Complete Hardware Guide for EX2200 Ethernet Switches

Published: 2010-12-07
Revision 4

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Complete Hardware Guide for EX2200 Ethernet Switches

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Revision History
17 February 2010—Revision 1
May 2010—Revision 2
August 2010—Revision 3
December 2010—Revision 4

The information in this document is current as of the date listed in the revision history.

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About This Topic Collection

How to Use This Guide

Complete documentation for the EX Series product family is provided on webpages at http://www.juniper.net/techpubs/en_US/release-independent/information-products/pathway-pages/ex-series/product/index.html. We have selected content from these webpages and created a number of EX Series guides that collect related topics into a book-like format so that the information is easy to print and easy to download to your local computer.

This guide, *Complete Hardware Guide for EX2200 Switches*, collects together information about the EX2200 fixed-configuration switches. The release notes are at http://www.juniper.net/techpubs/en_US/junos10.4/information-products/topic-collections/release-notes/10.4/junos-release-notes-10.4.pdf.

List of EX Series Guides for Junos OS Release 10.4

Title	Description
Complete Hardware Guide for EX2200 Ethernet Switches	Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX2200 Ethernet switches
Complete Hardware Guide for EX3200 Ethernet Switches	Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX3200 Ethernet switches
Complete Hardware Guide for EX4200 Ethernet Switches	Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX4200 Ethernet switches

Title	Description
Complete Hardware Guide for EX4500 Ethernet Switches	Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX4500 Ethernet switches
Complete Hardware Guide for EX8208 Ethernet Switches	Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX8208 Ethernet switches
Complete Hardware Guide for EX8216 Ethernet Switches	Component descriptions, site preparation, installation, replacement, and safety and compliance information for EX8216 Ethernet switches
Complete Hardware Guide for the XRE200 External Routing Engine	Component descriptions, site preparation, installation, replacement, and safety and compliance information for the XRE200 External Routing Engine
Complete Software Guide for Junos® OS for EX Series Ethernet Switches, Release 10.4	Software feature descriptions, configuration examples, and tasks for Junos OS for EX Series switches
Software Topic Collections	Software feature descriptions, configuration examples and tasks, and reference pages for configuration statements and operational commands (This information also appears in the *Complete Software Guide for Junos® OS for EX Series Ethernet Switches, Release 10.4.*)
Junos® OS for EX Series Ethernet Switches, Release 10.4: EX4200 Virtual Chassis	
Junos® OS for EX Series Ethernet Switches, Release 10.4: EX8200 Virtual Chassis	
Junos® OS for EX Series Ethernet Switches, Release 10.4: Access Control	
Junos® OS for EX Series Ethernet Switches, Release 10.4: Configuration Management	
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Junos® OS for EX Series Ethernet Switches, Release 10.4: Interfaces	

Title	Description
Junos® OS for EX Series Ethernet Switches, Release 10.4: Layer 3 Protocols	
Junos® OS for EX Series Ethernet Switches, Release 10.4: MPLS	
Junos® OS for EX Series Ethernet Switches, Release 10.4: Multicast	
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Junos® OS for EX Series Ethernet Switches, Release 10.4: System Setup	
Junos® OS for EX Series Ethernet Switches, Release 10.4: User and Access Management	
Junos® OS for EX Series Ethernet Switches, Release 10.4: User Interfaces	

Downloading Software

You can download Junos OS for EX Series switches from the Download Software area at http://www.juniper.net/customers/support/ . To download the software, you must have a Juniper Networks user account. For information about obtaining an account, see http://www.juniper.net/entitlement/setupAccountInfo.do.

Documentation Symbols Key

Notice Icons		
Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.

Text and Syntax Conventions		
Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the **configure** command: user@host> **configure**
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`
Italic text like this	• Introduces important new terms. • Identifies book names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS System Basics Configuration Guide* • RFC 1997, *BGP Communities Attribute*
Italic text like this	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# **set system domain-name** *domain-name*
Plain text like this	Represents names of configuration statements, commands, files, and directories; IP addresses; configuration hierarchy levels; or labels on routing platform components.	• To configure a stub area, include the **stub** statement at the **[edit protocols ospf area area-id]** hierarchy level. • The console port is labeled **CONSOLE**.
< > (angle brackets)	Enclose optional keywords or variables.	**stub <default-metric** ***metric*****>;**

