

ExtremeSwitching VDX 6940 Hardware Installation Guide

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Preface

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Document conventions

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

Notes, cautions, and warnings

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

NOTE

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

ATTENTION

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



CAUTION

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



DANGER

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

Text formatting conventions

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

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

Format	Description
	Identifies command syntax examples.

Command syntax conventions

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

Convention	Description
bold text	Identifies command names, keywords, and command options.
<i>italic text</i>	Identifies a variable.
[]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{ x y z }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
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.

Extreme resources

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

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

Document feedback

Quality is our first concern at Extreme, and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you.

You can provide feedback in two ways:

- Use our short online feedback form at <http://www.extremenetworks.com/documentation-feedback-pdf/>
- Email us at internalinfodev@extremenetworks.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.

Contacting Extreme Technical Support

As an Extreme customer, you can contact Extreme Technical Support using one of the following methods: 24x7 online or by telephone. OEM customers should contact their OEM/solution provider.

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

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

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

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

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Supported hardware and software

This document is applicable to the following ExtremeSwitching VDX devices and Extreme Network operating systems.

Device	First supported OS
VDX 6940-36Q	Network OS v6.0.0
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)
Fan assemblies				
XBR-FAN-40-F	40 MM nonport side exhaust fan	VDX 6940-36Q	Network OS 6.0.0	Active
XBR-FAN-40-R	40 MM port-side exhaust fan	VDX 6940-36Q	Network OS 6.0.0	Active
XBR-FAN-80-01-F	80 MM nonport side exhaust fan	VDX 6940-144S	Network OS 6.0.1	Active
XBR-FAN-80-01-R	80 MM port side exhaust fan	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	VDX 6940-36Q, VDX 6740T	Network OS 6.0.0	Active
XBR-500WPSAC-01-F	AC 500W power supply, nonport side exhaust	VDX 6940-36Q, VDX 6740T	Network OS 6.0.0	Active
RPS9DC +E	DC 500W power supply, exhaust	VDX 6940-36Q	Network OS 6.0.0	Active
RPS9DC+I	DC 500W power supply, intake	VDX 6940-36Q	Network OS 6.0.0	Active
XBR-1100WPSAC-F	AC 1100W power supply, nonport side exhaust	VDX 6940-144S	Network OS 6.0.1	Active
XBR-1100WPSAC-R	AC 1100W power supply, port side exhaust	VDX 6940-144S	Network OS 6.0.1	Active

TABLE 2 Power supplies (continued)

Part number	Short description	Where used	First supported (OS)	Last supported (OS)
XBR-1100WPSDC-01-F	DC 1100W power supply, nonport side exhaust	VDX 6940-144S	Network OS 6.0.1	Active
XBR-1100WPSDC-01-R	DC 1100W power supply, port side exhaust	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	VDX 6940-144S and VDX 6940-36Q	N/A	Active
XBR-R000294	Universal two-post rack kit	VDX 6940-144S and VDX 6940-36Q	N/A	Active

What's new in this document

On October 30, 2017, Extreme Networks, Inc. acquired the data center networking business from Brocade Communications Systems, Inc. This document has been updated to remove or replace references to Brocade Communications, Inc. with Extreme Networks, Inc., as appropriate.

Device Overview

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Hardware features

There are two ExtremeSwitching VDX 6940 models provide unique port configurations and hardware features that allow them to function in a spine and leaf architecture.

- The VDX 6940-36Q provides up to 36 40 GbE quad small form-factor pluggable (QSFP+) ports for connecting devices in a data center 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 SFP breakout mode (also referred to as 4x10 GbE breakout mode) to provide a total of 144 10 GbE ports for the device. For details on configuring SFP breakout mode, refer to the "SFP breakout" section of the *Extreme Network OS Management Configuration Guide*.

- The VDX 6940-144S provides up to 12 40 GbE QSFP+ ports and 96 fixed 1/10 GbE ports for connecting devices in a data center fabric. The 1/10 GbE ports support SFP+ and TSFP+ optics.

Each 40 GbE port can be reconfigured as four 10 GbE ports in SFP breakout mode to provide a total of 144 10 GbE ports for the device. For details on configuring SFP breakout mode, refer to the "SFP breakout" section of the *Extreme Network OS Management Configuration Guide*.

Using the dual-personality port feature, dual-personality 40/100 GbE ports can be reconfigured to provide the following port combinations:

- 12 40 GbE QSFP ports and no 100 GbE QSFP28 port
- 9 40 GbE QSFP ports and 1 100 GbE QSFP28 port
- 6 40 GbE QSFP ports and 2 100 GbE QSFP28 ports
- 3 40 GbE QSFP ports and 3 100 GbE QSFP28 ports
- No 40 GbE QSFP ports and 4 100 GbE QSFP28 ports

To configure the dual-personality port feature, refer to the "Dual personality ports" section of the *Extreme Network OS Management Configuration Guide*.

- 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. To configure a dual personality port for 100 GbE operation, all three ports in the dual-personality port group must have ports on demand (POD) reservations allocated from a 40 GbE Port Upgrade license.
- 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 the VDX 6940 is Extreme VCS™ technology, which includes virtual cluster switching, a set of technologies that allows users to create flatter, virtualize, and converged data center networks. Extreme 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. For full details and configuration procedures for VCS fabrics, refer to the *Extreme Network OS Management Configuration Guide*.
- The VDX 6940 can also be deployed in IP fabrics. An IP fabric can be described as a collection of discrete Layer 3 elements (such as switch-routers) arranged in a spine-leaf network. These elements exchange Layer 2 and Layer 3 database information

to provide a flexible, non-blocking and scalable framework while retaining the semantics of a single logical switch. There can be competing protocols for exchanging this distributed database across such discrete elements. Spine-leaf networks are designed to be a three-stage architecture, an ingress stage, a middle stage, and an egress stage. The concept is that there are multiple paths for the call to be switched through the network so that traffic can always connect and not be blocked. For full details and configuration procedures for IP fabrics, refer to the *Extreme Network OS IP Fabrics Configuration Guide*.

4x10 GbE breakout mode support

Each 40 GbE port on the VDX 6940 can be configured for breakout mode to provide four 10 GbE interfaces. You can administer and operate the 10 GbE interfaces as any other SFP port.

Optical and twinaxial copper 4x10 GbE QSFP breakout cables provide a connection from the 40 GbE port to four 10 GbE SFP ports on other devices. The 10 GbE 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 mode as there is no need to reboot the system to enable breakout mode after breakout mode is configured. For more information on configuring breakout mode, refer to the "SFP breakout" section of the *Extreme Network OS Management Configuration Guide*.

NOTE

Breakout mode is not supported on VDX 6940-144S 100 GbE ports.

For a information on 4x10 GbE QSFP to 4 SFP optical and copper cable that support breakout mode, refer to the online matrices referenced in [Supported transceivers](#) on page 18.

Extreme Networks trunking support

Extreme Network OS supports Extreme 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.

Extreme Networks trunking is supported on the following port types:

- 10 GbE ports
- 40 GbE ports in 40 GbE mode
- 10 GbE interfaces when SFP breakout mode (also referred to as 8x10 GbE breakout mode) is configured on 40 GbE ports.

NOTE

Trunking is not supported on 100 GbE ports.

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 SFP breakout mode - 10 Gbps.
 - 10 GbE ports - 10 Gbps
- Ports forming a trunk must be in the same trunk group. Trunk groups are different for the VDX 6940-36Q and 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 in SFP breakout mode.
 - Three 40 GbE ports (40 GbE mode)
- Trunking is supported between VDX 6940 40 GbE ports and VDX 8770 ports only when all ports are configured in SFP breakout mode. Trunking is not supported between these devices when the 40 GbE ports are configured in 40 GbE mode.
- 40 GbE and 10 GbE trunking is supported between VDX 6940 and VDX 6740 devices.
- MCAST LAG spraying is not supported on trunks.
- Standard 802.1ag LAG and Extreme Networks 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 SFP breakout mode (also referred to as 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 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 VDX 6940-36Q

Trunk group	Color label by port	GbE port number	Port speeds
TG1	Blue	1 through 9	40 Gbps - 40 GbE mode 10 Gbps - SFP breakout mode
TG2	Yellow	10 through 18	40 Gbps - 40 GbE mode 10 Gbps - SFP breakout mode
TG3	Purple	19 through 27	40 Gbps - 40 GbE mode 10 Gbps - SFP breakout mode
TG4	Green	28 through 36	40 Gbps - 40 GbE mode 10 Gbps - SFP breakout mode

TABLE 5 Trunk groups in the VDX 6940-144S

Trunk group	Color label by port	GbE port number	Port speeds
TG-1	Blue	1 through 24 61 through 72	10 Gbps 10 Gbps
TG-2	Yellow	25 through 48 73 through 84	10 Gbps 10 Gbps
TG-3	Green	85 through 96 and 40 GbE ports 97 through 102 if breakout mode is configured	10 Gbps
TG-3A	Green	103 through 108	40 Gbps - 40 GbE mode
	NOTE Ports in this group cannot be trunked with TG-3 ports.		
TG-4	Purple	49 through 60 and 40 GbE ports 97 through 102 if	10 Gbps

TABLE 5 Trunk groups in the VDX 6940-144S (continued)

Trunk group	Color label by port	GbE port number	Port speeds
		breakout mode is configured	
TG-4A NOTE Ports in this group cannot be trunked with TG-4 ports.	Purple	97 through 102	40 Gbps - 40 GbE mode
TG-4A NOTE Ports in this group cannot be trunked with TG-4 ports.	Purple	97 through 102	40 Gbps - 40 GbE mode 10 Gbps - SFP breakout mode

NOTE

For a diagram and information on VDX 6940 device port numbering, refer to [VDX 6940-36Q port numbering](#) on page 26.

For more information on Extreme Trunking and enabling and disabling trunking, refer to the *Extreme Network OS Management Configuration Guide*.

Dual personality ports

The dual personality port feature for the VDX 6940-144S allows ports 97, 98, 103, and 104 to be configured as 40 GbE QSFP+ or 100 GbE QSFP28 ports provided appropriate transceivers are installed.

Four rows of 40 GbE ports are located on the right side of the VDX 6940-144S front panel with three ports per row. Each row is assigned a dual personality group number of 1 through 4. The following table shows port group mapping to the dual personality port and other ports in the row. Refer to [Dual personality ports and port groups](#) on page 27 for the specific location of dual personality ports and port groups on the device.

TABLE 6 Dual personality port groups

Port Group	40/100 GbE port # (dual personality port)	40 GbE port #	40 GbE port #
1	97	99	101
2	98	100	102
3	103	105	107
4	104	106	108

The group number is used in Extreme Network OS commands for configuration. When you configure 100 GbE mode for a port group, only the dual personality port operates at 100 GbE, if the appropriate 100 GbE QSFP28 transceiver is installed in that port. The remaining two 40 GbE ports in the group are disabled. Conversely, if you reconfigure the port group from 100 GbE to 40 GbE operation, the dual personality port will transition to 40 GbE mode. All three ports in the group will come back online at 40 GbE operation if appropriate 40 GbE optics transceivers installed.

The following port configurations are possible for the twelve 40 GbE ports on the device:

- 12 40 GbE QSFP ports and No 100 GbE QSFP28 ports

- 9 40 GbE QSFP ports and 1 100 GbE QSFP28 port
- 6 40 GbE QSFP ports and 2 100 GbE QSFP28 ports
- 3 40 GbE QSFP ports and 3 100 GbE QSFP28 ports
- No 40 GbE QSFP ports and 4 100 GbE QSFP28 ports

Ports configured for 100 GbE operation with supported 100 GbE QSFP28 media installed can connect with 100 GbE CFP2 transceivers on the ExtremeSwitching VDX 8770 6x100 GbE line card port through a CFP2 to QSFP28 Conversion Module. This module plugs into the line card port cage as CFP2 transceiver and a QSFP28 transceiver is installed on the input side for connection to VDX 6940-144S 100 GbE QSFP28 ports. The VDX 8770-8 line card and VDX 6940-144S ports connect with optical 40 GbE QSFP to QSFP cable using MPO connectors. For more information on the CFP2 to QSFP28 Conversion Module, refer to the ExtremeSwitching *VDX 8770-4* or *ExtremeSwitching VDX 8770-8 Hardware Installation Guides*.

NOTE

100 GbE QSFP28 transceivers do not support breakout mode.

Configure 100 GbE operation on specific dual personality port groups using the **port-group** *rbridge-id/slot/port-group-id* and **mode** *100g* command. You can transition to 40 GbE operation for specific port groups using the **port-group** *rbridge-id/slot/port-group-id* and **mode** *40g* command. To enable 100 GbE or 40 GbE operation, you must reboot the VDX 6940-144S. For details on configuring dual personality ports and displaying port and port group configuration, refer to the "Dual personality ports" section in the *Extreme Network OS Management Configuration Guide*.

Before enabling 100 GbE mode for a port group, perform the following tasks:

- Disable SFP breakout mode (also referred to as 4x10 GbE breakout mode) for all ports in that port group, if configured. Ports must be enabled for 40 GbE mode.
- Disable all ports in the port group.
- Install the appropriate 100 GbE QSFP28 transceiver in the dual-personality port cage for that port group (port 97, 98, 103, or 104).
- Reserve the DPOD for the ports in the port group.

Limitations and considerations

Consider the following when configuring and using dual-personality ports and port groups.

- When you enable 100 GbE mode for a port group, the leftmost port in the group (dual personality port 97, 98, 103, or 104) will be enabled for 100 GbE operation and the other ports in the port group will be disabled.
- Ports with supported 40 GbE QSFP transceivers that are not in a dual personality port group configured for 100 GbE operation can function in 40 GbE mode and can be configured SFP breakout mode (also referred to as 4x10 GbE breakout mode).
- To transition port 97, 98, 103, or 104 from 100 GbE to 40 GbE operation, you must install a supported 40 GbE QSFP+ transceiver in that port. You can transition a port group from 100 GbE operation to 40 GbE operation and leave the 100 GbE QSFP128 transceiver installed in port 97, 98, 103, or 104. The other ports in the port group will operate at 40 GbE and can be configured for SFP breakout mode, however the 100 GbE dual personality port will be unusable unless you replace the transceiver with a qualified 40 GbE transceiver.
- Any configuration applied to ports in a port group will be removed when you change to 100 GbE mode or 40 GbE mode.
- A specific dual personality port license is not required, but to enable a dual-personality port in a port group for 100 GbE operation, all three ports in the port group must have ports on demand (POD) reservations allocated from a 40 GbE Port Upgrade license. Refer to [Dual personality ports and port groups](#) on page 27 for the location of dual-personality ports and port groups.

- Trunking is not supported on 100 GbE ports.
- 100 GbE QSFP28 SR4 optics support Forward error correction (FEC). FEC enhances data reliability by inserting redundant data, called error correcting code, into data being transmitted or stored. FEC is enabled by default on the Extreme QSFP28 SR4 optics.

Supported transceivers

The VDX 6940-36Q provides up to 36 ports that support 40 GbE quad small form-factor pluggable transceivers (QSFP+). The VDX 6940-144S has the following ports:

- Up to 12 ports that support 40 GbE QSFP+ ports. Using the dual-personality port feature, specific 40 GbE ports can be reconfigured to support 100 GbE QSFP28 transceivers.
- Up to 96 ports that support fixed 1/10 GbE transceivers. These ports also support SFP+ direct-attached Twinax copper and active and passive optical cables.

VDX 6940-144S fixed 10 GbE ports support tunable SFP+ (TSFP+) transceivers. If used, TSFP+ transceivers must be installed in the port at each end of a link and "tuned" to the same wavelength. If not, the link may come online, but operation may be unpredictable. If wavelength difference exceeds a specified limit, a RASLOG message occurs and the port is taken offline. You can configure wavelengths for installed transceivers using channel numbers from 1 to 102 that correspond to wavelengths from 1568.77 to 1528.38 nm using the **tunable-optics sfpp channel** *channel number* command. For details on using this and related commands, refer to the "Tunable SFP+ optics" section of the *Extreme Network OS Management Configuration Guide*.

For up-to-date details on supported transceivers for all VDX 6940 models, refer to the *ExtremeSwitching VDX Transceiver Support Matrix*. Access this matrix on the www.extremenetworks.com website by selecting *Product and Services* from the menu, scroll down *Transceivers*, and then select *Transceiver Modules*. Also contact your Extreme Networks representative for current transceiver support and ordering information.

- *ExtremeSwitching VDX Transceiver Support Matrix*
- *Extreme Fibre Channel Transceiver Support Matrix*



DANGER

All fiber-optic interfaces use Class 1 lasers.



DANGER

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

License support

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 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 SFP breakout mode (also referred to as 4x10 GbE breakout mode).

The 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 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 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 and the 10 GbE links formed when configuring 40 GbE ports in SFP breakout mode.
- 100 GbE ports - A specific dual personality port license is not required, but to enable a dual-personality port in a port group for 100 GbE operation, all three ports in the port group must have ports on demand (POD) reservations allocated from a 40 GbE Port Upgrade license. Refer to [Dual personality ports and port groups](#) on page 27 for the location of dual-personality ports and port groups.

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

Hardware components

Interface ports, component status LED indicators, and field replaceable units (FRUs) are located on the port side and non-port side of 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 VDX 6940-36Q port supports 10/100/1000 MB.
 - The 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:
 - VDX 6940-36Q - up to 36 40 GbE QSFP ports.
 - VDX 6940-144S - up to 96 fixed 10 GbE ports and 12 40 GbE QSFP ports. Using the Dual-Personality port feature, 40 GbE ports can be reconfigured to provide the following port combinations:
 - > 12 40 GbE QSFP ports and no 100 GbE QSFP28 port
 - > 9 40 GbE QSFP ports and 1 100 GbE QSFP28 port
 - > 6 40 GbE QSFP ports and 2 100 GbE QSFP28 ports
 - > 3 40 GbE QSFP ports and 3 100 GbE QSFP28 ports
 - > No 40 GbE QSFP ports and 4 100 GbE QSFP28 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 SFP breakout mode (also referred to as 4x10 GbE breakout mode), each of the four LEDs illuminate to indicate status of individual 10 GbE lanes.
- When a dual-personality 40/100-GbE port is configured for 100-GbE operation (VDX 6940-144S only), the first of the four LEDs above the port illuminates to indicate 100 GbE status.
- For fixed 10 GbE ports on the 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 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 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 are available for VDX 6940-144S GbE ports:

- Short-range and long-range 40 GbE QSFP+ transceivers.
- Short-range and long-range 10 GbE SFP+ transceivers
- 10 GbE BaseT transceivers
- Short-range and long-range 10 GbE BIDI BXD SFP+ transceivers.
- Short-range, long-range, and CWDM4 100 GbE QSFP28 transceivers.
- 10 GbE passive cables

The following transceivers are supported for VDX 6940-36Q GbE ports:

- Short-range and long-range 40 GbE QSFP+ transceivers.
- 40 GbE passive cables

The following cables are supported on the VDX 6940.

- 4x10 GbE QSFP to 4 SFP optical or twinaxial breakout cable for 40 GbE ports when configured in SFP breakout mode.
- 40 GbE QSFP to QSFP optical or twinaxial cable for connecting ports in non-breakout mode.
- Optical 40GbE QSFP to QSFP 10m AOC cables can be used for 100 GbE port connections on the VDX 6940-144S.
- 10 GbE optical and twinaxial copper cable for connecting 10 GbE ports on the VDX 6940-144S.

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



DANGER

Batteries used for RTC/NVRAM backup are not located in operator-access areas. There is a risk of explosion if a battery is replaced by an incorrect type. Dispose of used components containing batteries according to the local ordinance and regulations.



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

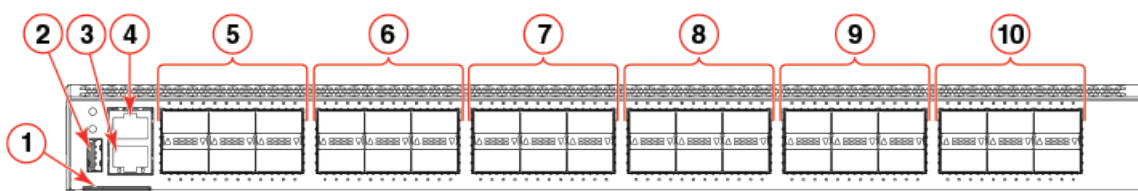
Use the following illustrations to locate ports, LED indicators, and other components on the port side of devices.

Port-side view of VDX 6940-36Q

The port side of the 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 75 for details on port-side LED locations.

FIGURE 1 Port-side view of the VDX 6940-36Q



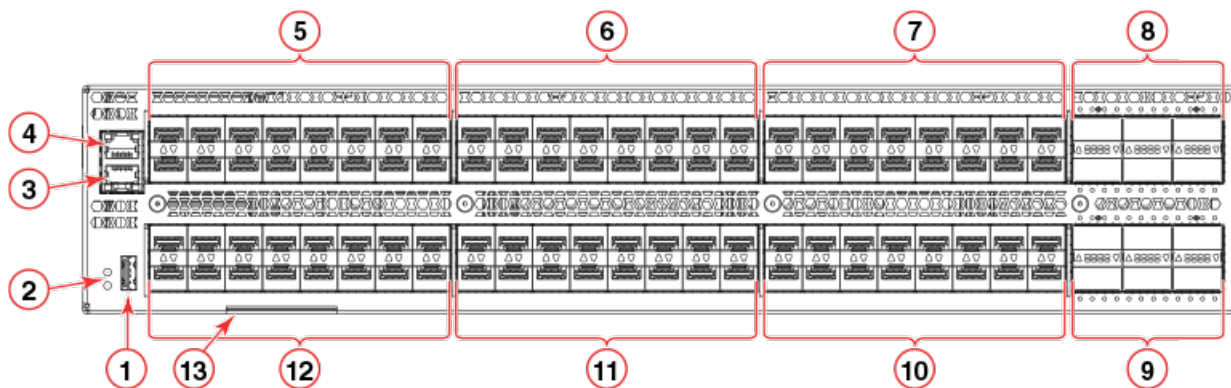
- | | |
|-----------------------------------|-----------------------------|
| 1. Switch ID pull-out tab | 6. 40 GbE QSFP ports 7-12 |
| 2. USB port | 7. 40 GbE QSFP ports 13-18 |
| 3. RJ-45 Ethernet management port | 8. 40 GbE QSFP ports 19-24 |
| 4. RJ-45 serial console port | 9. 40 GbE QSFP ports 25-30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

Port-side view of VDX 6940-144S

The port side of the 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 75 for details on port-side LED locations.

FIGURE 2 Port-side view of 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

NOTE

*Port 97, 98, 103, and 104 are dual-personality ports and can be configured for 100 GbE or 40 GbE operation. Refer to [Dual personality ports and port groups](#) on page 27 for a diagram of 40 GbE and 100 GbE capable ports contained in dual-personality port groups.

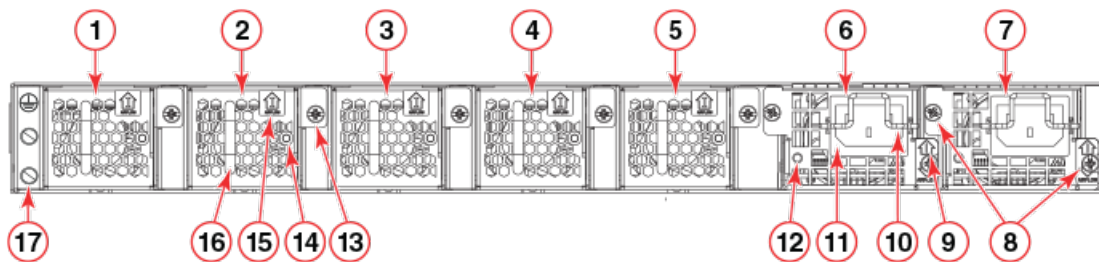
Non-port-side views

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 VDX 6940-36Q. Refer to [LED locations](#) on page 75 for details on LED locations.

