trays are clearly labeled with either a green arrow with an "E", or an orange arrow with an "I."

**FIGURE 43** Examples of airflow symbols



The green **E** symbol indicates an exhaust FRU. This unit pulls air in from the port side of the device and exhausts it out the non-port side. This is called front-to-back airflow or exhaust airflow. This symbol should appear on FRUs with part numbers ending with **-F**.

The orange **I** symbol indicates an intake FRU. This unit pulls air in from the non-port side of the device and exhausts it out the port side. This is called back-to-front airflow or intake airflow. This symbol should appear on FRUs with part numbers ending with **-R**.

## VDX 6940-36Q FRU replacement

Field-replaceable units (FRUs) include separate power supplies and fan assemblies identified through Network OS as follows:

- Power supplies - identified from left to right as power supply #1 and power supply #2 when viewed from the non-port-side of the device.
- Fan assemblies - identified from left to right as fan #1, fan #2, fan #3, fan #4, and fan #5 when viewed from the non-port side of the device.

For locations of these assemblies, captive screws, LEDs, labels, and other components, refer to [Non-port-side views](#) on page 24.

---

### NOTE

Maintain all power supply and fan assemblies in operational condition to provide redundancy.

---



**CAUTION**

**Because the cooling system relies on pressurized air, do not leave any of the power supply and fan assembly slots empty longer than two minutes while the switch is operating. If a power supply or fan assembly fails, leave it in the switch until it can be replaced.**



**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.**

Refer to [Non-port-side LED patterns for VDX 6940-36Q](#) on page 78 for details on the meaning of LED patterns for the device power supplies and fans in one of the following locations to verify operation and determine if replacement is necessary.

## Determining the need to replace a power supply

Use one of the following methods to determine the status of the power supplies:

- Check the power supply status LEDs. Refer to "Interpreting LED activity" for details on LED normal operation and error conditions.
- Enter one of the following commands in the command line interface to display power supply status:
  - **show chassis**
  - **show environment power**
- Check the power supply status in the Web Tools application.

## Time and items required to replace a power supply

Replacing a power supply should take less than two minutes to complete.

You need the following items to replace a power supply:

- A new power supply (must have the same part number and the same airflow label as the power supply being replaced)

## Power supply replacement

Use the following procedures to remove and install dual, hot-swappable 500W AC or DC power supplies.

The power supplies are located in slots at the rear of the device. Each power supply FRU contains a fan and can be ordered with front-to-back or back-to-front airflow. Although the two power supplies provide redundancy for required power, both must be installed to provide sufficient airflow from their fans.

This section provides information about the following topics:

- Installation precautions and warnings
- Determining which power supply has failed, if necessary.
- Removing a power supply.
- Installing a power supply.

---

**NOTE**

Power supplies are hot swappable. You can replace a one power supply at a time while the Brocade device is powered on and running.

---

***Installation precautions and warnings***

Follow these precautions when installing a power supply in the Brocade device.



**DANGER**

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



**CAUTION**

**Do not install the device in an environment where the operating ambient temperature might exceed 40°C (104°F).**



**CAUTION**

**Never leave tools inside the chassis.**

***Replacing a 500W AC power supply***

Complete the following steps to replace a 500W AC power supply.

---

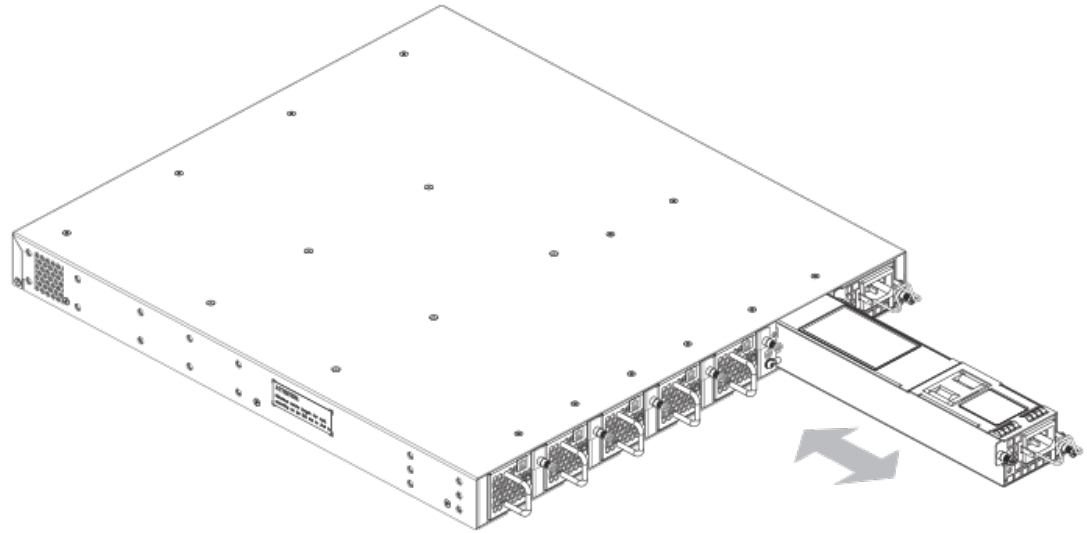
**NOTE**

Before beginning the replacement, refer to the precautions in "Power precautions."

---

1. If leaving the device in service while replacing a power supply, verify that the other power supply (the one not being replaced) has been powered on for at least four seconds and has a steady green status LED.
2. Ensure that the replacement power supply has the same part number and airflow label as the power supply being replaced.
3. Unplug the power cord from the power supply that is being replaced.
4. Using the Phillips screwdriver, unscrew the two captive screws on the power supply.
5. Remove the power supply from the chassis by grasping the edges of the power supply and pulling it out from the chassis.



**FIGURE 44** Inserting the power supply

6. Place the power supply in an anti-static bag for storage.
7. If the empty power supply bay where you are installing the replacement power supply has a cover plate, remove the two screws near the edges of the cover plate to unlock the plate, and then remove the plate.
8. Remove the replacement power supply from its packaging.
9. To install the power supply into the chassis, orient the power supply with the power plug receptacle on the right, as shown in the previous illustration.
10. With one hand, hold the bar on the front panel of the power supply. With the other hand, support the underside of the power supply, and insert the power supply into the empty power supply slot. Gently push the power supply into the chassis until it is firmly seated.

**CAUTION**

Carefully follow the mechanical guides on each side of the power supply slot and make sure the power supply is properly inserted in the guides. Never insert the power supply upside down.

**NOTE**

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

11. Secure the power supply to the chassis by tightening the two captive screws using the Phillips screwdriver.
12. Plug the power cord from the AC power source into the power supply to power on the unit.

The power supply will immediately attempt to power up.

**CAUTION**

If you observe that the switch has powered down approximately two minutes after a power supply replacement, it is likely because the new power supply has a mismatched airflow. Check your console for error messages.

13. Verify that the LED on the new power supply displays steady green while the device is operating. If the LED is not steady green, ensure that the power supply is securely installed and seated properly.

You can enter one of the following commands at the command line prompt to display the power supply status:

- **show chassis**
- **show environment power**

The power supply status can also be viewed using the Web Tools application.

### ***Replacing a 500W DC power supply***

Use the following procedures to replace a 500W DC power supply.

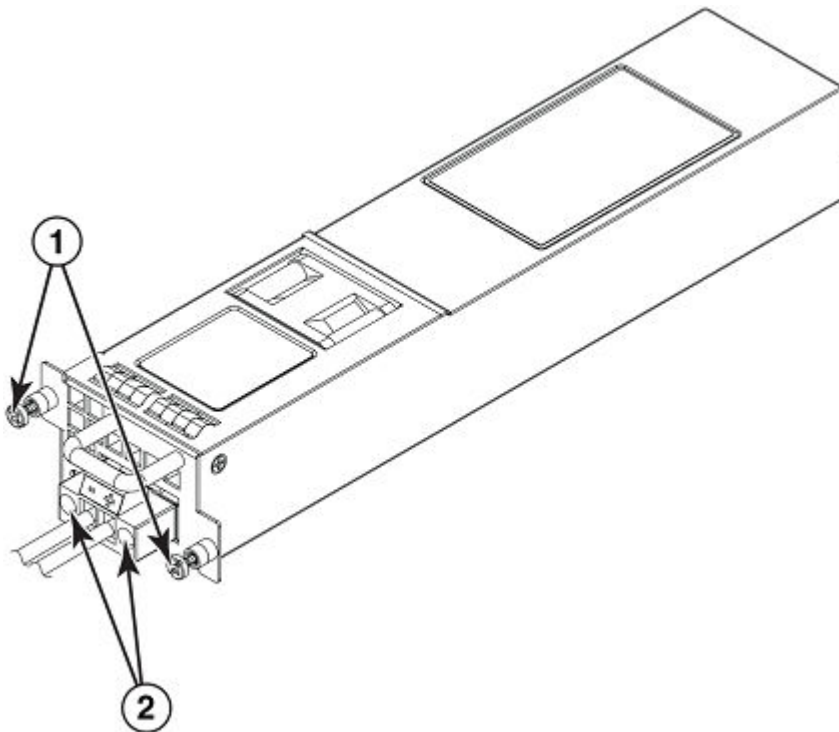
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#### **NOTE**

Before beginning the replacement, refer to the precautions in the "Power precautions" section of this guide.