Text and Syntax Conventions		
Convention	Description	Examples
| (pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	**broadcast | multicast** (***string1*** **|** ***string2*** **|** ***string3***)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	**rsvp { # Required for dynamic MPLS only**
[ ] (square brackets)	Enclose a variable for which you can substitute one or more values.	**community name members [** ***community-ids*** **]**

Indention and braces ({ })	Identify a level in the configuration hierarchy.	[edit]
		routing-options {
		  static {
		  route default {
		  nexthop *address*;
		  retain;
		  }
		  }
		}

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
J-Web GUI Conventions		
Bold text like this	Represents J-Web graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.
> (bold right angle bracket)	Separates levels in a hierarchy of J-Web selections.	In the configuration editor hierarchy, select **Protocols>Ospf**.

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- Document URL or title
- Page number if applicable
- Software version
- Your name and company

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- Product warranties—For product warranty information, visit http://www.juniper.net/support/warranty/ .
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- Find product documentation: http://www.juniper.net/techpubs/
- Find solutions and answer questions using our Knowledge Base: http://kb.juniper.net/
- Download the latest versions of software and review release notes: http://www.juniper.net/customers/csc/software/
- Search technical bulletins for relevant hardware and software notifications: https://www.juniper.net/alerts/
- Join and participate in the Juniper Networks Community Forum: http://www.juniper.net/company/communities/
- Open a case online in the CSC Case Management tool: http://www.juniper.net/cm/

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: https://tools.juniper.net/SerialNumberEntitlementSearch/

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For international or direct-dial options in countries without toll-free numbers, see http://www.juniper.net/support/requesting-support.html .

PART 1

Switch and Components Overview and Specifications

CHAPTER 1

EX2200 Switch Overview

EX2200 Switches Hardware Overview

Juniper Networks EX Series Ethernet Switches provide scalable connectivity for the enterprise market, including branch offices, campus locations, and data centers. The switches run under the Juniper Networks Junos operating system (Junos OS), which provides Layer 2 and Layer 3 switching, routing, and security services. The same Junos OS code base that runs on EX Series switches also runs on all Juniper Networks J Series, M Series, MX Series, and T Series routers.

EX2200 Switches

Juniper Networks EX2200 Ethernet switches provide connectivity for low-density environments.

EX2200 switches are available in models with either 24 or 48 built-in network ports and four uplink ports, with Power over Ethernet (PoE) either available in all built-in network ports or not available in any built-in network port. All models provide network ports that have 10/100/1000Base-T Gigabit Ethernet connectors and four uplink ports. These switches run under Junos OS for EX Series switches.

Uplink Ports

Each EX2200 switch has four uplink ports that support 1-gigabit small form-factor pluggable (SFP) transceivers for use with fiber connections and copper connections. See “Optical Interface Support in EX2200 Switches” on page 22.

Power over Ethernet (PoE) Ports

PoE ports provide electrical current to devices through the network cables so that separate power cords for devices such as IP phones, wireless access points, and security cameras are unnecessary. EX2200 switches are available with full (all 24 or 48 built-in network ports) or no PoE capability. Full PoE models are primarily used in IP telephony environments.

EX2200 switches running Junos OS Release 10.3 or later can supply up to 30 W to individual PoE ports, supporting powered devices that comply with IEEE 802.3af (PoE) and IEEE 802.3at (PoE+).

NOTE: IEEE 802.3at class 4 powered devices require category 5 or higher Ethernet cables.

EX2200 switches running Junos OS Release 10.2 or earlier can supply up to 15.4 W to individual PoE ports, supporting powered devices that comply with IEEE 802.3af (PoE).

Related Documentation

- EX2200 Switch Models on page 4
- Site Preparation Checklist for EX2200 Switches on page 33

EX2200 Switch Models

The EX2200 switch is available with 24 or 48 built-in network ports with full (all 24 or 48 built-in network ports) or no Power over Ethernet (PoE) capability. Table 1 on page 4 lists the EX2200 switch models.