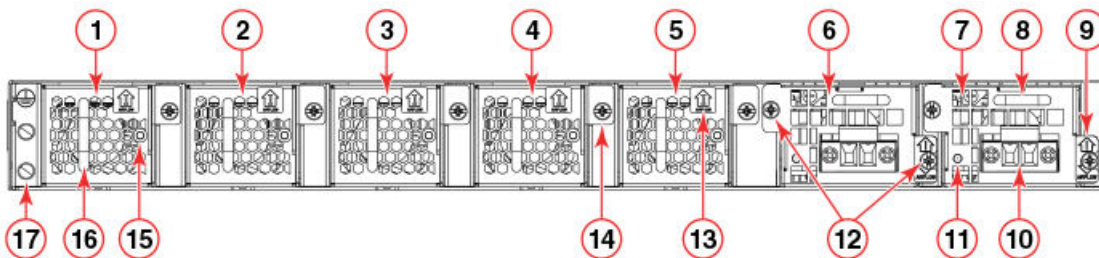
FIGURE 3 Non-port-side view showing AC power supplies



- | | |
|--------------------|----------------------------------|
| 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 | |

The following illustration shows the fan assemblies, DC power supplies, and other components on the non-port side of the VDX 6940-36Q. Refer to [LED locations](#) on page 75 for details on LED locations.

FIGURE 4 Non-port-side view showing DC power supplies

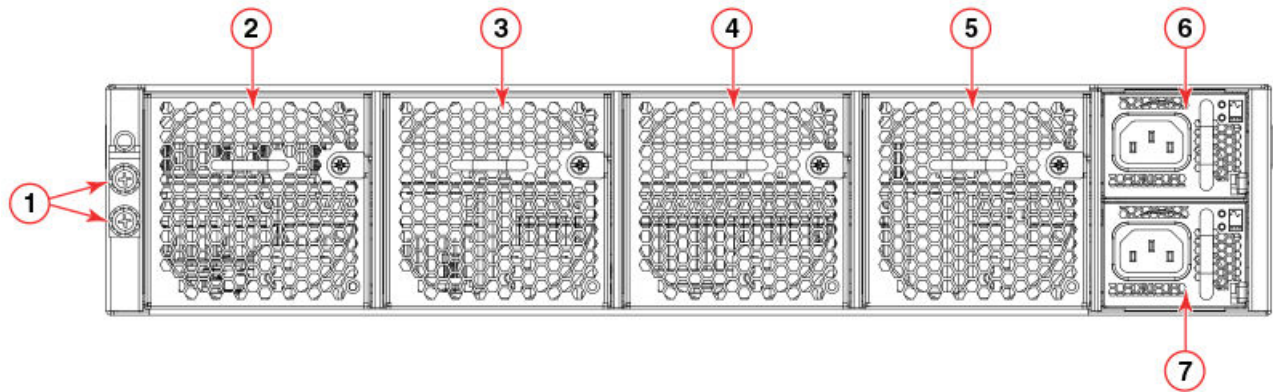


- | | |
|--------------------|----------------------------------|
| 1. Fan #1 | 10. DC wire connectors |
| 2. Fan #2 | 11. Status LED |
| 3. Fan #3 | 12. Captive screws |
| 4. Fan #4 | 13. Airflow label |
| 5. Fan #5 | 14. Fan captive screw |
| 6. Power supply #1 | 15. Status LED |
| 7. Power supply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

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 VDX 6940-144S. Refer to [LED locations](#) on page 75 for details on LED locations.

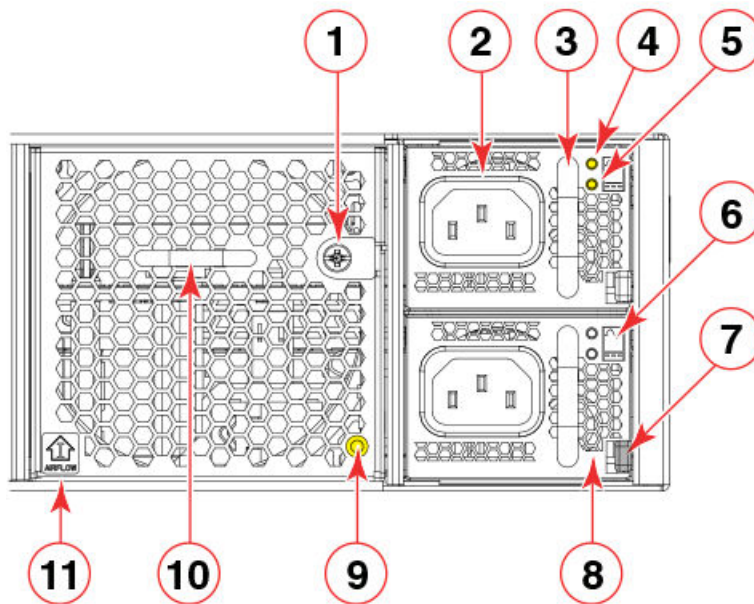
FIGURE 5 Non-port-side view showing AC power supplies



- | | |
|---------------------------------|-----------------------|
| 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 | |

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

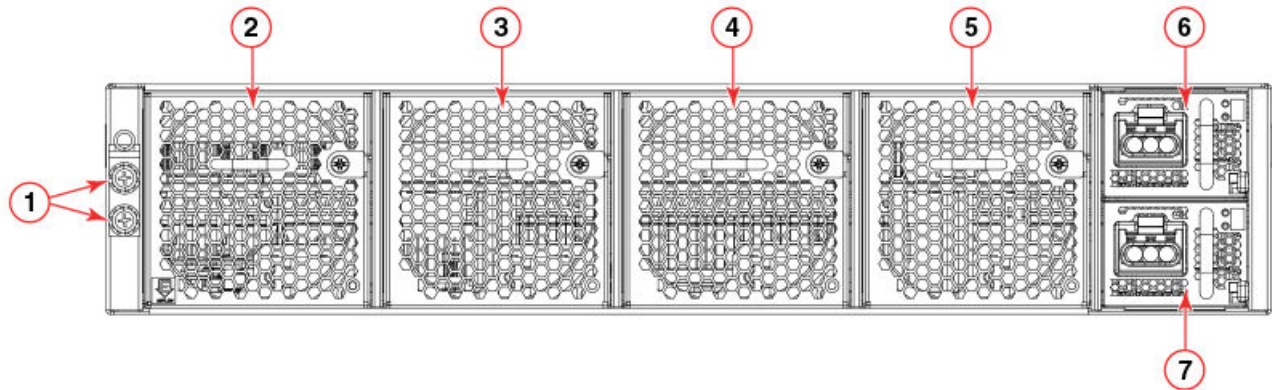
FIGURE 6 AC power supply and fan details



- | | |
|-------------------------------|---------------------------|
| 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 | |

The following illustrations show the fan assemblies, DC power supplies, and other components on the non-port side of the VDX 6940-144S. Refer to [LED locations](#) on page 75 for details on LED locations.

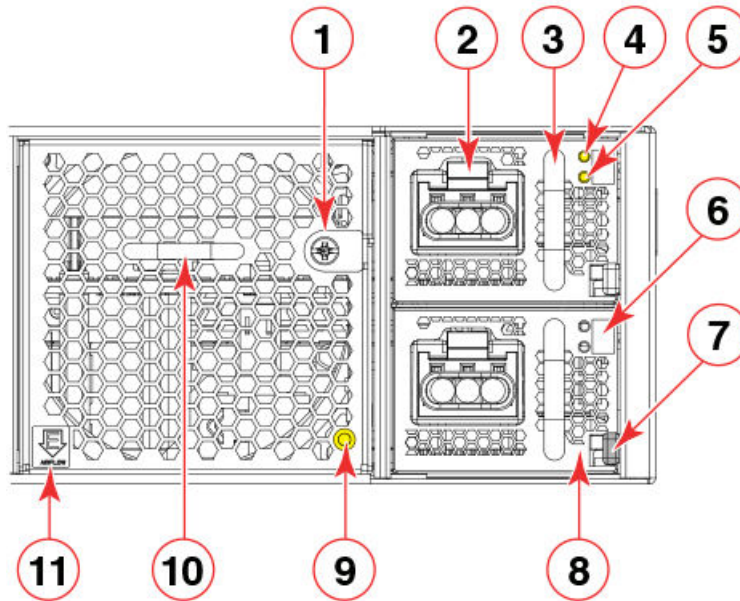
FIGURE 7 Non-port-side view showing DC power supplies



- | | |
|---------------------------------|-----------------------|
| 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 | |

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

FIGURE 8 DC power supply and fan details



- | | |
|-------------------------------|---------------------------|
| 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 | |

Port numbering

Port numbers for GbE ports are required for Extreme 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 VDX 6940 devices.

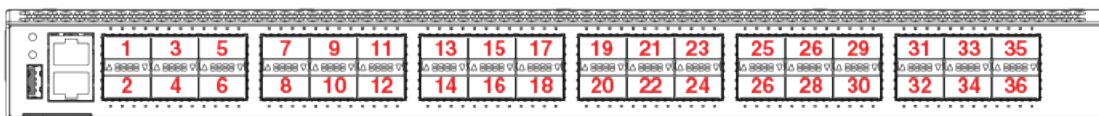
VDX 6940-36Q port numbering

For the 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 SFP breakout mode (also referred to as 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 9 VDX 6940-36Q port numbering



A 40 GbE port configured in SFP 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

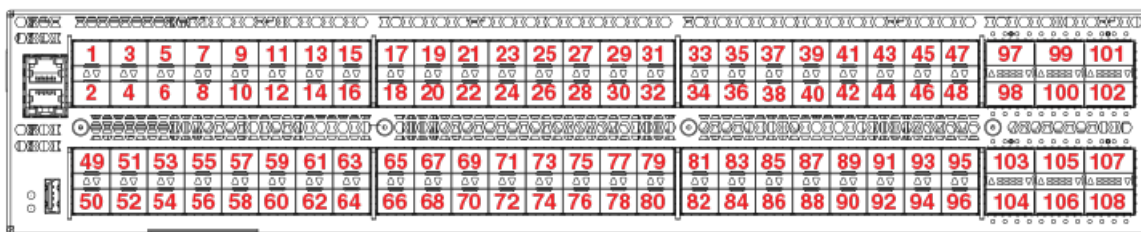
VDX 6940-144S port numbering

For the 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.

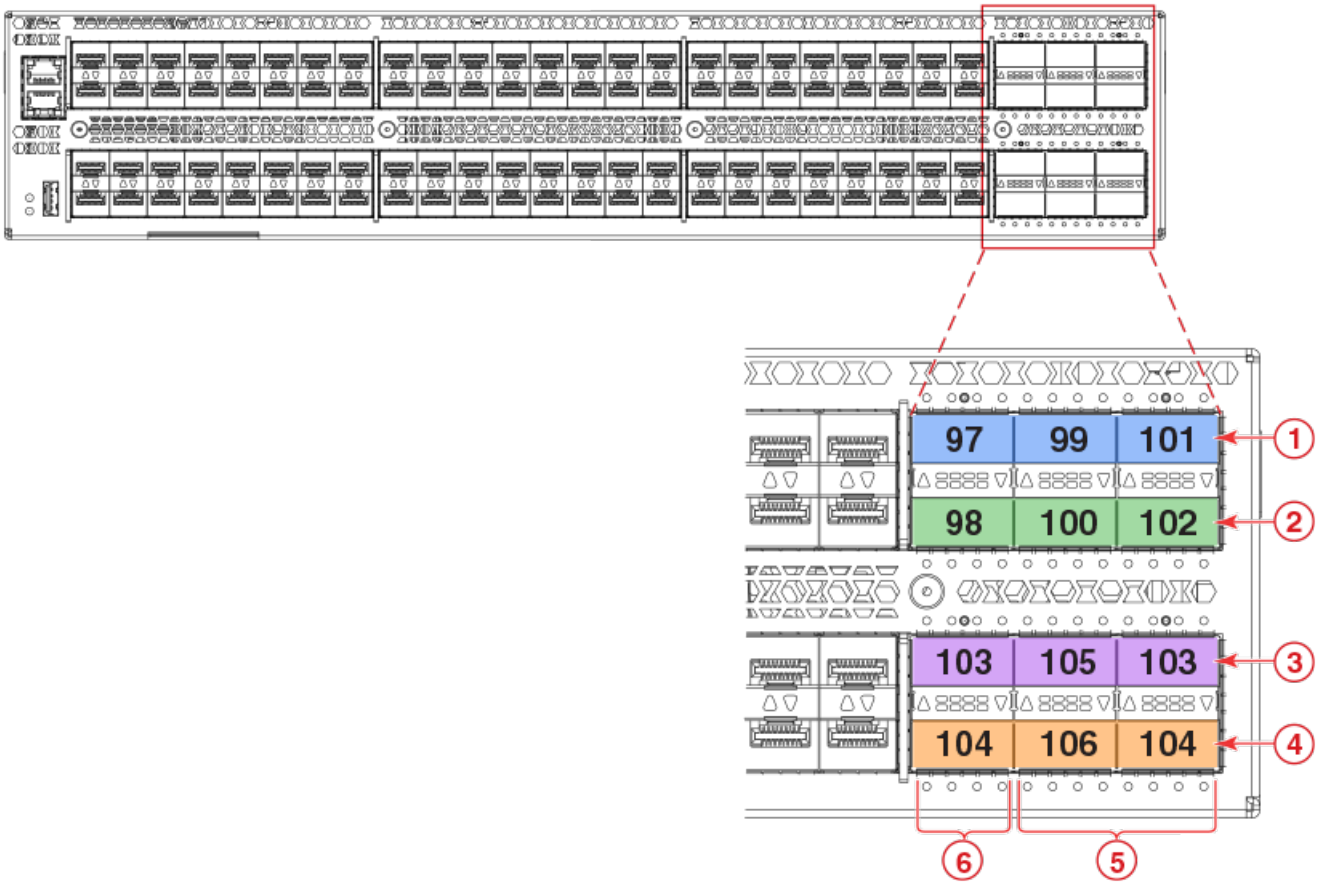
FIGURE 10 VDX 6940-144S port numbering



Dual personality ports and port groups

The following illustration shows the dual-personality ports and port groups on the VDX 6940-144S. Dual personality ports can be configured as 40 GbE QSFP or 100 GbE QSFP28 ports with a qualified 40 GbE or 100 GbE transceiver installed. When a dual personality port is configured for 100 GbE operation, the remaining 40 GbE ports in the same port group will be disabled. Ports 97, 98, 103, and 104 are dual personality ports.

FIGURE 11 Dual -personality ports and port groups



- | | |
|---|--|
| <ul style="list-style-type: none"> 1. Port group 1 2. Port group 2 3. Port group 3 | <ul style="list-style-type: none"> 4. Port group 4 5. 40 GbE ports 6. 100/40 GbE dual personality ports |
|---|--|

Preparing for Installation

- Installation and safety considerations.....29
- Items required for the installation.....31
- Items included with the device.....32

Installation and safety considerations

You can install the ExtremeSwitching VDX 6940-144S 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

The VDX 6940-144S is suitable for connection to the (Central Office).

Follow these precautions during installation:



CAUTION

Make sure the airflow around the front, 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.

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 a location where access can be gained only by trained service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.



DANGER

*The intra-building port or ports of the equipment or subassembly is suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building port or ports of the equipment or subassembly **MUST NOT** be metalically connected to interfaces that connect to the outside plant (OSP) or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 5) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metalically to OSP wiring.*



CAUTION

The Extreme Networks device must be connected to external Special Protection Devices (SPD) when installed and connected to commercial AC power.

NOTE

The unit is suitable for installation as part of the Common Bonding Network (CBN).

For the 500W DC power supply used on the 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 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 440 mm (17.5 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 multirack 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, 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.

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 Extreme-branded USB device for backing up the device configuration.
- (Optional) If mounting in the iDataplex IBM 15.5-inch depth rack, the Extreme Networks iDataplex rack mount kit.

Items included with the device

The following items are included with the standard shipment of a fully-configured 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 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 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

Mounting the device

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- Mounting precautions..... 33
- Standalone installation 34
- Installing the Universal Four-Post Rack Kit (XBR-R000296)..... 34
- Installing the Universal Two-Post Rack Kit (XBR-R000294)..... 47

Mounting options

You can install the device in several ways:

- As a standalone unit on a flat surface, for example a desk top. Use the rubber feet included with the shipment to secure the device on the surface. No other equipment is required for desktop installation.
- In a four-post EIA rack: You will need a Universal Four-Post Rack Kit (XBR-R000296) 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.
- In a two-post Telco rack: You will need a Universal Two-Post Rack Kit (XBR-R000294) to install 1U and 2U devices in a two-post telecommunications (Telco) rack.

NOTE

These rack mount kits are supported for this device at the date of this publication. For the latest support information, contact your Extreme Networks representative.

Mounting precautions

The following precautions specifically apply to mounting the device.



CAUTION

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



CAUTION

Never leave tools inside the chassis.



DANGER

Use safe lifting practices when moving the product.



DANGER

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



CAUTION

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

**CAUTION**

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

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."

Installing the Universal Four-Post Rack Kit (XBR-R000296)

Use the following instructions to install 1U and 2U devices 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).

There are two ways you can mount the device in a four-post rack:

- With the port side flush with the front posts.
- With the nonport side flush with the rear posts in a recessed position. 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.

TABLE 7 Space requirements

Chassis with port-side side vents	Notes	Chassis depth	Minimum rack depth	Maximum rack depth
No	Applicable to port-side and nonport-side flush mounts.	L	L-12.7 cm (L-5 in.)	81.28 cm (32 in.)
Yes	Applicable to port-side flush mounts.	L	L-12.7 cm (L-5 in.)	81.28 cm (32 in.)
Yes	Applicable to nonport-side 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 the universal four-post 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.).

Observe the following when mounting this device:

- Two people are required to install the device in a rack. One person holds the device, while the other screws in the front and rear brackets.
- Before mounting your device, review any specific installation and facility requirements in this Hardware Installation Guide.
- Hardware devices illustrated in these procedures are only for reference and may not depict the device you are installing into the rack.

Time and items required

Allow 15 to 30 minutes to complete the installation.

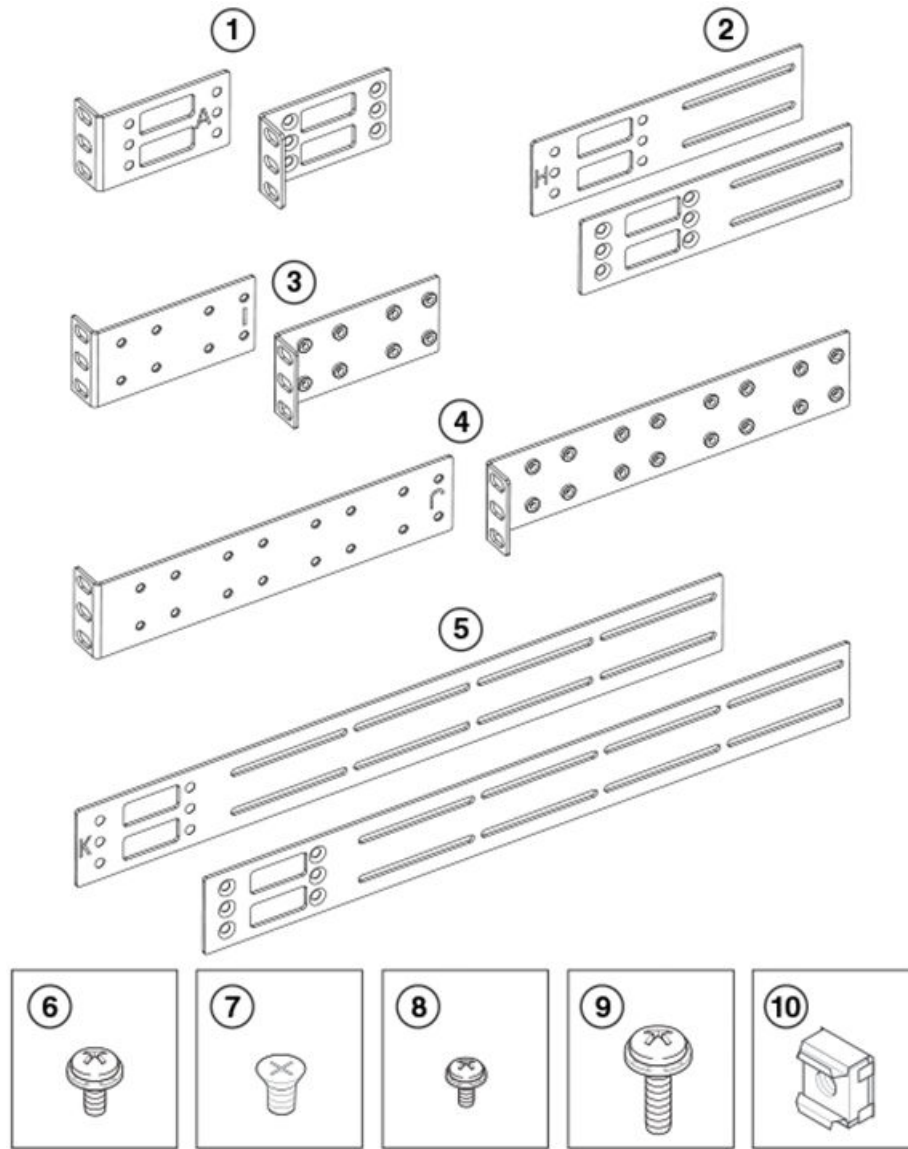
The following items are required to install the device using the Universal Four-Post Rack Kit:

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

Parts list

The following parts are provided with the 1U, 1.5U, and 2U Universal Kit for Four Post Racks Installation (XBR-R000296).

FIGURE 12 Rack kit parts



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

Ensure that the items listed and illustrated are included in the kit. Note that not all parts may be used with certain installations depending on the device type.



CAUTION

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

Flush-front mounting



CAUTION

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

NOTE

The illustrations in the rack installation procedures are for reference only and may not show the device that you are installing.

Complete the following tasks to install the device in a four-post rack.

1. [Attaching the front brackets](#) on page 37
2. [Attaching the bracket extensions to the device](#) on page 38
3. [Installing the device in the rack](#) on page 39
4. [Attaching the rear brackets to the extensions](#) on page 40
5. [Attaching the rear brackets to the rack posts](#) on page 41

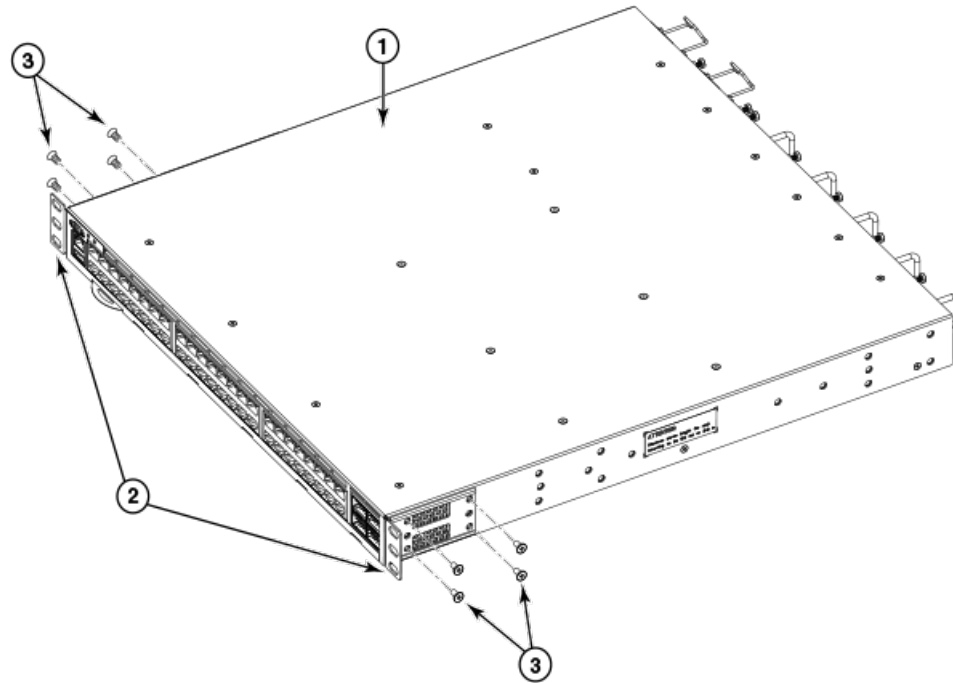
Attaching the front brackets

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

1. Position the right front bracket with the flat side against the right side of the device at the front of the device, as shown in [Figure 13](#).
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 device. 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 device.