---

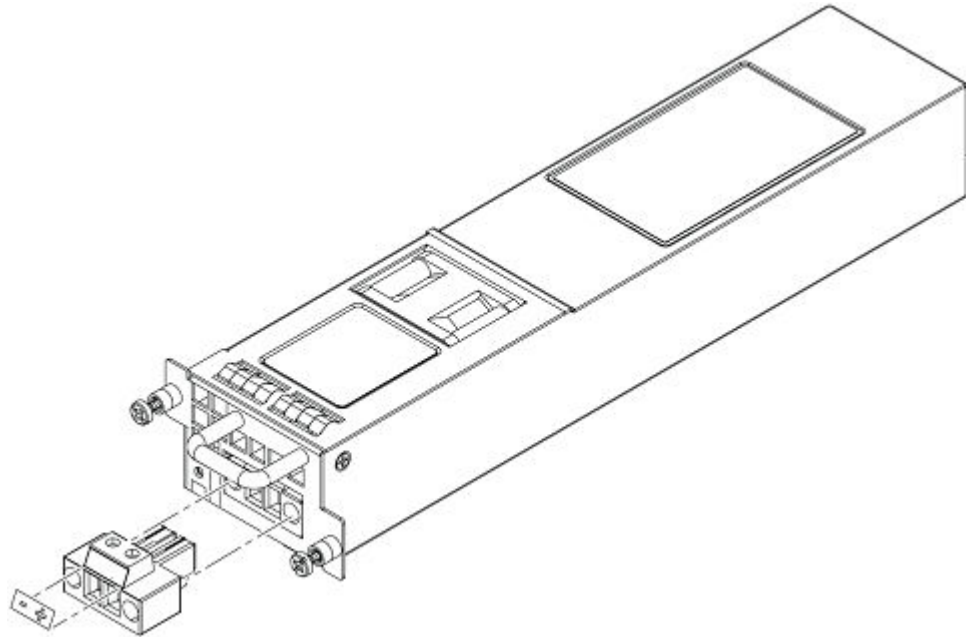
1. Ensure that the replacement power supply has the same part number and airflow label as the power supply being replaced.
2. Before removing the power supply, first remove the DC input wires from your DC power source.
3. Unscrew the chassis attachment screws to unlock the power supply from the chassis, and then pull the power supply out to disconnect it from the chassis backplane. Pull it completely free of the chassis.



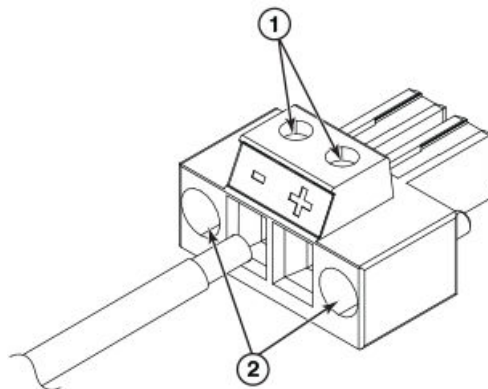
- 1 Chassis attachment screws
- 2 Assembly screws

**FIGURE 45** DC power supply assembly screws

4. Remove the DC wiring harness assembly from the power supply by unscrewing the two assembly screws.

**FIGURE 46** Removing wiring harness from DC power supply

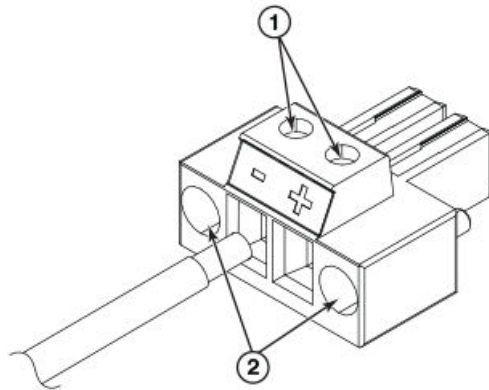
5. Loosen the wire tightening screws to remove the two wires from the DC power source, as shown in following illustration, from the DC wiring assembly.



- 1 Wire tightening screws
- 2 Assembly screws

**FIGURE 47** The DC wiring assembly

6. Reinstall the DC wiring assembly on the power supply so that you can return it with the power supply.
7. Place the power supply in an anti-static bag for storage.
8. If the empty power supply bay where you are installing the power supply has a cover plate, remove the two screws near the edges of the cover plate to unlock the plate, and then remove the plate.
9. Remove the replacement power supply from its packaging.
10. Unscrew the two DC wiring harness assembly screws to unlock the wiring harness assembly from the power supply, and then remove the assembly from the power supply.
11. Loosen the wire tightening screws and insert the wires from the DC power source into the wiring assembly (as shown in the illustration below).



- 1 Wire tightening screws
- 2 Assembly screws

**FIGURE 48** The DC wiring assembly

12. Tighten the wire tightening screws to secure the wires.
13. Insert the DC wiring assembly with wires onto the power supply and tighten the two assembly screws.
14. With one hand, hold the bar on the front panel of the power supply. With the other hand, support the underside of the power supply, and insert the power supply into the empty power supply slot. Gently push the power supply into the chassis until it is firmly seated.

---

**NOTE**

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

---

15. Secure the two chassis attachment screws near the edges of the supply to lock the supply in place.
16. Connect the DC input wires to your DC power source, making sure to connect the -48V cable to the negative terminal on the power supply and the 0V cable to the positive terminal as marked on the power supply.

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

17. Refer to [Connecting a power cord to a 500W DC power supply](#) on page 33 for more information and precautions on connecting DC power.
18. Verify that the LEDs on the new power supply display steady green while the device is operating.

If the LEDs are not steady green, ensure that the power supply is securely installed and seated properly.

You can enter one of the following commands at the command line prompt to display the power supply status:

- **show chassis**
- **show environment power**

The power supply status can also be viewed using the Web Tools application.

## Determining the need to replace a fan assembly

Use one of the following methods to determine the status of the fan assemblies:

- Check the fan status LED on the face of the fan. Refer to "Interpreting LED activity" for details on LED normal operation and error conditions.
- Enter one of the following commands in the command line interface to display the fan status:
  - **show chassis**
  - **show environment fan**

## Time and items required to replace a fan assembly

Replacing a fan assembly should take less than two minutes.

You need the following items to replace a fan assembly:

- A new fan assembly (must have the same part number and the same airflow label as the fan being replaced)
- A #1 Phillips screwdriver

## Replacing a fan assembly

Complete the following steps to replace a fan assembly.

1. Ensure that the replacement fan assembly has the same part number and airflow label as the fan assembly being replaced.
2. Using the Phillips screwdriver, unscrew the captive screw on the fan assembly.
3. Remove the fan assembly from the chassis by pulling the handle on the fan assembly out and away from the chassis.
4. Install the new fan assembly in the chassis:
  - a) Orient the new fan assembly with the captive screw on the right, as shown in the following illustration.
  - b) With one hand, hold the bar on the front panel of the fan. With the other hand, support the underside of the fan, and insert it into the empty fan slot. Slide the new fan into the chassis until the latch engages.



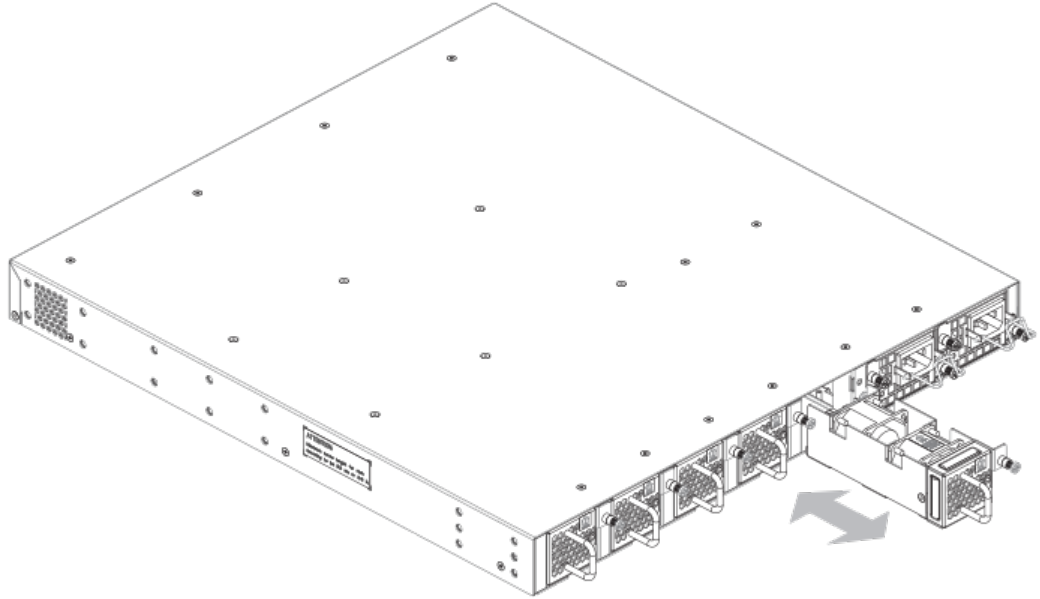
### **CAUTION**

**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.**

If the device is powered up, the fan will immediately power up.

- c) Using the Phillips screwdriver, secure the fan assembly to the chassis by tightening the captive screw.

**FIGURE 49** Inserting or removing the fan assembly



5. Verify that the fan status LED is steady green to indicate normal operation.

If the LED is not steady green, ensure that the fan is securely installed and seated properly. You can refer to the "Interpreting LED activity" section of this guide for details on LED operation.

You can enter one of the following commands at the command line prompt to display fan status:

- **show chassis**
- **show environment fan**

The fan status can also be viewed using the Web Tools application.

## VDX 6940-144S FRU replacement

Field-replaceable units (FRUs) include separate power supplies and fan assemblies identified through Network OS as follows:

- Power supplies - identified from top to bottom as power supply #1 and power supply #2 when viewed from the non-port-side of the device.
- Fan assemblies - identified from left to right as fan #1, fan #2, fan #3, and fan #4 when viewed from the non-port side of the device.

For locations of these assemblies, captive screws, LEDs, labels, and other components, refer to [Non-port-side views](#) on page 24.

---

### NOTE

Maintain all power supply and fan assemblies in operational condition to provide redundancy.