Table 1: EX2200 Switch Models

Model	Access Ports	Ports in Which PoE Is Available	Maximum PoE Power Available
EX2200-24T-4G	24 Gigabit Ethernet	–	–
EX2200-24P-4G	24 Gigabit Ethernet	All 24 ports	405 W
EX2200-48T-4G	48 Gigabit Ethernet	–	–
EX2200-48P-4G	48 Gigabit Ethernet	All 48 ports	405 W

Related Documentation

- Front Panel of an EX2200 Switch on page 5
- EX2200 Switches Hardware Overview on page 3

Chassis Physical Specifications for EX2200 Switches

The EX2200 switch chassis is a rigid sheet-metal structure that houses the hardware components. Table 2 on page 5 summarizes the physical specifications of the EX2200 switch chassis.

Table 2: Physical Specifications of the EX2200 Switch Chassis

Description	Value
Chassis height	1.75 in. (4.45 cm)
Chassis width	• 17.5 in. (44.5 cm) • 19 in. (48.2 cm) with mounting brackets attached
Chassis depth	10.5 in. (26.7 cm)
Weight	• EX2200-24T: 6 lb (2.7 kg) • EX2200-24P: 8 lb (3.6 kg) • EX2200-48T: 8 lb (3.6 kg) • EX2200-48P: 10 lb (4.5 kg)

Related Documentation

- Rack Requirements for EX2200 Switches on page 39
- Cabinet Requirements for EX2200 Switches on page 40
- Mounting an EX2200 Switch on page 53
- Installing and Connecting an EX2200 Switch on page 51

Front Panel of an EX2200 Switch

The front panel of an EX2200 switch consists of the following components:

- Network ports—depending on the switch model, either of:
  - 24 or 48 10/100/1000Base-T Gigabit Ethernet ports, with Power over Ethernet (PoE) not available in EX2200-24T and EX2200-48T
  - 24 or 48 10/100/1000Base-T Gigabit Ethernet ports, with Power over Ethernet (PoE) available in EX2200-24P and EX2200-48P
- 4 built-in SFP uplink ports
- 2 chassis status LEDs
- 4 port status mode LEDs
- Mode button

Figure 1 on page 6 shows the front panel of an EX2200 switch with 48 Gigabit Ethernet ports. Figure 2 on page 6 shows the front panel of an EX2200 switch with 24 Gigabit Ethernet ports.

Figure 1: Front Panel of an EX2200 Switch with 48 Gigabit Ethernet Ports

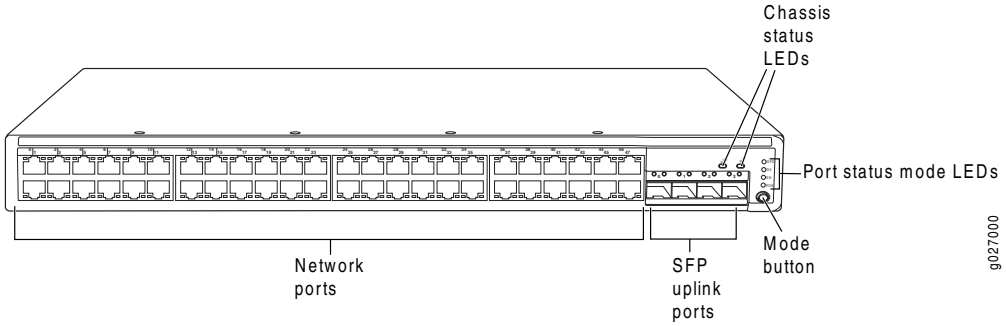
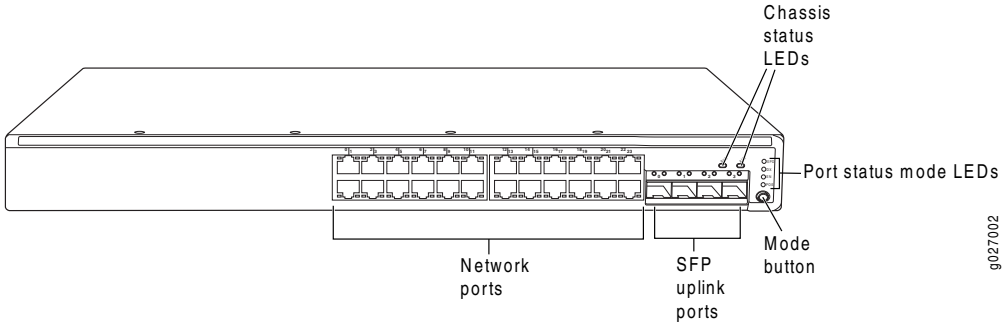