4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 13 Attaching the front brackets



1. The device
2. Front brackets

3. Screws, 8-32 x 5/16-in., flathead Phillips

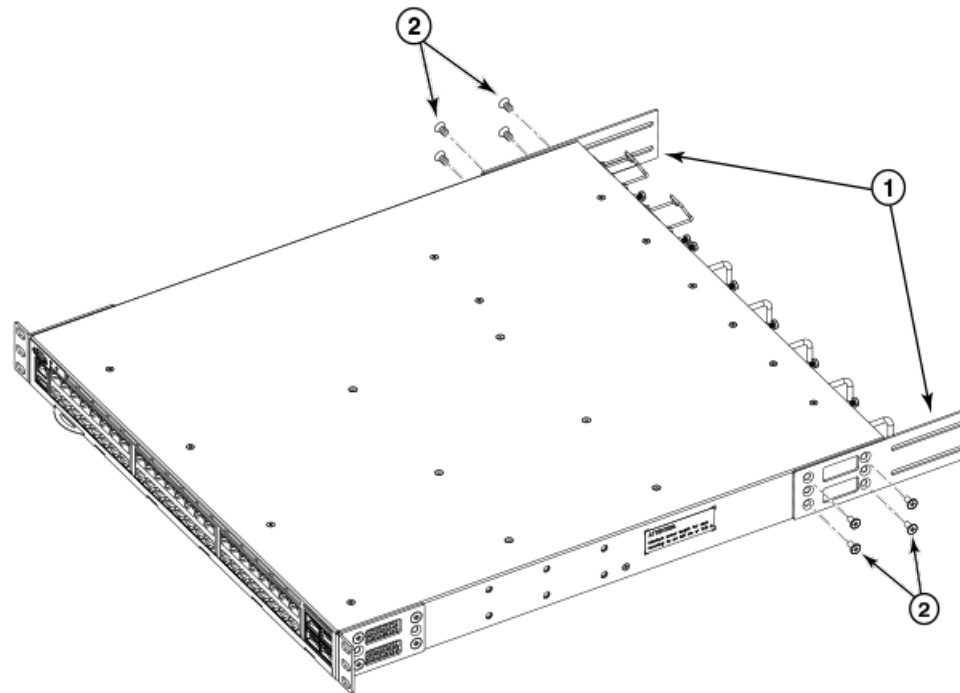
Attaching the bracket extensions to the device

Complete the following steps to attach the extension brackets to the device. There are medium and long extension brackets that you can use for this step.

1. Select the proper length bracket extension for your rack depth.
2. Position the right bracket extension along the side of the device as shown in [Figure 14](#).
3. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the bracket extension and then into the holes on the side of the device. Use the upper and lower screw holes, leaving the center holes empty.
4. Repeat step 2 and step 3 to attach the left bracket extension to the left side of the device.

5. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 14 Attaching the bracket extensions to the device



1. Bracket extension

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

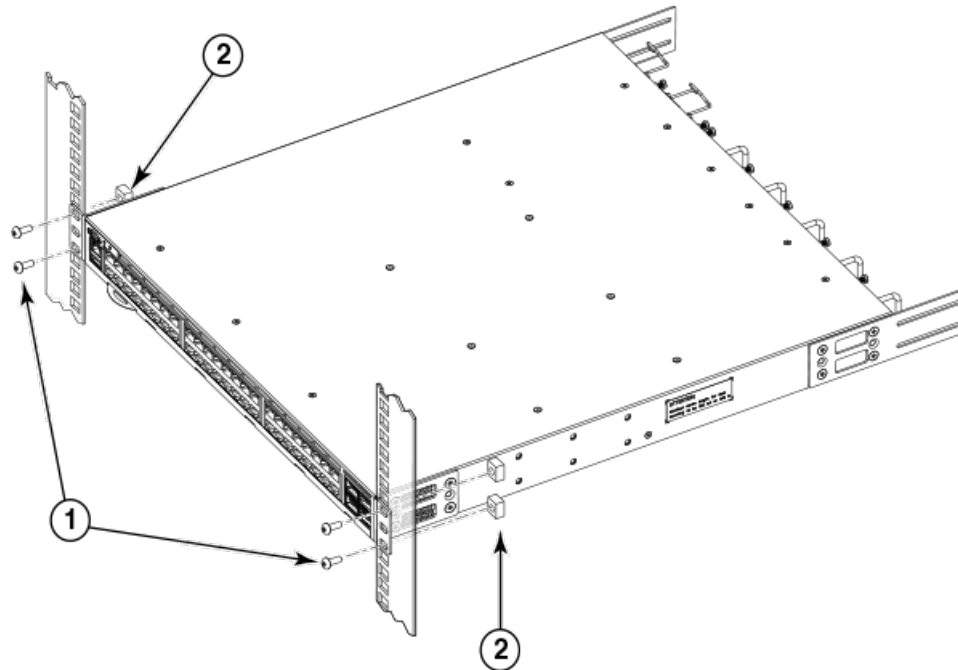
Installing the device in the rack

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

1. Position the device in the rack, as shown in [Figure 15](#), providing temporary support under the device 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-lb (29 cm-kg).

FIGURE 15 Positioning the device in the rack



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

2. Retainer nuts, 10-32

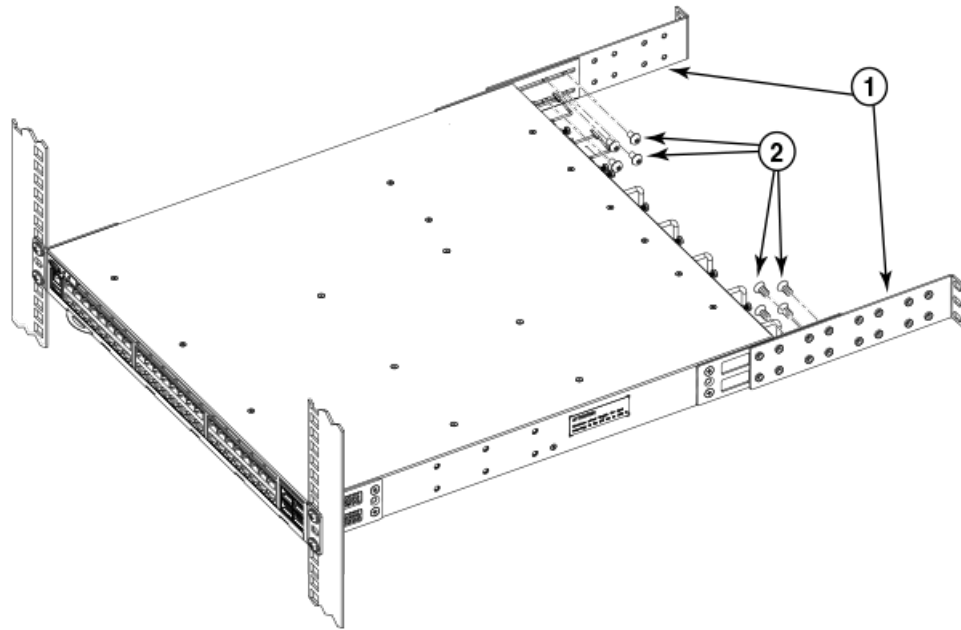
Attaching the rear brackets to the extensions

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 bracket extension, as shown in the following figure.
3. Attach the brackets using four 6-32 x 1/4-in. panhead screws.
If possible, leave at least one empty vertical pair of holes between the screws for better support.
4. Repeat step 2 and 3 to attach the left rear bracket to the left bracket extension.

- Adjust the brackets to the rack depth and tighten all the 6-32 x 1/4-in. screws to a torque of 9 in-lb (10 cm-kg).

FIGURE 16 Attaching the rear brackets to the extensions



1. Rear brackets

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

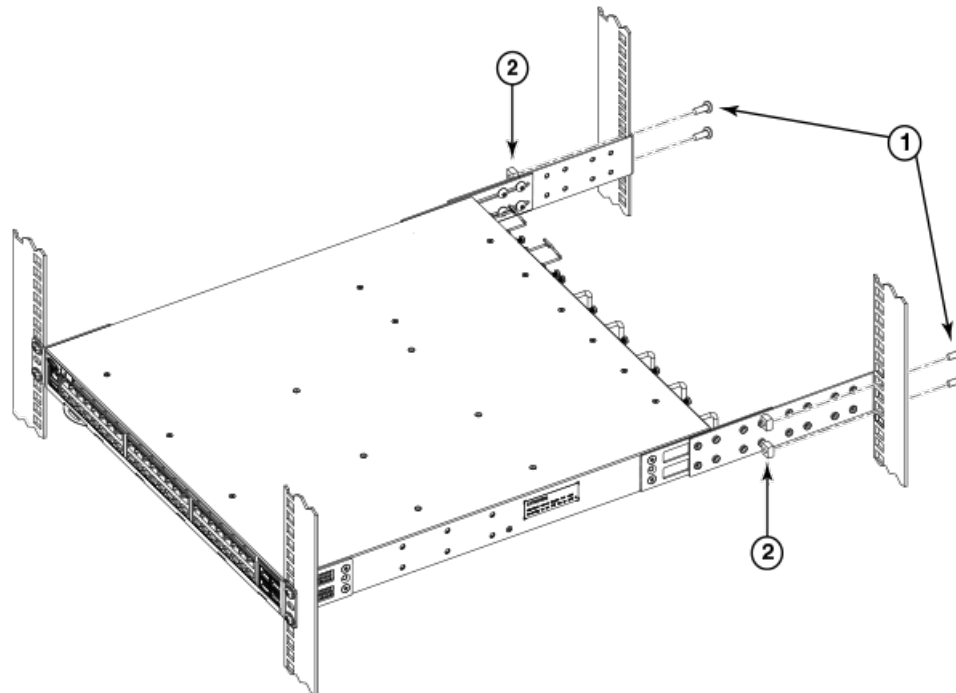
Attaching the rear brackets to the rack posts

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

- 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 17](#). Use the upper and lower holes in the bracket.
- 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).

FIGURE 17 Attaching the rear brackets to the rack posts



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

2. Retainer nuts, 10-32

Flush-rear (recessed) mounting

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



CAUTION

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

NOTE

The illustrations in the rack installation procedures show a 1U device, but the instructions are the same for a 2U device. The illustrations in the rack installation procedures are for reference only and may not show the actual device.

Complete the following tasks to install the device in a four-post rack:

1. [Attaching the front brackets to the rear of the device](#) on page 43
2. [Attaching the extensions to the front of the device](#) on page 43
3. [Installing the device in the rack](#) on page 44
4. [Attaching the rear brackets to the extensions at the front of the device](#) on page 45
5. [Attaching the rear brackets to the front rack posts](#) on page 47

Attaching the front brackets to the rear of the device

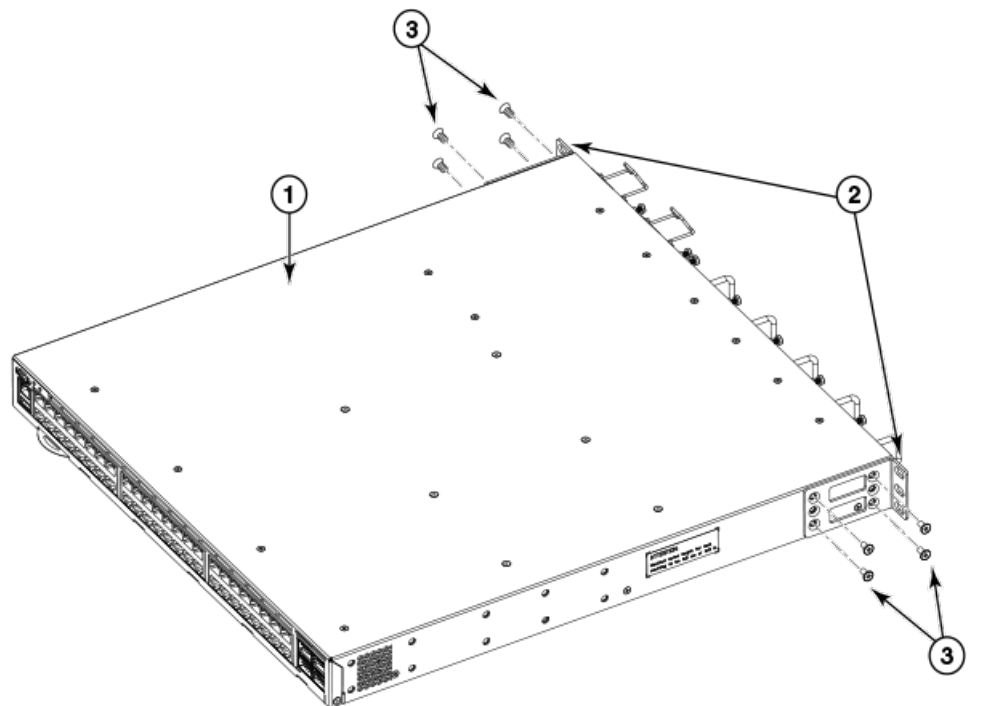
NOTE

In this installation, the brackets are named as listed 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 device.

1. Position the right front bracket with the flat side against the right rear side of the device, as shown in [Figure 18](#).
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 device. 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 device.
4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 18 Attaching the front brackets to the rear of the device



1. The device
2. Front brackets

3. Screws, 8-32 x 5/16-in., flathead Phillips

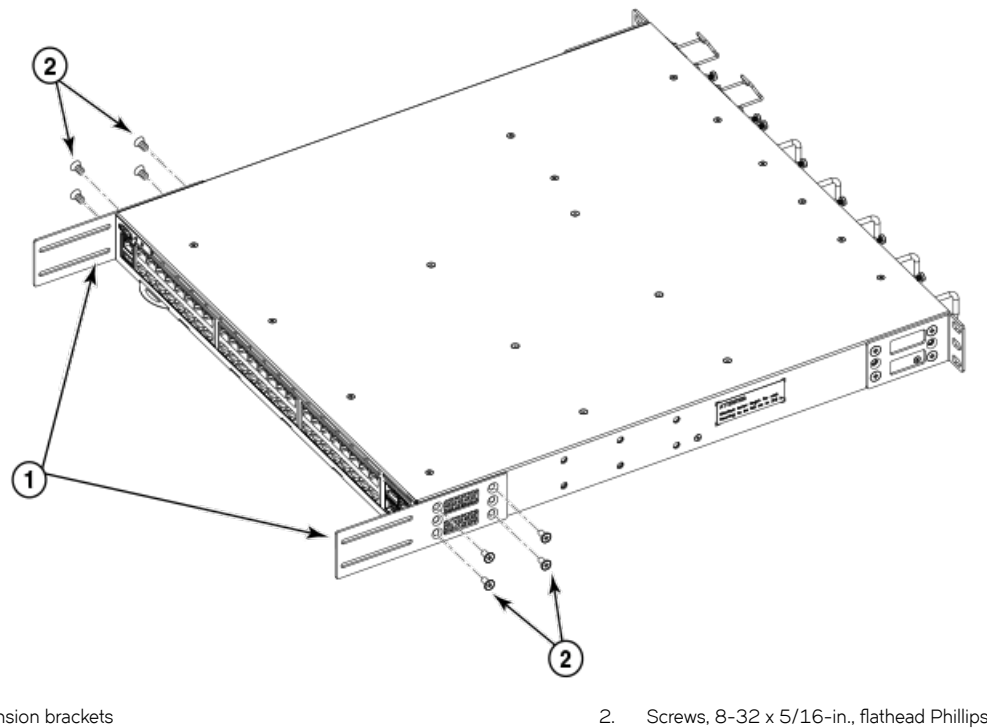
Attaching the bracket extensions to the front of the device

Complete the following steps to attach the bracket extensions to the front of the device. There are medium and long extension brackets that you can use for this step.

1. Select the proper length extension bracket for your rack depth.
2. Position the right bracket extension along the side of the device as shown in [Figure 19](#).
3. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the bracket extension and then into the holes on the side of the device. Use the upper and lower screw holes, leaving the center holes empty.

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

FIGURE 19 Attaching the bracket extensions to the device



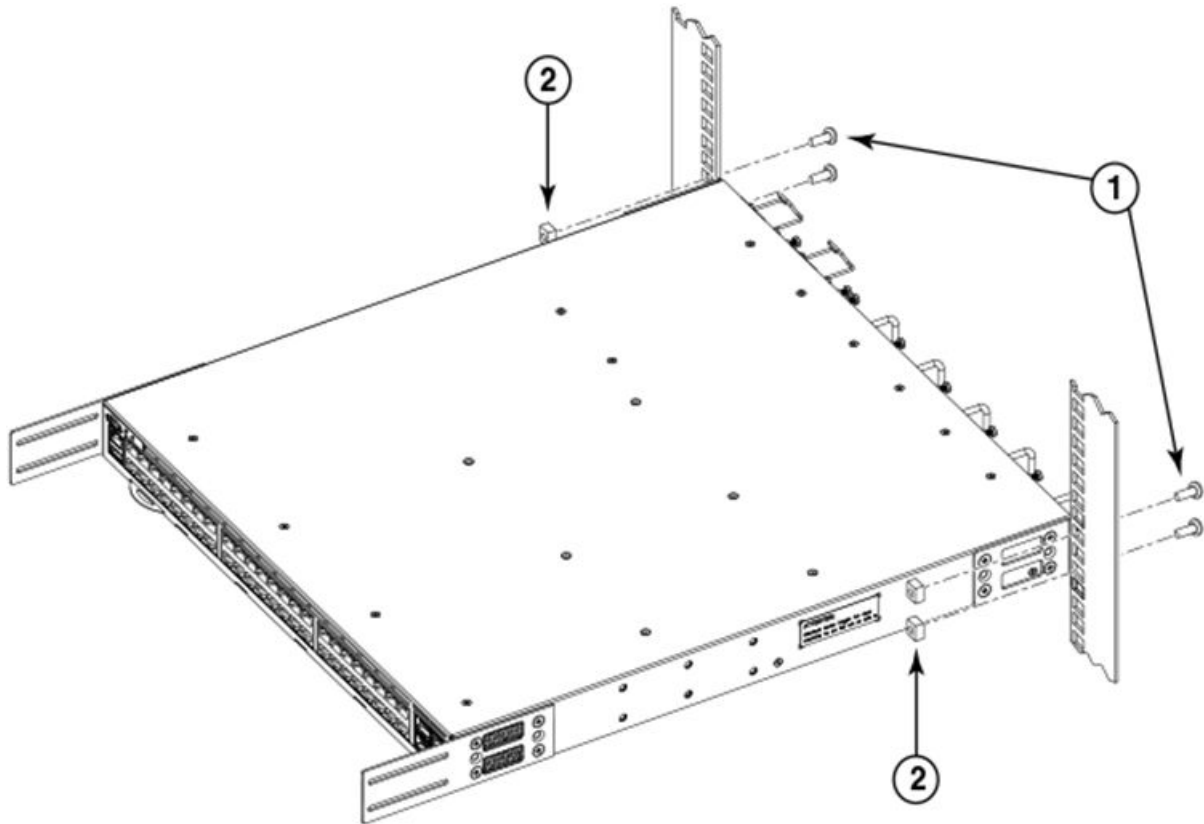
Installing the device in the rack

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

1. Position the device in the rack, as shown in [Figure 20](#), providing temporary support under the device 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-lb (29 cm-kg).

FIGURE 20 Positioning the device in the rack



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

2. Retainer nuts, 10-32

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

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.

1. Select the proper length rear bracket for your rack depth.
2. Slide the right rear bracket onto the right extension.

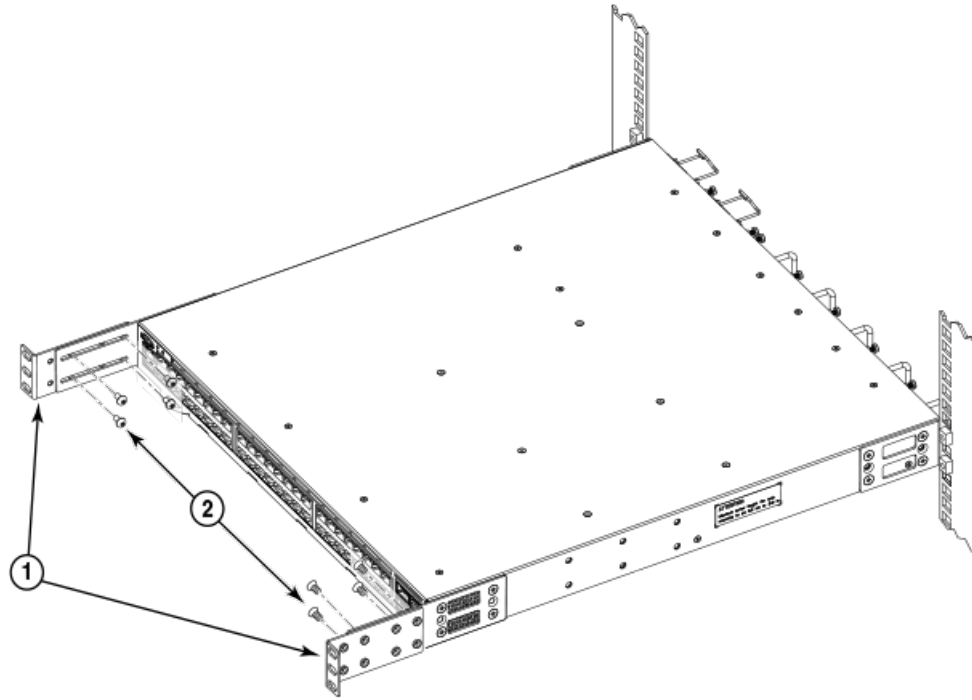
The short rear brackets are shown in [Figure 21](#). Use the first and third vertical pairs of holes for the screws.

Refer to [Figure 22](#) for the positioning of the short or long brackets and screws.

3. Attach the brackets using four 6-32 x 1/4-in. panhead screws.
4. Repeat step 2 and step 3 to attach the left rear bracket to the left extension.

- Adjust the brackets to the rack depth and tighten all the 6-32 x 1/4-in. screws to a torque of 9 in-lb (10 cm-kg).