---



**CAUTION**

**Because the cooling system relies on pressurized air, do not leave any of the power supply and fan assembly slots empty longer than two minutes while the switch is operating. If a power supply or fan assembly fails, leave it in the switch until it can be replaced.**



**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.**

Refer [Non-port-side LED patterns for VDX 6940-144S](#) on page 79 for details on the meaning of LED patterns for the device power supplies and fans in one of the following locations to verify operation and determine if replacement is necessary.

## Determining the need to replace a power supply

Use one of the following methods to determine the status of the power supplies:

- Check the power supply status LEDs. Refer to "Interpreting LED activity" for details on LED normal operation and error conditions.
- Enter one of the following commands in the command line interface to display power supply status:
  - **show chassis**
  - **show environment power**
- Check the power supply status in the Web Tools application.

## Time and items required to replace a power supply

Replacing a power supply should take less than two minutes to complete.

You need the following items to replace a power supply:

- A new power supply (must have the same part number and the same airflow label as the power supply being replaced)

## Power supply replacement

Use the following procedures to remove and install dual, hot-swappable 1100W AC or DC power supplies.

The power supplies are located in slots at the rear of the device. Each power supply FRU contains a fan and can be ordered with front-to-back or back-to-front airflow. Although the two power supplies provide redundancy for required power, both must be installed to provide sufficient airflow from their fans.

This section provides information about the following topics:

- Installation precautions and warnings
- Determining which power supply has failed, if necessary.
- Removing a power supply.
- Installing a power supply.

---

**NOTE**

Power supplies are hot swappable. You can replace a one power supply at a time while the Brocade device is powered on and running.

---

***Installation precautions and warnings***

Follow these precautions when installing a power supply in the Brocade device.



**DANGER**

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



**CAUTION**

**Do not install the device in an environment where the operating ambient temperature might exceed 40°C (104°F).**



**CAUTION**

**Never leave tools inside the chassis.**

***Replacing an 1100W AC power supply***

Use the following procedure to remove an 1100W AC power supply.

---

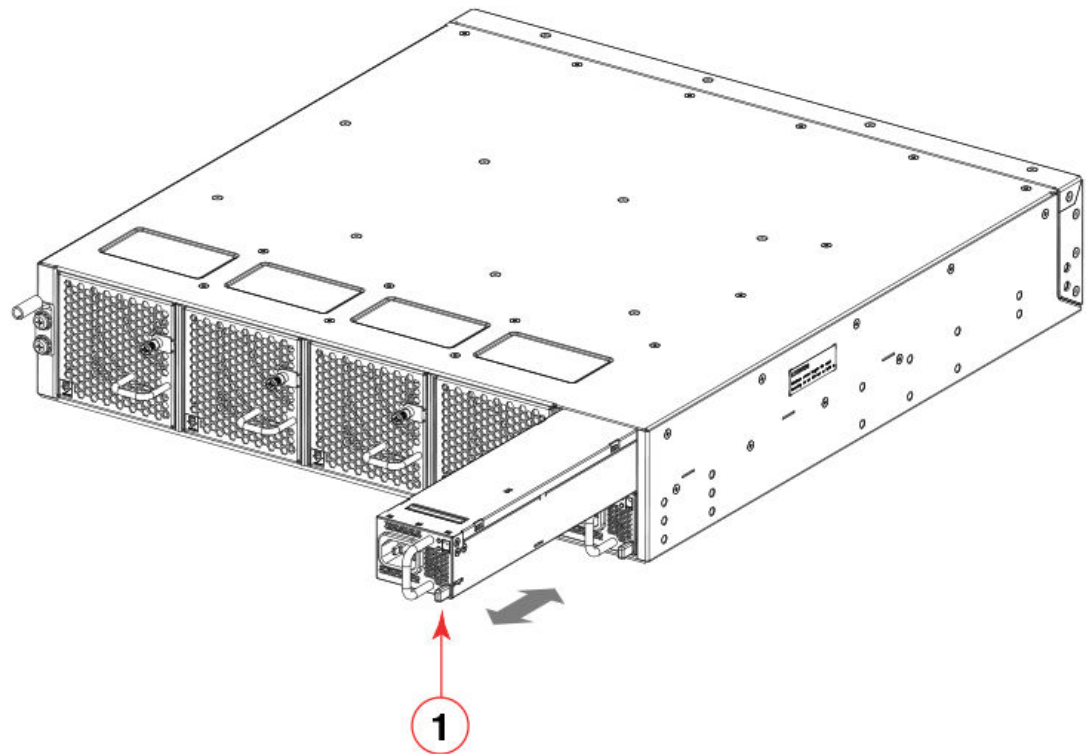
**NOTE**

Before beginning the replacement, refer to the precautions in "Power precautions."

---

1. If leaving the device in service while replacing a power supply, verify that the other power supply (the one not being replaced) has been powered on for at least four seconds and has a steady green status LED.
2. Ensure that the replacement power supply has the same part number and airflow label as the power supply being replaced.
3. Unplug the power cord from the power supply that is being replaced.
4. Push the locking tab on the right lower corner of the power supply to the left and hold it there while using the handle on the power supply to pull it straight out and away from the chassis. Pull the power supply out slowly to avoid catching a finger on the locking tab.





1 Locking tab

**FIGURE 50** Removing power supply from chassis

5. Place the power supply in an anti-static bag for storage.
6. If the empty power supply bay where you are installing the power supply has a cover plate, remove the two screws near the edges of the cover plate to unlock the plate, and then remove the plate.
7. Remove the replacement power supply from its packaging.
8. To install the power supply into the chassis, orient the power supply with the locking tab on the lower right, as shown in the previous illustration.
9. With one hand, hold the bar on the front panel of the power supply. With the other hand, support the underside of the power supply, and insert the power supply into the empty power supply slot. Slide the new power supply into the chassis until the locking tab engages.

---

**NOTE**

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

---

- 10 Plug the power cord from the AC power source into the power supply to power on the unit.

The power supply will immediately attempt to power up.



**CAUTION**

**If you observe that the switch has powered down approximately two minutes after a power supply replacement, it is likely because the new power supply has a mismatched airflow. Check your console for error messages.**

11. Verify that the LED on the new power supply displays steady green while the device is operating.

If the LED is not steady green, ensure that the power supply is securely installed and seated properly.

You can enter one of the following commands at the command line prompt to display the power supply status:

- **show chassis**
- **show environment power**

The power supply status can also be viewed using the Web Tools application.

### ***Replacing an 1100W DC power supply***

Use the following procedure to remove an 1100W AC power supply.

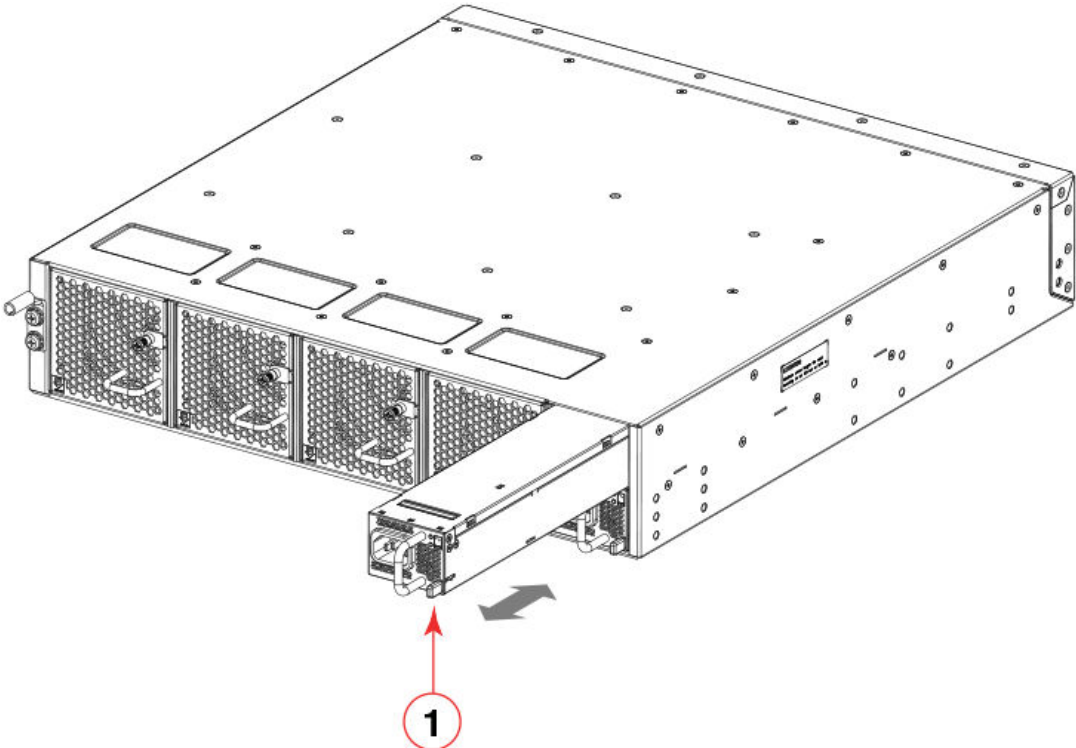
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#### **NOTE**

Before beginning the replacement, refer to the precautions in the "Power precautions" section of this guide.

---

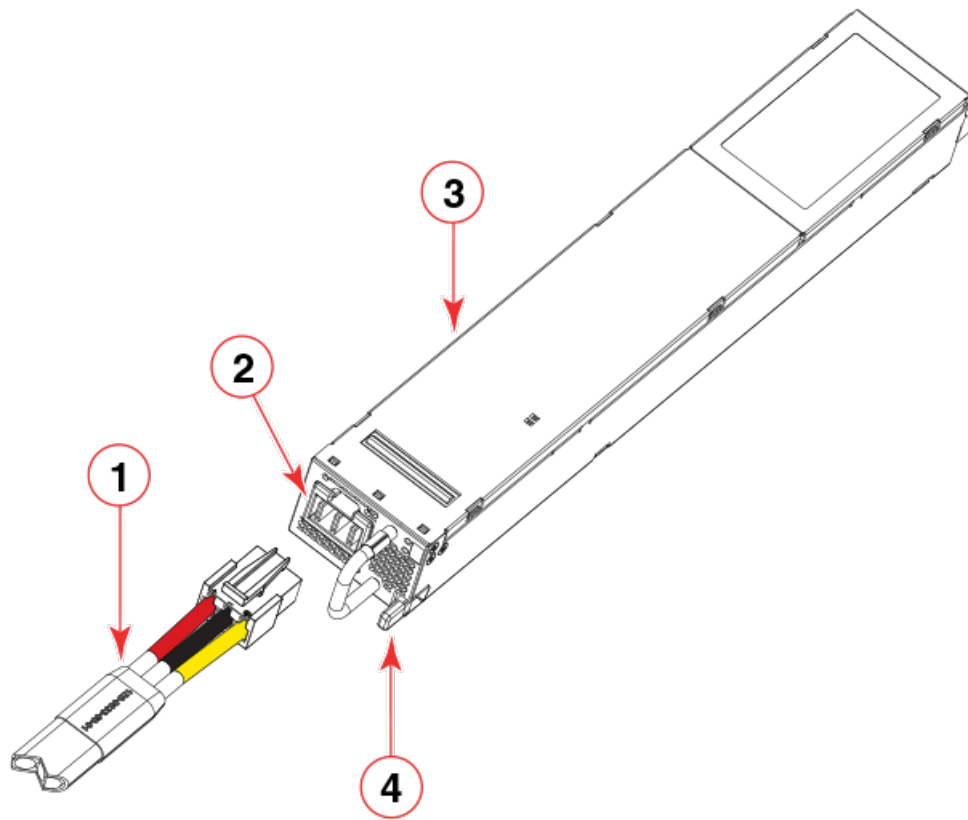
1. If leaving the device in service while replacing a power supply, verify that the other power supply (the one not being replaced) has been powered on for at least four seconds and has a steady green status LED.
2. Unplug the DC wiring harness from the power supply that is being replaced.
3. Push the locking tab on the right lower corner of the power supply to the left and hold it there while using the handle on the power supply to pull it straight out and away from the chassis. Pull the power supply out slowly to avoid catching a finger on the locking tab.



1 Locking tab

**FIGURE 51** Removing power supply from chassis

The following illustration shows the power supply removed from the chassis with DC wiring harness.



- |  |                   |
|--|-------------------|
| 1 DC wiring harness from power source      | 3 DC power supply |
| 2 Wiring harness connector on power supply | 4 Locking tab     |

**FIGURE 52** 1100W DC power supply and DC harness

4. Place the power supply in an anti-static bag for storage.
5. If the empty power supply bay where you are installing the power supply has a cover plate, remove the two screws near the edges of the cover plate to unlock the plate, and then remove the plate.
6. Remove the replacement power supply from its packaging.
7. To install the power supply into the chassis, orient the power supply with the locking tab on the lower right, as shown in the previous illustration.
8. With one hand, hold the bar on the front panel of the power supply. With the other hand, support the underside of the power supply, and insert the power supply into the empty power supply slot. Slide the new power supply into the chassis until the locking tab engages.

---

**NOTE**

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

---

9. Plug the DC cable harness into power supply connector.  
The harness connector is keyed so that it fits only one way into the power supply.
10. Refer to [Connecting a power cord to a 1100W DC power supply](#) on page 34 for more information and precautions on connecting DC power.

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

## Determining the need to replace a fan assembly

Use one of the following methods to determine the status of the fan assemblies:

- Check the fan status LED on the face of the fan. Refer to "Interpreting LED activity" for details on LED normal operation and error conditions.
- Enter one of the following commands in the command line interface to display the fan status:
  - **show chassis**
  - **show environment fan**

## Time and items required to replace a fan assembly

Replacing a fan assembly should take less than two minutes.

You need the following items to replace a fan assembly:

- A new fan assembly (must have the same part number and the same airflow label as the fan being replaced)
- A #1 Phillips screwdriver

## Replacing a fan assembly

Complete the following steps to replace a fan assembly.

1. Using the Phillips screwdriver, unscrew the captive screw on the fan assembly.
2. Pull on screw and push screw body left to unlock latch mechanism.
3. While holding the screw in unlatched position, use the other hand to pull fan assembly straight out from the chassis using the handle. Pull the fan assembly out slowly.
4. Install the new fan assembly in the chassis:
  - a) Orient the new fan assembly with the captive screw on the upper right, as shown in the following illustration.
  - b) With one hand, hold the bar on the front panel of the fan. With the other hand, support the underside of the fan, and insert it into the empty fan slot. Slide the new fan into the chassis until the latch engages.



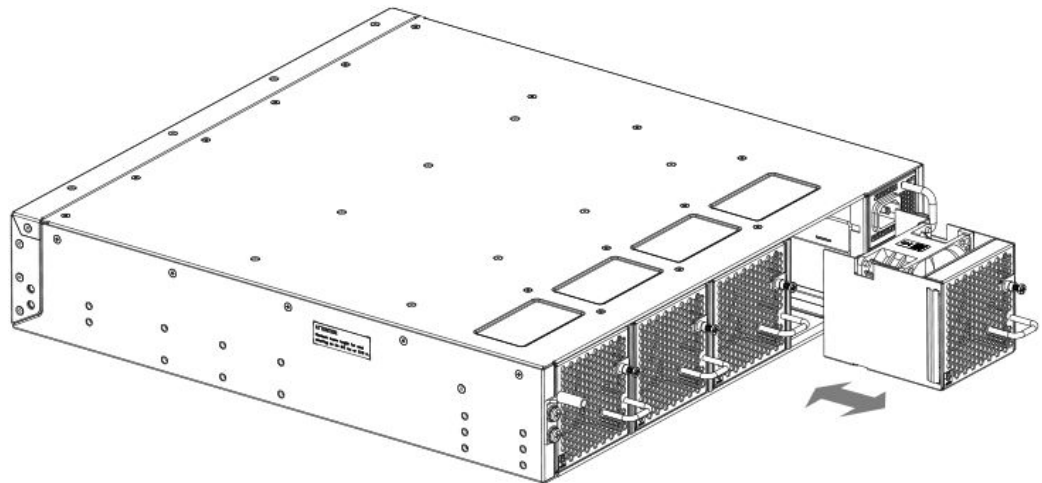
### **CAUTION**

**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.**

If the device is powered up, the fan will immediately power up.

- c) Using a Phillips screwdriver, lock the latch mechanism by tightening the captive screw.

**FIGURE 53** Inserting or removing the fan assembly



5. Verify that the fan status LED is steady green to indicate normal operation.

If the LED is not steady green, ensure that the fan is securely installed and seated properly. You can refer to the "Interpreting LED activity" section of this guide for details on LED operation.

You can enter one of the following commands at the command line prompt to display fan status:

- **show chassis**
- **show environment fan**

The fan status can also be viewed using the Web Tools application.

## QSFP transceiver removal and replacement

Use this procedure to remove and replace a QSFP transceiver. Because each QSFP transceiver consists of four 10 GbE ports, be aware that any problems with one port could affect all four ports in the quad.



**DANGER**

***All fiber-optic interfaces use Class 1 lasers.***



**DANGER**

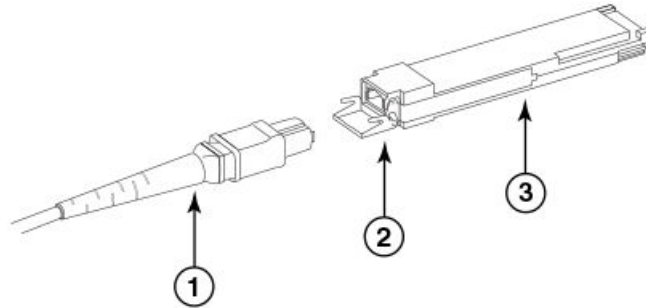
***Laser Radiation. Do Not View Directly with Optical Instruments. Class 1M Laser Products.***

### Removing a QSFP transceiver

Complete the following steps to remove a QSFP transceiver.

1. Remove the fiber-optic cable from the transceiver.
2. If your transceiver has an integrated pull tab, gently pull the transceiver from the port using the tab.
3. If your transceiver has a bail release, as shown in the following figure, complete the following steps.

- a) Pivot the bail on the transceiver to the horizontal position.
  - b) Holding the transceiver by the bail, gently pull the transceiver out of the port.
4. Insert a protective plug into the transceiver and put it aside.



- 1 Fiber-optic cable
- 2 Bail
- 3 Transceiver

**FIGURE 54** QSFP cable and transceiver with bail open

## Replacing a QSFP transceiver

Complete the following steps to replace a QSFP transceiver.

1. Position the new QSFP transceiver so that the key is oriented correctly to the port.
2. Grasping the edges of the transceiver, gently push it into the port until it is firmly seated and the latching mechanism clicks. If your transceiver has a bail release, pull the bail up to lock the transceiver in place.

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.

3. Remove the protective plug from the transceiver.
4. 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.

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.

## SFP transceiver removal and replacement

Use the following procedure to remove and replace an SFP or SFP+ transceiver.



**DANGER**

***All fiber-optic interfaces use Class 1 lasers.***



**DANGER**

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

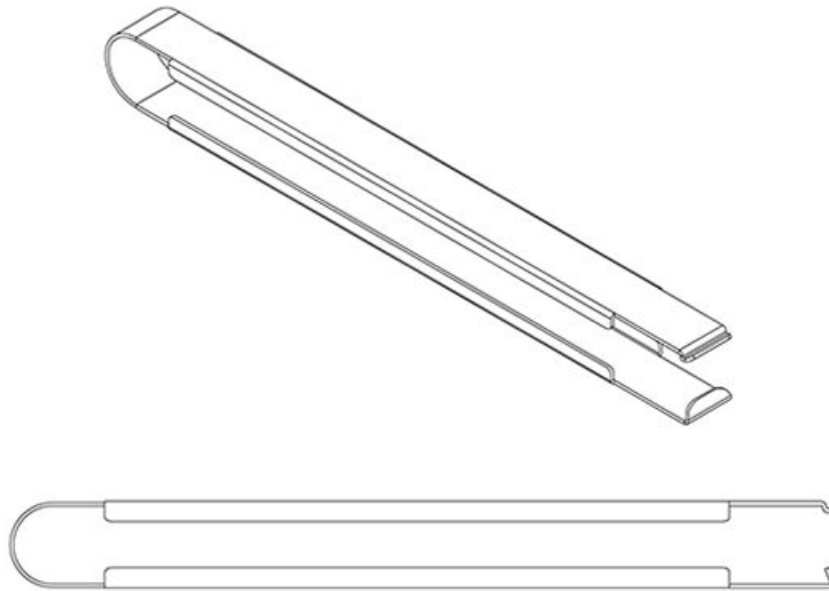
## Time and items required

The replacement procedure for one transceiver takes less than 5 minutes. You should have the following items available:

- Replacement SFP or SFP+ transceiver
- Optical transceiver extraction tool

Most Brocade devices and backbones come with an optical transceiver extraction tool ([Figure 55](#)) and holster. The extraction tool is designed to remove transceivers from modules where the space is limited.

**FIGURE 55** Optical transceiver extraction tool



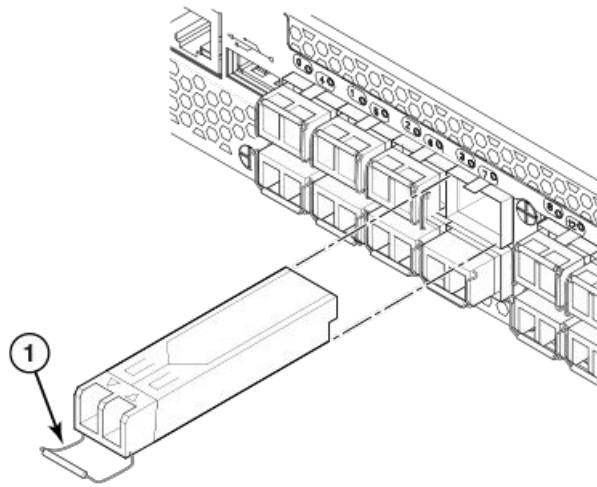
## Removing a transceiver

For the following procedure refer to the illustration.

Complete the following steps to remove an SFP or SFP+ transceiver.

1. Remove any cables that are inserted into the transceiver. Use the extraction tool to open the cable latching mechanism.
2. Using the hooked end of the tool, pull the bail (wire handle) away from its pivot point and out, sliding the transceiver out of the device or module.





1 SFP or SFP+ bail

**FIGURE 56** Optical transceiver with bail open

## Replacing a transceiver

Complete the following steps to replace an SFP or SFP+ transceiver. Refer to the illustration in [Removing a transceiver](#) on page 104.

1. Making sure that the bail (wire handle) is in the unlocked or open position, position the optical transceiver so that the key is oriented correctly to the port. Insert the transceiver into the port until it is firmly seated and the latching mechanism clicks.

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.

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.



# Brocade VDX 6940 Switch Technical Specifications

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This document highlights the features and specifications for the Brocade VDX 6940 switch.

## System specifications

| System component    | Description   |
|---------------------|---|
| Enclosure           | VDX 6940-36Q - 1U, 19-inch EIA-compliant, front-to-back airflow or back-to-front airflow; power from back<br><br>VDX 6940-144S - 2U, 19-inch EIA-compliant, front-to-back airflow or back-to-front airflow; power from back     |
| Power inlet         | C14, power from nonport side  |
| Power supplies      | Two internal, redundant, field-replaceable, load-sharing AC or DC power supplies (each power supply has an integral fan unit)   |
| Fans                | Brocade VDX 6940-36Q Five field-replaceable fan assemblies, each with two fans, for a total of 10 per system<br><br>Brocade VDX 6940-144S Four field-replaceable fan assemblies, each with one fan, for a total of 4 per system |
| Cooling             | Front-to-rear and rear-to-front (port-side intake and port-side exhaust) airflow.   |
| System architecture | Nonblocking shared memory switch  |
| System processor    | Brocade VDX 6940-36Q - 1.5 GHz P3041 Quad Core CPU<br><br>Brocade VDX 6940-144S- 1.5 GHz P4080 8-Core CPU   |

## Ethernet

| System component         | Description  |
|--------------------------|--|
| QSFP GbE ports           | Brocade VDX 6940-36Q - 36 40-GbE QSFP+ ports. 144 10-GbE ports using 10-GbE breakout cables.<br><br>Brocade VDX 6940-144S- 12 40-GbE QSFP+ ports.                      |
| SFP+ GbE ports           | Brocade VDX 6940-144S - 96 fixed 10-GbE ports  |
| Ethernet management port | Brocade VDX 6940-36Q - RJ-45 10/100/1000 Mbps Ethernet out-of-band management port<br><br>Brocade VDX 6940-144S - RJ-45 1000 Mbps Ethernet out-of-band management port |

## LEDs

| System component   | Description  |
|--|--|
| Switch status and management                             | <p>One bicolor system status LED (green and amber) on the port side.</p> <p>One green power status LED on the port side.</p> <p>Two green Ethernet management port status LEDs on the port side.</p>   |
| Port activity 40-GbE ports                               | <p>One green LED per port for 40-GbE operation.</p> <p>Four green LEDs per port for 10-GbE operation in breakout mode (Brocade VDX 6940-36Q).</p>  |
| Port activity fixed 10-GbE ports (Brocade VDX 6940-144S) | <p>One bicolor LED (green and amber) per port to indicate status on the port side.</p>   |
| Fan status   | <p>One bicolor LED (green and amber) per fan to indicate status on nonport side.</p>   |
| Power supply status                                      | <p>Brocade VDX 6940-36Q - One green LED per power supply to indicate status on nonport side.</p> <p>Brocade VDX 6940-144S One green LED to indicate status of input voltage and one bi-color (green/amber) LED to indicate status of output voltage.</p> |

## Other

| System component     | Description  |
|----------------------|--|
| Serial cable         | <p>Rollover cable</p>  |
| RJ-45 connectors (2) | <p>One serial port used for console.</p> <p>Brocade VDX 6940-36Q - One RJ-45 10/100/1000 Mbps Ethernet out-of-band management port</p> <p>Brocade VDX 6940-144S - One RJ-45 1000 Mbps Ethernet out-of-band management port</p> |
| USB connector        | <p>Used for data and firmware downloads</p>  |

## Weight and physical dimensions

*Fully loaded* means that all FRUs and transceivers are installed.

| Model                 | Height   | Width     | Depth     | Weight (empty) | Weight (fully loaded) |
|-----------------------|----------|-----------|-----------|----------------|-----------------------|
| Brocade VDX 6940-36Q  | 4.4 cm   | 44 cm     | 43.8 cm   | 8.9 kg         | 10.1 kg               |
|                       | 1.73 in. | 17.32 in. | 17.22 in. | 19.6 lb        | 22.3 lb               |
| Brocade VDX 6940-144S | 8.7 cm   | 44 cm     | 48.5 cm   | 15.46 kg       | 17.32                 |
|                       | 3.41 in. | 17.32 in. | 19.1 in.  | 34.10 lb       | 38.2 lb               |

## Environmental requirements

**TABLE 13** Environmental requirements

| Condition                          | Operational   | Non-operational  |
|------------------------------------|---|--|
| Ambient temperature                | 0°C to 40°C (32°F to 104°F)   | -25°C to 70°C (-13°F to 158°F)   |
| Relative humidity (non-condensing) | 10% to 85% at 40°C (104°F)  | 5% to 80% at 70°C (158°F)  |
| Altitude (above sea level)         | 0 to 3000 m (9,842 ft.)   | 0 to 12000 m (39,370 ft)   |
| Shock                              | <p>Brocade VDX 6940-36Q - 15 G , 11 ms, half-sine wave</p> <p>Brocade VDX 6940-144S - 15 G , 11 ms, half-sine wave</p>  | <p>Brocade VDX 6940-36Q - 33 G, 11 ms, half-sine wave, 5/ea Axis and 33 G 6ms, Trapezoidal, 1/ea axis</p> <p>Brocade VDX 6940-144S - 33 G, 11 ms, half sine wave 5/ea Axis, and 33 G 6ms, Trapezoidal, 1/ea axis</p> |
| Vibration                          | <p>Brocade VDX 6940-36Q - 1 G sine, 0.5 gms random, 5-500 Hz</p> <p>Brocade VDX 6940-144S - 1 G sine, 0.5 gms random, 5-500 Hz</p>  | <p>Brocade VDX 6940-36Q - 2.4 G sine, 1.1 gms random, 5-500 Hz</p> <p>Brocade VDX 6940-144S - 2.4 G sine, 1.1 gms random, 5-500 Hz</p>   |
| Airflow                            | <p>Brocade VDX 6940-36Q</p> <ul style="list-style-type: none"> <li>Maximum: 159 cmh (94 cfm)</li> <li>Minimum: 65 cmh (38 cfm)</li> </ul> <p>Brocade VDX 6940-144S</p> <ul style="list-style-type: none"> <li>Maximum: 370 cmh (218 CFM)</li> <li>Minimum: 95 cmh (56 CFM)</li> </ul> | N/A  |
| Heat dissipation                   | Refer to BTU/hr data under "Power consumption (typical configuration)" and "Power consumption (maximum configuration)" for various power inputs.  | N/A  |

**TABLE 13** Environmental requirements (Continued)

| Condition       | Operational   | Non-operational |
|-----------------|---|-----------------|
| Operating noise | Brocade VDX 6940-36Q <ul style="list-style-type: none"> <li>• Maximum: 88 dBA (8.8 Bels)</li> <li>• Nominal: 71 dBA (7.1 Bels)</li> </ul> Brocade VDX 6940-144S <ul style="list-style-type: none"> <li>• Maximum 87 dbA (8.7 Bels)</li> <li>• Nominal: 69 dBA (6.9 Bels)</li> </ul> | 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  |
|--|----------------------------------|----------------------------|-------------------------|-----------------------|------------------------------|---|
| AC to DC -<br>Brocade VDX<br>6940-36Q  | 500 W                            | 100 - 240<br>VAC (nominal) | 50 - 60 Hz<br>(nominal) | 6 A @ 100<br>VAC      | Line Fused                   | 30 A peak at<br>cold start and<br>50 A peak at<br>warm start for<br><10 ms, 10 A<br>peak for<br>cycles 10 ms<br>-150 ms, < 7 A<br>peak for >150<br>ms |
| XBR-500WPS<br>AC-01-F                  |                                  | 90 - 264 VAC<br>(range)    | 50-60 Hz<br>(range)     | 7 A @ 90 VAC          |                              |   |
| or                                     |                                  |                            |                         |                       |                              |   |
| XBR-500WPS<br>AC-01-R                  |                                  |                            |                         |                       |                              |   |
| AC to DC -<br>Brocade VDX<br>6940-144S | 1100 W                           | 100 - 240<br>VAC (nominal) | 50 - 60 Hz<br>(nominal) | 12 A                  | AC line and<br>neutral fused | 40 A peak at<br>240 VAC<br>during cold<br>startup at<br>25°C 77°F   |
| XBR-<br>VDX6940-64S<br>-AC-2           |                                  | 90 - 264 VAC<br>(range)    | 47 - 63 Hz<br>(range)   |                       |                              |   |
| XBR-<br>VDX6940-64S<br>-AC-R           |                                  |                            |                         |                       |                              |   |
| DC to DC -<br>Brocade VDX<br>6940-36Q  | 500 W                            | 48 VDC<br>(nominal)        | NA                      | 15 A                  | -VE fused                    | 25 A peak<br>cold and warm<br>start   |
| RPS9DC                                 |                                  | 40-60 VDC<br>(range)       |                         | 16 A                  |                              |   |
| or                                     |                                  |                            |                         |                       |                              |   |
| RPS9DC+I                               |                                  |                            |                         |                       |                              |   |

| Power supply model  | Maximum output power rating (DC) | Input voltage       | Input line frequency | Maximum input current | Input line protection | Maximum inrush current      |
|---|----------------------------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------------|
| DC to DC - Brocade VDX 6940-144S  | 1100 W                           | 40-60 VDC (rated)   | NA                   | <33 A                 | -Ve fused             | 60 A peak hot or cold start |
| XBR-1100WP SDC-01-F   |                                  | 48 VDC(nominal)     |                      |                       |                       |                             |
| or  |                                  | 40 - 60 VDC (range) |                      |                       |                       |                             |
| XBR-1100WP SDC-01-R   |                                  |                     |                      |                       |                       |                             |
| <p><b>NOTE</b><br/>                     XBR-1000WP -SDC-F/R DC power supplies require 45 VDC or greater to ensure output voltage at power on. After power on, the output voltage will remain operational to 40 VDC.</p> |                                  |                     |                      |                       |                       |                             |

## Power consumption (typical configuration)

All ports fully configured with approved optic sources. Test performed with 25 percent traffic rate, fans at nominal speed, and one power supply.

| Model name    | @100 VAC input | @200 VAC input | @-48 VDC input | Minimum number of power supplies  | Notes   |
|---------------|----------------|----------------|----------------|---|---|
| VDX 6940-36Q  | 2.18 A         | 1.12 A         | 4.1 A          | 2   | Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies. |
|               | 231 W          | 226 W          | 211.2 W        |   |   |
|               | 788.42 BTU/hr  | 771.36 BTU/hr  | 720.84 BTU/hr  |   |   |
|               |                |                |                | <b>NOTE</b><br>Device ships with two power supplies. One provides system power, but both must be installed to provide sufficient airflow from fans. |   |
| VDX 6940-144S | 3.288 A        | 1.639 A        | 6.8 A          | 1   | Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies. |
|               | 332 W          | 326 W          | 350 W          |   |   |
|               | 1133.14 BTU/hr | 1112.66 BTU/hr | 1195.94 BTU/hr |   |   |

## Power consumption (idle configuration)

No optics or connections to ports installed and system completed boot up, fans at nominal speed.

| Model name    | @100 VAC input | @200 VAC input | @-48 VDC input | Minimum number of power supplies | Notes   |
|---------------|----------------|----------------|----------------|----------------------------------|---|
| VDX 6940-36Q  | 1.245 A        | 0.636 A        | 2.7 A          | 1                                | Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies. |
|               | 140 W          | 136 W          | 144.42 W       |                                  |   |
|               | 477.83 BTU/hr  | 464.18 BTU/hr  | 492.92 BTU/hr  |                                  |   |
| VDX 6940-144S | 1.73 A         | 0.912 A        | 4.8 A          | 1                                | Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies  |
|               | 180 W          | 180 W          | 244.8 W        |                                  |   |
|               | 614.35 BTU/hr  | 614.35 BTU/hr  | 835.52 BTU/hr  |                                  |   |



## Power consumption (maximum configuration)

All optic ports configured with optics that draw the maximum power rating per MSA specification. Fans set at high speed and one power supply unit (PSU) used.

| Model name    | @100 VAC input | @200 VAC input | @-48 VDC input           | Minimum number of power supplies | Notes   |
|---------------|----------------|----------------|--------------------------|----------------------------------|---|
| VDX 6940-36Q  | 2.84 A         | 1.44 A         | -48 VDC                  | 2                                | Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies.   |
|               | 295 W          | 289 W          | 5.8 A                    |                                  |   |
|               | 1006.86 BTU/hr | 986.38 BTU/hr  | 288.6 W<br>985.01 BTU/hr |                                  |   |
| VDX 6940-144S | 5.119 A        | 2.506 A        | 10.3 A                   | 1                                | <b>NOTE</b><br>Device ships with two power supplies. One provides system power, but both must be installed to provide sufficient airflow from fans. |
|               | 512 W          | 500 W          | 499.2 W                  |                                  |   |
|               | 1747.5 BTU/hr  | 1706.54 BTU/hr | 1703.81 BTU/hr           |                                  |   |

## Data port specifications (Ethernet)

| Model         | Port type    | Number of ports                                  | Description  |
|---------------|--------------|--|--|
| VDX 6940-36Q  | 40-GbE       | 36   | 24 base ports can be upgraded to 36 with single port upgrade license.  |
|               |              | Up to 144 10-GbE ports in 4x10 GbE breakout mode | Each 40-GbE port can be broken out into four independent 10-GbE SFP+ ports, providing up to 144 10-GbE SFP+ ports. |
| VDX 6940-144S | 10-GbE fixed | 96   | 64 base ports can be upgraded to 96 in two 16-port increments with port upgrade licenses.                          |
|               | 40-GbE       | 12   | Base model with no 40-GbE ports can be upgraded to 12 in two 6-port increments with port upgrade licenses.         |

## Serial port specifications (pinout RJ-45)

| Pin | Signal        | Description   |
|-----|---------------|---------------|
| 1   | Not supported | N/A           |
| 2   | Not supported | N/A           |
| 3   | UART1_TXD     | Transmit data |
| 4   | GND           | Logic ground  |
| 5   | GND           | Logic ground  |
| 6   | UART1_RXD     | Receive data  |
| 7   | Not supported | N/A           |
| 8   | Not supported | N/A           |

## Serial port specifications (protocol)

| Parameter    | Value |
|--------------|-------|
| Baud         | 9600  |
| Data bits    | 8     |
| Parity       | None  |
| Flow control | None  |

## Memory specifications

| Memory        | Type       | Size  |
|---------------|------------|-------|
| Boot Flash    |            | 4 MB  |
| Compact Flash | e-USB      | 16 GB |
| Main Memory   | DDR3 SDRAM | 16 GB |

## Regulatory compliance (EMC)

- FCC Part 15, Subpart B (Class A)
- EN 55022 (Class A)
- EN 55024 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. 60950-1-07/UL60950-1 - Safety of Information Technology Equipment
- EN 60825-1 Safety of Laser Products - Part 1: Equipment Classification, Requirements and User's Guide
- EN 60825-2 Safety of Laser Products - Part 2: Safety of Optical Fibre Communications Systems
- EN 60950-1, IEC 60950-1 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

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### 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/IEC61000-3-2 (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.

## 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.

## VCCI statement

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

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

## Germany

Machine noise information regulation - 3. GPSGV, the highest sound pressure level value is 88.0 dB(A) in accordance with EN ISO 7779.

Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 88.0 dB(A) gemäss EN ISO 7779.





# Cautions and Danger Notices

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- [Cautions](#)..... 121
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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

**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

**Make sure the airflow around the front, sides, 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.

---



**CAUTION**

**Ensure that the airflow direction of the power supply unit matches that of the installed fan tray. The power supplies and fan trays are clearly labeled with either a green arrow with an "E", or an orange arrow with an "I."**

---

VORSICHT      Vergewissern Sie sich, dass die Luftstromrichtung des Netzteils der eingebauten Lüftereinheit entspricht. Die Netzteile und Lüftereinheiten sind eindeutig mit einem grünen Pfeil und dem Buchstaben "E" oder einem orangefarbenen Pfeil mit dem Buchstaben "I" gekennzeichnet.

---

MISE EN GARDE      Veillez à ce que le sens de circulation de l'air du bloc d'alimentation corresponde à celui du tiroir de ventilation installé. Les blocs d'alimentation et les tiroirs de ventilation sont étiquetés d'une flèche verte avec un "E" ou d'une flèche orange avec un "I".