Figure 2: Front Panel of an EX2200 Switch with 24 Gigabit Ethernet Ports



Related Documentation

- Chassis Status LEDs in EX2200 Switches on page 11
- Network Port and Uplink Port LEDs in EX2200 Switches on page 12
- Network Port Connector Pinout Information for an EX2200 Switch on page 20
- Rear Panel of an EX2200 Switch on page 6
- Installing a Transceiver in an EX Series Switch on page 65
- Removing a Transceiver from an EX Series Switch on page 95
- Installing and Connecting an EX2200 Switch on page 51

Rear Panel of an EX2200 Switch

The rear panel of the EX2200 switch consists of the following components:

- Management Ethernet port
- USB port
- Console port
- Protective earthing terminal
- ESD point
- Air exhaust

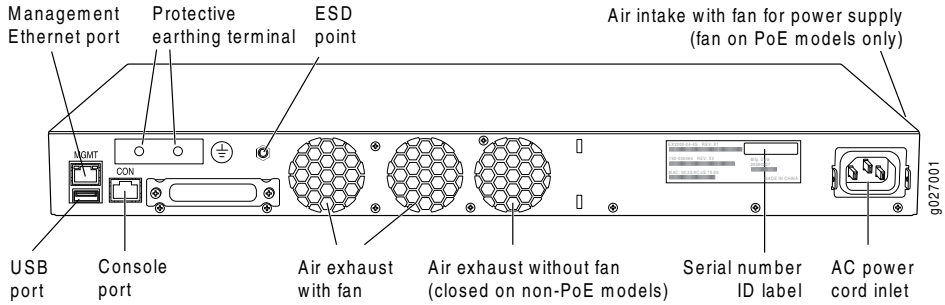
- Serial number ID label
- AC power cord inlet

Figure 3 on page 7 shows the rear panel of an EX2200 switch.

All EX2200 switches have three exhaust openings on the rear panel. The two leftmost exhaust openings have fans behind them and are open. The rightmost exhaust opening is open on Power over Ethernet (PoE) models and closed on non-PoE models. On PoE models, this opening exhausts the air from the fan at the air intake for the power supply on the side panel.

The power cord retainer clips extend out of the chassis by 3 in.

Figure 3: Rear Panel of an EX2200 Switch



Related Documentation

- Front Panel of an EX2200 Switch on page 5
- USB Port Specifications for an EX Series Switch on page 19
- Cooling System and Airflow in an EX2200 Switch on page 15
- Power Supply in EX2200 Switches on page 14
- Prevention of Electrostatic Discharge Damage on EX Series Switches on page 142
- Connecting Earth Ground to an EX Series Switch on page 67
- Installing and Connecting an EX2200 Switch on page 51

EX2200 Switch Hardware and CLI Terminology Mapping

This topic describes the hardware terms used in EX2200 switch documentation and the corresponding terms used in the Junos OS command line interface (CLI). See Table 3 on page 8.

Table 3: CLI Equivalents of Terms Used in Documentation for EX2200 Switches

Hardware Item (CLI)	Description (CLI)	Value (CLI)	Item in Documentation	Additional Information
Chassis	One of the following: • EX2200-24T-4G • EX2200-24P-4G • EX2200-48T-4G • EX2200-48P-4G	–	Switch chassis	"Chassis Physical Specifications for EX2200 Switches" on page 5
FPC (*n*)	Abbreviated name of the Flexible PIC Concentrator (FPC) One of the following: • EX2200-24T-4G • EX2200-24P-4G • EX2200-48T-4G • EX2200-48P-4G	Value of *n* is always 0.	The switch does not have actual FPCs. In this case, FPC refers to the switch itself.	Understanding Interface Naming Conventions on EX Series Switches
PIC (*n*)	Abbreviated name of the Physical Interface Card (PIC)	*n* is a value in the range of 0-1.	The switch does not have actual PIC devices; see entries for PIC 0 through PIC 1 for the equivalent item on the switch.	Understanding Interface Naming Conventions on EX Series Switches
	One of the following: • 24x 10/100/1000 Base-T • 48x 10/100/1000 Base-T	PIC 0	Built-in network ports on the front panel of the switch	"Front Panel of an EX2200 Switch" on page 5
	4x GE SFP	PIC 1	Built-in uplink ports on the front panel of the switch	"Front Panel of an EX2200 Switch" on page 5
Xcvr (*n*)	Abbreviated name of the transceiver	*n* is a value equivalent to the number of the port in which the transceiver is installed.	Optical transceivers	"Optical Interface Support in EX2200 Switches" on page 22
Power supply (*n*)	Built-in power supply	Value of *n* is always 0.	AC power supply	"Power Supply in EX2200 Switches" on page 14
Fan tray	Fan tray	–	Fan tray	"Cooling System and Airflow in an EX2200 Switch" on page 15

Related Documentation

- EX Series Switches Hardware and CLI Terminology Mapping
- EX2200 Switches Hardware Overview on page 3

CHAPTER 2

Component Descriptions

Chassis Status LEDs in EX2200 Switches

The front panel of an EX2200 switch has two chassis status LEDs labeled SYS and ALM on the far right side of the panel, above the uplink ports (see Figure 4 on page 11).

Figure 4: Chassis Status LEDs in an EX2200 Switch

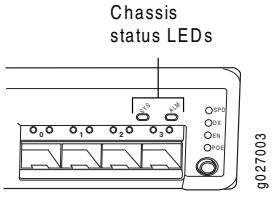


Table 4 on page 11 describes the chassis status LEDs in an EX2200 switch, their colors and states, and the status they indicate.

Table 4: Chassis Status LEDs in an EX2200 Switch

LED Label	Color	State and Description
ALM	Unlit	There is no alarm.
	Amber	There is a minor alarm.
	Red	There is a major alarm.
SYS	Green	• On steadily—The switch is functioning normally. • Blinking—The switch is booting. • Off—The switch is off.

A major alarm (red) indicates a critical error condition that requires immediate action.

A minor alarm (amber) indicates a noncritical condition that requires monitoring or maintenance. A minor alarm that is left unchecked might cause interruption in service or performance degradation.

Both LEDs can be lit simultaneously.

You can view the colors of the two LEDs remotely through the CLI by issuing the operational mode command **show chassis led**.

Related Documentation

- Front Panel of an EX2200 Switch on page 5
- Checking Active Alarms with the J-Web Interface
- Understanding Alarm Types and Severity Levels on EX Series Switches

Network Port and Uplink Port LEDs in EX2200 Switches

Each network port and uplink port on the front panel of an EX2200 switch has two LEDs that indicate link/activity and port status. See Figure 5 on page 12 and Figure 6 on page 12.

Figure 5: LEDs on the Network Ports on the Front Panel

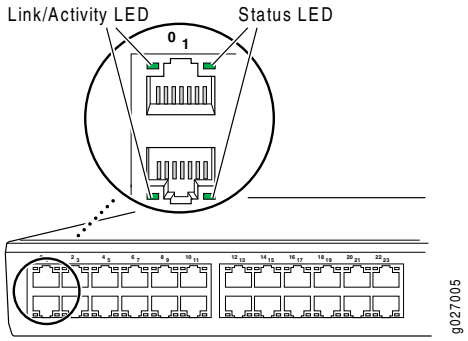


Figure 6: LEDs on the Uplink Ports and Port Status Mode LEDs

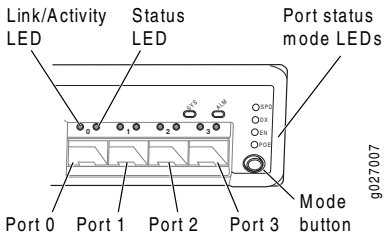


Table 5 on page 12 describes the Link/Activity LED.

Table 5: Link/Activity LED on the Network Ports and Uplink Ports in EX2200 Switches

LED	Color	State and Description
Link/Activity	Green	• Blinking—The port and the link are active, and there is link activity. • On steadily—The port and the link are active, but there is no link activity. • Off—The port is not active.

The LEDs labeled Status LED in Figure 5 on page 12 and Figure 6 on page 12 indicate the status of one of the four port parameters—speed, duplex mode, administrative status, and Power over Ethernet (PoE) status. Use the mode button below the POE LED on the far right side of the front panel to toggle the Status LED to show the different port parameters. You can tell which port parameter is indicated by the Status LED by seeing which port status mode LED (SPD, DX, EN, and POE) is lit. (See Figure 6 on page 12).

Table 6 on page 13 describes the Status LED.

Table 6: Status LED on the Network Ports and Uplink Ports in EX2200 Switches

Port Parameters	State and Description
Speed	Indicates the speed. The speed indicators for network ports are: • One blink per second—10 Mbps • Two blinks per second—100 Mbps • Three blinks per second—1000 Mbps The speed indicators for uplink ports are: • On steadily—1000 Mbps • Off—10/100 Mbps
Duplex mode	Indicates the duplex mode. The status indicators are: • On steadily—Port is set to full-duplex mode. • Off—Port is set to half-duplex mode.
Administrative status	Indicates the administrative status. The status indicators are: • On steadily—Port is administratively enabled. • Off—Port is administratively disabled.

PoE status	Indicates the PoE status. The status indicators for network ports are:
	• On steadily—PoE is available on the port, a device that draws power from the port is connected to the port, and the device is drawing power from the port.
	• Blinking—PoE is available on the port, but no power is drawn from the port because of one of the following:
	  ◦ No device that draws power from the port is connected to the port.
	  ◦ A device that draws power from the port is connected to the port, but the device is not drawing any power from the port.
	• Off—PoE is not available on the port.
	PoE is not available on uplink ports; therefore, the LED for those ports is always unlit.

You can tell which port parameter is indicated by the Status LED on network ports and uplink ports by issuing the operational mode command show chassis led.

Related Documentation

- Front Panel of an EX2200 Switch on page 5
- Configuring Gigabit Ethernet Interfaces (CLI Procedure)
- Configuring Gigabit Ethernet Interfaces (J-Web Procedure)

Management Port LEDs in EX2200 Switches

The management port on the rear panel of an EX2200 switch has two LEDs that indicate link/activity and port status (see Figure 7 on page 14).

Figure 7: LEDs on the Management Port on an EX2200 Switch

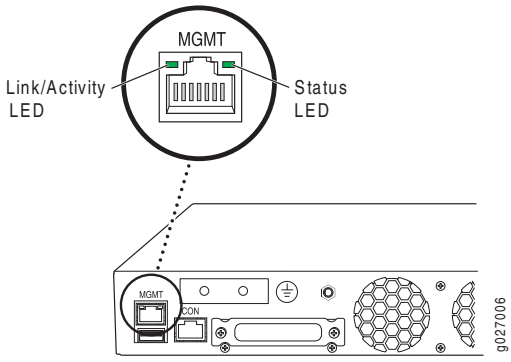


Table 7 on page 14 describes the Link/Activity LED.

Table 7: Link/Activity LED on the Management Port on an EX2200 Switch

LED	Color	State and Description
Link/Activity	Green	• Blinking—The port and the link are active, and there is link activity. • On steadily—The port and the link are active, but there is no link activity. • Off—The port is not active.

Table 8 on page 14 describes the Status LED.

Table 8: Status LED on the Management Port on an EX2200 Switch

LED	Color	State and Description
Status	Green	Indicates the speed. The speed indicators are: • One blink per second—10 Mbps • Two blinks per second—100 Mbps

Related Documentation

- Connecting an EX Series Switch to a Network for Out-of-Band Management on page 74

Power Supply in EX2200 Switches

The power supply in EX2200 switches is built in along the rear panel of the chassis, with an AC power cord inlet on the rear panel to connect power to the switch.

Table 9 on page 15 lists the power consumed by each EX2200 switch model. The maximum power available on a PoE port is 30 W for switches running Junos OS Release 10.3 or later and 15.4 W for switches running Junos OS Release 10.2 or earlier.

Table 9: Power Consumed by EX2200 Switches

Model Number	Number of PoE-Enabled Ports	Maximum Power Consumed by the Switch	Maximum PoE Power Available
EX2200-24T	–	50 W	–
EX2200-24P	24	60 W (when no PoE power is drawn)	405 W
EX2200-48T	–	76 W	–
EX2200-48P	48	91 W (when no PoE power is drawn)	405 W

Related Documentation

- AC Power Cord Specifications for EX2200 Switches on page 47
- Rear Panel of an EX2200 Switch on page 6
- Power Specifications for EX2200 Switches on page 47
- Connecting AC Power to an EX2200 Switch on page 73
- