VSP 4900 Series Switches:
Hardware Installation Guide

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Preface

This guide provides the instructions and supporting information needed to install the following Extreme Networks® Summit® family switches:

The guide includes information about site preparation, switch functionality, and switch operation.

Audience

This guide is intended for use by network administrators responsible for installing and setting up network equipment. It assumes a basic working knowledge of:

- Local area networks (LANs)
- Ethernet concepts
- Ethernet switching and bridging concepts
- Routing concepts
- Simple Network Management Protocol (SNMP)
- Basic equipment installation procedures

See the and the for information about configuring ExtremeSwitching switches.

> **Note**
>
> If the information in an installation note or release note shipped with your Extreme Networks equipment differs from the information in this guide, follow the installation or release note.

Conventions

This section discusses the conventions used in this guide.

Text Conventions

The following tables list text conventions that are used throughout this guide.

Table 1: Notice Icons

Icon	Notice Type	Alerts you to...
	General Notice	Helpful tips and notices for using the product.
	Note	Important features or instructions.
	Caution	Risk of personal injury, system damage, or loss of data.
	Warning	Risk of severe personal injury.
New!	New Content	Displayed next to new content. This is searchable text within the PDF.

Table 2: Text Conventions

Convention	Description
`Screen displays`	This typeface indicates command syntax, or represents information as it appears on the screen.
The words **enter** and **type**	When you see the word "enter" in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says "type."
[Key] names	Key names are written with brackets, such as **[Return]** or **[Esc]**. If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press **[Ctrl]**+**[Alt]**+**[Del]**
Words in italicized type	Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles.

Terminology

When features, functionality, or operation is specific to a switch family, such as ExtremeSwitching, the family name is used. Explanations about features and operations that are the same across all product families simply refer to the product as the switch.

Providing Feedback to Us

Quality is our first concern at Extreme Networks, and we have made every effort to ensure the accuracy and completeness of this document. We are always striving to improve our documentation and help you work better, so we want to hear from you! We welcome all feedback but especially want to know about:

- Content errors or confusing or conflicting information.
- Ideas for improvements to our documentation so you can find the information you need faster.
- Broken links or usability issues.

If you would like to provide feedback to the Extreme Networks Information Development team, you can do so in two ways:

- Use our short online feedback form at https://www.extremenetworks.com/documentation-feedback/.
- Email us at documentation@extremenetworks.com.

Please 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.

Getting Help

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

Extreme Portal	Search the GTAC (Global Technical Assistance Center) knowledge base, manage support cases and service contracts, download software, and obtain product licensing, training, and certifications.

| The Hub | A forum for Extreme Networks customers to connect with one another, answer questions, and share ideas and feedback. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC. |
| Call GTAC | For immediate support: 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 |

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

Subscribing to Service Notifications

You can subscribe to email notifications for product and software release announcements, Vulnerability Notices, and Service Notifications.

1 Go to www.extremenetworks.com/support/service-notification-form.
2 Complete the form with your information (all fields are required).
3 Select the products for which you would like to receive notifications.

> **Note**
> You can modify your product selections or unsubscribe at any time.

4 Click **Submit**.

Documentation and Training

To find Extreme Networks product guides, visit our documentation pages at:

Current Product Documentation	www.extremenetworks.com/documentation/
Archived Documentation (for earlier versions and legacy products)	www.extremenetworks.com/support/documentation-archives/
Release Notes	www.extremenetworks.com/support/release-notes
Hardware/Software Compatibility Matrices	https://www.extremenetworks.com/support/compatibility-matrices/
White papers, data sheets, case studies, and other product resources	https://www.extremenetworks.com/resources/

Training

Extreme Networks offers product training courses, both online and in person, as well as specialized certifications. For more information, visit www.extremenetworks.com/education/.

1 Overview of the VSP 4900 Series Switch

> **VSP 4900-48P Features**
> **VSP License Options**

ExtremeSwitching VSP 4900 Series switches provide 48 10/100/1000BASE-T PoE+ Ethernet that can be deployed in either Enterprise LAN or high-density, top-of-rack high-performance enterprise and aggregation applications. The switch provides a modular Versatile Interface Module (VIM) slot that allows a user to choose an uplink model that is suitable for their needs. The VSP 4900 Series switches run the VOSS operating platform.

VSP 4900 Series switches include the following base model:

Table 3: VSP 4900 Model

Part no.	Model
VSP4900-48P	VSP 4900-48P switch with 3 fan modules and 2 unpopulated power supply slots

The 10/100/1000BASE-T ports on the VSP 4900-48P model can operate in half-duplex mode when operating at 10Mbps or 100Mbps. In addition, This model supports IEEE 802.1AE MACsec.

Versatile Interface Module (VIM5) Options for VSP 4900 Series Switches

The following VIM5s are available for VSP 4900 series switches:

- VIM5-4X versatile interface module that provides four 10-GbE (SFP+) ports.
- VIM5-4XE versatile interface module that provides four 10-GbE (SFP+) ports, LRM/MACsec capable.
- VIM5-2Y versatile interface module that provides two 25-GbE (SFP28) ports.
- VIM5-4YE versatile interface module that provides four 25-GbE (SFP28) MACsec capable ports.
- VIM5-2Q versatile interface module that provides two 40-GbE (QSFP) ports.

> ### Warning
> The switch must be powered off before you install any interface module options (VIM5s). The interface module options are not hot swappable.

Management

A serial console port on the rear panel of the VSP 4900 series switch allows you to connect a terminal and perform local management. An Ethernet management port can be used to connect the system to a

out of bound management network for administration. Alternatively, you can use an Ethernet cable to connect this port directly to a laptop to view and locally manage the switch configuration. The Ethernet management port supports 10/100/1000 Mbps speeds.

There is also a USB console port. If the USB console port is connected, it will be selected over the RJ45 console port. The USB console port will disconnect when the switch is rebooted. A user can re-connect the port if needed. When the USB console is active, any messages from the switch to the client terminal will be echoed to both the USB console and the rear panel RJ45 serial port; however, no user input will be accepted from the rear panel port.

Cooling

Each base model is available with front-to-back cooling.

Switch cooling is provided by replaceable fan modules. The available fan module uses airflow from front to back. Two modular power supply slots accommodate AC power supplies. Power supplies have integrated cooling fans that operate independently of the switch fan.

A spare fan module (XN-FAN-002-F) with front-to-back airflow is available for VSP 4900 switches.

Power Supplies

Two power supply bays accommodate AC power supplies. Power supplies have integrated cooling fans that operate independently of the switch fans. Like the fan modules, the power supplies are available in models with front-to-back cooling airflow. For more information about the power supplies used in the VSP 4900 switches, see Removing and Replacing Components on page 52.

Power supplies are ordered separately.

> ⚠️ **Caution**
> Air must flow in the same direction for all installed fan modules and power supplies in a switch.

Operating Temperatures

All VSP 4900 switch models support an operating range from 0°C to 50°C.

VSP 4900-48P Features

The front panel of the ExtremeSwitching VSP4900-48P switch includes:

- 48 10/100/1000Mb full/half duplex MACsec capable ports with 802.3at Type 2 PoE (30W)
- 1 VIM5 slot
- 2 USB A ports
- 1 USB micro B management port
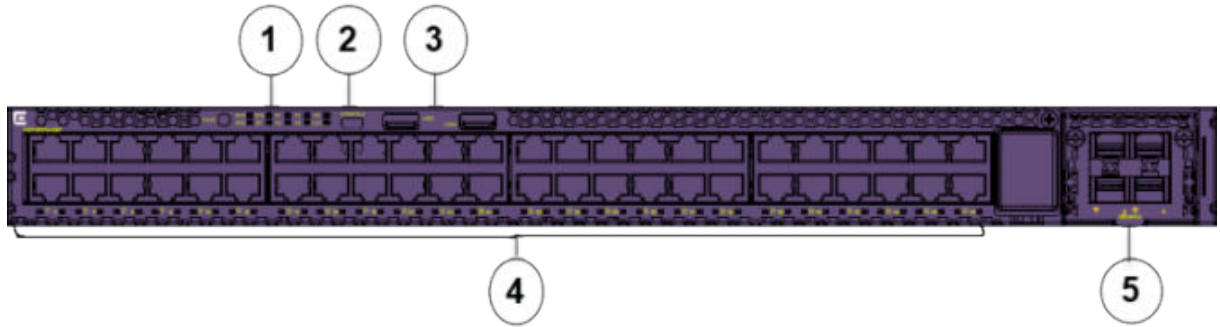
Figure 1: VSP 4900 Series Switch: Front Panel

1 = Mode Button and System LEDs	3 = USB A ports	5 = VIM slot, shown with VIM installed
2 = USB micro B management port	4 = Access ports	

The rear panel of the ExtremeSwitching VSP4900-48P switch includes:

- 3 fan modules
- 2 unpopulated PSU slots
- RJ-45 console and management ports
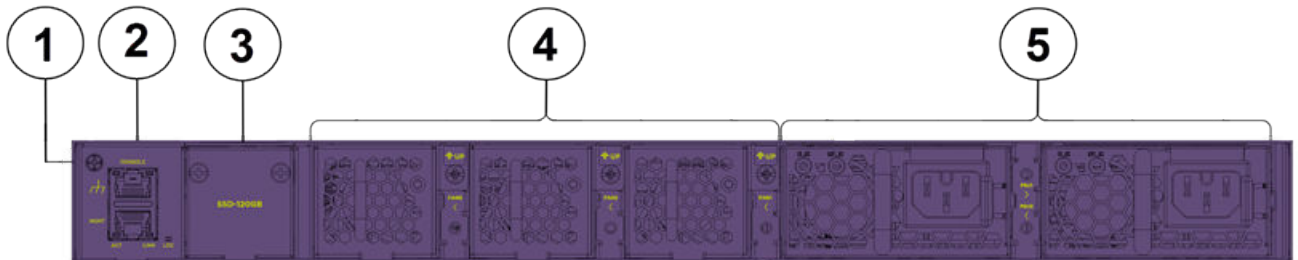
Figure 2: VSP 4900 Series Switch: Rear Panel

1 = Grounding lug	3 = SSD slot	5 = Power supplies
2 = RJ45 console and management ports	4 = Fan modules	

VSP License Options

For information about licensing options for VOSS, see *Administering VSP Operating System Software*.

2 Power Supplies for Use with Your Switch

1100 W AC Power Supplies

Each VSP 4900 Series switch runs with two replaceable internal power supply units that provide all of the power needed for the switch to operate. You can remove one power supply without interrupting the switch's operation. The VSP4900-48P model requires power supplies to be ordered separately.

For more information, see the following topic:

-

1100 W AC Power Supplies

1100 W AC power supply is available in the following model:

- 1100 W AC PSU-FB (Model 10941)—power supply with front-to-back ventilation airflow

The 1100 W AC power supply has a keyed power inlet (C16) that requires a notched (C15) power cord.

The 1100 W AC power supply has the status LEDs listed in the following table.

Table 4: 1100 W AC Power Supply LED Status Indications

IN_OK (Green)	OUT_OK (Green/RED)	Description
Off	Off	No AC input power connection or low AC voltage.
On	Off	AC input good, 54V output disabled.
On	(Red) On	AC input good, output (54V) fault.
On	(Green) On	AC input good, DC outputs in spec.

3 Expansion Modules

Versatile Interface Modules for the ExtremeSwitching VSP 4900 Series Switches

Several different hardware accessories are available for expanding the capabilities of your Extreme Networks switch. Collectively, they are referred to as expansion modules.

- Port option cards and versatile interface modules (VIMs) are installed in dedicated slots at the back of the switch to provide optional I/O ports or stacking ports. These optional items add 10-Gbps copper or fiber I/O ports to the back panel of compatible switches. If no card or module is installed, the option slot is covered by a blank panel.

The following table lists the types of expansion modules and the switch series with which they are compatible.

Table 5: Compatibility of Expansion Modules

Module Type	Name	No. of Ports	Type of Ports	Compatible Switch Series
VIM5	VIM5-4X	4	10GbE SFP+ optical ports	VSP 4900
	VIM5-4XE	4	10GbE SFP+ LRM MACsec capable optical ports	VSP 4900
	VIM5-2Y	2	25GbE SFP28 optical ports	VSP 4900
	VIM5-4YE	4	25GbE SFP28 LRM MACsec capable optical ports	VSP 4900
	VIM5-2Q	2	40GbE QSFP optical ports	VSP 4900

Versatile Interface Modules for the ExtremeSwitching VSP 4900 Series Switches

You can install a VIM5 versatile interface module in a dedicated slot in the front panel of the ExtremeSwitching VSP 4900 Series switch to provide a dedicated high speed port. The front panel of every VSP 4900 switch provides one slot to install the following:

- VIM5-4X versatile interface module that provides four 10-GbE (SFP+) ports.
- VIM5-4XE versatile interface module that provides four 10-GbE (SFP+) ports, LRM/MACsec capable.
- VIM5-2Y versatile interface module that provides two 25-GbE (SFP28) ports.
- VIM5-4YE versatile interface module that provides four 25-GbE (SFP28) MACsec capable ports.
- VIM5-2Q versatile interface module that provides two 40-GbE (QSFP) ports.

For 48-port model, the VIM5 ports are 49-56.

VIM5s are ordered separately. Each VIM5's label can be found on the bottom side of the device, as seen in the following figure:
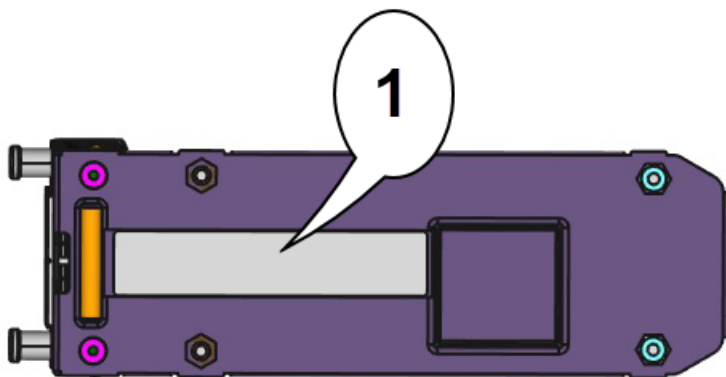
Figure 3: VIM5 Label

1 = VIM5 label

Table 6: VSP 4900 VIM5 Matrix

	VIM5-4X	VIM5-4XE	VIM5-2Y	VIM5-4YE	VIM5-2Q
Usable ports	4	4	2	2	1
Operational speeds	1Gbps & 10Gbps	1Gbps & 10Gbps	10Gbps & 25Gbps	10Gbps & 25Gbps	4x10Gbps w/ channelization & 40Gbps
PHY present	No	Yes	Yes	Yes	No
1000BASE-T & 10GBASE-T	10GBASE-T only	Both	10GBASE-T only	10GBASE-T only	-
Mixed speeds	1Gbps & 10Gbps	1Gbps & 10Gbps	Not supported*	Not supported*	-
1G Auto-negotiation	Disabled	Enabled	-	-	-
10G Auto-negotiation	Disabled	Disabled	Disabled	Disabled	-
25G Auto-negotiation	-	-	Disabled	Enabled for DAC Disabled for Fiber	-
FEC	-	-	-	Auto-FEC enabled for DAC and Fiber	-
MACsec	-	256bit	-	256bit	-

* The user must set `vim-speed` to 10G or 25G for VIM5-2Y. The default is 25G.