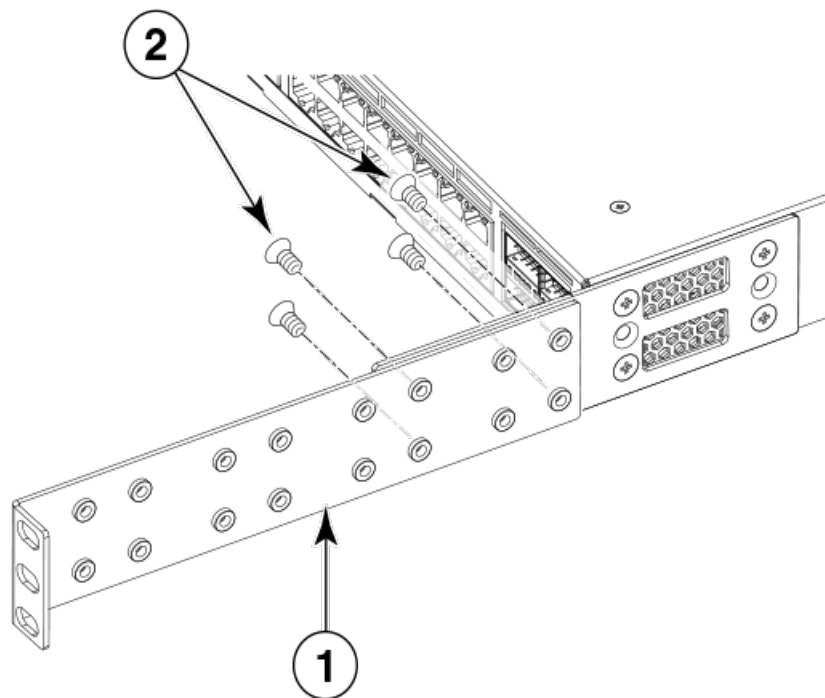
FIGURE 21 Attaching the rear brackets to the extensions at the front of the device



1. Rear brackets, short

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

FIGURE 22 Attaching the short or long rear brackets to the extensions



1. Rear bracket, short or long

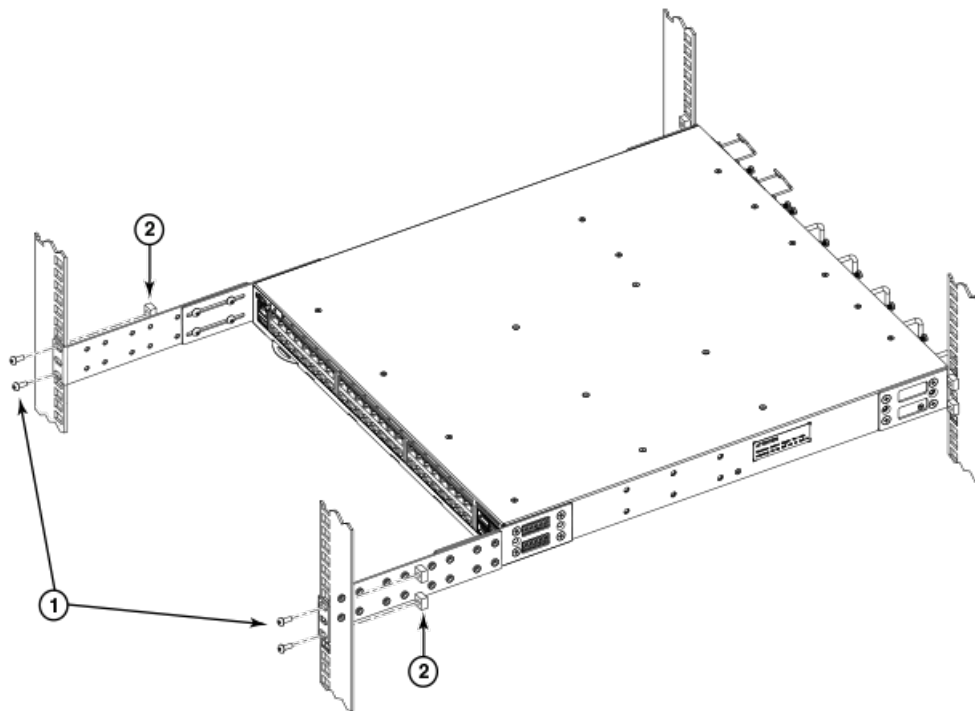
2. Screws, 6-32 x 1/4-in., panhead Phillips

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 23](#). 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-lb (29 cm-kg).

FIGURE 23 Attaching the rear brackets to the front rack posts



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

2. Retainer nuts, 10-32

Installing the Universal Two-Post Rack Kit (XBR-R000294)

Use the following instructions to install an Extreme Networks 1U or 2U device in a two-post telecommunications (Telco) rack using the Universal Two-Post Rack Kit (XBR-R000294).

There are two ways you can mount the device in a two-post rack:

- With the port side flush with the front posts
- With the posts mounted to the mid-section of the device

Observe the following when mounting this device:

- Two people are required to install the device in a rack. One person should hold the device, while the other screws in the front and rear brackets
- Before mounting your device, review any specific installation and facility requirements in the Hardware Installation Guide for the device.
- Hardware devices illustrated in these procedures are only for reference and may not depict the device you are installing in the rack.

Time and items required

Allow 15 to 30 minutes to complete the installation.

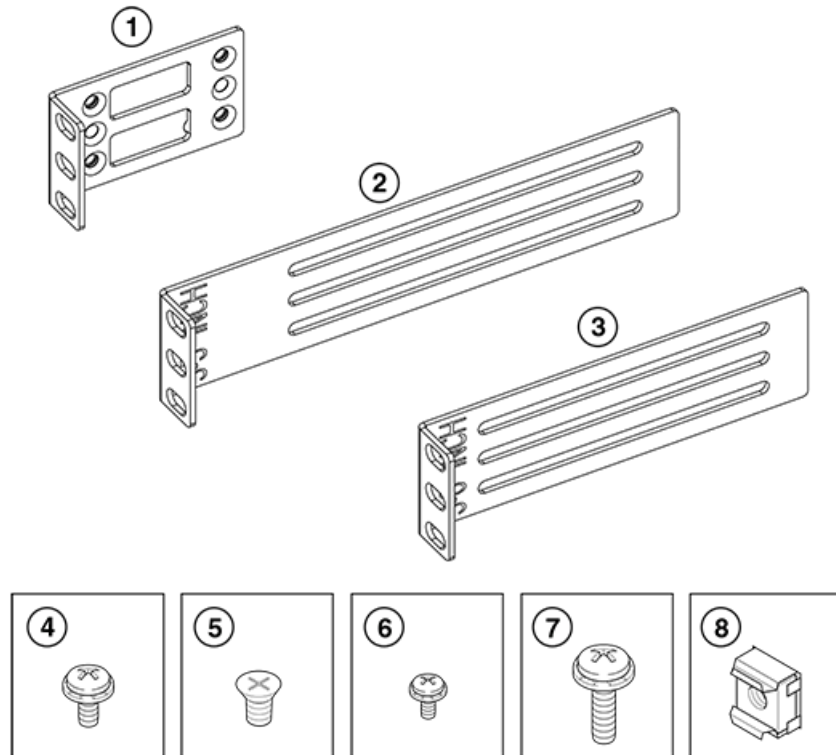
The following items are required to install the device using the Universal Two-Post Rack Kit:

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

Parts list

The following parts are provided with the Universal Two-Post Rack Kit Installation (XBR-R000294).

FIGURE 24 Rack kit parts



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

Ensure that the items listed and illustrated above are included in the kit. Note that not all parts may be used with certain installations depending on the device type.

Flush-front mounting

Observe the following notes when using this procedure:

- The device must be turned off and disconnected from the fabric during this procedure.
- The illustrations in this document show a 1U device, but the instructions are the same for a 2U device.
- The illustrations for this procedure show a two-post rack with narrow posts (3- to 5-inch) as an example.
- The illustrations in the rack installation procedures are for reference only and may not show the actual device.



CAUTION

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

Complete the following tasks to install the device in a rack:

1. [Attaching the front brackets to the device](#) on page 50
2. [Attaching the front brackets to the rack](#) on page 50

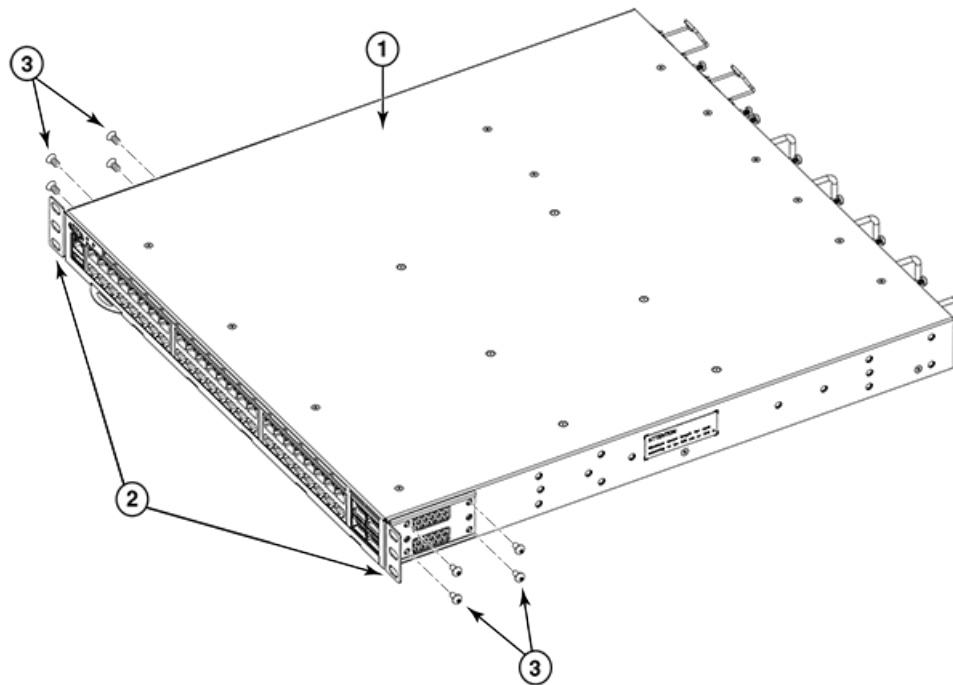
3. [Attaching the rear brackets to the rack](#) on page 51
4. [Attaching the rear brackets to the device](#) on page 52

Attaching the front brackets to the device

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

1. Position the right front bracket with the flat side against the right side of the device, as shown in [Figure 25](#).
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 device. 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 device.
4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 25 Attaching the front brackets



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

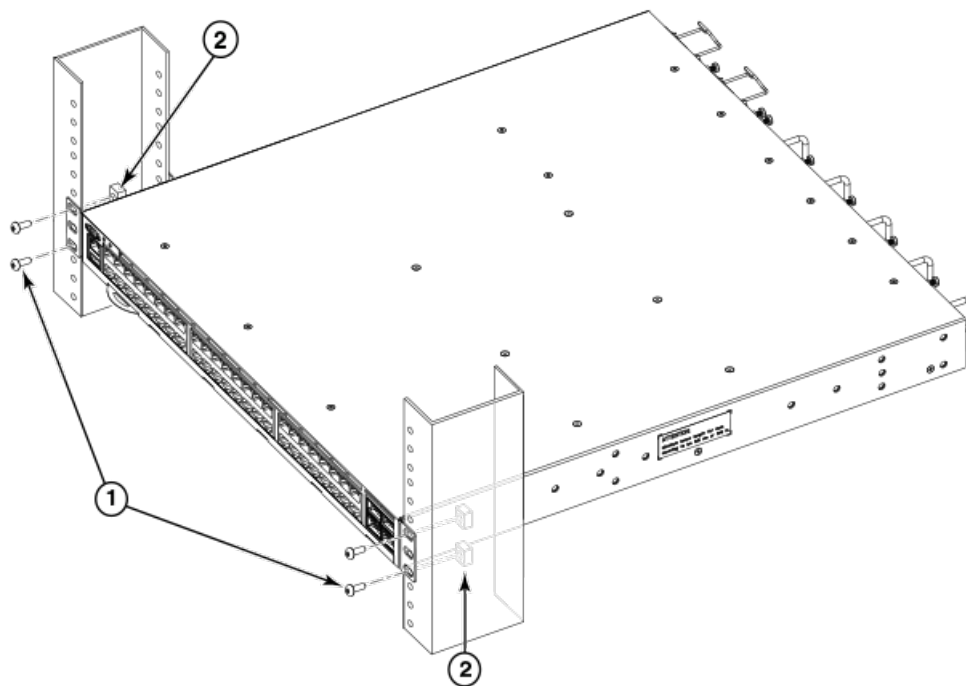
Attaching the front brackets to the rack

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

1. Position the device in the rack, as shown in [Figure 26](#), providing temporary support under the device 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. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.

3. Attach the left front bracket to the left rack upright 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-lb. (29 cm-kg).

FIGURE 26 Attaching front brackets to a rack



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

2. Retainer nuts, 10-32

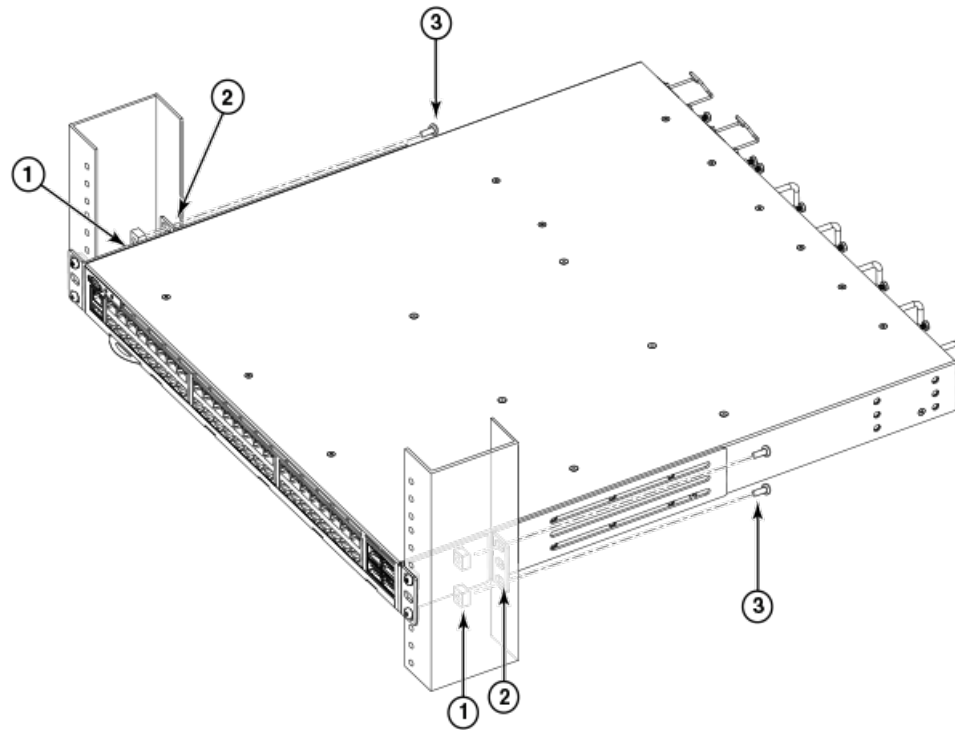
Attaching the rear brackets to the rack

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 device, as shown in [Figure 27](#).
3. Attach the bracket to the right rack upright using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower 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-lb. (29 cm-kg).

FIGURE 27 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

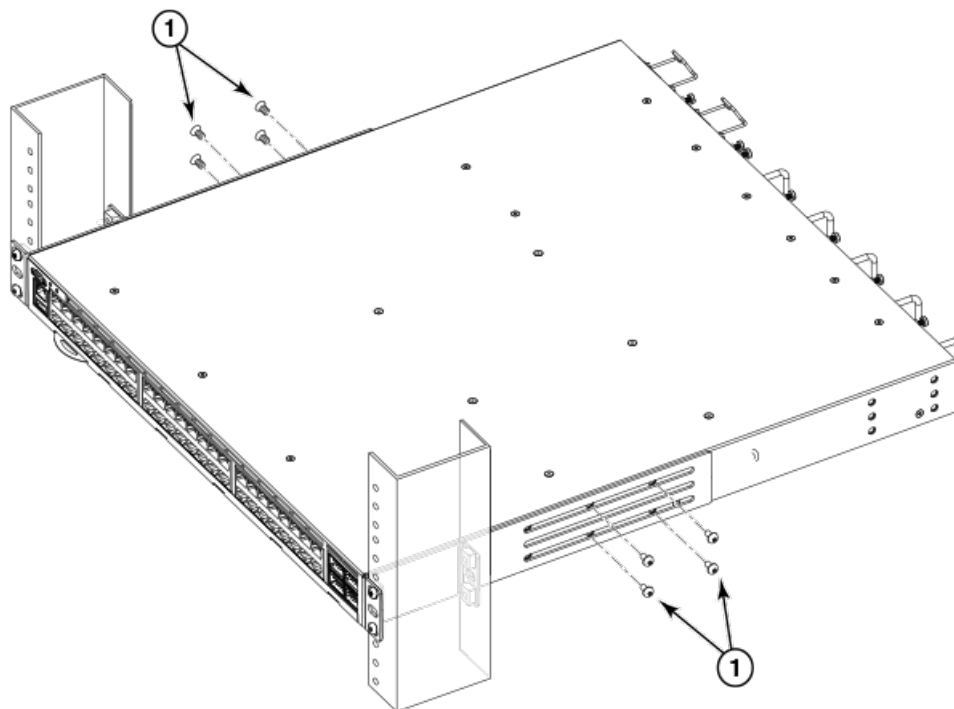
Attaching the rear brackets to the device

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

1. Align the right rear bracket to the right rear of the device and use four 8-32 x 5/16-in. panhead screws to attach the bracket to the device, as shown in [Figure 28](#). 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 device and use four 8-32 x 5/16-in. panhead screws to attach the bracket to the device. 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 28 Attaching the rear brackets to the device



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

Mid-mounting

Observe the following notes when using this procedure:

- The device must be turned off and disconnected from the fabric during this procedure.
- The illustrations in this document show a 1U device, but the instructions are the same for a 2U device.
- The illustrations in the rack installation procedures are for reference only and may not show the actual device.

Complete the following tasks to install the device in a rack:

1. [Attaching the front brackets to the device](#) on page 53
2. [Attaching the front brackets to the rack](#) on page 54
3. [Attaching the rear brackets to the rack](#) on page 55
4. [Attaching the rear brackets to the device](#) on page 56

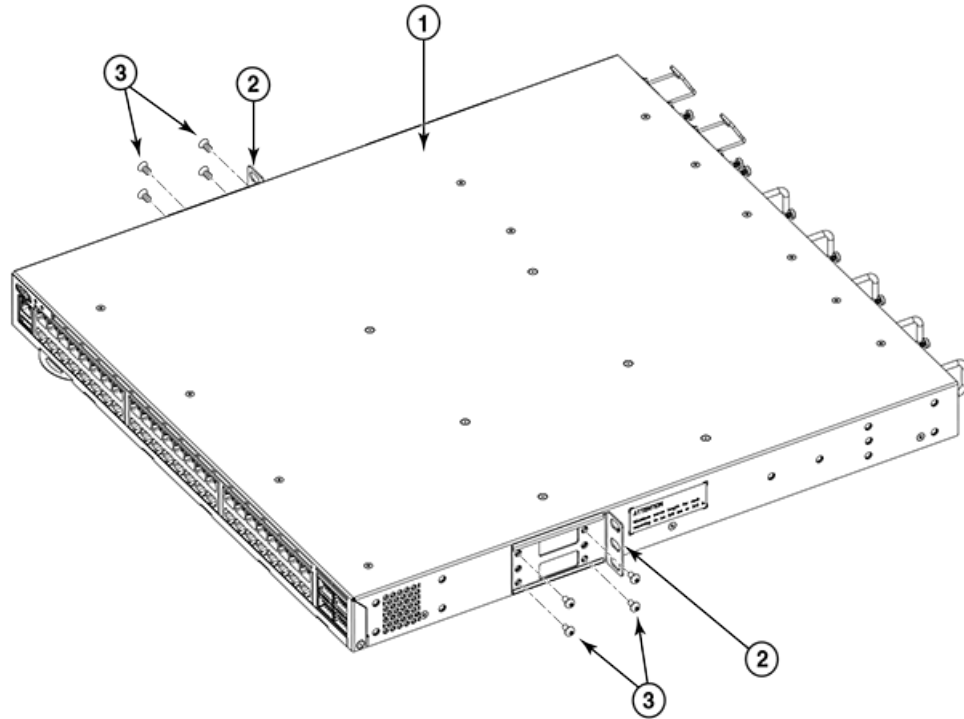
Attaching the front brackets to the device

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

1. Position the right front bracket with the flat side against the right side of the device, as shown in [Figure 29](#).

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 device. 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 device.
4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 29 Attaching the front brackets



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

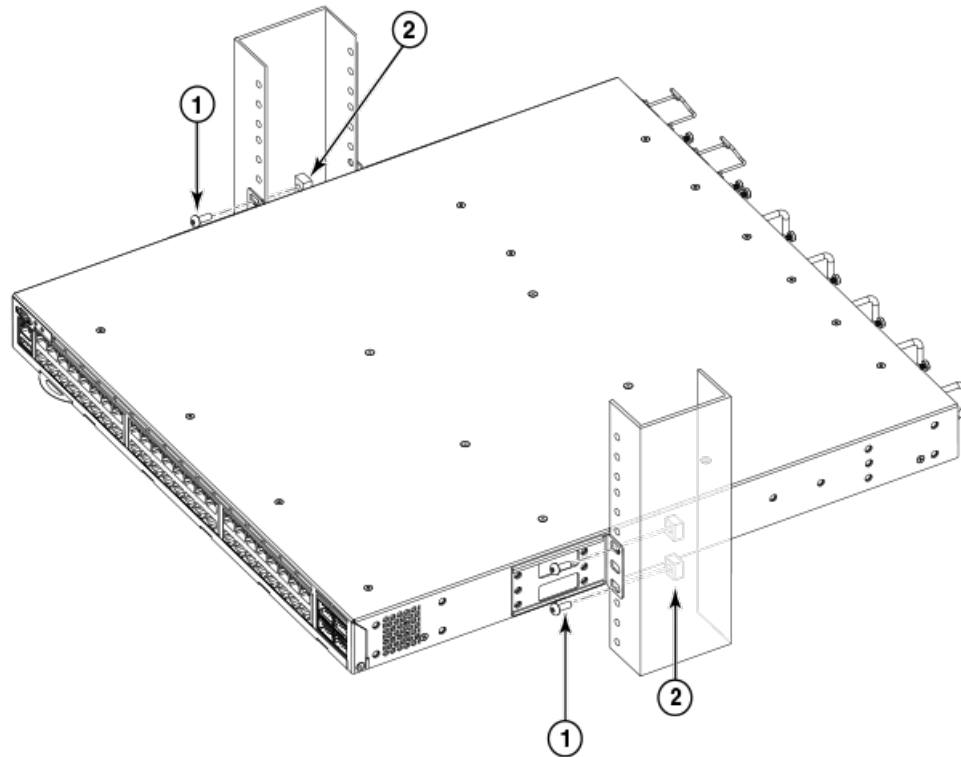
Attaching the front brackets to the rack

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

1. Position the device in the rack, as shown in [Figure 30](#), providing temporary support under the device 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. Use the upper and lower 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. 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-lb (29 cm-kg).

FIGURE 30 Attaching front brackets to a rack



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

2. Retainer nuts, 10-32

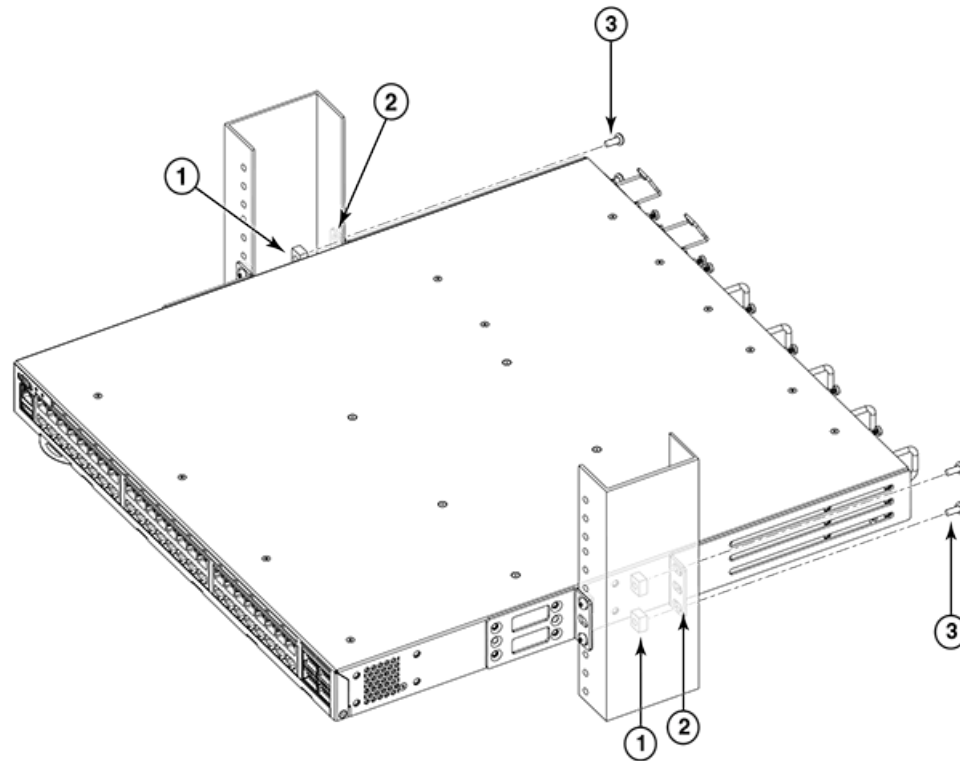
Attaching the rear brackets to the rack

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 device, as shown in the following figure. Whether you are using the 3-5 inch or the 5-6 inch bracket, the rear end of the bracket will be flush with the back of the device.
3. Attach the brackets to the right rack upright using two 10-32 x 5/8-in. panhead 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 31 Attaching the rear brackets to a rack



1. Retainer nuts, 10-32
2. Rear brackets (right and left)

3. Screws, 10-32 x 5/8-in., panhead Phillips

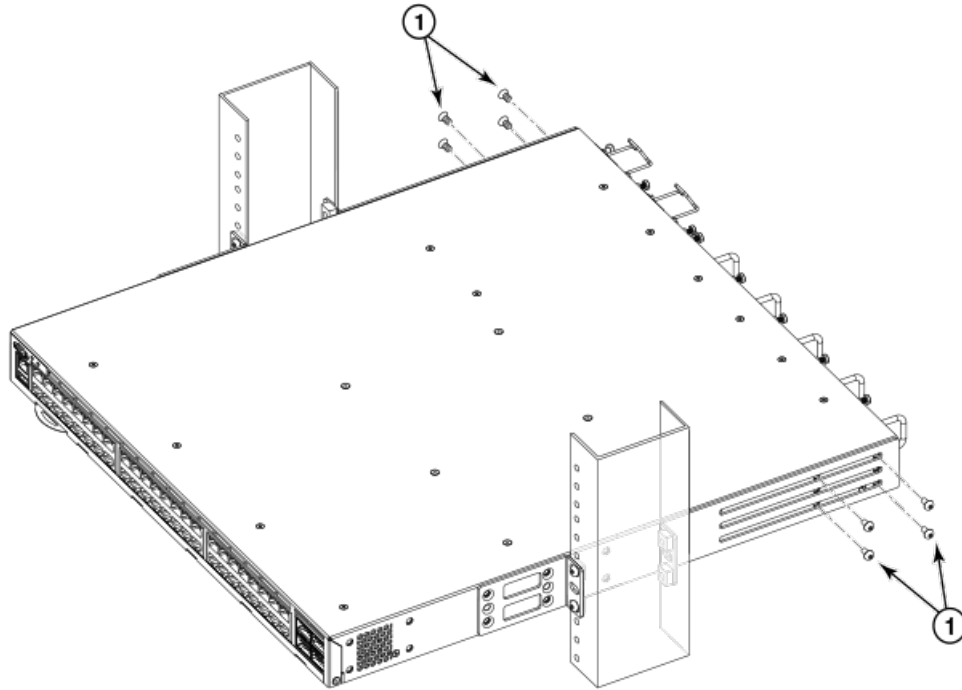
Attaching the rear brackets to the device

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

1. Align the right rear bracket to the right rear of the device and use four 8-32 x 5/16-in. panhead screws to attach the bracket to the device, as shown in [Figure 32](#). 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 device and use four 8-32 x 5/16-in. panhead screws to attach the bracket to the device. 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 32 Attaching the rear brackets to the device



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

Initial Configuration

• Configuration overview.....	59
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Configuration overview

- IP address and gateway address for the device
- IP addresses, host names, and gateway addresses for one or two management modules, as needed
- Passwords - You may need to change passwords from their default values and set the time and date, either by the way of NTP or manually.

Upon bootup, the device attempts to form ISLs with connected devices. If the device is not connected to another device, it forms a "single node VCS fabric." This means that the chassis operates as a standalone system, but the operational mode is always VCS-enabled.

In VCS mode, the device can be 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.

In Extreme Network OS v7.1.0 and later, all configuration changes are maintained in the running configuration after a reboot. For prior releases, for nodes in fabric cluster mode only, you must copy the running configuration file to the startup configuration using the **copy running-config startup-config** command to ensure that the device reboots with the preferred configuration.

The device can be deployed as part of a VCS and IP fabrics. For advanced procedures to configure the device for VCS and IP fabrics, refer to the *etwork OS Management Configuration Guide*, *Extreme Network OS IP Fabrics Configuration Guide*, and the *Extreme Network OS Command Reference*.

Items required

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

- The device, mounted and installed with the required power supply and fan assemblies, transceivers, and cables; and connected to a power source
- A workstation computer with a terminal emulator application installed, such as HyperTerminal for Windows
- An unused IP address with corresponding subnet mask and gateway address
- A serial cable with an RJ-45 connector
- RJ-45 to DB-9 adapter
- An Ethernet cable
- Access to an FTP server or USB device for backing up (uploading) or downloading the device configuration (optional)

Providing power to the device

Perform the following steps to provide power to the device.

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.

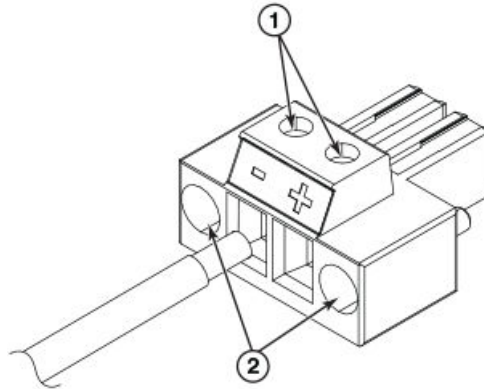
Connecting a power cord to a 500W DC power supply

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

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

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

FIGURE 33 DC wiring assembly and power source wires



1. Wire tightening screws

2. Assembly screws

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

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 Extreme Networks device.

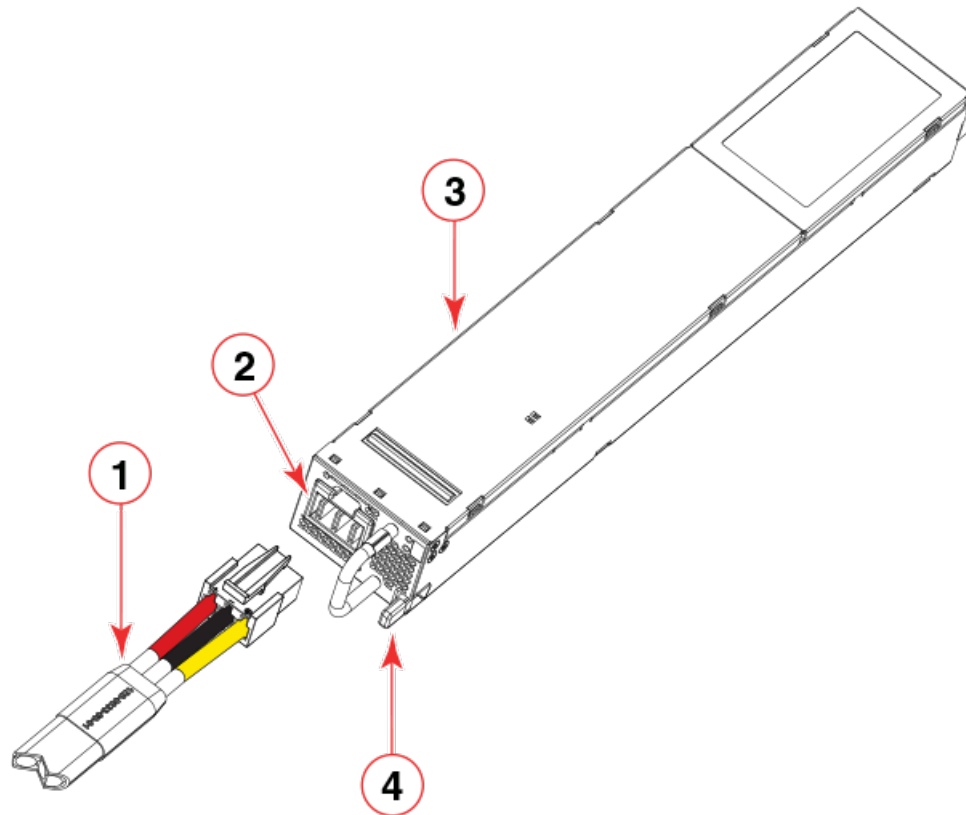
These power supplies are used on the VDX 6940-144S.

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.

FIGURE 34 DC power cable and power supply



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

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 8 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.

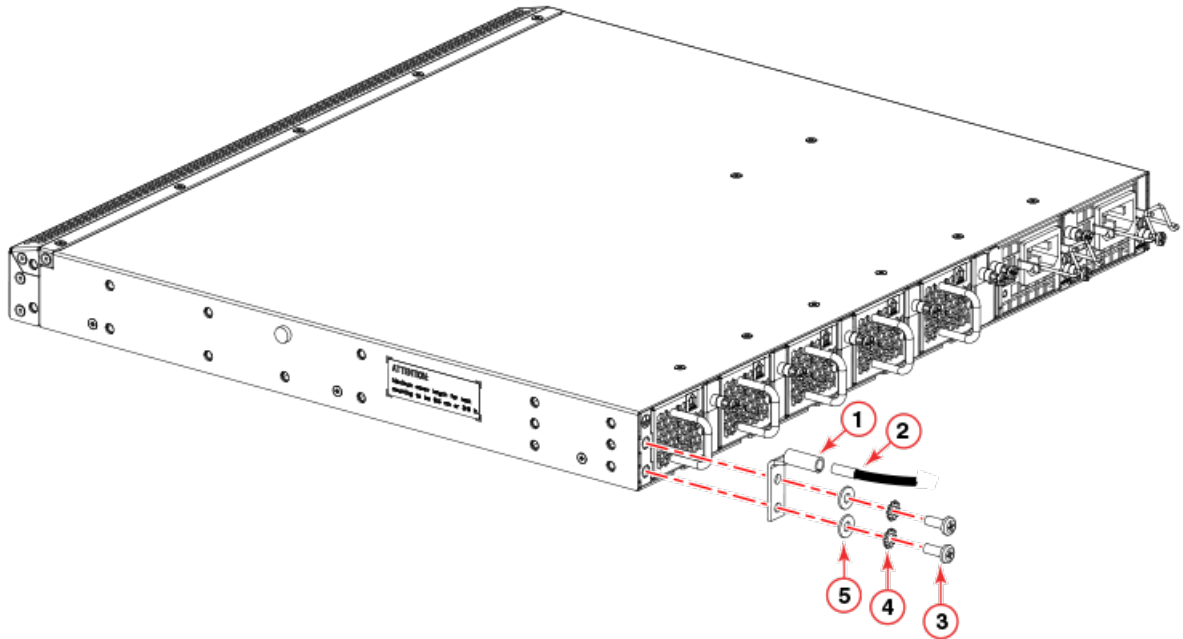
Grounding the device using two-hole ground lug

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.

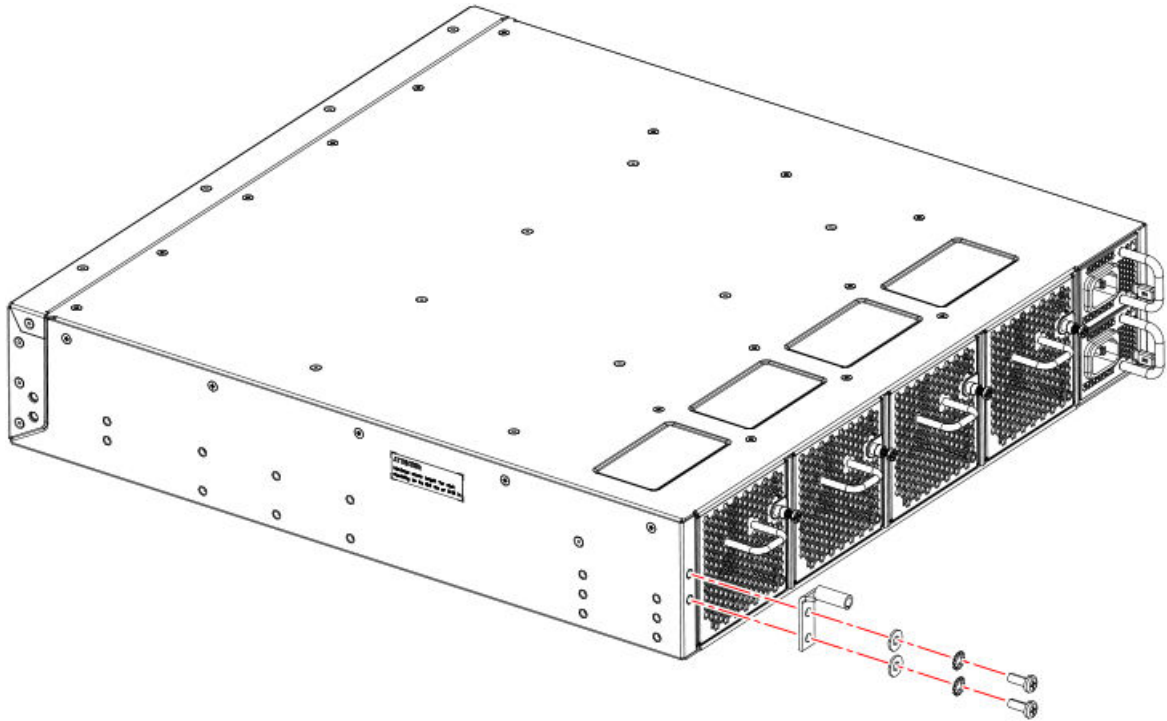
FIGURE 35 Installing ground lug on VDX 6940-36Q



1. Two-hole grounding lug
2. Ground wire
3. 10-32 x ½ in. screws


4. Lock washers
5. Flat washers

FIGURE 36 Installing ground lug on VDX 6940-144S



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

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 an Extreme Networks device, 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.

Verifying operation

Power is supplied to the device as soon as the first power supply is connected and powered on. During POST activities, the system status LED on the port-side of the device displays amber and the port LEDs illuminate.

After the system powers on and POST completes, verify the following:

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. 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.

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.

NOTE

Flow control is not supported on the serial consoles when attached to remote terminal servers and must be disabled on the customer-side remote terminal server and the host-side clients.

- 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, Extreme Networks 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 9 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 *Extreme 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 Extreme Networks 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 Extreme Networks 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
```

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.

Setting the date and time

Extreme Networks 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.

Changing the RBridge ID and VCS ID

If you are planning to connect more than one device in a fabric, each device must have a unique RBridge ID. The default RBridge ID for the device is 1.

If you are planning more than one VCS fabric, each fabric must have a unique VCS ID. The default VCS ID is 1.

If you need to change an Rbridge ID or VCS ID, you can use either of the following commands:

- **vcs set-rbridge-id**: This changes the existing RBridge ID of a node. An option is available for this command to also change the VCS ID.
- **vcs vcsid**: This changes the existing VCS ID of a node. An option is available for this command to also change the RBridge ID.

NOTE

Each time that you change the Extreme Networks VCS Fabric configuration, the device resets to the default configuration and reboot automatically. Make sure to save the configuration before using either of these commands.

For details on using these commands, refer to the *Extreme Network OS Command Reference* and *Extreme Network OS Management Configuration Guide*.

Network device connections

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



CAUTION

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

Ethernet or Fast Ethernet hubs

For copper connections to Ethernet hubs, a 1000Base-T device, or another Extreme Networks 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 Extreme Networks 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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• POST and boot specifications.....	82
• Interpreting POST results.....	83
• Diagnostic tests.....	83
• Device management.....	83
• Powering off the device.....	84
• Thermal operations.....	84

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 78 and [Non-port-side LED patterns](#) on page 80 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

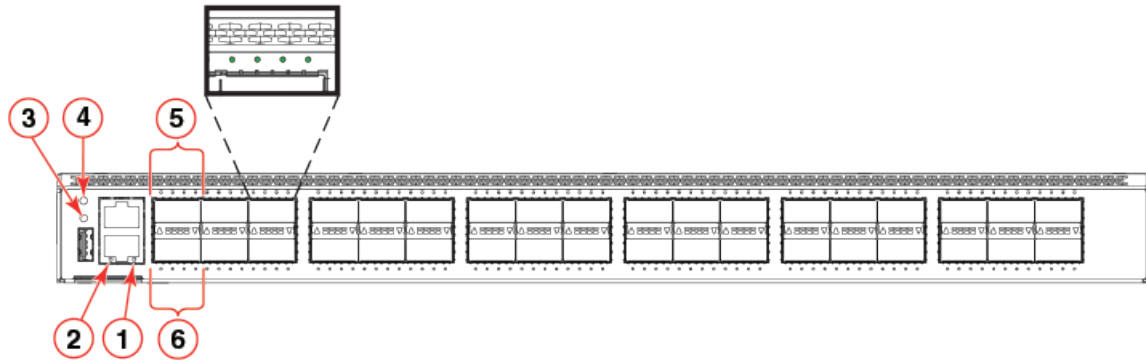
LEDs are located on the port side of the device to indicate power, system, and port status. LEDs on the non-port side of the device indicate fan assembly and power supply status.

VDX 6940-36Q LED locations

The following figure illustrates status LEDs on the port side of the 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 SFP breakout mode (also referred to as 4x10 GbE breakout mode), each LED indicates status and activity of individual 10 GbE interfaces.

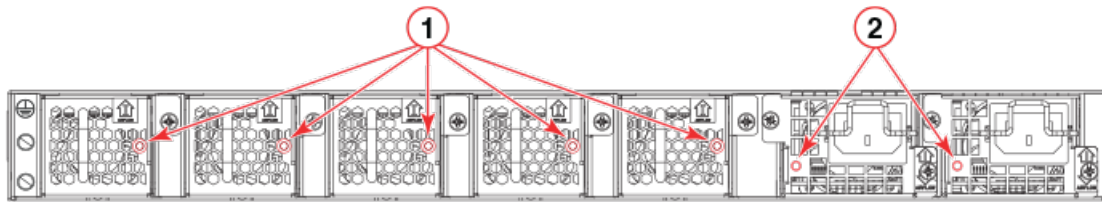
FIGURE 37 LEDs on the port side of the VDX 6940-36Q



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

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

FIGURE 38 LEDs on the non-port side of the VDX 6940-36Q



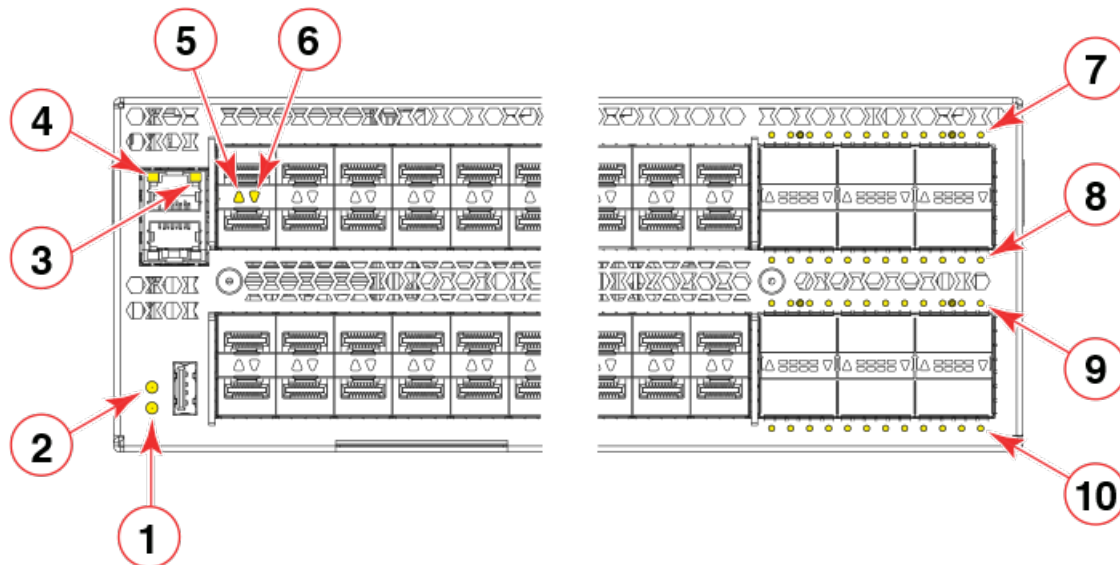
- | | |
|-----------------------------|-----------------------------|
| 1. Fan assembly status LEDs | 2. Power supply status LEDs |
|-----------------------------|-----------------------------|

VDX 6940-144S LED locations

The following figure illustrates status LEDs on the port side of the 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 10 GbE 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 as follows:
 - When a 40 GbE port is in 40 GbE mode, the leftmost LED indicates 40 GbE port status and activity.
 - When a 40 GbE port is in 4x10 GbE breakout mode, the four LEDs indicates status and activity of individual 10 GbE interfaces.
- When 40/100 GbE dual personality ports 97, 98, 93, or 104 are configured as 100 GbE ports, the leftmost LED for those ports illuminates to indicate 100 GbE port status and activity. LEDs for the two 40 GbE ports to the right of these ports in the same row (port group) will not illuminate as these ports will be disabled. For more detail on dual personality ports and port groups, refer to [Dual personality ports and port groups](#) on page 27.

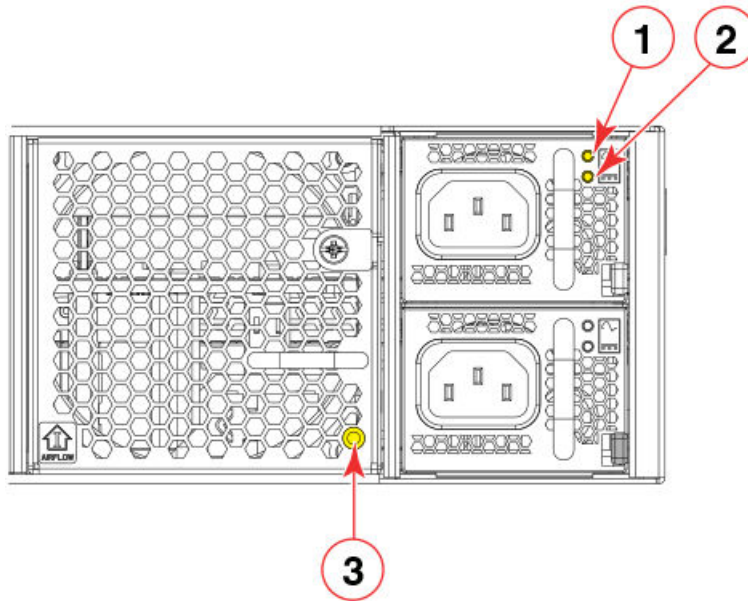
FIGURE 39 LEDs on port side of VDX 6940-144S



- | | |
|--|---|
| <ol style="list-style-type: none"> 1. System power 2. System status 3. Ethernet port activity 4. Ethernet port link status 5. Upper 10 GbE port status 6. Lower 10 GbE port status 7. Upper 40 GbE QSFP port, 10 GbE breakout interface, and 100 GbE dual personality port status | <ol style="list-style-type: none"> 8. Lower 40 GbE QSFP port, 10 GbE breakout interface, and 100 GbE dual personality port status 9. Upper 40 GbE QSFP port, 10 GbE breakout interface, and 100 GbE dual personality port status 10. Lower 40 GbE QSFP port, 10 GbE breakout interface, and 100 GbE dual personality port status |
|--|---|

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

FIGURE 40 LEDs on non-port side of VDX 6940-144S



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

NOTE

Although the pervious 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 10 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. Contact your service provider.

TABLE 10 Port-side LED patterns during operation (continued)

LED name	LED color	Status of hardware	Recommended action
	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 (VDX 6940-36Q)	A component requires attention. Most likely a power supply or fan assembly has faulted.	Verify the component status and check all messages.
	Blinking green (VDX 6940-144S)		
	Steady green	System is on and functioning properly.	No action required.
	Blinking amber.	A system fault has occurred or the device is in an initialization state.	Check the management interface and the error log for details on the cause of the status. Contact your service provider.
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 port is offline - either disabled, faulted, or enabled, but no link.	Install module or connect cable. Enable the port. Check messages for faults and take necessary action. Establish link connection.
	Steady green	The port is online. Link is present, but no activity.	No action required.
	Flashing green.	Beaconing is enabled.	No action required.
	Flickering green	Activity on port.	No action required.
Status of individual 10 GbE lanes in SFP breakout mode (also referred to as 4x10 GbE breakout mode). Indicated by each of four LEDs above or below the 40 GbE ports.	Off (no light)	10 GbE lane is offline - either disabled, faulted, or enabled but no link.	Enable the port. Check messages for faults and take necessary action. 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.
Dual personality 40/100 GbE port status in 100 GbE mode (VDX 6940-144S). Indicated by first of four LEDs for ports 97, 98, 93, and 104.	Off (no light)	No module or cable. The port is offline - either disabled, faulted, or enabled, but no link.	Install module or connect cable. Enable the port. Check messages for faults and take necessary action. Establish link connection.
	Steady green	The port is online. Link is present, but no activity.	No action required.
	Flashing green.	Beaconing is enabled.	No action required.
	Flickering green	Activity on port.	No action required.

TABLE 10 Port-side LED patterns during operation (continued)

LED name	LED color	Status of hardware	Recommended action
Fixed 10 GbE ports (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. Enable the port. Check messages for faults and take necessary action. 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 11 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.
	Steady green	Power supply is operating normally. Also, airflow mismatch or fault may have been detected.	No action required. Check messages or use the show environment command to check the state of the power supply.
	Blinking green	Power supply is faulty.	Try the following: <ul style="list-style-type: none"> • Check the power cable connection. • Verify that the power supply is powered on. • Replace the power supply.
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"> • Verify the fan assembly is seated correctly. • Verify the device is powered on.
	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"> • Mismatched airflow on fan assemblies. 	Try the following: <ul style="list-style-type: none"> • Verify that the airflow symbol and part number on the replacement fan matches the fans in the

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

LED name	LED color	Status of hardware	Recommended action
		<ul style="list-style-type: none"> One or more of the fans in the fan assembly has failed. The fan assembly was disabled by the user. <p>NOTE When the device is first powered on, the fan status LED will show amber until POST has completed.</p>	<p>chassis. Replace if necessary.</p> <ul style="list-style-type: none"> Replace the fan assembly. Verify the fan assembly is enabled (use the show environment fan command). Re-enable if necessary.

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 12 Non-port-side LED patterns during operation

LED name	LED color	Status of hardware	Recommended action
Power supply input voltage status: <ul style="list-style-type: none"> AC voltage for AC power supply DC voltage for DC power supply 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"> Verify the fan assembly is seated correctly. Verify the device is powered on.

TABLE 12 Non-port-side LED patterns during operation (continued)

LED name	LED color	Status of hardware	Recommended action
	Steady green	Fan assembly is operating normally.	No action required.
	Steady amber (for more than 5 seconds)	<p>Fan fault for one of the following reasons:</p> <ul style="list-style-type: none"> Mismatched airflow on fan assemblies. One or more of the fans in the fan assembly has failed. The fan assembly was disabled by the user. <p>NOTE When the device is first powered on, the fan status LED will show amber until POST has completed.</p>	<p>Try the following:</p> <ul style="list-style-type: none"> Verify that the airflow symbol and part number on the replacement fan matches the fans in the chassis. Replace if necessary. Replace the fan assembly. Verify the fan assembly is enabled (use the show environment fan command). Re-enable if necessary.

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 *Extreme 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 *Extreme Network OS Command Reference*. For information about error messages, refer to the *Extreme 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 *Extreme Network OS Management Configuration Guide* and the *Extreme 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 *Extreme Network OS Software Upgrade Guide*.

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

TABLE 13 Management options

Management tool	Out-of-band support
Command line interface (CLI)	Ethernet or serial (console port) connection

TABLE 13 Management options (continued)

Management tool	Out-of-band support
For more information, refer to the <i>Extreme Network OS Management Configuration Guide</i> and the <i>Extreme Network OS Command Reference</i> .	
Standard SNMP applications For information, refer to the <i>Extreme Network OS Management Configuration Guide</i> .	Ethernet or serial (console port) connection
Extreme Network Advisor For information, refer to the <i>Extreme Network Advisor SAN+IP User Manual</i> .	Ethernet (preferred) or serial (console port) connection

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. When the system shuts down, fans continue to run at high speed.

Removal and Replacement Procedures

• Before beginning replacement	85
• ESD precautions.....	86
• VDX 6940-36Q FRU replacement.....	87
• VDX 6940-144S FRU replacement.....	95
• QSFP transceiver removal and replacement.....	108
• SFP transceiver removal and replacement.....	110

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 41 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**.

ESD precautions

The device contains ESD-sensitive FRUs. When working with any Extreme Networks FRU, use the following electrostatic discharge (ESD) procedures:

- Wear a wrist grounding strap connected to chassis ground (if the device is plugged in) or a bench ground.



DANGER

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

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



CAUTION

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

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 22.

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 80 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 Extreme Networks device is powered on and running.

Installation precautions and warnings

Follow these precautions when installing a power supply in the Extreme Networks 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.

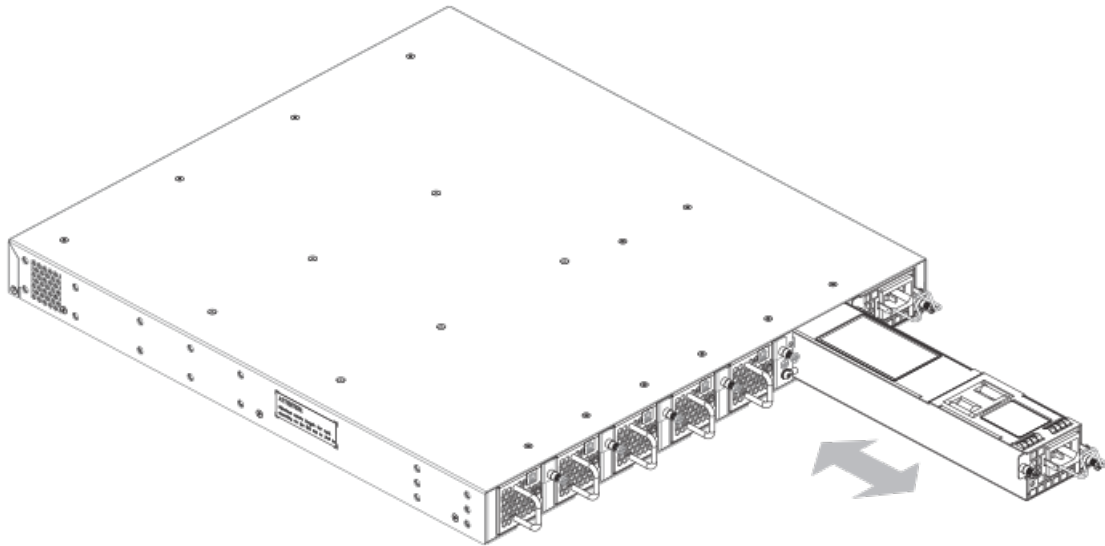
NOTE

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 42 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

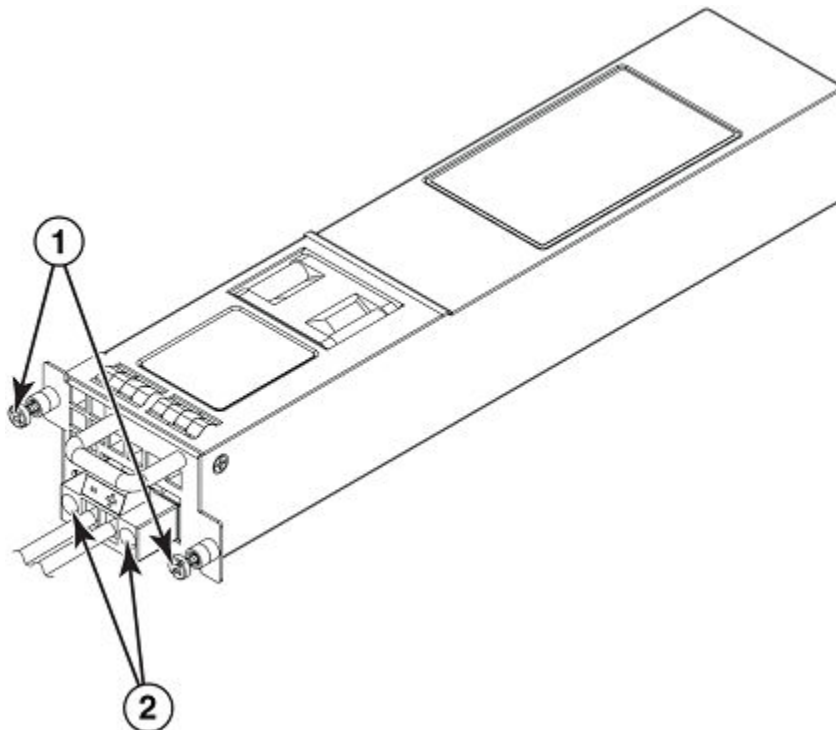
Use the following procedures to replace a 500W DC power supply.

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.

FIGURE 43 DC power supply assembly screws

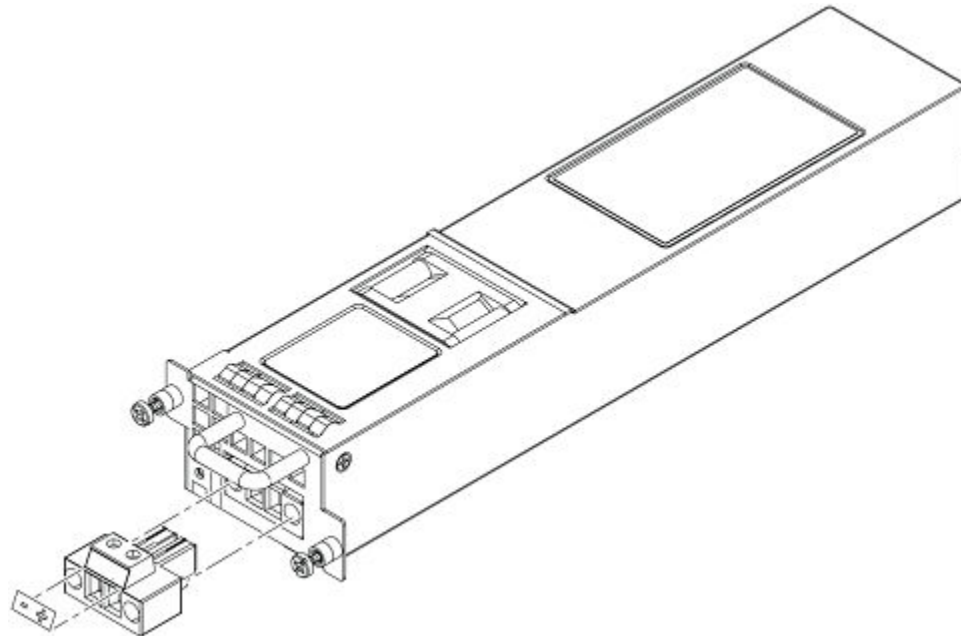


1. Chassis attachment screws

2. Assembly screws

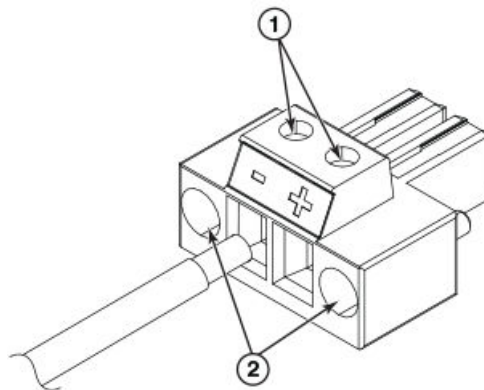
- Remove the DC wiring harness assembly from the power supply by unscrewing the two assembly screws.

FIGURE 44 Removing wiring harness from DC power supply



- 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.

FIGURE 45 The DC wiring assembly



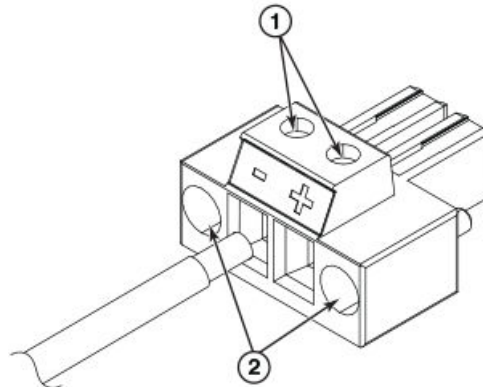
1. Wire tightening screws

2. Assembly screws

- Reinstall the DC wiring assembly on the power supply so that you can return it with the power supply.
- Place the power supply in an anti-static bag for storage.