---

PRECAUCIÓN      Asegúrese de que la dirección del flujo de aire de la unidad de alimentación se corresponda con la de la bandeja del ventilador instalada. Los dispositivos de alimentación y las bandejas del ventilador están etiquetadas claramente con una flecha verde y una "E" o con una flecha naranja y una "I".

---



**CAUTION**

**If you observe that the switch has powered down approximately two minutes after a power supply replacement, it is likely because the new power supply has a mismatched airflow. Check your console for error messages.**

---

VORSICHT      Falls Sie feststellen, dass der Switch ca. 2 Minuten nach Austausch des Netzteils heruntergefahren wird, ist die mögliche Ursache, dass das neue Netzteil für einen Luftstrom in der falschen Richtung ausgelegt ist. Prüfen Sie auf der Konsole, ob Fehlermeldungen vorliegen.

---

MISE EN GARDE      Si vous remarquez que le commutateur s'éteint deux minutes après le remplacement d'un bloc d'alimentation, il est probable que le nouveau bloc d'alimentation ait un flux d'air différent de l'ancien. Vérifiez que la console n'affiche aucun message d'erreur.

---

PRECAUCIÓN      Si observa que el conmutador se ha apagado aproximadamente dos minutos después del cambio de la fuente de alimentación, es posible que se deba a que la nueva fuente de alimentación tenga un flujo de aire incompatible. Revise la consola para ver si hay mensajes de error.

---



**CAUTION**

**This document describes how to change field-replaceable units (FRUs) for units with either a port-side air exhaust or a port-side air intake. You must replace a failed FRU with a FRU of the same type. This applies to both power supplies and fan assemblies. A new FRU must have the same part number (P/N) as the FRU being replaced. The manufacturing P/N is located on the top of the FRU. The P/N ends in either -F (front-to-rear airflow) or -R (rear-to-front airflow). You must use a replacement FRU that has the same airflow designator with the part number.**

---

**VORSICHT** Das vorliegende Dokument erläutert, wie Austauschkomponenten (FRUs) in Geräten ersetzt werden, bei denen entweder der Luftauslass oder der Lufteinlass auf der Portseite liegt. Ausgefallene FRUs müssen stets durch FRUs desselben Typs ersetzt werden. Dies gilt sowohl für Netzteile als auch für Lüftereinheiten. Neue FRUs müssen stets dieselbe Teilenummer wie die ersetzten FRUs aufweisen. Die Hersteller-Teilenummer befindet sich auf der Oberseite der FRU. Die Teilenummer endet entweder auf „-F“ (Luftstrom von der Vorderseite des Geräts zur Rückseite) oder auf „-R“ (Luftstrom von der Rückseite des Geräts zur Vorderseite). Austauschteile müssen stets Teilenummern mit demselben Kennbuchstaben für den Luftstrom wie das auszutauschende Teil aufweisen.

---

**MISE EN GARDE** Ce document décrit comment changer les pièces détachées des unités qui comportent un refroidissement par une entrée ou une sortie d'air côté port. Vous devez remplacer une pièce détachée défectueuse par une autre du même type. Cela s'applique aux blocs d'alimentation et aux ventilateurs. La pièce détachée doit avoir la même référence que l'ancienne. La référence du fabricant se trouve sur le dessus de la pièce détachée. La référence se termine par -F (flux d'air de l'avant vers l'arrière) ou par -R (flux d'air de l'arrière vers l'avant). Vous devez utiliser une pièce détachée dont l'indicatif de flux d'air est le même.

---

**PRECAUCIÓN** Este documento describe cómo cambiar las unidades reemplazables sobre el terreno (FRU, por sus siglas en inglés) por unidades con salida o entrada de aire por el lado de los puertos. La unidad FRU averiada debe cambiarse por otra del mismo tipo. Esto aplica a las fuentes de alimentación y a los módulos de ventilación. La nueva unidad FRU debe tener el mismo número de parte (P/N) que la unidad FRU que se va a sustituir. El P/N de fabricación se encuentra en la parte superior de la unidad FRU. El P/N termina en -F (flujo de aire de adelante hacia atrás) o -R (de atrás hacia adelante). Debe utilizar una unidad FRU de repuesto que tenga la misma designación de flujo de aire que el número de parte reemplazado.

---

**CAUTION**

**Because the cooling system relies on pressurized air, do not leave any of the power supply and fan assembly slots empty longer than two minutes while the switch is operating. If a power supply or fan assembly fails, leave it in the switch until it can be replaced.**

---

**VORSICHT** Das Kühlsystem beruht auf Überdruck. Lassen Sie die Einschübe für Netzteile und Lüfter daher nicht länger als zwei Minuten unbelegt, während der Switch in Betrieb ist. Falls ein Netzteil oder ein Lüfter ausfällt, belassen Sie die Komponente im Switch, bis sie ausgetauscht werden kann.

---

**MISE EN GARDE** Comme le système de refroidissement repose sur l'air pressurisé, ne laissez aucun logement du bloc d'alimentation ou du ventilateur vide plus de deux minutes, lorsque le commutateur est utilisé. Si un bloc d'alimentation ou un ventilateur est défectueux, laissez-le dans le commutateur jusqu'à ce qu'il puisse être remplacé.

---

**PRECAUCIÓN** Como el sistema de refrigeración depende del aire presurizado, no deje ninguna de las ranuras de los módulos de fuente de alimentación y ventiladores vacías durante más de dos minutos mientras el conmutador esté funcionando. Si se produce una avería en el módulo de fuente de alimentación y ventiladores deje el dispositivo en cuestión en el conmutador hasta que lo pueda cambiar.

---

**CAUTION**

**Do not install the device in an environment where the operating ambient temperature might exceed 40°C (104°F).**

---

---

|          |  |
|----------|--|
| VORSICHT | Das Gerät darf nicht in einer Umgebung mit einer Umgebungsbetriebstemperatur von über 40°C (104°F) installiert werden. |
|----------|--|

---

|               |  |
|---------------|--|
| MISE EN GARDE | N'installez pas le dispositif dans un environnement où la température d'exploitation ambiante risque de dépasser 40°C (104°F). |
|---------------|--|

---

|            |  |
|------------|--|
| PRECAUCIÓN | No instale el instrumento en un entorno en el que la temperatura ambiente de operación pueda exceder los 40°C (104°F). |
|------------|--|

---



**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.**

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|          |   |
|----------|---|
| 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. |
|------------|--|

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**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.**

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|          |  |
|----------|--|
| VORSICHT | Wenden Sie beim Einbau keine Gewalt an. Wenn sich ein Netzteil oder eine Lüftereinheit nicht einfach einsetzen lässt, überprüfen Sie zunächst, ob die Ausrichtung korrekt ist. |
|----------|--|

---

|               |   |
|---------------|---|
| MISE EN GARDE | Ne forcez pas l'installation. Si le bloc d'alimentation ou le ventilateur ne glisse pas facilement dans leur logement, assurez-vous qu'il soit correctement orienté avant de continuer. |
|---------------|---|

---

|            |  |
|------------|--|
| PRECAUCIÓN | No fuerce la instalación. Si el módulo de fuente de alimentación y ventiladores no se deslizan con facilidad hacia el interior, asegúrese de que la orientación sea correcta antes de continuar. |
|------------|--|

---



**CAUTION**

**Carefully follow the mechanical guides on each side of the power supply slot and make sure the power supply is properly inserted in the guides. Never insert the power supply upside down.**

---

|               |  |
|---------------|--|
| VORSICHT      | Beachten Sie mechanischen Führungen an jeder Seite des Netzteils, das ordnungsgemäß in die Führungen gesteckt werden muss. Das Netzteil darf niemals umgedreht eingesteckt werden.   |
| MISE EN GARDE | Suivez attentivement les repères mécaniques de chaque côté du slot du bloc d'alimentation et assurez-vous que le bloc d'alimentation est bien inséré dans les repères. N'insérez jamais le bloc d'alimentation à l'envers.                     |
| PRECAUCIÓN    | Siga cuidadosamente las guías mecánicas de cada lado de la ranura del suministro de energía y verifique que el suministro de energía está insertado correctamente en las guías. No inserte nunca el suministro de energía de manera invertida. |

**CAUTION**

**To protect the serial port from damage, keep the cover on the port when not in use.**

|               |   |
|---------------|---|
| VORSICHT      | Um den seriellen Anschluss vor Beschädigungen zu schützen, sollten Sie die Abdeckung am Anschluss belassen, wenn er nicht verwendet wird. |
| MISE EN GARDE | Mettre le bouchon de protection sur le port série lorsqu'il ne sert pas pour éviter de l'endommager.                                      |
| PRECAUCIÓN    | Para evitar que se dañe el puerto serie, mantenga la cubierta colocada sobre el puerto cuando no lo utilice.                              |

**CAUTION**

**For a DC system, use grounding wire of at least 8 American Wire Gauge (AWG). The grounding wire should be attached to the DC input connector, the other end connects to the building ground.**

|               |  |
|---------------|--|
| VORSICHT      | Für ein Gleichstromsystem verwenden Erdungskabel von mindestens 8 AWG (amerikanische Norm für Drahtquerschnitte). Der Erdungsdraht sollte DC-Eingang angeschlossen werden, das andere Ende verbindet sich mit dem Baugrund.                              |
| MISE EN GARDE | Pour les systèmes d'alimentation courant continu (C.C), utilisez un fil de mise à terre d'au moins de 8 AWG. Le fil de mise à terre doit être relié au connecteur du circuit d'alimentation; l'autre extrémité se connecte à la prise terre du bâtiment. |
| PRECAUCIÓN    | Para un sistema de CC, usar alambre de puesta a tierra de por lo menos 8 AWG (American Wire Gauge). El cable de tierra debe ser conectada a enchufe CC; el otro extremo se conecta a la tierra del edificio.   |

**Electrical cautions****CAUTION**

**For a DC system, use grounding wire of at least 8 American Wire Gauge (AWG). The grounding wire should be attached to the DC input connector, the other end connects to the building ground.**

---

|          |   |
|----------|---|
| VORSICHT | Für ein Gleichstromsystem verwenden Erdungskabel von mindestens 8 AWG (amerikanische Norm für Drahtquerschnitte). Der Erdungsdraht sollte DC-Eingang angeschlossen werden, das andere Ende verbindet sich mit dem Baugrund. |
|----------|---|

---

|               |  |
|---------------|--|
| MISE EN GARDE | Pour les systèmes d'alimentation courant continu (C.C), utilisez un fil de mise à terre d'au moins de 8 AWG. Le fil de mise à terre doit être relié au connecteur du circuit d'alimentation; l'autre extrémité se connecte à la prise terre du bâtiment. |
|---------------|--|

---

|            |  |
|------------|--|
| PRECAUCIÓN | Para un sistema de CC, usar alambre de puesta a tierra de por lo menos 8 AWG (American Wire Gauge). El cable de tierra debe ser conectada a enchufe CC; el otro extremo se conecta a la tierra del edificio. |
|------------|--|

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**CAUTION**

**For a DC system, use a grounding wire of at least 12 American Wire Gauge (AWG). The 12 AWG wire should be attached to an agency-approved crimp connector crimped with the proper tool.**

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|          |   |
|----------|---|
| VORSICHT | Für ein Gleichstromsystem ist ein Erdungsdraht (wenigstens 12 AWG) erforderlich. Ein 12 AWG Draht muss mit dem richtigen Werkzeug an einen zugelassenen Crimpverbinder angebracht werden. |
|----------|---|

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|               |  |
|---------------|--|
| MISE EN GARDE | Pour les systèmes C.C., utilisez un fil de mise à la terre d'au moins 12 AWG (American Wire Gauge). Ce fil de 12 AWG doit être relié à un connecteur à sertissage homologué, serti avec l'outil approprié. |
|---------------|--|

---

|            |  |
|------------|--|
| PRECAUCIÓN | Para un sistema de CC, utilice un cable de conexión a tierra de calibre de cable norteamericano (AWG) número 12. El cable 12 AWG deberá acoplarse a un conector engarzado aprobado y engarzado con la herramienta apropiada. |
|------------|--|

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**CAUTION**

**For the DC input circuit to the system, make sure there is a 20 Amp circuit breaker, minimum -48 VDC, double pole, on the input terminal block to the power supply. The input wiring for connection to the product should be copper wire, 12 AWG, marked VW-1, and rated minimum 90°C.**

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|          |   |
|----------|---|
| VORSICHT | Für den Eingangs-Gleichstromkreis zum System ist ein 20 A maximum -48 V DC, doppelpoliger Stromkreisunterbrecher am Eingang zur Reihenklemme zu installieren. Bei der Eingangsverdrahtung zum Anschluss des Produkts sollte es sich um einen 12 AWG-Kupferdraht (VW-1) und einer Mindestnenntemperatur von 90° C handeln. |
|----------|---|

---

|               |   |
|---------------|---|
| MISE EN GARDE | Pour le circuit d'alimentation C.C du système, assurez-vous de la présence d'un disjoncteur de 20 ampères, maximum -48 V C.C., double coupure, sur l'entrée vers le bloc d'alimentation. Les câbles d'alimentation pour le produit doivent être en fils de cuivre, 12 AWG (American Wire Gauge), marqués VW-1 et classés 90 degrés Celsius. |
|---------------|---|

---

|            |  |
|------------|--|
| PRECAUCIÓN | Para el circuito de entrada de CC al sistema, verifique que existe un cortacircuitos catalogado de 20 amperios, como máximo, -48 VCC, bipolar, en la entrada al bloque terminal. El cableado de entrada para la conexión al producto deberá ser de cable de cobre catalogado, 12 AWG, marcado con VW-1, y tener una capacidad nominal mínima para 90 grados centígrados. |
|------------|--|

---

**CAUTION**

**For the DC input circuit to the system, make sure there is a 40-amp circuit breaker, minimum 60 VDC, double pole, on the input to the terminal block. The input wiring for connection to the product should be copper wire, 8 AWG, marked VW-1, and rated a minimum of 90 degrees celsius.**

---

VORSICHT Für den Eingangs-Gleichstromkreis zum System ist ein 40 A, minimum 60 VDC, doppelpoliger Stromkreisunterbrecher am Eingang zur Reihenklemme zu installieren. Bei der Eingangsverdrahtung zum Anschluss des Produkts sollte es sich um einen 8 AWG-Kupferdraht (VW-1) und einer Mindesttemperatur von 32° handeln.

---

MISE EN GARDE Pour le circuit d'alimentation C.C du système, assurez-vous de la présence d'un disjoncteur de 40 ampères, minimum 60 V C.C., double coupure, sur l'entrée vers le bloc d'alimentation. Les câbles d'alimentation pour le produit doivent être en fils de cuivre, 8 AWG (American Wire Gauge), marqués VW-1 et classés 90 degrés Celsius.

---

PRECAUCIÓN Para el circuito de entrada de CC al sistema, verifique que existe un cortacircuitos catalogado de 40 amperios, como mínimo, 60 VCC, bipolar, en la entrada al bloque terminal. El cableado de entrada para la conexión al producto deberá ser de cable de cobre catalogado, 8 AWG, marcado con VW-1, y tener una capacidad nominal mínima para 90 grados centígrados.

**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**

**All devices with DC power supplies are intended for installation in restricted access areas only. A restricted access area is where access can be gained only by 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 Bereich, zu dem nur Wartungspersonal mit Spezialwerkzeug, Schlüssel oder anderen Sicherheitsvorrichtungen Zugang hat. Dieser Zugang wird von für den Bereich zuständigen Personen überwacht.

---

|               |   |
|---------------|---|
| MISE EN GARDE | Tous les dispositifs avec bloc d'alimentation C.C. sont conçus pour l'installation dans des zones à accès réglementé uniquement. Une zone à accès réglementé est une zone dont l'accès n'est possible qu'au personnel de service 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 instrumentos con suministros de corriente continua han sido diseñados únicamente para instalación en áreas restringidas. 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**

**Before plugging a cable into to 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**

**DC return shall be isolated from the chassis ground (DC-I) when connections to the power supply are made.**

---

|          |  |
|----------|--|
| VORSICHT | Der Gleichstromrücklauf soll von der Gehäuseerdung isoliert werden (DC-I), wenn Verbindungen zur Stromversorgung hergestellt werden. |
|----------|--|

---

|               |   |
|---------------|---|
| MISE EN GARDE | La prise de terre de courant continu (CC) doit être isolée de la masse (CC-I) lorsqu'elle est connectée au bloc d'alimentation. |
|---------------|---|

---

|            |  |
|------------|--|
| PRECAUCIÓN | El retorno de CC debe estar aislado de la toma de tierra de chasis (CC-I) cuando se realicen conexiones con la fuente de alimentación. |
|------------|--|

---



**CAUTION**

**For the NEBS-compliant installation of a Brocade device with AC or DC systems, use a ground wire of at least 6 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 mit Gleich- oder Wechselstrom betriebenen muss zur Erdung ein Kabel der Stärke von mindestens 6 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 avec système alimentation CC ou CA à la norme NEBS, utilisez un câble de mise à la terre d'au moins 6 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 sertir 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 con sistemas de CA o CC sea conforme a la certificación NEBS, utilice un cable de conexión a tierra de calibre AWG 6 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. |

## 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 paragraphe Danger indique des conditions ou des situations potentiellement mortelles ou extrêmement dangereuses. Des labels de sécurité sont posés 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.                 |
| 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.                          |

---

## 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 fibres optiques 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 825-2. 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, und IEC 825-2 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 la norme IEC 825-2. 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 la norma IEC 825-2 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 les instruments optiques. Produits de laser de la classe 1M.

---

PELIGRO Radiacion de Laser. No vea directamente con Instrumentos Opticos. Clase 1M de Productos de Laser.

---

## Electrical dangers



### DANGER

***Connect the power cord only to a grounded outlet.***

---

GEFAHR Schließen Sie das Netzkabel nur an eine geerdete Steckdose an.

---

DANGER Le cordon d'alimentation ne doit être raccordé qu'à une prise de courant mise à la terre.

---

PELIGRO Conecte el cable de alimentación únicamente a una toma de corriente con conexión a tierra.

---



### 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

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

---

GEFAHR Dieses Produkt ist für die Stromversorgung über ein IT-Stromversorgungssystem mit einer Netzspannung von 230 V Phase zu Phase konzipiert. Bei einem Anschluss an ein IT-Stromversorgungssystem steht das Gerät selbst dann unter Spannung, wenn die Schutzvorrichtung ausgelöst wurde.

---

DANGER Ce produit est conçu pour un système d'alimentation électrique avec une tension de 230 Ven mono-phase. Après fonctionnement du dispositif de protection, l'équipement est toujours sous tension s'il est connecté à un système d'alimentation électrique

---

PELIGRO Este es un producto diseñado para sistemas de alimentación informático con un voltaje de haber utilizado el dispositivo de protección, el equipo sigue teniendo voltaje si está conectado a un sistema de alimentación informático.

---

## Dangers related to equipment weight



### **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**

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

---

GEFAHR Stellen Sie sicher, dass das Gestell für die Unterbringung des Geräts auf angemessene Weise gesichert ist, so dass das Gestell oder der Schrank nicht wackeln oder umfallen kann.

---

DANGER Vérifiez que le bâti abritant le dispositif est bien fixé afin qu'il ne devienne pas instable ou qu'il ne risque pas de tomber.

---

PELIGRO Verifique que el bastidor que alberga el instrumento está asegurado correctamente para evitar que pueda hacerse inestable o que caiga.

---

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