VIM5-4X Versatile Interface Module

The VIM5-4X versatile interface module provides four 10-GbE (SFP+) ports.

For information about the supported optical modules, refer to the most recent version of the *Extreme Hardware/Software Compatibility and Recommendation Matrices*.
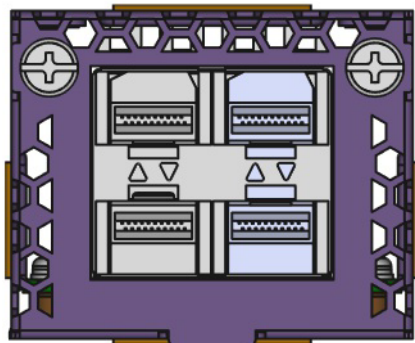
Figure 4: VIM5-4X Versatile Interface Module

Table 7: Port Numbers for Ports on the VIM5-4X Module

ExtremeSwitching VSP4900 Port Number for 48-port Models
49-52

VIM5-4XE Versatile Interface Module

The VIM5-4XE versatile interface module provides four 10-GbE (SFP+) ports, LRM/MACsec capable.

For information about the supported optical modules, refer to the most recent version of the *Extreme Hardware/Software Compatibility and Recommendation Matrices*.

Figure 5: VIM5-4XE Versatile Interface Module

Table 8: Port Numbers for Ports on the VIM5-4XE Module

ExtremeSwitching VSP4900 Port Number for 48-port Models
49-52

VIM5-2Y Versatile Interface Module

The VIM5-2Y versatile interface module provides two 25-GbE (SFP28) ports.

The user must set `vim-speed` to 10G or 25G for VIM5-2Y. The default is 25G. For details about the `vim-speed` command, see the *Command Line Interface Commands Reference for VOSS*.

For information about the supported optical modules, refer to the most recent version of the *Extreme Hardware/Software Compatibility and Recommendation Matrices*.

Figure 6: VIM5-2Y Versatile Interface Module

Table 9: Port Numbers for Ports on the VIM5-2Y Module

ExtremeSwitching VSP4900 Port Number for 48-port Models
49, 50

VIM5-4YE Versatile Interface Module

The VIM5-4YE versatile interface module provides four 25-GbE (SFP28) LRM/MACsec capable ports.

> **Note**
>
> For the VIM5-4YE versatile interface module, only the first two 25-GbE (SFP28) ports are supported.
>
> The user must set `vim-speed` to 10G or 25G for VIM5-4YE. The default is 25G. For details about the `vim-speed` command, see the *Command Line Interface Commands Reference for VOSS*.

For information about the supported optical modules, refer to the most recent version of the *Extreme Hardware/Software Compatibility and Recommendation Matrices*.
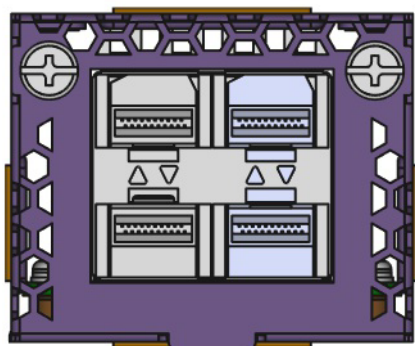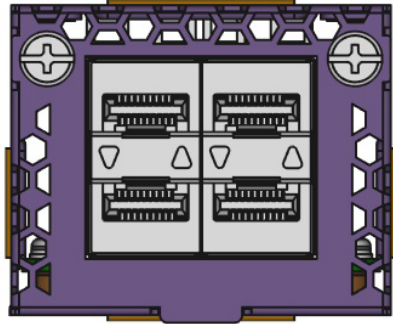
Figure 7: VIM5-4YE Versatile Interface Module

Table 10: Port Numbers for Ports on the VIM5-4YE Module

ExtremeSwitching VSP4900 Port Number for 48-port Models
49-52

VIM5-2Q Versatile Interface Module

The VIM5-2Q versatile interface module provides two 40-GbE (QSFP) ports.

Note

For the VIM5-2Q versatile interface module, only the first 40-GbE (QSFP) port is supported.

For information about the supported optical modules, refer to the most recent version of the *Extreme Hardware/Software Compatibility and Recommendation Matrices*.
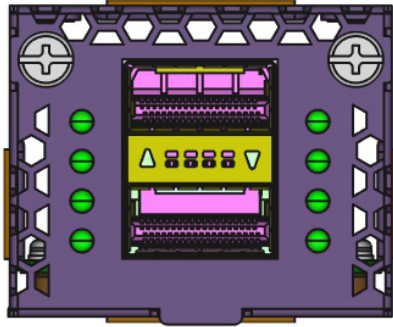
Figure 8: VIM5-2Q Versatile Interface Module

Table 11: Port Numbers for Ports on the VIM5-2Q Module

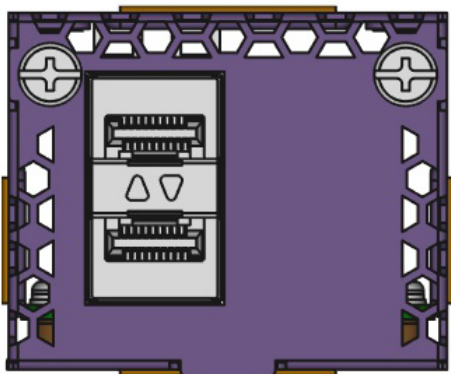| ExtremeSwitching VSP4900
Port Number for 48-port Models |
| --- |
| 49 in unchannelized mode
49/1, 49/2, 49/3, and 49/4 in channelized mode |

4 Preparing to Install

Operating Environment Requirements
Rack Specifications and Recommendations
Evaluating and Meeting Cable Requirements
Meeting Power Requirements
Following Applicable Industry Standards

Before you install your Extreme Networks equipment, careful planning can help ensure that it is used effectively and help prepare you for future growth.

Only qualified service personnel should install, maintain, or remove a switch, chassis, or its components. Qualified service personnel have had appropriate technical training and experience that is necessary to be aware of the hazards to which they are exposed when performing a task and of measures to minimize the danger to themselves or other people.

> **Note**
> Before installing or removing any components of the system, and before carrying out any maintenance procedures, read the safety information in Safety and Regulatory Information on page 67.

The information in this chapter is intended for the system administrator, network equipment technician, network manager, or facilities manager responsible for installing and managing the network hardware. The chapter assumes a working knowledge of local area network (LAN) operations, and a familiarity with communications protocols that are used on interconnected LANs.

This chapter covers the following aspects of site preparation:

1 Operating Environment Requirements on page 21

   Verify that your site meets all environmental and safety requirements.
2 Rack Specifications and Recommendations on page 23

   Ensure that mounting racks are safe and appropriate for the equipment.
3 Evaluating and Meeting Cable Requirements on page 25

   Understand the different cabling options and select the ones that best address your needs.
4 Meeting Power Requirements on page 31

   Ensure that power supplies are safe and appropriate for the equipment.

   For details about the equipment's power requirements, see the "Technical Specifications" section.
5 Following Applicable Industry Standards on page 33

Understand the applicable standards and ensure that they are being followed.

Operating Environment Requirements

Verify that your site meets all environmental and safety requirements.

Virtually all areas of the United States are regulated by building codes and standards. During the early planning stages of installing or modifying your network, it is important that you develop a thorough understanding of the regulations that pertain to your location and industry.

Meeting Building and Electrical Codes

Building and electrical codes vary depending on your location. Comply with all code specifications when planning your site and installing cable. This section lists resources for obtaining additional information.

For information about major building codes, consult the following organization:

International Code Council (ICC)
5203 Leesburg Pike
Falls Church, VA 22041 USA
www.iccsafe.org

The organizations listed in Table 12 are authorities on electrical codes.

Table 12: Authorities on Electrical Codes

Organization	Address	Web Site URL
National Electrical Code (NEC) Classification (USA only) Recognized authority on safe electrical wiring. Federal, state, and local governments use NEC standards to establish their own laws, ordinances, and codes on wiring specifications. The NEC classification is published by the National Fire Protection Association (NFPA).	NFPA 1 Batterymarch Park Quincy, MA 02169 USA	www.nfpa.org/
Underwriters' Laboratory (UL) Independent research and testing laboratory. UL evaluates the performance and capability of electrical wiring and equipment to determine whether they meet certain safety standards when properly used. Acceptance is usually indicated by the words "UL Approved" or "UL Listed."	UL 333 Pfingsten Road Northbrook, IL 60062 USA	www.ul.com
National Electrical Manufacturing Association (NEMA) (USA only) Organization of electrical product manufacturers. Members develop consensus standards for cables, wiring, and electrical components.	NEMA 1300 N. 17th Street Rosslyn, VA 22209 USA	www.nema.org

Table 12: Authorities on Electrical Codes (continued)

Organization	Address	Web Site URL
Electronic Components Industry Association (ECIA) Trade association that develops technical standards, disseminates marketing data, and maintains contact with government agencies in matters relating to the electronics industry.	ECIA 111 Alderman Drive Suite 400 Alpharetta, GA 30005 USA	www.ecianow.org
Federal Communications Commission (FCC) (USA only) Commission that regulates all interstate and foreign electrical communication systems that originate in the United States according to the Communications Act of1934. The FCC regulates all U.S. telephone and cable systems.	FCC 445 12th Street S.W. Washington, DC 20554 USA	www.fcc.gov

Setting up the Wiring Closet

Be aware of the following recommendations for your wiring closet:

- Make sure that your system is easily accessible for installation and service. See Rack Specifications and Recommendations on page 23 for more information.
- Use appropriate AC or DC power, power distribution, and grounding for your specific installation.
- Use a vinyl floor covering in your wiring closet. (Concrete floors accumulate dust, and carpets can cause static electricity.)
- Prevent unauthorized access to wiring closets by providing door locks. Install the equipment in a secured, enclosed, and restricted access location, ensuring that only qualified service personnel have access to the equipment.
- Provide adequate overhead lighting for easy maintenance.
- Be sure that each wiring closet has a suitable ground. All equipment racks and equipment installed in the closet should be grounded.
- Be sure that all system environmental requirements are met, such as ambient temperature and humidity.

Note
We recommend that you consult an electrical contractor for commercial building and wiring specifications.

Controlling the Temperature

Extreme Networks equipment generates a significant amount of heat. It is essential that you provide a temperature-controlled environment for both performance and safety.

Install the equipment only in a temperature- and humidity-controlled indoor area that is free of airborne materials that can conduct electricity. Too much humidity can cause a fire. Too little humidity can produce electrical shock and fire.

Observe these additional thermal recommendations for the location where you plan to install your equipment:

- Ensure that the ventilation in the wiring closet is adequate to maintain a temperature no higher than 40°C (104°F). (Some configurations support higher operating temperatures. See Environmental Data in "Technical Specifications" for details.)
- Install a reliable air conditioning and ventilation system.
- Keep the ventilation in the wiring closet running during non-business hours; otherwise, the equipment can overheat.
- Maintain a storage temperature between -40°C (-40°F) and 70°C (158°F).

When internal system temperatures exceed the thermal shutdown temperature limit (typically about 20°C higher than normal system operating temperatures), the system's power supplies are turned off and the switch shuts down. The system remains in the OFF state until the system has sufficient time to cool and the internal thermal sensor measures a temperature lower than the maximum specified ambient temperature, at which time the system restarts automatically.

Alternately, you can restart the system immediately by removing and then restoring all line power to the system.

Safeguards are built into all Extreme Networks switches and power supply units to minimize the risk of fire.

Controlling the Humidity Level

To maximize equipment life, keep operating humidity between 50% and 70% relative humidity (non-condensing) during typical operation.

The equipment can operate between 5% and 95% relative humidity (non-condensing) for short intervals.

Protecting Your System from ESD (Electrostatic Discharge)

Your system must be protected from static electricity or ESD. Take the following measures to ensure optimum system performance:

- Remove materials that can cause electrostatic generation (such as synthetic resins) from the wiring closet.

  Check the appropriateness of floor mats and flooring.
- Connect metal chassis, conduit, and other metals to ground using dedicated grounding lines.
- Use electrostatically safe equipment.

  If you are working with pluggable interface modules, wear an ESD-preventive wrist strap and connect the metal end to a grounded equipment rack or other source of ground.

Rack Specifications and Recommendations

Racks should conform to conventional standards.

In the United States, use EIA Standard RS-310C: Racks, Panels, and Associated Equipment. In countries other than the United States, use IEC Standard 297. In addition, verify that your rack meets the basic mechanical, space, and earthquake requirements that are described in this section.

Mechanical Recommendations for the Rack

Use equipment racks that meet the following mechanical recommendations:

- Use an open style, 19-inch rack to facilitate easy maintenance and to provide proper ventilation.
- Use a rack made of steel or aluminum.
- The rack should use the universal mounting rail hole pattern that is identified in IEC Standard 297.
- The rack should have designated earth grounding connections (typically on the base).
- The rack must meet earthquake safety requirements equal to that of the installed chassis.
- The mounting holes should be flush with the rails to accommodate the chassis.
- The rack should support approximately 270 kg (600 lb).

Grounding the Rack

The rack must be properly grounded.

Use a rack grounding kit and a ground conductor that is carried back to earth or to another suitable building ground.

At a minimum, follow these guidelines to ground equipment racks to the earth ground:

- CAD weld appropriate wire terminals to building I-beams or earth ground rods.
- For a DC-powered switch, use a minimum 14 AWG stranded copper wire for grounding.

  AC-powered switches do not need separate chassis grounding.
- Position the earth ground as close to the equipment rack as possible to maintain the shortest wiring distance possible.
- Use a ground impedance tester or micro-ohm meter to test the quality of earth ground connection at the chassis. This will ensure good grounding between the chassis, rack, and earth ground.

> **Note**
> Because building codes vary worldwide, Extreme Networks strongly recommends that you consult an electrical contractor to ensure proper equipment grounding for your specific installation.

Providing Adequate Space for the Rack

Provide enough space in front of and behind the equipment, so that you can service it easily and so that airflow is not impeded.

We recommend providing a minimum of 122 cm (48 in) in front of the rack and 76 cm (30 in) behind the rack. When using a relay (two-post) rack, provide a minimum of 61 cm (24 in) of space behind the mounted equipment. Extra room on each side is optional.

> **Note**
> The equipment does not have a switch for turning power on and off. For systems using an AC power supply, power to the switch is disconnected by removing the wall plug from the electrical outlet.

Be sure that cables and other equipment do not block the switch's air intake or outflow.

Securing the Rack

The rack should be attached to the wiring closet floor with 9.5 mm (3/8 in) lag screws or equivalent hardware. The floor under the rack should be level within 5 mm (3/16 in). Use a floor-leveling cement compound if necessary or bolt the racks to the floor as shown.
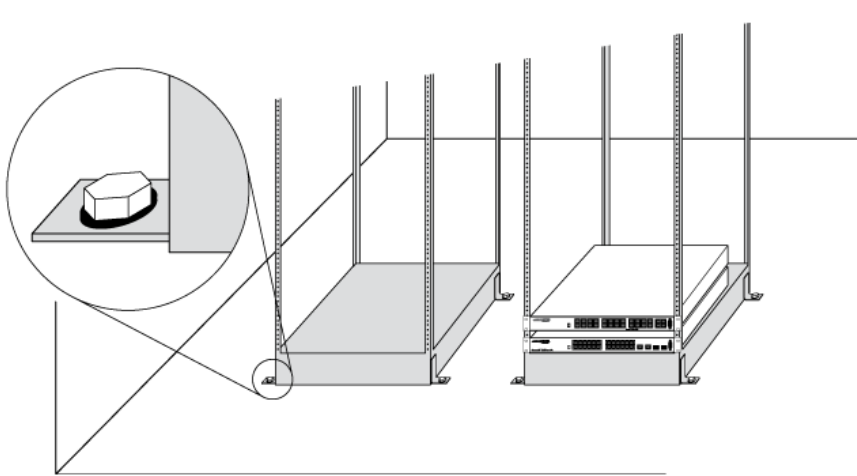
Figure 9: Properly Secured Rack

Brace open equipment racks if the channel thickness is less than 6.4 mm (1/4 in).

Evaluating and Meeting Cable Requirements

Use professional consultants for site planning and cabling.

Extreme Networks recommends using the Building Industry Consulting Service International (BICSI) Registered Communications Distribution Designer (RCDD), which is globally recognized as a standard in site planning and cabling.

For information, visit www.bicsi.org.

Labeling Cables and Keeping Accurate Records

A reliable cable labeling system is essential when planning and installing a network.

Keeping accurate records helps you to:

- Relocate devices easily.
- Make changes quickly.
- Isolate faults in the distribution system.
- Locate the opposite end of any cable.
- Know the types of network devices that your cabling infrastructure can support.

Follow these guidelines when setting up a cable labeling system suitable for your installation:

- Identify cables by securely attaching labels to all cable ends.
- Assign a unique block of sequential numbers to the group of cables that run between each pair of wiring closets.
- Assign a unique identification number to each equipment rack.
- Identify all wiring closets by labeling the front panel of your Extreme Networks equipment and other hardware.
- Keep accurate and current cable identification records.
- Post records near each equipment rack. For each cable drop, include information about the cable source, destination, and jumper location.

Installing Cable

When you connect cable to your network equipment, keep the following things in mind.

- Examine cable for cuts, bends, and nicks.
- Support cable using a cable manager that is mounted above connectors to avoid unnecessary weight on the cable bundles.
- Use cable managers to route cable bundles to the left and right of the network equipment to maximize accessibility to the connectors.
- Provide enough slack, approximately 5 to 7.5 cm (2 to 3 in), to provide proper strain relief as shown in Figure 10 on page 27.
- Bundle cable using hook-and-loop straps to avoid injuring cables.
- If you build your own cable, be sure that connectors are properly crimped.
- When installing a patch panel using twisted pair wiring, untwist no more than 2.5 cm (1 in) of the cable to avoid radio frequency (RF) interference.
- Discharge the RJ45 Ethernet cable before plugging it into a port on the switch.

Caution

Unshielded twisted pair (UTP) cable can build up electrostatic charges when being pulled into a new installation. Before connecting any category 5 UTP cable to the switch, discharge ESD from the cable by plugging the RJ45 connector into a LAN static discharge device or use an equivalent method.

- Use plenum-rated cable when it is necessary for safety and fire rating requirements. Consult your local building codes to determine when it is appropriate to use plenum-rated cable, or refer to IEC standard 850.
- Keep all ports and connectors free of dust.
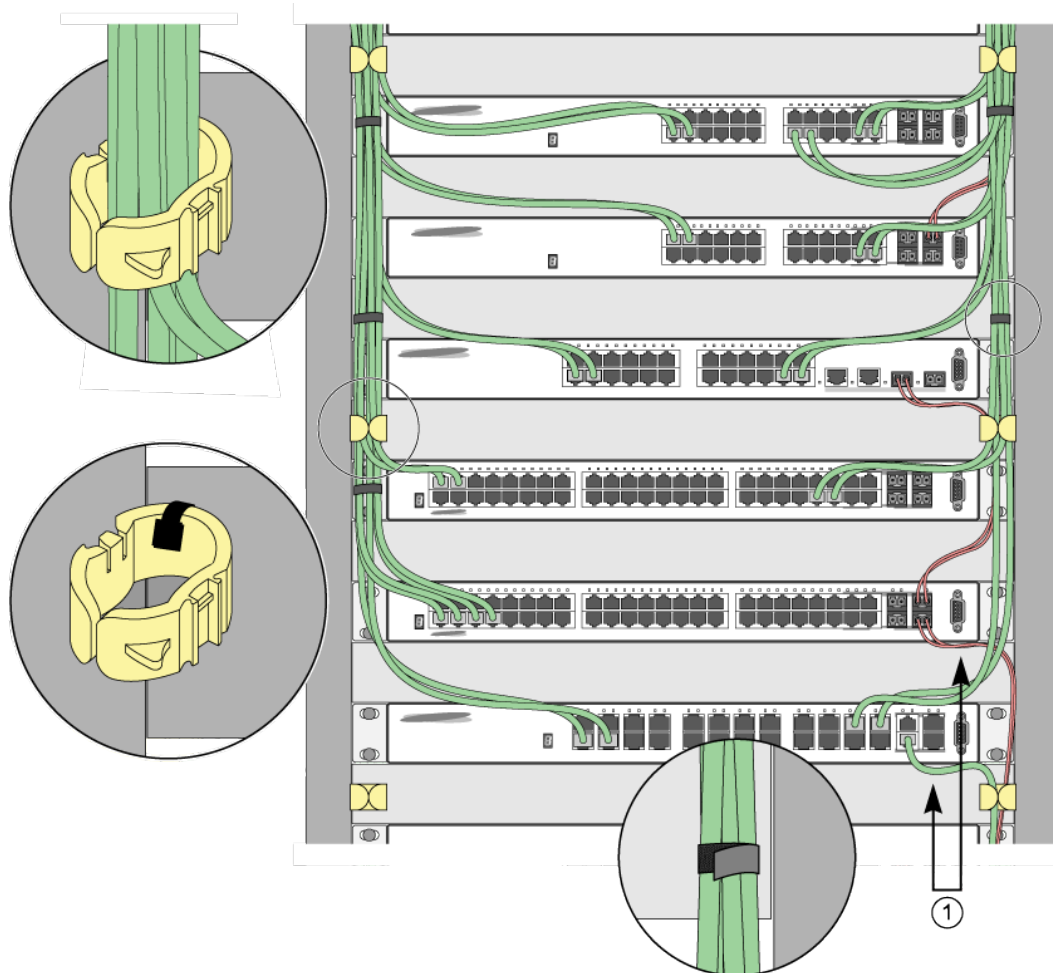
Figure 10: Properly Installed and Bundled Cable

1 = Ensure adequate slack and bend radius

Handling Fiber Optic Cable

Fiber optic cable must be handled carefully during installation.

Every cable has a minimum bend radius, example, and fibers will be damaged if the cables are bent too sharply. It is also important not to stretch the cable during installation. Extreme Networks recommends

that the bend radius for fiber optic cable equal at least 5 cm (2 in) for each 90-degree turn as shown in Figure 11.

Note

Kinks and sharp bends can destroy or impair the cable's ability to convey light pulses accurately from one end of the cable to the other. Use care in dressing the optical fiber cables: provide satisfactory strain relief to support the cable and maintain an adequate bend radius at all cable turns, particularly where the cable connects to the I/O module.
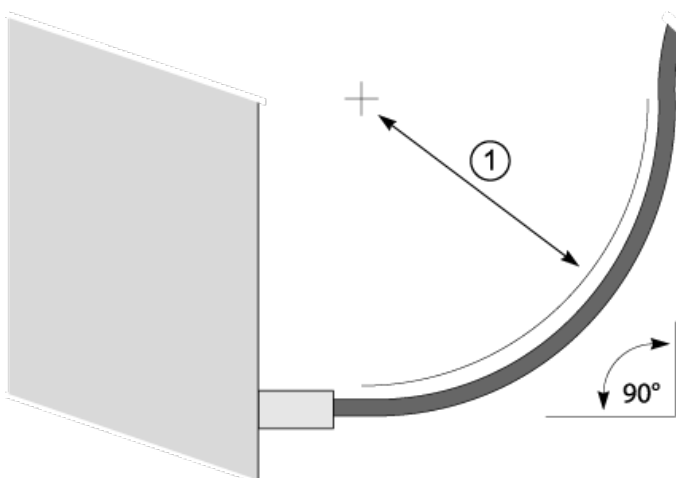
Figure 11: Bend Radius for Fiber Optic Cable

1 = Minimum 5 cm (2 in) radius in 90° bend

Cable Distances and Types

Table 13 on page 28 shows one example of cable media types and maximum distances that support reliable transmission in accordance with international standards (except where noted). Refer to *Extreme Networks Pluggable Transceivers Installation Guide* for descriptions of optics and cables, as well as a complete list of supported cable lengths.

Refer to *Extreme Hardware/Software Compatibility and Recommendation Matrices* for a list of the cable types that are compatible with your equipment.

Table 13: Cable Distances and Types

Standard	Media Type	MHz•km Rating	Maximum Distance (Meters)
1000BASE-SX (850nm optical window)	50/125 µm multimode fiber	400	500
	50/125 µm multimode fiber	500	550
	62.5/125 µm multimode fiber	160	220
	62.5/125 µm multimode fiber	200	275

Table 13: Cable Distances and Types (continued)

Standard	Media Type	MHz•km Rating	Maximum Distance (Meters)
1000BASE-LX (1300nm optical window)	50/125 µm multimode fiber	400	550
	50/125 µm multimode fiber	500	550
	62.5/125 µm multimode fiber	500	550
	10/125 µm single-mode fiber	–	5,000
	10/125 µm single-mode fiber	–	10,000
1000BASE-ZX (1550nm optical window)	10/125 µm single-mode fiber	–	80,000
100BASE-LX100 (1550nm optical window)	10/125 µm single-mode fiber	–	100,000
1000BASE-BX10 (1490nm optical window) (1310nm optical window)	10/125 µm single-mode fiber	–	10,000
1000BASE-LX70 (1550nm optical window)	10/125 µm single-mode fiber	–	70,000
10/100/1000BASE-T SFP	(1 Gbps link) Category 5 and higher UTP cable	–	100
	(100 Mbps link) Category 5 and higher UTP cable	–	150
	(10 Mbps link) Category 5 and higher UTP cable	–	250
10GBASE-T SFP+	(10 Gb links) Category 6A and higher UTP cable	–	30
10GBASE-SR SFP+ (850nm optical window)	62.5 mm multimode fiber	160	26
	62.5 mm multimode fiber (OM1)	200	33
	50 mm multimode fiber	400	66
	50 mm multimode fiber (OM2)	500	82
	50 mm multimode fiber (OM3)	2000	300
10GBASE-LR SFP+ (1310nm optical window)	10/125 µm single-mode fiber	–	10,000
10GBASE-ER SFP+ (1550nm optical window)	10/125 µm single-mode fiber	–	40,000
40GBASE-SR4 QSFP+ (850nm optical window)	50 mm multimode fiber (OM3)	–	100
	50 mm multimode fiber (OM4)		150
1000BASE-T	Category 5 and higher UTP cable	–	100
100BASE-TX	Category 5 and higher UTP cable	–	100
10BASE-T	Category 3 and higher UTP cable	–	100

---

[1] Proprietary to Extreme Networks. Connections between two Extreme Networks 1000BASE-LX interfaces that use 10/125 µm single-mode fiber can use a maximum distance of 10,000 meters.

Table 14 and Table 15 on page 30 list direct-attach cables available from Extreme Networks.

Table 14: Extreme Networks 100Gb Direct-Attach Cables

Cable Type	Part Number	Length
QSFP28-QSFP28 Direct attach passive copper cable	10411 or AA1405029-E6	1 meter
	10413 or AA1405031-E6	3 meters
	10414 or AA1405032-E6	5 meters
QSFP28-4xSFP28 (4x25Gb) Direct attach passive copper breakout	10421	1 meter
	10423	3 meters
	10424	5 meters
QSFP28-4xSFP28 (4x25Gb) Active optical breakout cable	10444	20 meters

Table 15: Extreme Networks 40Gb Direct-Attach Cables

| Cable Type	Part Number	Length
QSFP+ to QSFP+ Direct attach cable	AA1404037-E6	0.5 meter
	AA1404029-E6	1 meter
	AA1404030-E6	2 meters
	AA1404031-E6	3 meters
	AA1404032-E6	5 meters
QSFP+ to QSFP+ Active optical cable	AA1404028-E6	10 meters active optical
QSFP+ to 4xSFP+ Breakout cable	AA1404033-E6	1 meter
	AA1404035-E6	3 meters
	AA1404036-E6	5 meters
	AA1404041-E6	10 meters active optical

Using RJ45 Connector Jackets

Use RJ45 cable with connector jackets that are flush with the connector or that have connectors with a no-snag feature.

Using cable with jackets that are wider than the connectors can cause:
- Connectors that are not properly aligned with the port.
- Crowded cable installation, which can cause connectors to pop out of the port.

Figure 12 shows examples of recommended and non-recommended connector jacket types.