- 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.
- 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).

FIGURE 46 The DC wiring assembly



1. Wire tightening screws

2. Assembly screws

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 60 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.



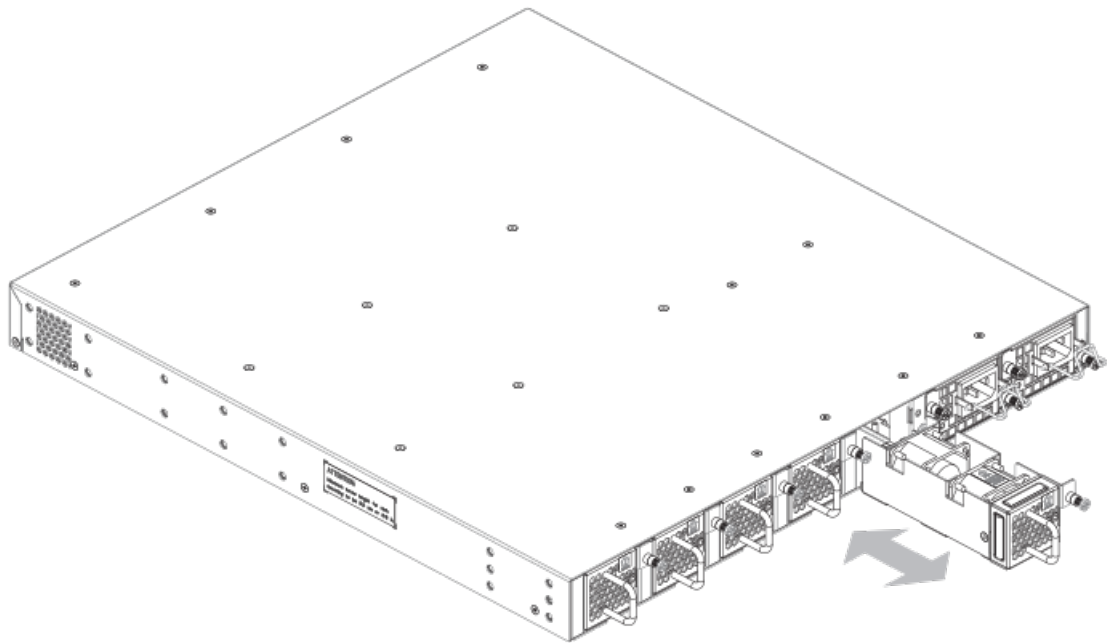
CAUTION

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 47 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 22.

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 81 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 Extreme Networks device is powered on and running.

Installation precautions and warnings

Follow these precautions when installing a power supply in the Extreme Networks 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.

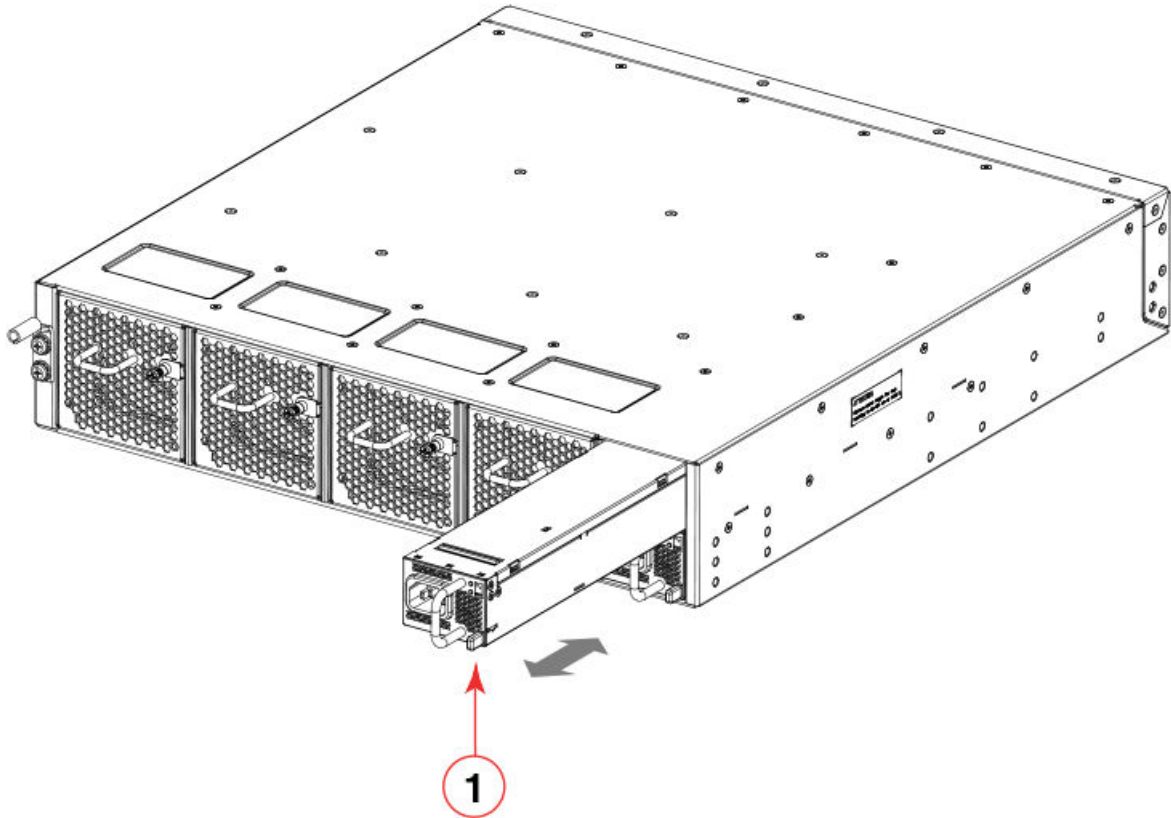
NOTE

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.

FIGURE 48 Removing power supply from chassis



1. Locking tab

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.

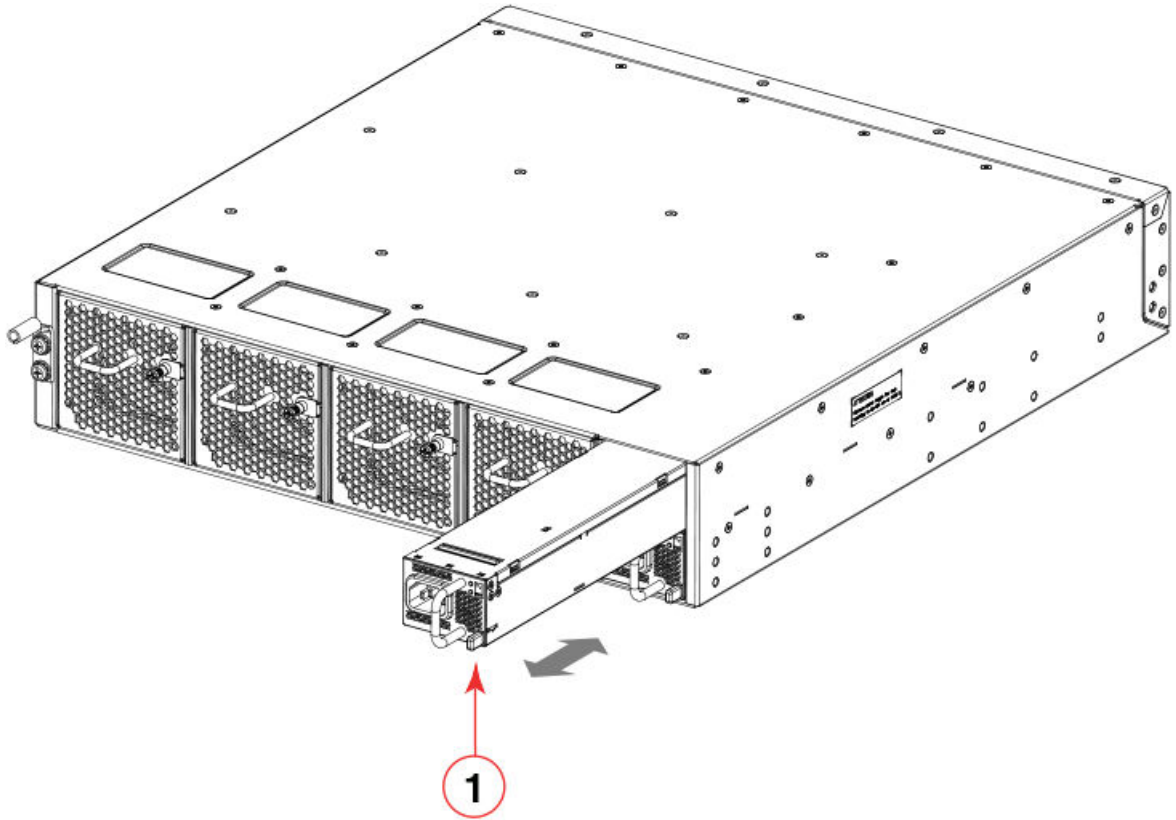
NOTE

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.

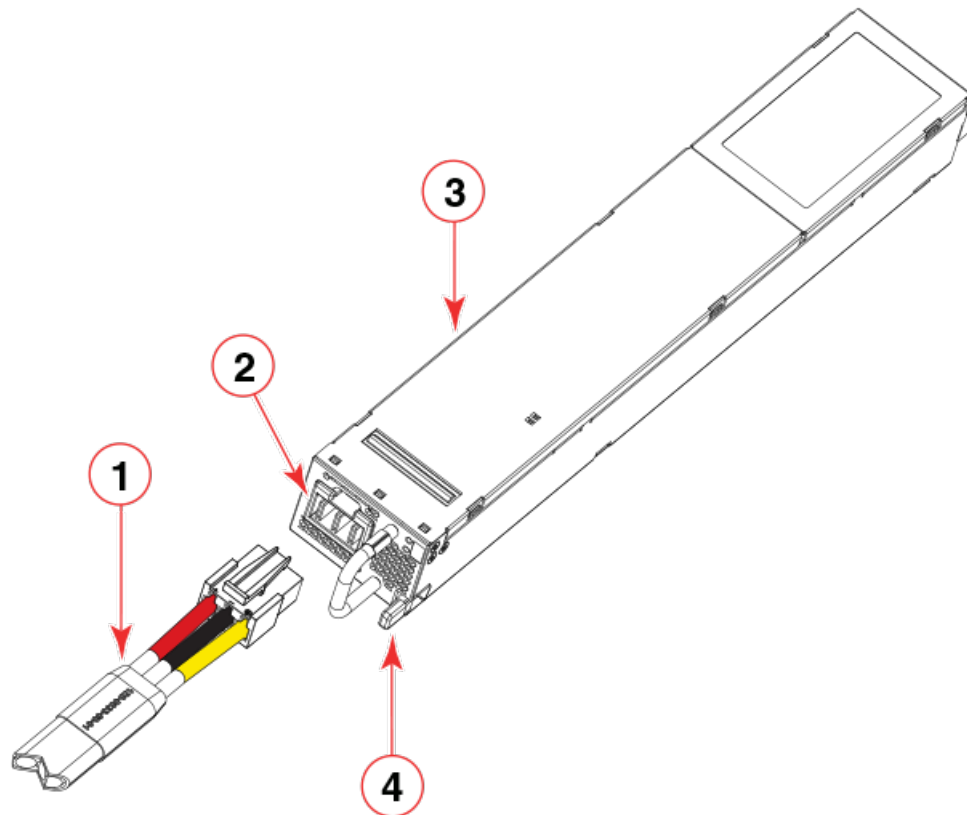
FIGURE 49 Removing power supply from chassis



1. Locking tab

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

FIGURE 50 1100W DC power supply and DC harness



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

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 62 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

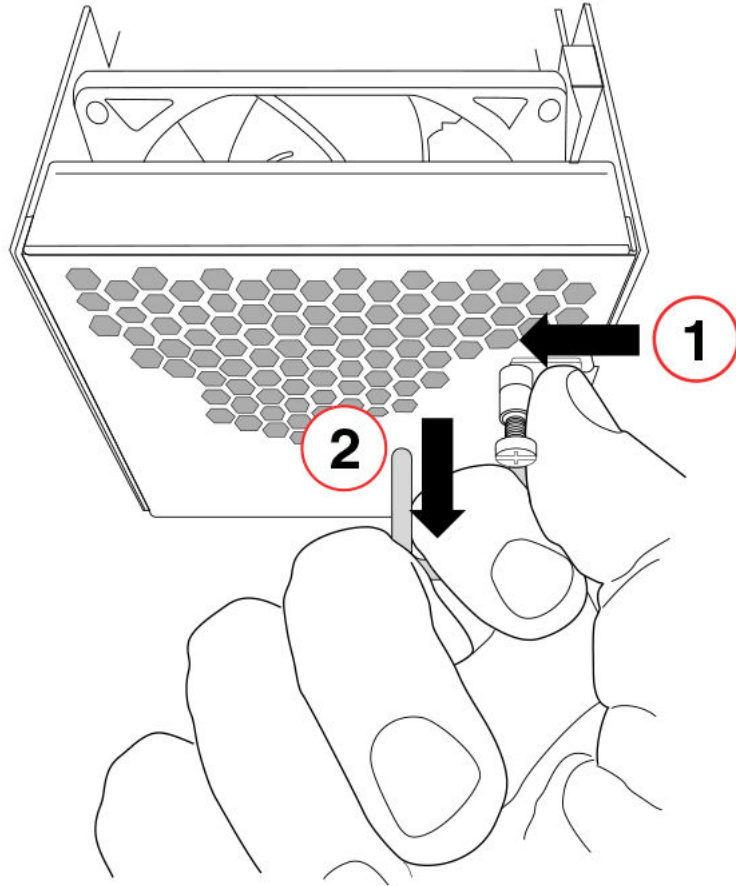
Replacing a fan assembly

Complete the following steps to replace a fan assembly.

1. Using the Phillips screwdriver, fully unscrew the captive screw on the fan assembly.
2. Pull on screw, and then push the screw body left with your thumb to unlock latch mechanism while holding the handle with your index finger (refer to following illustration).

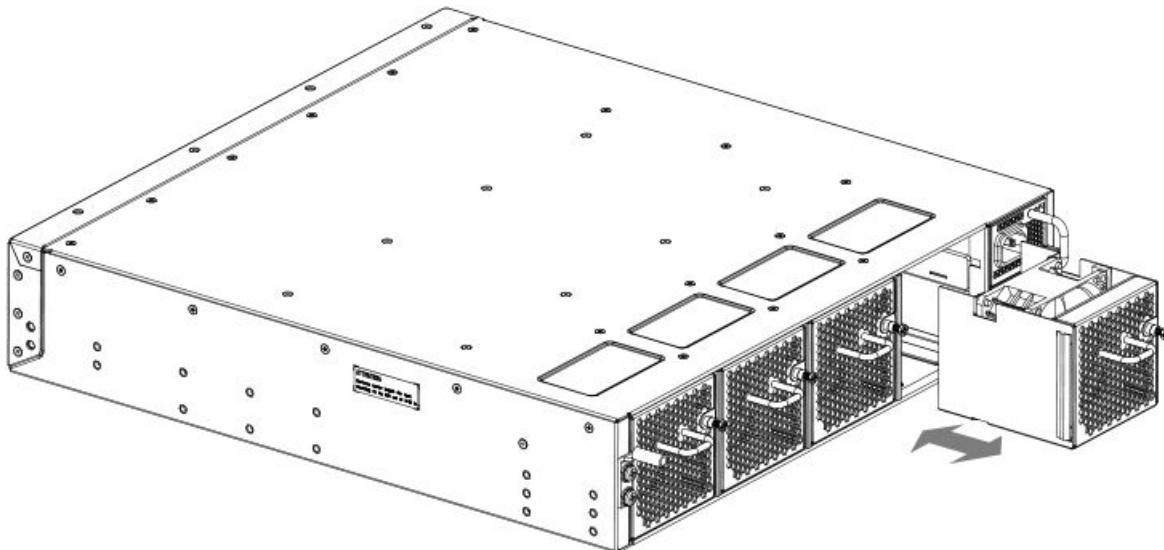
3. While holding the screw in the unlatched position, slowly pull the fan assembly straight out from the chassis with the handle.

FIGURE 51 Unlatching and removing fan assembly



4. Install the new fan assembly in the chassis using the following steps:
 - 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 handle on the front panel of the fan. With the other hand, support the underside of the fan, and then insert it into the empty fan slot. Slide the new fan into the chassis until the latch engages.

FIGURE 52 Inserting or removing fan assembly



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.
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.

Installing and replacing port-side fan filter assemblies

Use this procedure to install or replace the optional fan filter assemblies over air vents on the port side of the VDX 6940-144S.

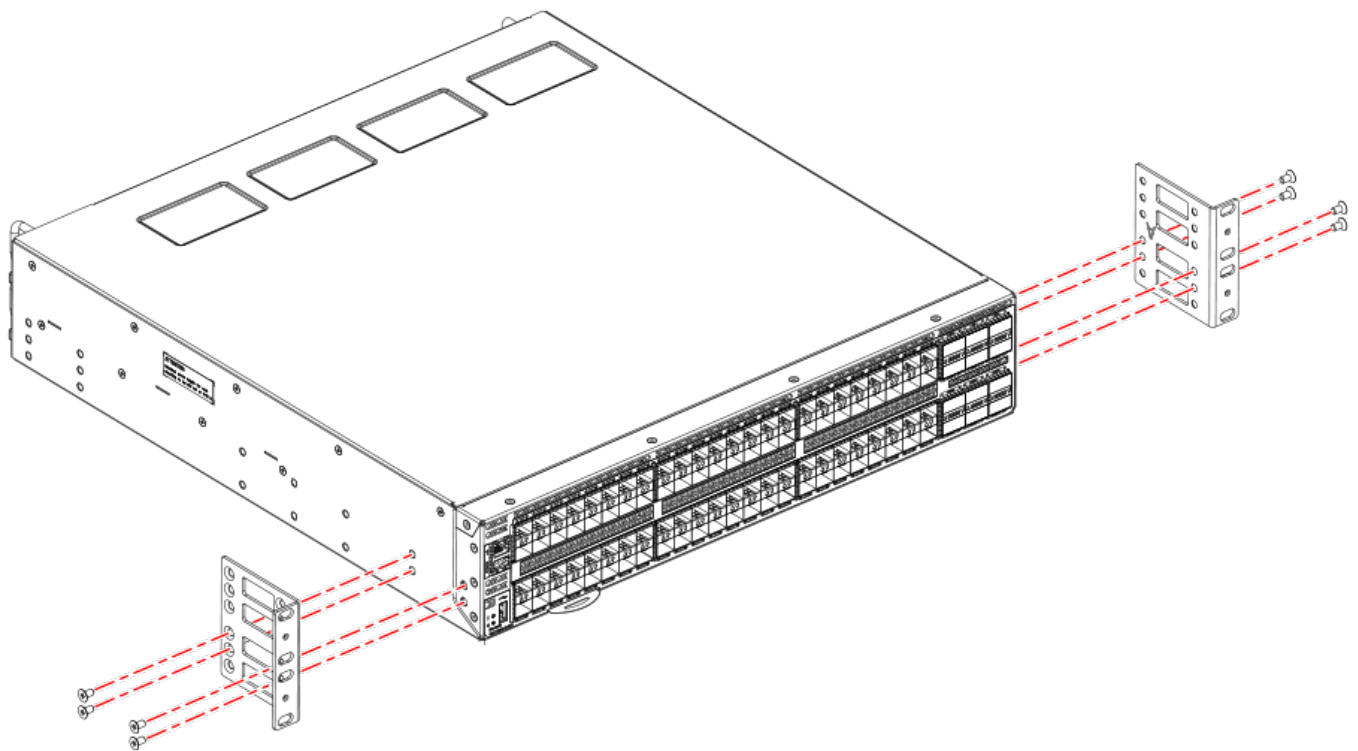
Optional fan filter assemblies can be installed over the air vents located above each row of ports on the device. Install these assemblies when dust or other airborne contaminants may be present that can potentially break down electrical components. The filters are designed to remove particulate matter that has not yet been filtered by the return air system in the installation site.

The fan filter accessory kit includes the following components:

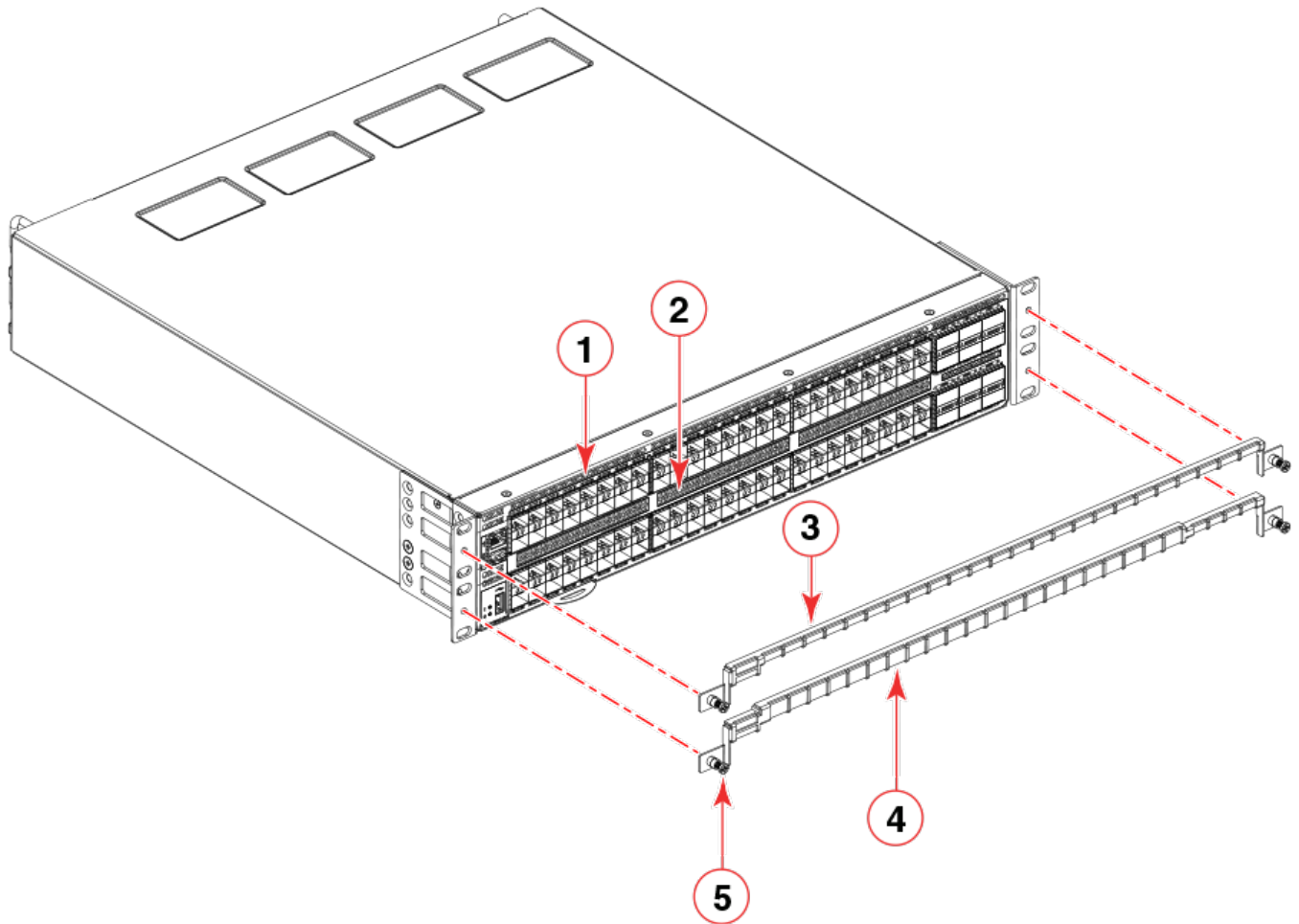
- Top filter assembly - includes filter and holder
- Bottom filter assembly - includes filter and holder
- Front mounting brackets - mounts device to rack
- 8-32 x 5/16-inch Phillips screws (8) - attaches mounting brackets to device

Regularly inspect and replace fan filters as needed. To replace filters, you must replace the top and bottom air filter assemblies. Order the fan filter accessory kit and replacement filter assemblies from your Extreme Networks representative.

1. Install the front mounting brackets to each side of the device using the 8-32 x 5/16-inch Phillips screws. Use four screws for each bracket.



2. Install the top and bottom fan filter assemblies over the air vents. Secure the ends of each assembly into holes on the device rack-mounting brackets using the captive screws on each assembly.



- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Top vents on device 2. Bottom vents on device 3. Top filter assembly | <ol style="list-style-type: none"> 4. Bottom filter assembly 5. Captive screw |
|---|---|

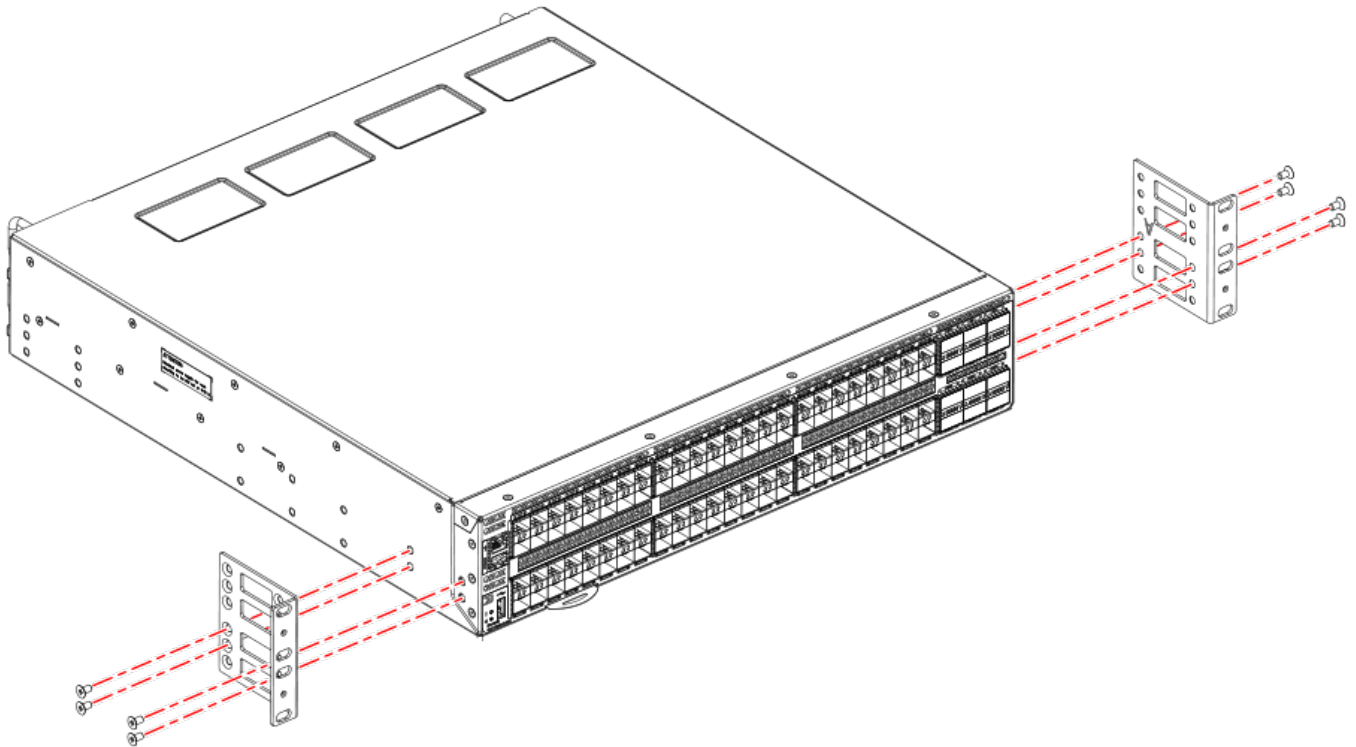
3. To replace filters, remove filter assemblies and slide in new filters

Installing fan filter assemblies

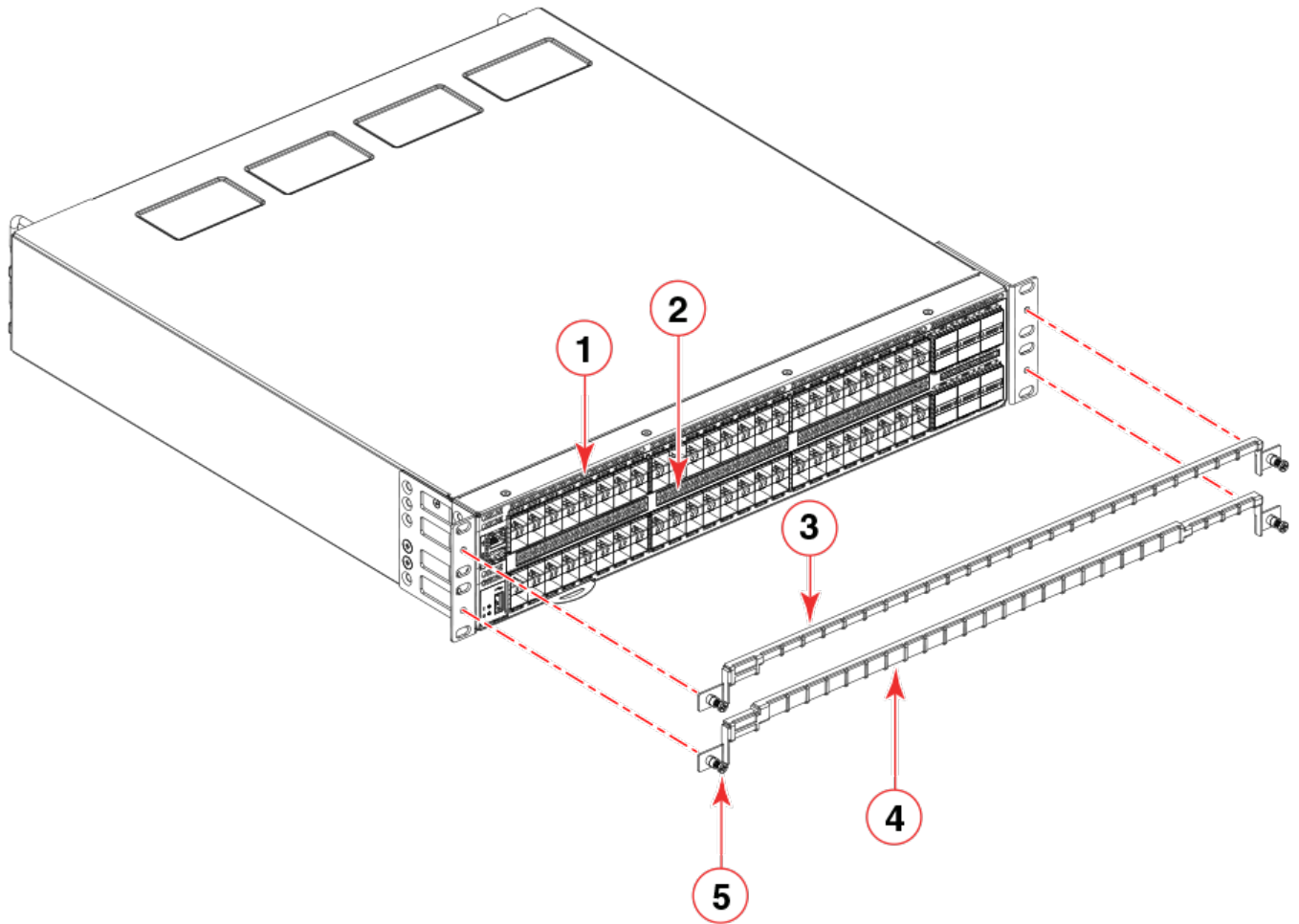
Use the following steps to install the optional fan filter assemblies over the port-side air vents.

If possible, install this filter assembly on the device before installing the device in a rack as you must use the front rack-mounting brackets in the fan filter accessory kit instead of the brackets provided with your rack mount kit. If already installed in a rack, you must replace the front rack-mounting brackets attaching the device to the rack with those in the filter accessory kit.

1. Install the front mounting brackets to each side of the device using the 8-32 x 5/16-inch Phillips screws. Use four screws for each bracket.



2. Install the top and bottom fan filter assemblies over the air vents.



- | | |
|---------------------------|---------------------------|
| 1. Top vents on device | 4. Bottom filter assembly |
| 2. Bottom vents on device | 5. Captive screw |
| 3. Top filter assembly | |

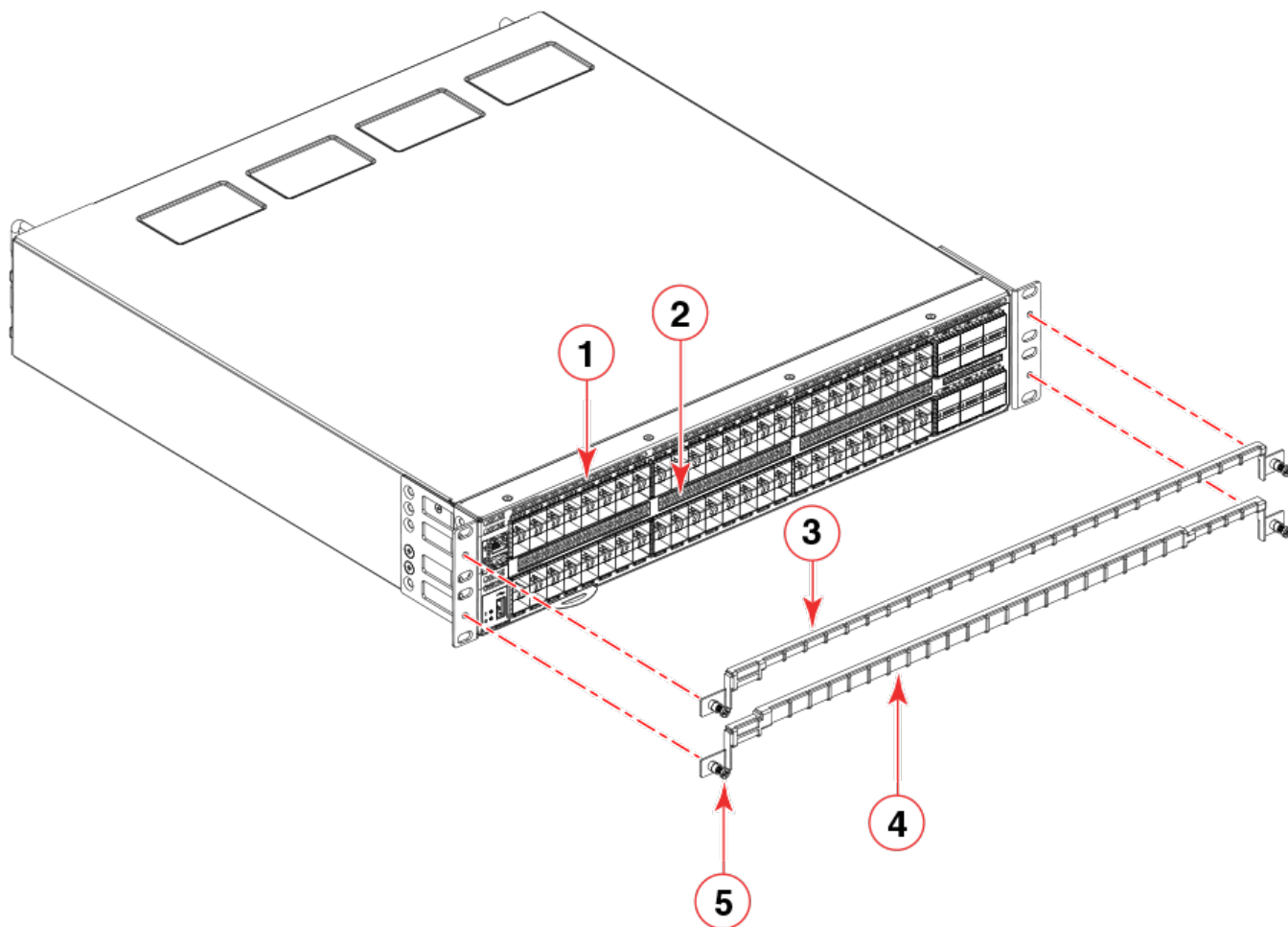
3. Secure the ends of each filter assembly into holes on the device's rack-mount brackets by tightening the assembly captive screws.

Replacing fan filter assemblies

Use the following procedure to replace fan filter assemblies installed over the port-side air vents.

If fan filters require replacement, order new fan filter assemblies from Extreme Networks. You must replace filters and assemblies as a unit.

1. Unscrew the captive screws securing the top and bottom filter assemblies over air vents and remove assemblies from device.



- | | |
|---------------------------|---------------------------|
| 1. Top vents on device | 4. Bottom filter assembly |
| 2. Bottom vents on device | 5. Captive screw |
| 3. Top filter assembly | |

2. Install new filter assemblies over top and bottom air vents.
3. Secure the ends of each assembly into holes on the device's rack-mount brackets by tightening the assembly captive screws.

QSFP transceiver removal and replacement

Use this procedure to remove and replace a QSFP transceiver. Because each 40 GbE 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.



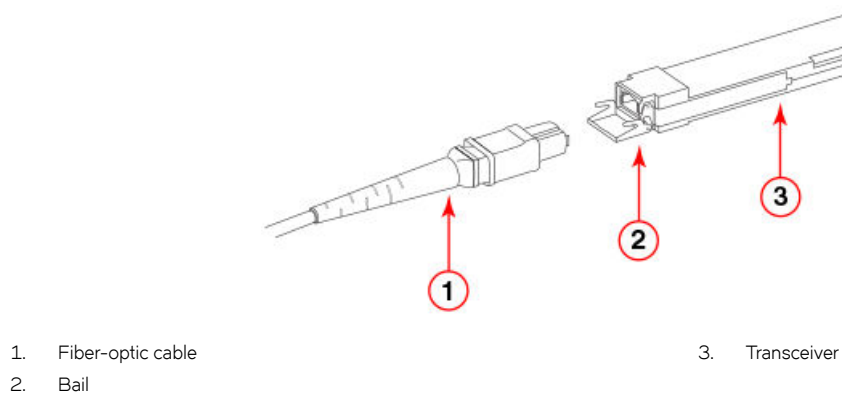
DANGER
Laser Radiation. Do Not View Directly with Optical Instruments. Class 1M Laser Products.

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.

FIGURE 53 QSFP cable and transceiver with bail open



1. Fiber-optic cable
2. Bail

3. Transceiver

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.

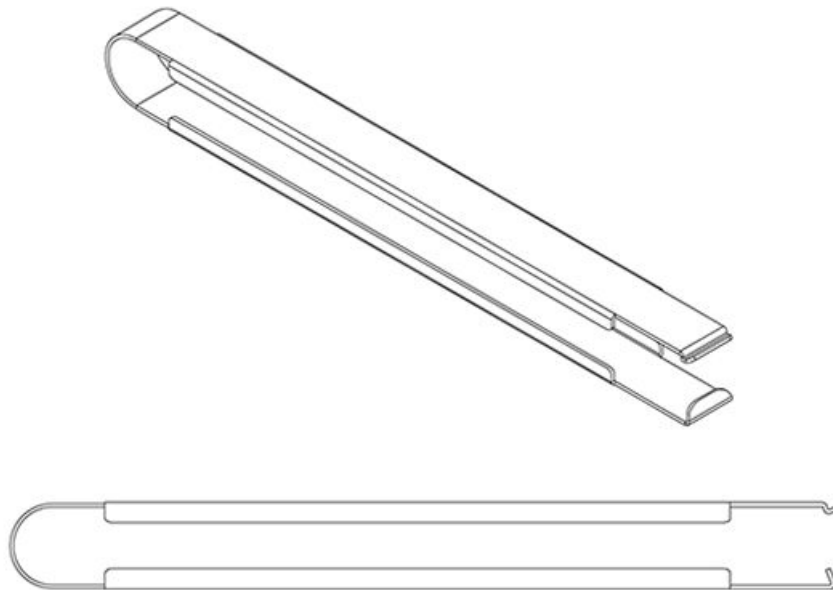
Time and items required

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 Extreme Networks devices and backbones come with an optical transceiver extraction tool (Figure 54) and holster. The extraction tool is designed to remove transceivers from modules where the space is limited.

FIGURE 54 Optical transceiver extraction tool



Removing a transceiver

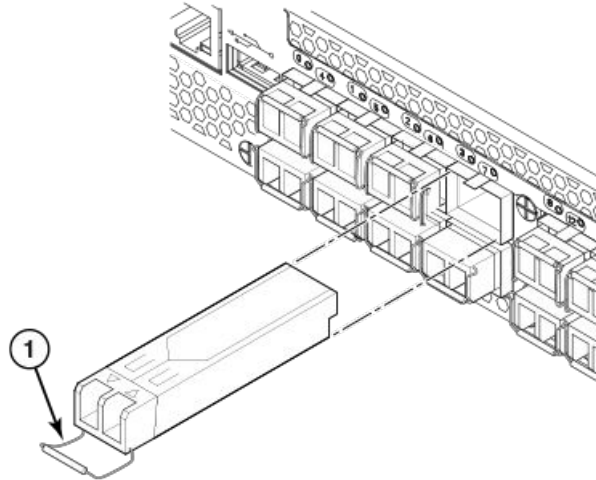
For the following procedure refer to the illustration.

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.

- 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.

FIGURE 55 Optical transceiver with bail open



- SFP or SFP+ bail

Replacing a transceiver

Complete the following steps to replace an SFP or SFP+ transceiver. Refer to the illustration in [Removing a transceiver](#) on page 110.

- 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.
- 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.

ExtremeSwitching VDX 6940 Technical Specifications

This document highlights the features and specifications for the ExtremeSwitching VDX 6940 device.

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 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	VDX 6940-36Q Five field-replaceable fan assemblies, each with two fans, for a total of 10 per system 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	Non-blocking shared memory switch
System processor	VDX 6940-36Q - 1.5 GHz P3041 Quad Core CPU VDX 6940-144S- 1.5 GHz P4080 8-Core CPU

Ethernet

System component	Description
QSFP+ GbE ports	VDX 6940-36Q - 36 40-GbE QSFP+ ports. 144 10-GbE ports using 10-GbE breakout cables. VDX 6940-144S - 12 40-GbE QSFP+ ports. Forty-eight 10-GbE ports using 10-GbE breakout cables.
QSFP28 ports	VDX 6940-144S - Up to 4 40/100-GbE dual personality ports can be configured for 100 GbE operation with qualified 100-GbE transceivers installed. NOTE For each dual personality port configured for 100-GbE operation, 40-GbE operation is disabled on three 40-GbE ports. Therefore, with a maximum of 4 100 GbE ports configured, all 40 GbE port operation is disabled.
SFP+ GbE ports	VDX 6940-144S - 96 fixed 10-GbE ports that support SFP+ and TSFP+ optics.
Ethernet management port	VDX 6940-36Q - RJ-45 10/100/1000 Mbps Ethernet out-of-band management port VDX 6940-144S - RJ-45 1000 Mbps Ethernet out-of-band management port

LEDs

System component	Description
Switch status and management	One bicolor system status LED (green and amber) on the port side. One green power status LED on the port side. Two green Ethernet management port status LEDs on the port side.
Port activity 40-GbE ports	One green LED per port for 40-GbE operation. Four green LEDs per port for 10-GbE operation in breakout mode.
Port activity 100-GbE ports (VDX 6940-144S)	One green LED per port for 100-GbE operation on 40/100 GbE dual personality ports 97, 98, 103, and 104.
Port activity fixed 10-GbE ports (VDX 6940-144S)	One bicolor LED (green and amber) per port to indicate status on the port side.
Fan status	One bicolor LED (green and amber) per fan to indicate status on nonport side.
Power supply status	VDX 6940-36Q - One green LED per power supply to indicate status on nonport side. 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.

Other

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

Weight and physical dimensions

Fully loaded means that all FRUs and transceivers are installed.

Model	Height	Width	Depth	Weight (empty)	Weight (fully loaded)
Extreme 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
Extreme 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 14 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	VDX 6940-36Q - 15 G , 11 ms, half-sine wave VDX 6940-144S - 15 G , 11 ms, half-sine wave	VDX 6940-36Q - 33 G, 11 ms, half-sine wave, 5/ea Axis and 33 G 6ms, Trapezoidal, 1/ea axis VDX 6940-144S - 33 G, 11 ms, half sine wave 5/ea Axis, and 33 G 6ms, Trapezoidal, 1/ea axis
Vibration	VDX 6940-36Q - 1 G sine, 0.5 gms random, 5-500 Hz VDX 6940-144S - 1 G sine, 0.5 gms random, 5-500 Hz	VDX 6940-36Q - 2.4 G sine, 1.1 gms random, 5-500 Hz VDX 6940-144S - 2.4 G sine, 1.1 gms random, 5-500 Hz
Airflow	VDX 6940-36Q <ul style="list-style-type: none"> Maximum: 159 cmh (94 cfm) Minimum: 65 cmh (38 cfm) VDX 6940-144S <ul style="list-style-type: none"> Maximum: 370 cmh (218 CFM) Minimum: 95 cmh (56 CFM) 	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
Operating noise	VDX 6940-36Q <ul style="list-style-type: none"> Maximum: 88 dBA (8.8 Bels) Nominal: 71 dBA (7.1 Bels) VDX 6940-144S <ul style="list-style-type: none"> Maximum 87 dbA (8.7 Bels) Nominal: 69 dBA (6.9 Bels) 	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 - VDX 6940-36Q XBR-500WPSAC-01-F or XBR-500WPSAC-01-R	500 W	100 - 240 VAC (nominal) 90 - 264 VAC (range)	50 - 60 Hz (nominal) 50-60 Hz (range)	6 A @ 100 VAC 7 A @ 90 VAC	Line Fused	30 A peak at cold start and 50 A peak at warm start for <10 ms, 10 A peak for cycles 10 ms -150 ms, < 7 A peak for >150 ms
AC to DC - VDX 6940-144S	1100 W	100 - 240 VAC (nominal)	50 - 60 Hz (nominal)	12 A	AC line and neutral fused	40 A peak at 240 VAC during cold

Power consumption (typical configuration)

Power supply model	Maximum output power rating (DC)	Input voltage	Input line frequency	Maximum input current	Input line protection	Maximum inrush current
XBR-VDX6940-64S-AC-2 XBR-VDX6940-64S-AC-R		90 - 264 VAC (range)	47 - 63 Hz (range)			startup at 25°C 77°F
DC to DC - VDX 6940-36Q RPS9DC+E or RPS9DC+I	500 W	48 VDC (nominal) 40-60 VDC (range)	NA	15 A 16 A	-VE fused	25 A peak cold and warm start
DC to DC - VDX 6940-144S XBR-1100WPSD C-01-F or XBR-1100WPSD C-01-R	1100 W	40-60 VDC (rated) 48 VDC(nominal) 40 - 60 VDC (range) 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.	NA	<33 A	-Ve fused	60 A peak hot or cold start

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 231 W 788.42 BTU/hr	1.12 A 226 W 771.36 BTU/hr	4.1 A 211.2 W 720.84 BTU/hr	2	Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies.

Model name	@100 VAC input	@200 VAC input	@-48 VDC input	Minimum number of power supplies	Notes
					NOTE 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 332 W 1133.14 BTU/hr	1.639 A 326 W 1112.66 BTU/hr	6.8 A 350 W 1195.94 BTU/hr	1	Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies.

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 140 W 477.83 BTU/hr	0.636 A 136 W 464.18 BTU/hr	2.7 A 144.42 W 492.92 BTU/hr	1	Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies.
VDX 6940-144S	1.73 A 180 W 614.35 BTU/hr	0.912 A 180 W 614.35 BTU/hr	4.8 A 244.8 W 835.52 BTU/hr	1	Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies

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 295 W 1006.86 BTU/hr	1.44 A 289 W 986.38 BTU/hr	-48 VDC 5.8 A 288.6 W 985.01 BTU/hr	2	Input current is for 1 power supply, Watts & BTUs/hr are with two power supplies.

Model name	@100 VAC input	@200 VAC input	@-48 VDC input	Minimum number of power supplies	Notes
					NOTE Device ships with two power supplies. One provides system power, but both must be installed to provide sufficient airflow from fans.
VDX 6940-144S	5.119 A 512 W 1747.5 BTU/hr	2.506 A 500 W 1706.54 BTU/hr	10.3 A 499.2 W 1703.81 BTU/hr	1	

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 SFP breakout mode (also referred to as 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.
		Up to 48 10-GbE ports in SFP breakout mode	Each 40-GbE port can be broken out into four independent 10-GbE SFP+ ports, providing up to 48 10-GbE SFP+ ports. Combined with 96 10-GbE fixed ports, up to 144 10-GbE ports can be provided on the VDX 6940-144S.
100-GbE	Up to 4 100-GbE ports	Up to four 40/100-GbE capable dual personality ports can be configured as 100-GbE ports. For each port configured for 100-GbE operation, three ports are disabled for 40-GbE operation. Therefore the following configurations are possible: <ul style="list-style-type: none"> • 9 40 GbE QSFP ports and 1 100 GbE QSFP28 port • 6 40 GbE QSFP ports and 2 100 GbE QSFP28 ports • 3 40 GbE QSFP ports and 3 100 GbE QSFP28 ports • No 40 GbE QSFP ports and 4 100 GbE QSFP28 ports 	

Serial port specifications (pinout RJ-45)

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

Serial port specifications (protocol)

Parameter	Value
Baud	9600
Data bits	8
Parity	None
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 (CE mark) (Class A)
- EN 55024 (CE mark) (Immunity) for Information Technology Equipment
- ICES-003 (Canada) (Class A)
- AS/NZ 55022 (Australia) (Class A)
- VCCI (Japan) (Class A)
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-6-1

Regulatory compliance (safety)

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

Regulatory compliance (environmental)

- 2011/65/EU - Restriction of the use of certain hazardous substance in electrical and electronic equipment (EU RoHS).
- 2012/19/EU - Waste electrical and electronic equipment (EU WEEE).
- 94/62/EC - packaging and packaging waste (EU).
- 2006/66/EC - batteries and accumulators and waste batteries and accumulators (EU battery directive).
- 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (EU REACH).
- Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 - U.S. Conflict Minerals.
- 30/2011/TT-BCT - Vietnam circular.
- SJ/T 11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in EIPs (China).
- SJ/T 11364-2006 Marking for the Control of Pollution Caused by EIPs (China).

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BSMI statement (Taiwan)

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

Warning:

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

Canadian requirements

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

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CE statement

ATTENTION

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

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

- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Low Voltage Directive (LVD) 2014/35/EU
- EN 55032/EN 55024 (European Immunity Requirements)
 - EN61000-3-2/JEIDA (European and Japanese Harmonics Spec)
 - EN61000-3-3

China ROHS

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

FCC warning (US only)

This equipment has been tested and complies with the limits for a Class A computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

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.

Japan power cord



注意 - 添付の電源コードを他の装置や用途に使用しない
添付の電源コードは本装置に接続し、使用することを目的として設計され、その安全性が確認されているものです。決して他の装置や用途に使用しないでください。火災や感電の原因となる恐れがあります。

English translation of above statement

ATTENTION: Never use the power cord packed with your equipment for other products.

Germany statement

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

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

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

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



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

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

VORSICHT	Alle Geräte mit Wechselstromquellen sind nur zur Installation in Sperrbereichen bestimmt. Ein Sperrbereich ist ein Ort, zu dem nur Wartungspersonal mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer anderen Schutzvorrichtung Zugang hat.
MISE EN GARDE	Pour éviter d'endommager le châssis et les composants, ne jamais tenter de soulever le châssis par les poignées du ventilateur ou de l'alimentation. Ces poignées n'ont pas été conçues pour supporter le poids du châssis.

PRECAUCIÓN	Para prevenir daños al chasis y a los componentes, nunca intente levantar el chasis usando las asas de la fuente de alimentación o del ventilador. Tales asas no han sido diseñadas para soportar el peso del chasis.
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**CAUTION**

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

VORSICHT	Stellen Sie sicher, dass an der Vorderseite, den Seiten und an der Rückseite der Luftstrom nicht behindert wird.
MISE EN GARDE	Vérifiez que rien ne restreint la circulation d'air devant, derrière et sur les côtés du dispositif et qu'elle peut se faire librement.
PRECAUCIÓN	Asegúrese de que el flujo de aire en las inmediaciones de las partes anterior, laterales y posterior del instrumento no esté restringido.

**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.
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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.

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**

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.

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.
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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	Mette 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.

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.

**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.

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.
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.

**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.

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 Mindestnenntemperatur 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 Lüfereinheiten macht die Garantie und die gesetzlichen Zertifizierungen ungültig. Die Netzteile und Lüfereinheiten 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 a location where access can be gained only by trained service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

VORSICHT	Alle Geräte mit DC-Netzteil sind nur für die Installation in Bereichen mit beschränktem Zugang gedacht. Ein Bereich mit beschränktem Zugang ist ein Ort, zu dem nur ausgebildetes Wartungspersonal mit Spezialwerkzeug, Schloss und Schlüssel oder anderen Sicherheitsvorrichtungen Zugang hat. Dieser Zugang wird von für den Bereich zuständigen Personen überwacht.
MISE EN GARDE	Tous les équipements dotés de sources d'alimentation C.C. sont destinés à être installés uniquement dans des zones à accès réglementé. Une zone à accès réglementé est une zone dont l'accès n'est possible qu'au personnel de service qualifié utilisant un verrou, une clé ou un outil spécial, ou d'autres moyens de sécurité, et qui est contrôlée par les autorités responsables du site.

PRECAUCIÓN	Todos los dispositivos con fuentes de alimentación de corriente continua (CC) han sido diseñados únicamente para su instalación en áreas restringidas/ zonas de acceso restringido . Se entiende como área de acceso restringido un lugar al que solo puede acceder personal de servicio mediante el uso de una herramienta especial, llave y cerrojo u otro medio de seguridad similar, y que esté controlado por la autoridad responsable de esa ubicación.
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CAUTION

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

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



CAUTION

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

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

VORSICHT	Statische Elektrizität kann das System und andere elektronische Geräte beschädigen. Um Schäden zu vermeiden, entnehmen Sie elektrostatisch empfindliche Geräte erst aus deren antistatischer Schutzhülle, wenn Sie bereit für den Einbau sind.
MISE EN GARDE	L'électricité statique peut endommager le châssis et les autres appareils électroniques. Pour éviter tout dommage, conservez les appareils sensibles à l'électricité statique dans leur emballage protecteur tant qu'ils n'ont pas été installés.
PRECAUCIÓN	La electricidad estática puede dañar el chasis y otros dispositivos electrónicos. A fin de impedir que se produzcan daños, conserve los dispositivos susceptibles de dañarse con la electricidad estática dentro de los paquetes protectores hasta que esté listo para instalarlos.



CAUTION

For the NEBS-compliant installation of an Extreme Networks device, 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 Extreme Networks Geräts 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 Extreme Networks 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 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 énoncé de danger indique des conditions ou des situations potentiellement mortelles ou extrêmement dangereuses. Des étiquettes de sécurité sont posées directement sur le produit et vous avertissent de ces conditions ou situations.

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

General dangers



DANGER

The procedures in this manual are for qualified service personnel.

GEFAHR	Die Vorgehensweisen in diesem Handbuch sind für qualifiziertes Servicepersonal bestimmt.
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.



DANGER

Use safe lifting practices when moving the product.

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



DANGER

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

GEFAHR	Montieren Sie die Geräte im Gestell so tief wie möglich. Platzieren Sie das schwerste Gerät ganz unten, während leichtere Geräte je nach Gewicht (je schwerer desto tiefer) darüber untergebracht werden.
DANGER	Montez les dispositifs que vous installez dans un bâti aussi bas que possible. Placez le dispositif le plus lourd en bas et le plus léger en haut, en plaçant tous les dispositifs progressivement de bas en haut du plus lourd au plus léger.

PELIGRO	Monte los instrumentos que instale en un bastidor lo más bajos posible. Ponga el instrumento más pesado en la parte inferior y los instrumentos progresivamente más livianos más arriba.
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Laser dangers



DANGER

All fiber-optic interfaces use Class 1 lasers.

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



DANGER

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

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



DANGER

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

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

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 V en 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 230 V. Después de haber utilizado el dispositivo de protección, el equipo sigue teniendo voltaje si está conectado a un sistema de alimentación informático.

**DANGER**

The intra-building port or ports of the equipment or subassembly is suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building port or ports of the equipment or subassembly MUST NOT be metallically connected to interfaces that connect to the outside plant (OSP) or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 5) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

GEFAHR	Die gebäudeinternen Anschlüsse des Geräts bzw. der Unterbaugruppe sind nur zur Verbindung mit gebäudeinternen bzw. nicht freiliegenden Drähten und Kabeln geeignet. Die gebäudeinternen Anschlüsse des Geräts bzw. der Baugruppe DÜRFEN NICHT metallisch mit Schnittstellen verbunden werden, die an Außenbereiche (OSP) oder deren Verdrahtung angeschlossen sind. Diese Schnittstellen sind ausschließlich zur Verwendung als gebäudeinterne Schnittstellen ausgelegt (Anschlüsse des Typs 2 oder 4 gemäß GR-1089-CORE, Ausgabe 5) und müssen von den freiliegenden OSP-Kabeln isoliert werden. Eine hinzugefügte Primärschutzeinrichtung ist kein ausreichender Schutz gegen den metallischen Anschluss dieser Schnittstellen an die OSP-Verdrahtung.
DANGER	Le ou les ports des connexions intra-bâtiment ou un sous-ensemble sont uniquement acceptable à une connexion intra-bâtiment ou une connexion avec du câblage non exposé. Il est rigoureusement interdit d'établir un contact métallique entre le ou les ports intra-bâtiment ou sous-ensemble, et des interfaces connectées à des installations extérieures (OSP) ou à leur câblage. Ces interfaces sont spécifiquement conçues pour un usage intra-bâtiment (les ports de Type 2 ou Type 4 comme décrits dans le document GR-1089-CORE, volume 5) et elles doivent être isolées de tout câblage exposé dans les installations extérieures (OSP). L'ajout des équipements de protection primaire (Primary Protectors) n'offre pas une protection suffisante pour permettre un raccordement par contact métallique au câblage extérieur (OSP).
PELIGRO	Los puertos del equipo o del sistema secundario situados en el interior de un edificio únicamente podrán conectarse a instalaciones eléctricas o cableados que se encuentren dentro del edificio o que no estén expuestos. Los puertos del equipo o del sistema secundario situados en el interior del edificio NO DEBEN conectarse metálicamente a interfaces que se encuentren conectadas a la planta exterior (OSP por sus siglas en inglés) o a su sistema eléctrico. Dichas interfaces han sido diseñadas para uso exclusivo en el interior de un edificio (puertos Tipo 2 o Tipo 4, según lo descrito en GR-1089-CORE, Número 5) y deben aislarse del cableado de la OSP expuesto. La incorporación de Protectores Primarios no proporciona protección suficiente para conectar dichas interfaces metálicamente al sistema eléctrico de la OSP.

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.



DANGER

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

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