Not recommended

Better

Best

SPG_001
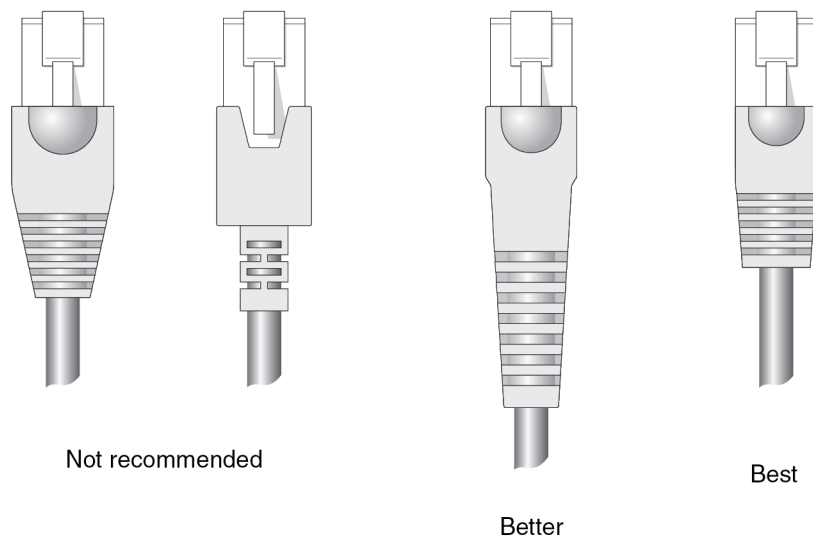
Figure 12: RJ45 Connector Jacket Types

Preventing Radio Frequency Interference (RFI)

If you use UTP cabling in an installation, take precautions to avoid radio frequency (RF) interference.

RF interference can cause degradation of signal quality, and, in an Ethernet network environment, can cause excessive collisions, loss of link status, or other physical layer problems that can lead to poor performance or loss of communication.

To prevent RF interference, avoid the following situations:

- Attaching UTP cable to AC power cables
- Routing UTP cable near antennas, such as a ham radio antenna
- Routing UTP cable near equipment that could exhibit RF interference, such as ARC welding equipment
- Routing UTP cable near electrical motors that contain coils
- Routing UTP cable near air conditioner units
- Routing UTP cable near electrical transformers

In areas or applications where these situations cannot be avoided, use fiber optic cabling or shielded twisted pair cabling.

Meeting Power Requirements

Observe the following requirements and precautions for powering your hardware.

Power Supply Requirements

Follow these recommendations when you plan power supply connections for your equipment:

- Place the equipment in an area that accommodates the power consumption and component heat dissipation specifications.
- Be sure that your power supply meets the site DC power or AC power requirements of the network equipment.
- When you connect power to installed equipment, do not make this connection through an extension cord or power strip.
- If your switch includes more than one power supply, connect each power supply to a different, independent power source.

  If a power source fails, it will affect only the switch power supply to which it is connected. If all switch power supplies are connected to a single power source, the entire switch is vulnerable to a power source failure.
- In regions that are susceptible to electrical storms, we recommend that you plug your system into a surge suppressor.

For detailed power specifications for your equipment, see "Technical Specifications."

Requirements for Power Cords

Most ExtremeSwitching switches do not ship with power cords. Visit www.extremenetworks.com/product/powercords/ for information on selecting and purchasing the correct power cords for use with specific Extreme Networks equipment. The web page provides specifications for power cords in each country so that you can purchase cords locally.

UPS (Uninterruptible Power Supply) Requirements

A UPS (uninterruptible power supply) is a device that sits between a power supply (such as a wall outlet) and a device (such as a switch) to prevent outages, sags, surges, and bad harmonics from adversely affecting the performance of the device.

A UPS traditionally can perform the following functions:

- Absorb relatively small power surges.
- Smooth out noisy power sources.
- Continue to provide power to equipment during line sags.
- Provide power for a period of time after a blackout has occurred.

In addition, some UPS devices or UPS-plus-software combinations provide the following functions:

- Automatically shut down equipment during long power outages.
- Monitor and log power supply status.
- Display the voltage (current draw) of the equipment.
- Restart equipment after a long power outage.
- Display the voltage currently on the line.
- Provide alarms on certain error conditions.
- Provide short-circuit protection.

Selecting a UPS

To determine UPS requirements for your switch, answer these questions:

- What are the amperage requirements?
- What is the longest potential time period that the UPS would be required to supply backup power?
- Where will the UPS be installed?
- What is the maximum transition time that the installation will allow? (See Providing a Suitable UPS Transition Time on page 33.)

Note

We recommend that you use a UPS that provides online protection.

Calculating Volt-Amperage Requirements

To determine the size of UPS that you need:

1. Locate the voltage and amperage requirements for each piece of equipment.

   These numbers are usually found on a sticker on the back or bottom of your equipment.
2. Multiply the numbers together to get Volt-Amperes (VA):

   VA = Volts x Amperes
3. Add the VA from all the pieces of equipment together to find the total VA requirement.

   To determine the minimum volt-amperage requirements for your UPS, we recommend that you add 30% to the total.

Providing a Suitable UPS Transition Time

UPS transition time is the time required for the UPS to change from providing AC power derived from the utility (or mains) supply to providing AC power derived from the battery backup. UPS transition time is sometimes called *UPS transfer time*.

UPS transition times vary between UPS models and implementations, but shorter transition times are preferred. For Extreme Networks stacking products, we recommend a UPS transition time of 20 milliseconds or less to ensure optimum performance and minimize service interruptions.

For high-availability and fault-tolerant installations in which the switches use redundant power supply units (PSUs), we recommend that each PSU in a switch be connected to a different UPS and that each UPS be powered by an independent AC supply. This will prevent service interruptions when a power source is lost, or when a UPS unit fails. (Note that a single, appropriately sized UPS can power PSUs in multiple switches. The recommendation is simply that for any given switch, the two PSUs should be connected to different UPS units.)

Following Applicable Industry Standards

Always follow applicable industry standards.

For more information, see the following ANSI/TIA/EIA standards:

- ANSI/TIA/EIA-568-A—the six subsystems of a structured cabling system
- ANSI/TIA/EIA-569-A—design considerations

- ANSI/TIA/EIA-606—cabling system administration
- ANSI/TIA/EIA-607—commercial building grounding and bonding requirements

You can access these standards at: www.ansi.org or www.tiaonline.org.

5 Installing Your Switch

Safety Considerations for Installing Switches
What You Will Need for the Installation
Attaching the Switch to a Rack or Cabinet
Installing Optional Components
Installing Internal AC Power Supplies
Powering up the Switch
Connecting Network Interface Cables

Before you attempt to install or remove an Extreme Networks switch, read the precautions in Safety Considerations for Installing Switches on page 36.

Extreme Networks switches fit into standard 19-inch equipment racks.

A four-post rack-mounting kit is provided with the switch. A two-post kit can be ordered separately.

The installation process includes the following tasks:

1   Prepare to install the switch.

    See What You Will Need for the Installation on page 36.

2   Install the switch in the rack.

    See Attaching the Switch to a Rack or Cabinet on page 37.

3   Install optional components: optical transceivers and cables.

    See the instructions in Installing Optional Components on page 40.

4   If your switch does not come with an installed internal power supply, install one or two power supplies.

    See Installing Internal AC Power Supplies on page 40.

> **Note**
> Be aware of whether the power supply you are installing is AC-powered or a DC-powered. The installation instructions are different depending upon what type of power is used.

5   Power up the switch.

    See Powering up the Switch on page 42.

6   Connect network interface cables.

    See Connecting Network Interface Cables on page 42.

7   Perform initial network connection and configuration.

    See Activating and Verifying the Switch on page 44.

Safety Considerations for Installing Switches

Read the information in this chapter thoroughly before you attempt to install or remove an Extreme Networks switch.

Ensure that proper ESD (electrostatic discharge) controls are in use before switch maintenance is performed. This includes but is not limited to wrist straps that are grounded to the switch housing and earth grounds.

Warning

Connect the chassis ground wire **before** you connect any DC power cables.

Disconnect the ground wire **after** you disconnect all DC power cables.

Take care to load the equipment rack so that it is not top-heavy. Start installing equipment at the bottom of the rack and work up.

Do not cover vents that would restrict airflow.

Note

See Safety and Regulatory Information on page 67 for additional safety information.

See Technical Specifications on page 60 for additional information regarding regulatory compliance certifications.

What You Will Need for the Installation

Ensure that you have followed the guidance in Preparing to Install on page 20, and ensure that you have the appropriate people and tools on hand.

Installing Extreme Networks switches is easiest when there are two people to maneuver the switch and attach mounting hardware.

Provide enough space in front of and behind the switch so that you can service it easily. Allow a minimum of 122 cm (48 in) in front of the rack and 76 cm (30 in) behind the rack.

If your switch has internal power supplies, make sure they have the same airflow direction as the fans in the switch.

Check the *Quick Reference Guide* for your switch model to see what hardware is provided in the switch packaging. Most Extreme Networks switches come with the following hardware:

- Two rack mounting brackets (ears) adaptable for either a front-mount or mid-mount installation.
- Two long mounting brackets (rails) or slider kits for mounting in a four-post installation.
- Screws for attaching mounting hardware to the switch housing.

You need the following additional tools and equipment. These are not provided with your switch.

- Rack mounting screws: eight for a four-post installation; four for other installations. The size of the screws will vary based on the rack system you are using.
- Screwdriver for securing the rack mounting screws.
- #2 Phillips screwdriver to attach bracket screws that are provided with the switch. We recommend using a magnetic screwdriver.

- AC power cord. For switches with removable AC power supplies, a separate power cord is needed for each installed power supply. The cord must meet the requirements listed in Power Cord Requirements for AC-Powered Switches and AC Power Supplies on page 66.
- ESD-preventive wrist strap for installing optional ports at the back of the switch.

Attaching the Switch to a Rack or Cabinet

To attach a switch to a two-post rack, a four-post rack, or a cabinet, follow these steps.

Take care to load the rack so that it is not top-heavy. Start installing equipment at the bottom and work up.

1 On one side of the switch, set a mounting bracket against the switch housing.

Set the flange even with the front panel of the switch – or, if you are mid-mounting the switch in a two-post rack, set the flange toward the back of the switch.

The following figures illustrate how to attach the brackets for two common mounting options.
- Figure 13 shows a mid-mount configuration using a long mounting bracket.
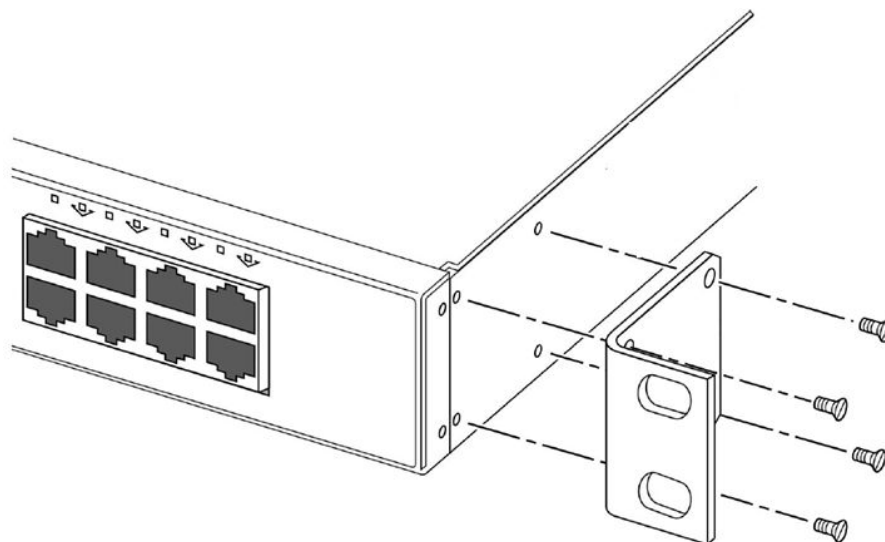- Figure 14 shows a front-mount configuration using a short mounting bracket.

> **Note**
> For some switch models, only short mounting brackets are provided.
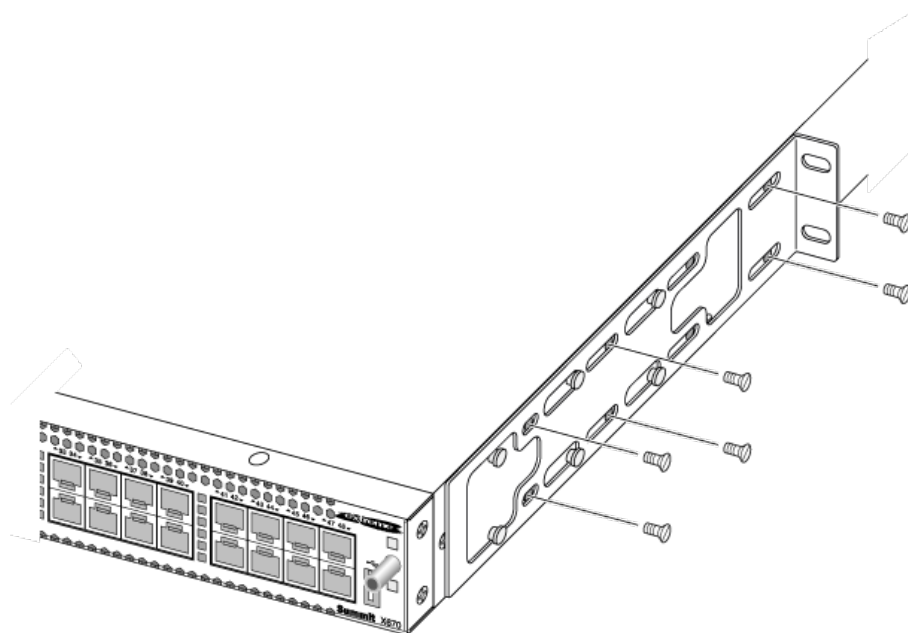
Figure 13: Mid-Mount: Attaching a Long Mounting Bracket

Figure 14: Front Mount: Attaching a Short Mounting Bracket

2   Use the small bracket-mounting screws (provided) to secure the bracket to the switch housing.

3   Repeat step 1 and step 2 to attach the other bracket to the other side of the switch.

4   Slide the switch into the equipment rack or cabinet.

Figure 15 shows an example of a mid-mount installation.
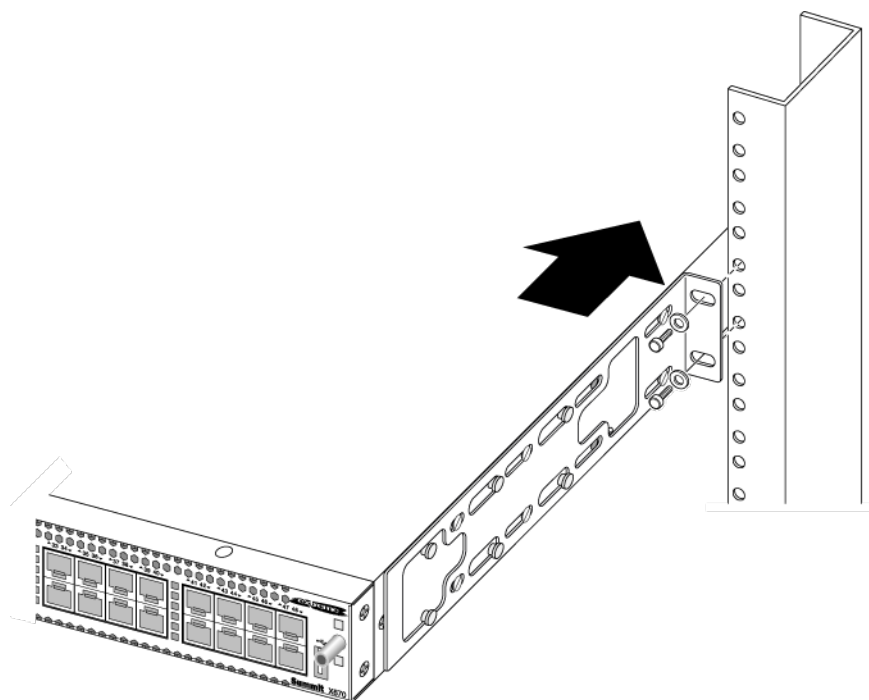
Figure 15: Sliding the Switch into the Rack

5   Secure the mounting bracket flanges to the rack, using screws that are appropriate for the rack. (Rack-mounting screws are not provided.)

6   If you are mounting the switch in a four-post rack or a cabinet, secure the rear mounting brackets (rails).

Otherwise, skip to step .

a   At the rear of the rack or cabinet, for each side, slide the rails between the two rows of pegs on either side of the switch.
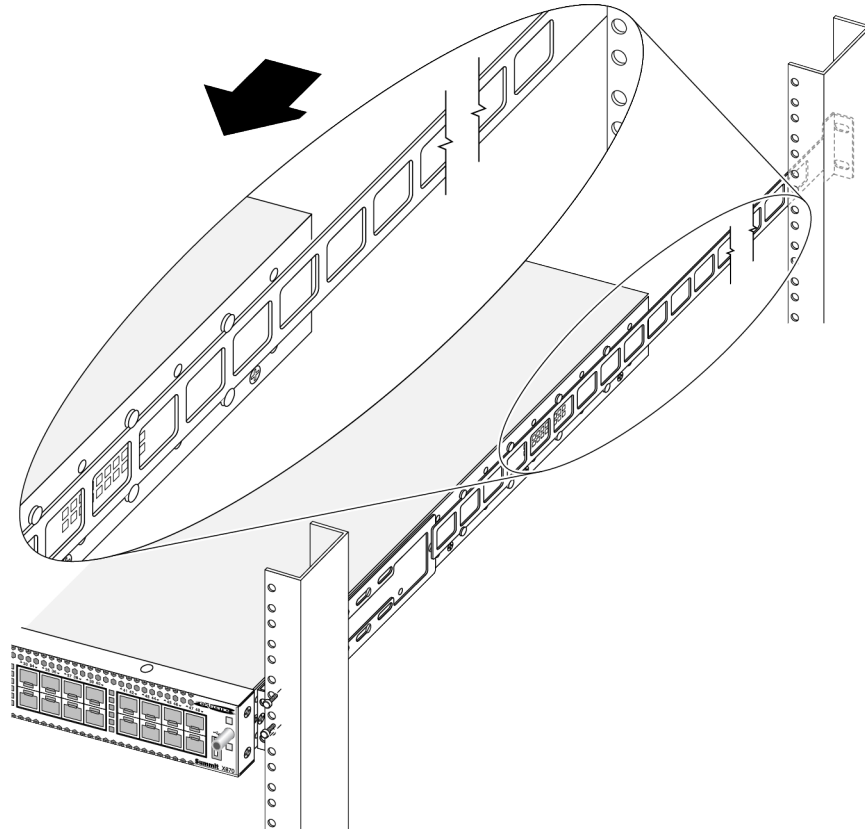
Figure 16: Inserting the Rear Mounting Brackets Between the Pegs on the Side of the Switch

b   Secure the rear mounting brackets to the rack posts using suitable screws.

Be sure the switch is level.

7   If a grounding lug is present, ground the switch.

a   At one end of the wire, strip the insulation to expose 1/2 inch (12 mm) of bare wire.

b   Identify the grounding lug on the back of the switch.

c   Insert the stripped wire into the grounding lug.

d   Using a straight-tip torque screwdriver, tighten the retaining screw to 20 in-lb (2.25 N m).

e   Connect the other end of the wire to a known reliable earth ground point at your site.

After the switch is secured to the rack or cabinet, install optional components using the instructions in Installing Optional Components on page 40.

Then, if your switch does not have an installed power supply, install one or two power supplies using the instructions in Installing Internal AC Power Supplies on page 40.

Installing Optional Components

After the switch is secured to the rack, install optional components.

VSP switches support the use of pluggable transceivers and cables in the SFP+, SFP28, QSFP+, and QSFP28 formats.

For a list of the optical components supported with VSP switches, see the *Extreme Hardware/Software Compatibility and Recommendation Matrices*.

Pluggable Transceiver Modules

Extreme Networks offers several optical transceiver modules for transmitting and receiving data over optical fiber rather than through electrical wires. Install these modules using the instructions in *Extreme Networks Pluggable Transceivers Installation Guide*.

Optical Cables

Direct-attach copper and fiber cables provide connections between unpopulated SFP+, SFP28, QSFP+, and QSFP28 ports.

To install optical cables, refer to the instructions in *Extreme Networks Pluggable Transceivers Installation Guide*.

Installing Internal AC Power Supplies

The following AC internal power supplies (PSUs) are available for Extreme Networks switches:

715 W AC PSU   Part number 10951 is compatible with VSP 4900 switch models. For installation instructions, see Installing a 715 W, 1100 W, or 2000 W Internal AC Power Supply on page 40.

1100 W AC PSU   Part number 10941 is compatible with VSP 4900 switch models. For installation instructions, see Installing a 715 W, 1100 W, or 2000 W Internal AC Power Supply on page 40.

2000 W AC PSU   Part number XN-ACPWR-200W-F is compatible with VSP 4900 switch models. For installation instructions, see Installing a 715 W, 1100 W, or 2000 W Internal AC Power Supply on page 40.

Selecting Power Cords for AC Power Supplies

An AC power cord is not included with an AC power supply.

You can purchase AC power cords for use in the US and Canada from Extreme Networks or from your local supplier. The cord must meet the requirements listed under Power Cord Requirements for AC-Powered Switches and AC Power Supplies on page 66.

Installing a 715 W, 1100 W, or 2000 W Internal AC Power Supply

Warning
To prevent an electrical hazard, make sure that the AC power cord is not connected to the power supply before you install the power supply in the power supply bay.

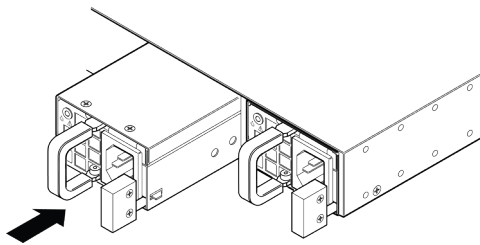> **Caution**
>
> Make sure the AC power supply circuit is not overloaded. Use proper overcurrent protection, such as a circuit breaker, to prevent overcurrent conditions.

An AC power cord is not included with the AC power supply. You can purchase AC power cords for use in the US and Canada from Extreme Networks or from your local supplier. The cord must meet the requirements listed in Power Cord Requirements for AC-Powered Switches and AC Power Supplies on page 66.

To install a 715 W, 1100 W, or 2000 W AC power supply in a switch, follow these steps:

1   If necessary, remove a blank panel from the back of the switch.
2   Verify that the power supply is right side up.
3   Verify that the power supply's airflow direction (front-to-back or back-to-front) is compatible with the switch.
4   Carefully slide the power supply all the way into the power supply bay, as shown in Figure 17.

Figure 17: Installing an AC Power Supply

5   Push the power supply in until the latch snaps into place.

> **Caution**
>
> Do not slam the power supply into the switch.

> **Note**
>
> If power supplies are not installed in both power supply bays, be sure to install a cover over the unoccupied bay. Unoccupied bays must always be covered to maintain proper system ventilation and EMI levels.

6   Connect the power cord to the power supply.

If the power supply is equipped with a power cord retainer, use the retainer to secure the power cord to the power supply.

7   Connect the power cord to a grounded AC power outlet.

> **Warning**
>
> Always make sure that the source outlet is properly grounded before plugging the AC power cord into the AC power supply.

8   To install a second power supply, repeat the procedure.

Powering up the Switch

An AC power cord is not included with the AC power supply. You can purchase AC power cords for use in the US and Canada from Extreme Networks or from your local supplier. The cord must meet the requirements listed in Power Cord Requirements for AC-Powered Switches and AC Power Supplies on page 66.

To power up an Extreme Networks switch, do the following.

1   For switches that are connected to AC power, connect the power cord to the AC power input socket on the switch (or power supply) and to an AC power outlet.
2   For switches that are connected to DC power, do the following:

   a   Verify that the DC circuit is de-energized.
   b   Verify that the ground wire is connected to the grounding lug on the rear of the switch.

      The grounding lug is identified by the international symbol for earth ground:

   c   Verify that the DC power input cables are properly connected to the DC power supplies at the rear of the switch.
   d   Energize the circuit.
3   When power is connected, verify that the PSU LED turns green.

When the PSU LED has turned green, follow the instructions in Connecting Network Interface Cables on page 42.

If the PSU and RPS LEDs do not turn green, refer to the *LEDs* topic for your switch model (in Monitoring the Switch on page 57) for troubleshooting information.

Connecting Network Interface Cables

Use the appropriate type of cable to connect the ports of your switch to another switch or router.

Cable Type	Maximum Distance
CAT5E	55 meters
CAT6	55 meters
CAT6A	100 meters

Working carefully, one port at a time, do the following:

1   Verify that you have identified the correct cable for the port.
2   Use an alcohol wipe or other appropriate cleaning agent to clean the cable connectors; make sure they are free of dust, oil, and other contaminants.
3   If you are using optical fiber cable, align the transmit (Tx) and receive (Rx) connectors with the correct corresponding connectors on the switch or the I/O module.
4   Press the cable connectors into their mating connectors on the switch or I/O module until the cable connector is firmly seated.
5   Repeat step 1 on page 42 through step 4 for the remaining cables on this or other switches or I/O modules.

6   Dress and secure the cable bundle to provide appropriate strain relief and protection against bends and kinks.

6 Activating and Verifying the Switch

<div style="background-color:#b9a3c9;">

Connecting the Switch to a Management Console
Configuring the Switch for Use

</div>

After you have installed the switch and connected network cables, perform the following tasks to configure the software on the switch and prepare it for use.

Check http://ezcloudx.com/supportedhardware to see what switch models can be managed with ExtremeCloud™. If your switch is entitled for management by ExtremeCloud, you can optionally use the installation instructions at http://ezcloudx.com/quickstart.

Otherwise, follow the instructions in these topics:
- Connecting the Switch to a Management Console on page 44
- Configuring the Switch for Use on page 44

Connecting the Switch to a Management Console

Connect each switch's serial console interface (an RJ45 jack) to a PC or terminal. The PC or terminal will serve as the management console, used to monitor and configure the switch.

The default communication protocol settings for the serial console interface are:
- Baud rate: 115200
- Data bits: 8
- Stop bit: 1
- Parity: None

Configuring the Switch for Use

After your switch is connected to power and completes its power-on self-tests, it is operational. Before logging in, verify that the switch LEDs are on (solid green or blinking green) and that it is connected to a management console as described in Connecting the Switch to a Management Console on page 44.

To perform the initial login and complete initial configuration tasks, follow these steps from the management console.

1 Using a terminal emulator such as PuTTY or TeraTerm, connect to the switch using the serial port connection.

   Be sure that your serial connection is set properly:
   - Baud rate: 115200
   - Data bits: 8
   - Stop bit: 1

2 Press **[Enter]** one or more times until you see the login prompt.

3 At the login prompt, log in using the default user name `rwa`.

For example:

```
login: rwa
```

When prompted for the password, enter `rwa`.

When you are logged in with the role-based authentical level of `rwa`, you can configure the login and password values for the other role-based authentication levels. For details, see *Quick Start Configuration for VOSS*.

4 Follow the steps for provisioning and verifying the switch in *Quick Start Configuration for VOSS*.

The switch is ready for use.

To configure security, see *Configuring Security*.

To configure other switch features, see *Documentation Reference*.

7 Installing Expansion Modules

Installing a Versatile Interface Module in a VSP 4900 Series Switch

This chapter describes how to install expansion modules:

- Versatile interface modules (VIM5s)

Note

Read the information in this chapter thoroughly before trying install or remove an expansion module.

Installing a Versatile Interface Module in a VSP 4900 Series Switch

This section describes how to install a versatile interface module (VIM5) in the front slot of a VSP 4900 switch.

You need the following tools and materials to install a VIM5:

- ESD-preventive wrist strap
- #2 Phillips screwdriver

Caution

Extreme Networks VIM5s are not hot-swappable. Disconnect power to the switch before removing an installed VIM5 or installing a new VIM5.

To install a versatile interface module, follow these steps:

1. Attach the ESD wrist strap to your wrist and connect the metal end to an appropriate ground point on the rack.
2. Ensure that the switch is completely powered down.

3 Remove the cover plate from the VIM5 slot (#2 Phillips screwdriver required).

a Remove the retaining screws at the top corners of the slot cover plate, and set the screws aside in a safe place.

b Save the retaining screws to secure the new module in the switch.

c Pull the cover plate away from the module slot.
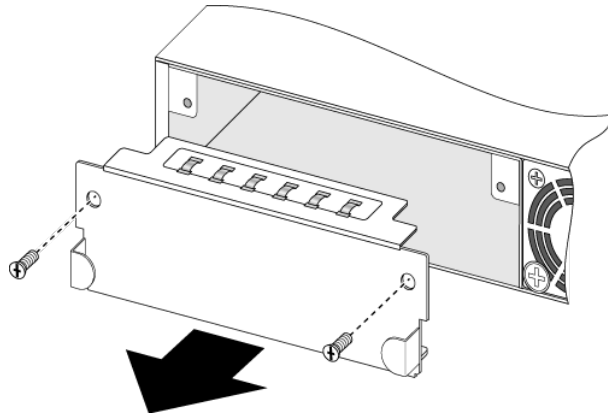
Figure 18: Removing a slot Cover Plate (VIM slot cover shown)

4 Remove the new VIM5 from its anti-static packaging.

5 Install the VIM5 in the switch:

a Carefully slide the VIM5 module into the switch.

b Insert and tighten the retaining screws you removed in step 3.a on page 47, using the screws provided.

Figure 19: Tighten Screws on the Inserted VIM5 Module

1 = VIM5 module retaining screw locations

8 Removing Switches from Service

Removing a switch from service is a two-step process:

1 Disconnect the switch from its power source, following these steps as applicable:
   - Disconnect and remove the switch's removable AC power supply. See "Adding or Replacing Power Supplies, Fans, and Expansion Modules."
   - Disconnect the switch from its redundant power supply.
2 Remove the switch from the rack, following the steps in Removing the Switch from the Rack on page 49.

> **Note**
> Read the information in this chapter thoroughly before you attempt to remove a switch.

9 Removing the Switch from the Rack

To remove or reposition a switch after you have mounted it in a rack, follow these steps.

These procedures assume that you have attached the switch to the rack as described in Installing Your Switch on page 35.

1 Disconnect the switch from its power source or sources.
2 Remove all cables and transceivers.
3 To remove a switch from a four-post rack, do the following:

    a Release the tabs on both slider assemblies, and slide the switch away from the rear of the rack.

      See Figure 20.
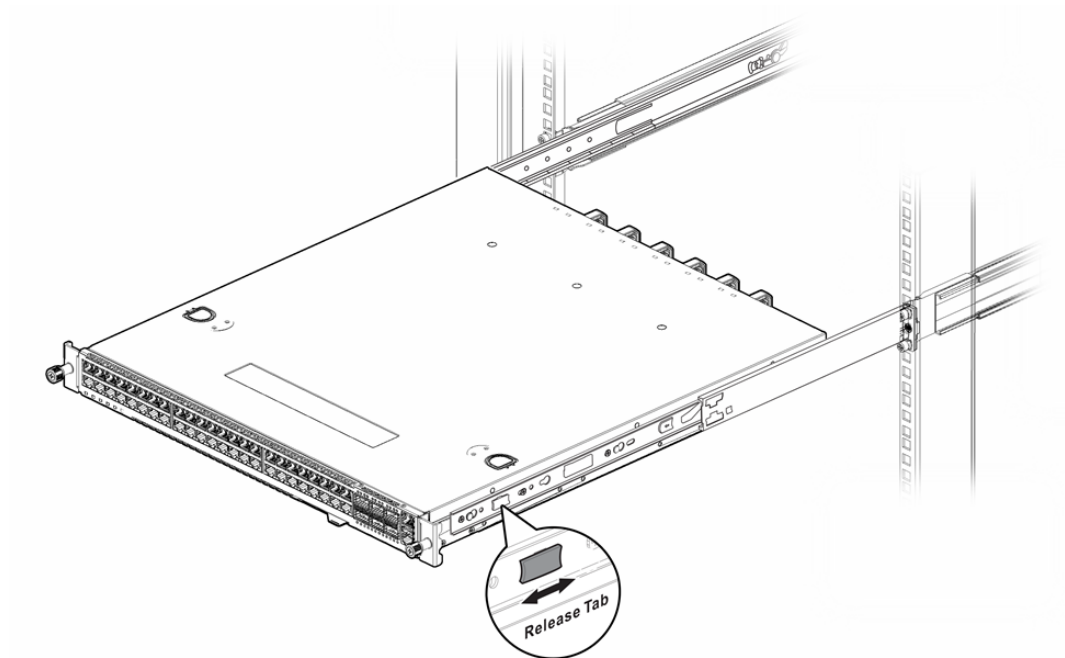
Figure 20: Removing the Switch from the Slider Assemblies

    b Disengage the retainers that are connecting the mounting brackets with the sliding rails on both sides.

    c Carefully slide the switch out of the slider assembly and place it on a flat surface.

      You can leave the slider assemblies in place. If you want to remove them, continue with step 3.d.

d   On one of the slider assemblies, push the rear clamp until it separates from the rear rack post.

See Figure 21.
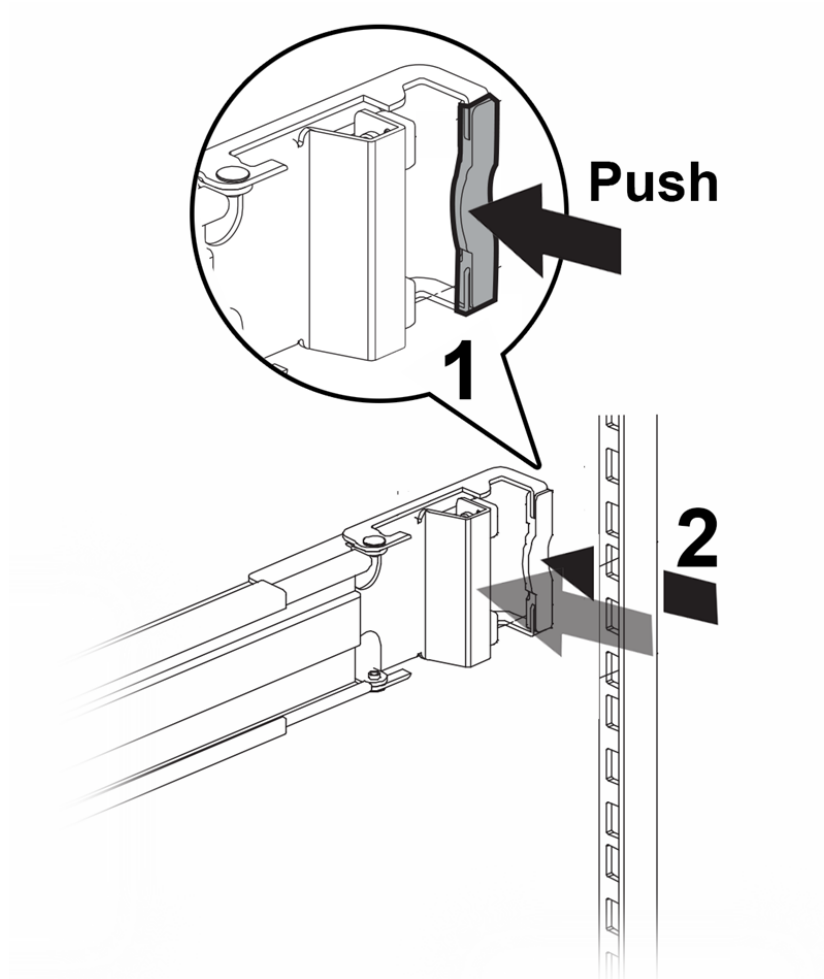
Figure 21: Removing the Slider Assembly: Rear Rack Post

e   Release the tab that holds the front of the slider assembly to the front rack post, and pull the pegs out.

See Figure 22.
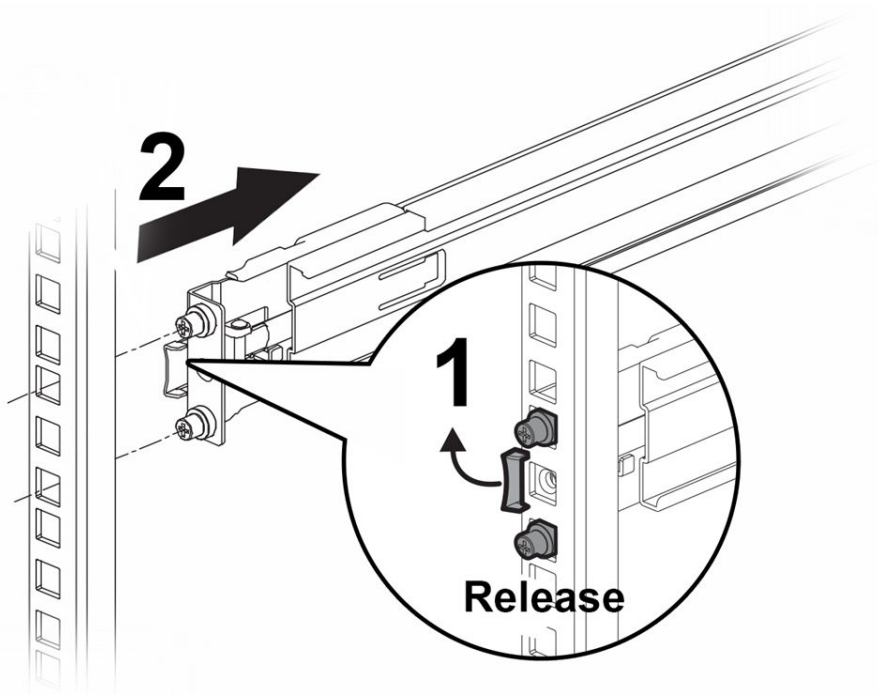
Figure 22: Removing the Slider Assembly: Front Rack Post

f   Repeat steps 3.d on page 50 and 3.e to remove the second slider assembly.

4   To remove a switch from a two-post rack, do the following:

a   Carefully supporting the weight of the switch, unscrew the mounting brackets from the rack.

b   Tilt the switch so that the brackets are clear of the rack posts, and carefully lift it out of the rack.

If the switch cannot be tilted (because other equipment is mounted directly above and below), remove one or two mounting brackets from the switch and then slide the switch out.

If you plan to use the switch again later, we recommend storing it with the mounting brackets attached.

10 Removing and Replacing Components

> **Replacing an 1100 W AC Power Supply**
> **Replacing Fan Modules**

You can replace internal power supplies and fan modules, as needed, while the switch is operating ("hot swapping").

For each switch, ensure that all installed power supplies and fan modules have the same the airflow direction: either front-to-back or back-to-front.

Follow the procedures in this section to remove and replace power supplies and fan modules, and to remove a switch from a rack.

Replacing an 1100 W AC Power Supply

The 1100 W AC power supplies with part number 10941 are compatible with the VSP 4900 switch.

The switch has two bays for hot-swappable power supplies. In a switch with a redundant power configuration, you can replace one AC power supply without powering down the switch.

You need the following tools and materials to replace a 1100 W AC power supply:

- Thermal protective gloves
- AC power cord, if you will not be re-using the cord from the removed power supply

To replace a 1100 W AC power supply, follow these steps:

1 Disconnect the AC power cord from the wall outlet and from the power supply.
2 Note the orientation of the installed power supply, and the location of the latching tab at the right of the unit.

3   Push the latching tab toward the power supply handle and pull outward on the handle to disengage the power supply internal connectors.

See Figure 23.
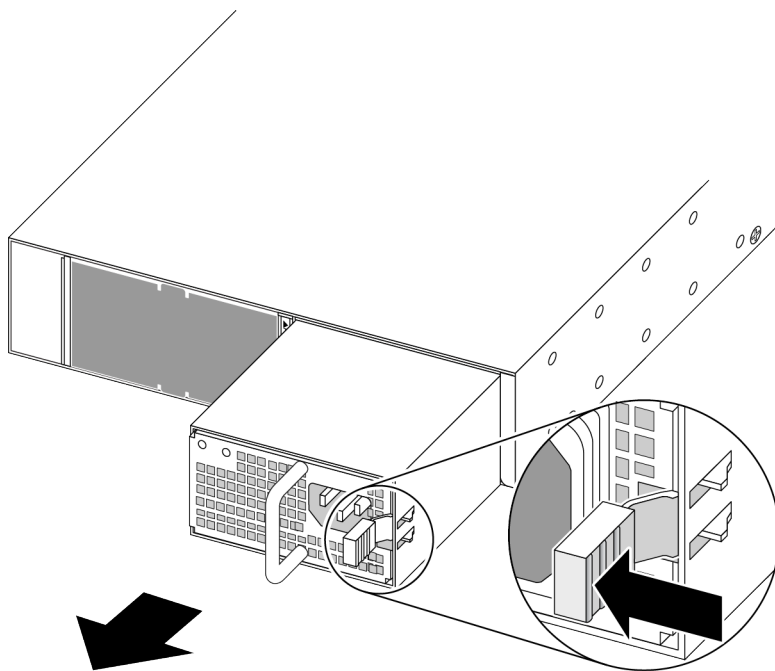
Figure 23: Removing an 1100 W AC Power Supply

4   Carefully slide the power supply the rest of the way out of the switch.

> **Caution**
> Power supplies can become very hot during operation. Wear thermal protective gloves when you remove a power supply from an operating switch.

> **Note**
> If you are not installing a replacement power supply, install a cover over the unoccupied power supply bay. Unoccupied bays must always be covered to maintain proper system ventilation and EMI levels.

5   Verify that the replacement power supply is oriented the same way as the unit you removed, and has the same airflow direction.

6   Carefully slide the power supply all the way into the power supply bay.

See Figure 24.
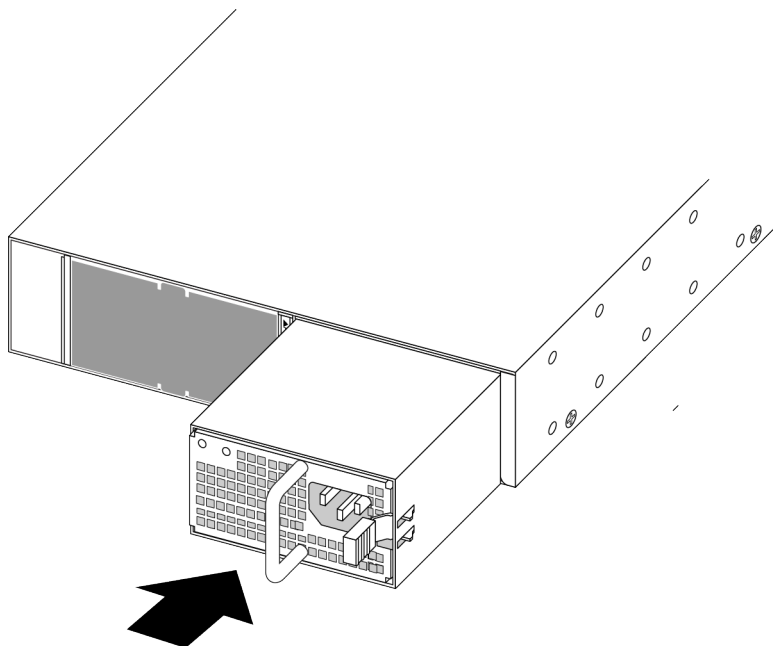
Figure 24: Installing an 1100 W AC Power Supply

7   Push the power supply in until the latch snaps into place.

> ⚠️ **Caution**
> Do not slam the power supply into the switch.

8   Connect the power cord to the power supply and to a grounded AC power outlet.

> ⚡ **Warning**
> Always be sure that the source outlet is properly grounded before plugging the AC power cord into the AC power supply.

9   If the power supply is equipped with a power cord retainer, use the retainer to secure the power cord to the power supply.

Replacing Fan Modules

You can replace fan modules as needed while the switch is operating ("hot swapping").

All installed fan modules must blow air in the same direction and must match the airflow direction of the installed power supplies.

• If the switch's fan tray has a **red** tab, the airflow is front-to-back. Use a fan module labeled **Air Out**.

- If the switch's fan tray has a **blue** tab, the airflow is back-to-front. Use a fan module labeled **Air In**.

> **Note**
>
> The operating-system software cannot display the airflow direction.

Before you begin, have the replacement fan module on hand so that you can complete the replacement promptly. The switch can overheat if left without adequate cooling for an extended time.

To replace the fan module in a switch, do the following.

1 Gently pull the tab (labeled **Air Out** or **Air In**) on the end of the fan module.

   The fan module is held in place by spring clips. As you pull, the clips will disenagage and the fan will stop.

2 Slide the fan module out of the switch and set it aside.

3 Verify that the airflow direction on the replacement fan module matches that of the installed fan modules.

   Fans with front-to-back airflow have red tabs and are labeled **Air Out**.

   Fans with back-to-front airflow have blue tabs and are labeled **Air In**.

4 Carefully slide the replacement fan module into the switch.

   Push until the fan module snaps into place. The fan will automatically start to operate.

11 Replacing a Versatile Interface Module in a VSP 4900 Series Switch

This section describes how to replace versatile interface modules (VIM5) in the front slot of a VSP 4900 switch.

You need the following tools and materials to install a VIM:

- ESD-preventive wrist strap
- #1 Phillips screwdriver (for clock module) or flat-bladed screwdriver (for all other VIM modules)

> ⚠️ **Caution**
> Extreme Networks VIMs are not hot-swappable. Disconnect power to the switch before removing an installed VIM or installing a new VIM.

The replacement procedure is the same all VSP 4900 VIM5s.

To replace a versatile interface module:

1. Attach an ESD-preventive wrist strap to your wrist and connect the metal end to an appropriate ground point on the rack.
2. Disconnect the switch power.
3. Remove the existing VIM:
   a. Remove the retaining screws holding the existing module in place.
   b. Save the retaining screws to secure the new module in the switch.
   c. Pull the old module out of the module slot.
4. Remove the new VIM from its anti-static packaging.
5. Install the VIM in the switch:
   a. Carefully slide the module into the switch.
   b. Insert and tighten the retaining screws you removed in step 3.
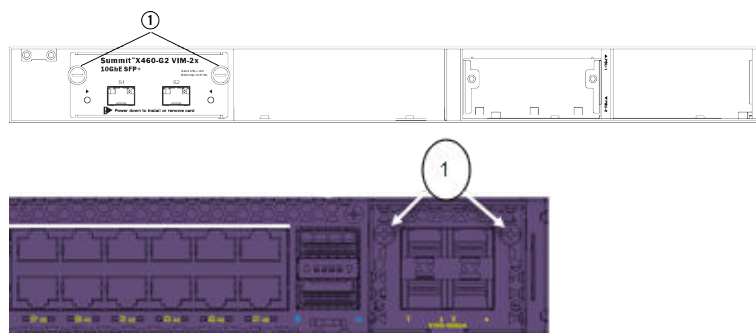
Figure 25: Tighten Screws on the Inserted VIM5 Module

1 = VIM/VIM5 module retaining screw locations

12 Monitoring the Switch

VSP 4900 Switch LEDs

The following topics help you monitor the status of the switch/appliance as it is running.

VSP 4900 Switch LEDs

ExtremeSwitching VSP 4900 Front Panel Port LEDs, as described in the following table:

Table 16: VSP 4900 Port LEDs

LED	Color/State	Port State
SYStem status LED (Legacy MGMT function)	Green Flash slowly	POST Passed, normal operation, blinks on standalone switch, stack master, and backup nodes in a stack; off for standby nodes in a stack
	Green Blinking	POST in progress
	Amber Blinking	POST failed or overheat
PSU status LEDs P1/P2	Green	Power On
	Off	Power off and no power attached
	Amber Blinking	Power supply failures
Fan status LEDS (F1, F2 and F3)	Green	Normal operation
	Amber Blinking	Fan failure
Bluetooth Status LED (BT)	Green Blinking	Bluetooth pairing in progress
	Green	Bluetooth connected
Locator LED (LOC)	Blue Blinking	Locator function
Ethernet Port 1-24 or 1-48		
VIM5 Port 25-32 or 49-56		

The following figure shows the two alternate mode LEDs for VSP 4900 switches: SYS and SPD. The Mode button is used to cylce through two display modes for the port LEDs. SYS and SPD display modes will expire after 30 seconds, at which time the port LEDs will revert to the default SYS mode.

Figure 26: VSP 4900 Mode and System Status LEDs

> **Note**
> Front-panel PoE ports use Amber to indicate PoE states.

Port LEDs in Default (SYS) Mode

In the default SYS mode, SPD is OFF, and the port status will display behavior for link, traffic, and POE as described in the following table:

Table 17: Port LEDs in SYS Mode (default)

Color/State	Meaning
Steady green	Link is OK; port is not powered
Steady amber	Link is OK; port is powered; no traffic
Blinking green	Link is OK and transmitting packets; port is not powered
Blinking amber	Link is OK and transmitting packets; port is powered
Slow blinking amber	No link, or disabled port; port is powered
Alternating amber and green	Port has a power fault
Off	Port is not powered, has no link, or is disabled

Port LEDs in SPD Mode

After one press of the Mode button (see), the port LEDs will enter the SPD Display Mode, indicated by the SPD LED. SPD mode is used to help determine the operational speed of a port. Color and blink pattern indicate speeds, as referenced by the following table:

Table 18: Port LEDs in SPD Mode

Color/State	Speed
Steady green	10Mbps
Blinking green	100Mbps
Steady amber	1000Mbps
Steady green	10Gbps

Table 18: Port LEDs in SPD Mode (continued)

Color/State	Speed
Blinking amber	25Gbps
Blinking green	40Gbps

A Technical Specifications

ExtremeSwitching VSP 4900 Series Switches Technical Specifications
1100 W Power Supplies Technical Specifications
Power Cord Requirements for AC-Powered Switches and AC Power Supplies

This section lists technical specifications for the hardware products described in this document.

ExtremeSwitching VSP 4900 Series Switches Technical Specifications

The ExtremeSwitching VSP 4900 series includes the following switch:

- VSP4900-48P switch

Table 19: VSP 4900 Unpackaged Dimensions

VSP4900-48P switch	Height: 1.72 inches (4.36 cm) Width: 17.34 inches (44 cm) Length: 19.23 inches (48.8 cm)

Table 20: VSP 4900 Unpackaged Weight (With Blanks; No PSU or Fan Module)

VSP4900-48P switch	17.38 lb (7.88 kg)

Table 21: VSP 4900 Packaged Dimensions

VSP4900-48P switch	Height: 6.22 inches (15.8 cm) Width: 21.58 inches (54.8 cm) Length: 23.39 inches (59.4 cm)

Table 22: VSP 4900 Packaged Weight (No PSU or Fan Module)

VSP4900-48P switch	21.63 lb (9.81 kg)

Table 23: VIM5 Module Unpacked Weights and Dimensions

VIM5/Module	Weight	Dimensions
VIM5-2Q	0.40 lb (0.18 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)
VIM5-2Y	0.42 lb (0.19 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)

Table 23: VIM5 Module Unpacked Weights and Dimensions (continued)

VIM5/Module	Weight	Dimensions
VIM5-4X	0.40 lb (0.18 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)
VIM5-4XE	0.45 lb (0.20 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)
VIM5-4Y	0.47 lb (0.21 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)
VIM5-4YE	0.47 lb (0.21 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)

Table 24: VIM5 Module Packed Weight and Dimensions

VIM5/Module	Weight	Dimensions
VIM5-2Q	17.02 lb (7.72 kg)	Height: 9.21 inches (23.39 cm) Width: 18.54 inches (47.01 cm) Length: 21.26 inches (54 cm)
VIM5-2Y	17.42 lb (7.90 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)
VIM5-4X	17.06 lb (7.74 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)
VIM5-4XE	18.14 lb (8.23 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)
VIM5-4Y	18.77 lb (8.51 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)
VIM5-4YE	18.77 lb (8.51 kg)	Height: 1.57 inches (3.99 cm) Width: 1.92 inches (4.88 cm) Length: 6.16 inches (15.64 cm)

Table 25: Fan and Acoustic Noise

Switch Model	Ambient Temp	VIM	PoE	Main Fan Speed (% of max)	PSU1 + PSU2	Bystander Sound Pressure	Declared Sound Power (L_{WAd})
VSP4900-48P switch	25°C	VIM5-4XE	720W	20%	1100W (½ of max PoE power	45.8	56.6

Note: Acoustic noise levels shown here represent noise emitted by the switch at room ambient temperatures. Values are based on a fully configured system consisting of two PSUs and two I/O modules operating under full load. Normal operating temperature range: 0°C to 50°C.

Fan Speed and Temperature Variation

The speed of the fan increases only when the temperature of the device increases. Fan speed is not dependent on any fan failures.

Table 26: VSP 4900 Fan Speed and Power Consumption

Fan Speed	Fan Module RPM (typical)		Power	
	Inlet Fan	Outlet Fan	Typical	
Full	16,000 (typ)	13,500 (typ)	15.8W per module*	
Low	3,200 (typ)	2,800 (typ)		

* Some units are equipped with (1) fan module, while others are equipped with 2. Total fan power is equal to the number of installed fan modules multiplied by the fan power for each module.

Power Options

Table 27: VSP 4900 Power Supply Options

Switch Model	Power Supply
VSP4900-48P switch	1100 W AC power supply: Part no. 10941 1100 W AC PS FB (front to back), Model PSSF112101A 100-127 V∼ 200-240 V∼ 50/60 Hz, 10.5A/5.0 A max per PS

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[2] Bystander Sound pressure is presented for comparison to other products measured using Bystander Sound Pressure.
[3] Declared Sound Power is presented in accordance with ISO 7779:2010(E), ISO 9296:2010 per ETSI/EN 300 753:2012-01.

Table 28: VSP 4900 Power Consumption

Switch Model	Minimum Heat Dissipation	Minimum Power Consumption	Maximum Heat Dissipation	Maximum Power Consumption
VSP4900-48P switch	280	82	1046	1746

Table 29: VSP 4900 PoE Power Budget

Switch Model	1 x 1100W PSU	2 x 1100W PSU
VSP4900-48P	845W	1440W

Table 30: CPU, Memory

CPU/Memory
2-core, 1.5GHz x86 CPU
2 GB DDR4 memory
8 GB eMMC Flash Memory
12MB packet buffer per chip

Standards and Environmental Data

Table 31: Safety Standards

North American Safety of ITE	UL 60950-1 2nd Ed., A2:2014 (US) UL 62368-1 2nd Ed., 2014-12-01 CAN/CSA-C22.2 No. 62368-1-14 2nd Ed. CSA 22.2 No. 60950-1-07 2nd Ed. 2014-10(Canada) Complies with FCC 21CFR 1040.10 (US Laser Safety) CDRH Letter of Approval (US FDA Approval)
European Safety of ITE	IEC 60950-1:2005 2nd+A1:2009+A2:2013 IEC 60950-1:2006+A11+A1+A12+A2 EN 60825-1:2007 (Lasers Safety) IEC/EN 62368-1 2nd, IEC/EN 60950-1 A2 EN 62368-1:2014/A11:2017
International Safety of ITE	CB Report & Certificate per IEC 60950-1:2005 2nd Ed., + National Differences AS/NZX 60950-1 (Australia /New Zealand)

Table 32: EMI/EMC Standards

North America EMC for ITE	FCC CFR 47 part 15 Class A (USA) ICES-003 Class A (Canada)
European EMC standards	EN 55032:2015+AC:2016, Class A EN 55024:2010+A1:2015 Class A includes IEC 61000-4-2, 3, 4, 5, 6, 11 EN 61000-3-2:2014 (Harmonics) EN 61000-3-3:2013 (Flicker) ETSI EN 300 386 V2.1.1 (2016-07) (EMC Telecommunications) 2014/35/EU Low Voltage Directive
International EMC certifications	CISPR 32: 2015, Class A (International Emissions) EN 55024 EN 55024:2010+A1:2015 Class A (International Immunity) IEC/EN 61000-4-2:2008 Electrostatic Discharge, 8kV Contact, 15 kV Air, Criteria A IEC/EN 61000-4-3-4-3:2010 Radiated Immunity 10V/m, Criteria IEC/EN 61000-4-4-4-4:2012 Transient Burst, 1 kV, Criteria A IEC/EN 61000-4-5-4-5:2014 Surge, 2 kV L-L, 2 kV L-G, Level 3, Criteria A IEC/EN 61000-4-6-4-6:2013 Conducted Immunity, 0.15-80 MHz, 10V/m unmod. RMS, Criteria A IEC/EN 61000-4-11:2004 Power Dips & Interruptions, >30%, 25 periods, Criteria C
Country-specific	VCCI Class A (Japan Emissions) BSMI (Taiwan Emissions) ACMA (C-Tick) (Australia Emissions) CCC Mark (China) KCC Mark, EMC Approval (Korea)

Table 33: Telecom Standards

	EN/ETSI 300 386 EN 300 386 V2.1.1 (2016-07) (EMC Telecommunications) EN/ETSI 300 019 (Environmental for Telecommunications) MEF9 and MEF14 certified for EPL, EVPL, and ELAN

Table 34: IEEE 802.3 Media Access Standards

	IEEE 802.3ab 1000BASE-T IEEE 802.3z 1000BASE-X IEEE 802.3ae 10GBASE-X IEEE 802.3ba 40GBASE-X IEEE 802.3bz 2.5GBASE-T and 5GBASE-T (for X460-G2-16mp-32p-10GE4) IEEE 802.3at PoE Plus IEEE 802.3az (EEE)

Table 35: Environmental Data

Environmental standards	EN/ETSI 300 019-2-1 v2.1.2 (2000 - 2009) - Class 1.2 Storage EN/ETSI 300 019-2-2 v2.1.2 (1999 - 09) - Class 2.3 Transportation EN/ETSI 300 019-2-3 v2.1.2 (2003 - 04) - Class 3.1e Operational EN/ETSI 300 753 (1997-10) - Acoustic Noise ASTM D3580 Random Vibration Unpackaged 1.5G
Operating conditions	Temperature range: 0°C to 50°C (32°F to 122°F) Humidity: 10% to 95% relative humidity, non-condensing Altitude: 0 to 3,000 meters (9,850 feet) Operational shock (half sine): 30 m/s^2 (3 G), 11 ms, 60 shocks Operational random vibration: 3 to 500 Hz at 1.5 G rms
Storage & transportation conditions (packaged)	Transportation temperature: -40°C to 70°C (-40°F to 158°F) Storage and transportation humidity: 10% to 95% relative humidity, non-condensing Packaged shock (half sine): 180 m/s^2 (18 G), 6 ms, 600 shocks Packaged sine vibration: 5 to 62 Hz at velocity 5 mm/s, 62 to 500 Hz at 0.2 G Packaged random vibration: 5 to 20 Hz at 1.0 ASD w/−3 dB/oct. from 20 to 200 Hz 14 drops minimum on sides and corners at 42 inches (<15 kg box)

1100 W Power Supplies Technical Specifications

AC Power Supplies

The following 1100 W AC power supply is available for use in VSP 4900 series switches.

•   1100 W AC power supply: front-to-back airflow (part no. 10941)

Table 36: Physical Specifications

Dimensions	Height: 1.57 inches (4.0 cm) Width: 3.25 inches (8.3 cm) Length: 10.22 inches (26.0 cm)
Weight	2.55 lb (1.12 kg)

Table 37: Power Specifications

Voltage input range	100-127/200-240∿ 47 to 63Hz
Nominal input ratings	12.5 A max at 115VAC and 6 A max at 230VAC at full 1100 W load
Maximum inrush current	45A at Max 264 VAC at 25C with cold start
Output	54 V, 20 A max, 1100 W
Power supply input socket and cord	IEC/EN 60320-1/C16 AC input receptacles
Power cord wall plug	Refer to Power Cord Requirements for AC-Powered Switches and AC Power Supplies on page 66.
Efficiency	Minimum efficiency: 88% at maximum power output.

Table 38: Environmental Specifications

Operating temperature	0°C to 50°C (normal operation)
Storage temperature	-40°C to 70°C
Operating humidity	93% relative humidity, non-condensing at 30C
Operational shock	30 m/s^2 (3 G)

Power Cord Requirements for AC-Powered Switches and AC Power Supplies

An AC power cord is not included with the AC power supply.

Power cords used with AC-powered switches or AC power supplies must meet the following requirements:

- The power cord must be agency-certified for the country of use.
- The power cord must have an IEC320-C13 connector for connection to the switch or power supply.
- The power cord must have an appropriately rated and approved wall plug applicable to the country of installation.
- For cords up to 6 feet (2 m) long, the wire size must be 18 AWG (.75 mm^2) minimum; over 6 feet, the minimum wire size is 16 AWG (1.0 mm^2).

  The power cords for switches that use either the 1100 W or 715 W power supplies are keyed with a "notch" to ensure the proper orientation when plugged in. These cords are of 3x14 AWG.

For details about obtaining AC power cords for use in your country, refer to http://www.extremenetworks.com/product/powercords/.

B Safety and Regulatory Information

Considerations Before Installing
General Safety Precautions
Maintenance Safety
Fiber Optic Ports and Optical Safety
Cable Routing for LAN Systems
Installing Power Supply Units and Connecting Power
Selecting Power Supply Cords
Battery Notice
Battery Warning - Taiwan
EMC Warnings
Japan (VCCI Class A)
Korea EMC Statement

> **Warning**
> Read the following safety information thoroughly before installing Extreme Networks products. Failure to follow this safety information can lead to personal injury or damage to the equipment.

Only trained and qualified service personnel (as defined in IEC 60950-1 and AS/NZS 3260) should install, replace, or perform service to Extreme Networks switches and their components. Qualified personnel have read all related installation manuals, have the technical training and experience necessary to be aware of the hazards to which they are exposed in performing a task, and are aware of measures to minimize the danger to themselves or other persons.

If you are located in the United States, install the system in accordance with the U.S. National Electrical Code (NEC).

Considerations Before Installing

Consider the following items before you install equipment.

- For equipment designed to operate in a typical Telco environment that is environmentally controlled, choose a site that has the following characteristics:
  - Temperature-controlled and humidity-controlled, such that the maximum ambient room temperature shall not exceed 50°C (122ºF).
  - Clean and free from airborne materials that can conduct electricity.
  - Well ventilated and away from sources of heat including direct sunlight.

- • Away from sources of vibration or physical shock.
- • Isolated from strong electromagnetic fields produced by electrical devices.
- For equipment designed to be installed in environments that are not environmentally controlled, such as outdoor enclosures, see the product data sheet or for environmental conditions, temperature, and humidity.
- Establish at least 3 inches clearance on all sides for effective ventilation. Do not obstruct the air intake vent on the front, side, or rear ventilation grills. Locate the system away from heat sources.
- Make sure that your equipment is placed in an area that accommodates the power consumption and component heat dissipation specifications.
- Make sure that your power supplies meet the site DC power or AC power requirements of all the network equipment.
- Racks for Extreme Networks equipment must be permanently attached to the floor. Failure to stabilize the rack can cause the rack to tip over when the equipment is removed for servicing.
- Do not operate the system unless all modules, faceplates, front covers, and rear covers are in place. Blank faceplates and cover panels are required for the following functions:
  - • Preventing exposure to hazardous voltages and currents inside the equipment
  - • Containing electromagnetic interference (EMI) that might disrupt other equipment
  - • Directing the flow of cooling air through the equipment
- Ultimate disposal of this product should be handled according to all national laws and regulations.

General Safety Precautions

Follow these guidelines:

- Do not try to lift objects that you think are too heavy for you.
- When you install equipment in a rack, load heavier devices in the lower half of the rack first to avoid making the rack top-heavy.
- Use only tools and equipment that are in perfect condition. Do not use equipment with visible damage.
- Route cables in a manner that prevents possible damage to the cables and avoids causing accidents, such as tripping.
- Do not place a monitor or other objects on top of the equipment. The chassis cover is not designed to support weight.
- To reduce the risk of fire, use only #26 AWG or larger telecommunications line cord. Use only copper conductors.
- Do not work on the system or connect or disconnect cables during periods of lightning activity.
- This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor.

Maintenance Safety

When you perform maintenance procedures on Extreme Networks equipment, follow these recommendations:

- Use only authorized accessories or components approved for use with this system. Failure to follow these instructions may damage the equipment or violate required safety and regulations.
- This system contains no customer serviceable components. Do not attempt to repair a chassis, power supply, module, or other component. In the event of failure, return the defective unit to Extreme Networks for repair or replacement, unless otherwise instructed by an Extreme Networks representative.
- To remove power from the system, you must unplug all power cords from wall outlets. The power cord is the disconnect device to the main power source.
- Disconnect all power cords before working near power supplies, unless otherwise instructed by a product-specific maintenance procedure.
- Replace a power cord immediately if it shows any signs of damage.
- When you work with optical devices, power supplies, or other modular accessories, put on an ESD-preventive wrist strap to reduce the risk of electronic damage to the equipment. Connect the other end of the strap to an appropriate grounding point on the equipment rack or to an ESD jack on the chassis if one is provided. Leave the ESD-preventive wrist strap permanently attached to the equipment rack or chassis so that it is always available when you need to handle components that are sensitive to ESD.
- Install all cables in a manner that avoids strain. Use tie wraps or other strain relief devices.

Fiber Optic Ports and Optical Safety

The following safety warnings apply to all optical devices used in Extreme Networks equipment that are removable or directly installed in an I/O module or chassis system.

Such devices include but are not limited to gigabit interface converters (GBICs), small form factor pluggable (SFP) modules (or mini-GBICs), QSFP+ modules, XENPAK transceivers, and XFP laser optic modules.

> **Warning**
>
> Laser optic modules become very hot after prolonged use. Take care when removing a laser optic module from the module or option card. If the laser optic module is too hot to touch, disengage the laser optic module and allow it to cool before removing it completely.
>
> When working with laser optic modules, always take the precautions listed below to avoid exposure to hazardous radiation.

- Never look at the transmit LED/laser through a magnifying device while the transmit LED is powered on.
- Never look directly at a fiber port on the switch or at the ends of a fiber cable when they are powered on.
- Invisible laser radiation can occur when the connectors are open. Avoid direct eye exposure to the beam when optical connections are unplugged.
- Never alter, modify, or change an optical device in any way other than suggested in this document.

GBIC, SFP (Mini-GBIC), QSFP+, XENPAK, and XFP Regulatory Compliance

Extreme Networks pluggable optical modules and direct-attach cables meet the following regulatory requirements:

- Class 1 or Class 1M Laser Product
- EN60825-1:2007 2nd Ed. or later, European standard
- FCC 21 CFR Chapter 1, Subchapter J in accordance with FDA & CDRH requirements
- Application of CE Mark in accordance with 2004/108/EEC EMC Directive and the 2006/95/EC Low Voltage Directives
- UL and/or CSA registered component for North America
- 47 CFR Part 15, Class A when installed into Extreme products

Cable Routing for LAN Systems

Extreme Networks equipment meets the requirements for LAN system equipment.

LAN systems are designed for intra-building installations; that is, cable runs between devices must be in the same building as the connected units, except under the conditions listed in the next paragraph.

As allowed in the USA by the National Electrical Code (NEC), this equipment can be connected between buildings if any one of the following conditions is true:

- Cable runs between buildings are less than 140 feet long.
- Cable runs between buildings are directly buried.
- Cable runs between buildings are in an underground conduit, where a continuous metallic cable shield or a continuous metallic conduit containing the cable is bonded to each building grounding electrode system.

Caution

Failure to follow these requirements for cable routing conditions may expose the user to electrical shock and expose the unit to damage that can cause errors.

Warning

The Ethernet ports of the equipment and its sub-assemblies are suitable only for intra-building connections (within the same building) or for connections to unexposed wiring or cabling. (See the conditions listed above.) The Ethernet ports of this equipment or its sub-assemblies must not be metallically connected to interfaces that connect to the outside plant (OSP) or its wiring. Ethernet interfaces are designed for use only as intra-building interfaces (described as Type 2 or Type 4 ports in GR-1089-CORE, Issue 6) and require isolation from the exposed OSP wiring. The addition of Primary Protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

This warning does not apply to T1/E1 ports because T1/E1 ports have built-in isolation and surge protection that allows them to be connected to OSP wiring.

Installing Power Supply Units and Connecting Power

For the ratings and power input requirements of each power supply unit, see "Technical Specifications" or the data sheet for the power supply at www.extremenetworks.com.

> **Warning**
>
> Be sure to satisfy the requirements listed in this section when you install Extreme Networks power supplies or connect power.

When you install any power supply:

- Do not use excessive force when you insert a power supply into the bay.
- Do not attempt to open the power supply enclosure for any reason; the power supply does not contain user-serviceable parts. In the event of failure, return the defective power supply to Extreme Networks for repair or replacement.
- Do not put your hand into an open power supply bay when a power supply is not present.
- Before you work on equipment that is connected to power lines, remove all jewelry, including watches. Metal objects heat up when they are connected to power and ground and can cause serious burns or weld the metal object to the terminals.
- An electrical arc can occur when you connect or disconnect the power with power applied. This could cause an explosion in hazardous area installations. Be sure that power is removed from the device.
- When you install or replace equipment, always make the ground connection first and disconnect the ground connection last.

When you install DC power supplies or connect DC power:

- Extreme Networks DC power supplies do not have switches for turning the unit on and off. Make sure that the DC circuit is de-energized before connecting or disconnecting the DC power cord at the DC input power socket.
- Connect the system or power supply only to a DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950-based safety standards.

> **Note**
>
> Because building codes vary worldwide, Extreme Networks strongly recommends that you consult an electrical contractor to ensure proper equipment grounding and power distribution for your specific installation and country.

> **Warning**
>
> Extreme Networks power supplies do not have switches for turning the unit on and off. Disconnect all power cords to remove power from the device. Make sure that these connections are easily accessible.
>
> Extreme Networks alimentations n'ont pas de contact pour mettre l'appareil sous et hors tension. Débranchez tous les cordons d'alimentation pour couper l'alimentation de l'appareil. Assurez-vous que ces connexions sont facilement accessibles.

Selecting Power Supply Cords

Extreme Networks does not include power input cords in the product box.

You can purchase a power cord for your product and for your specific country from your local Extreme Networks Channel Account Manager or Sales Manager, or you can purchase a cord from your local supplier. Requirements for the power cord are listed in the Technical Specifications for your product.

To locate a Sales Manager or Partner in your region, visit www.extremenetworks.com/partners/where-to-buy.

Note

This equipment is not intended to be directly powered by power distribution systems where phase-phase voltages exceed 240 VAC (2P+PE), such as those used in Norway, France, and other countries. For these applications it is recommended that a transformer be used to step down the voltage to < 240 VAC from phase-phase, or that you make a connection to a (P+N +PE) power distribution where voltages do not exceed 240 VAC.

All installations should confirm that the product is reliably grounded according to the country's local electrical codes.

Battery Notice

Warning: This product contains a battery used to maintain product information. If the battery should need replacement it must be replaced by Service Personnel. Please contact Technical Support for assistance.

Risk of explosion if battery is replaced by an incorrect type. Dispose of expended battery in accordance with local disposal regulations.

Attention: Ce produit renferme une pile servant à conserver les renseignements sur le produit. Le cas échéant, faites remplacer la pile par le personnel du service de réparation. Veuillez communiquer avec l'assistance technique pour du soutien.

Il y a risque d'explosion si la pile est remplacée par un type de pile incorrect. Éliminez les piles usées en conformité aux règlements locaux d'élimination des piles.

Battery Warning - Taiwan

警告

如果更換不正確之電池型式會有爆炸的風險,

請依製造商說明書處理用過之電池。

EMC Warnings

Taiwan BSMI Warning

警告使用者:

此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻

擾動，在此種情況下，使用者會被要求採取某些適當的對策。

China CCC Warning

警告使用者:

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。

在这种情况下，可能需要用户对干扰采取切实可行的措施。

Japan (VCCI Class A)

Warning

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

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

Korea EMC Statement

이 기기는 업무용 환경에서 사용할 목적으로 적
합성평가를 받은 기기로서 가정용 환경에서 사
용하는 경우 전파간섭의 우려가 있습니다.

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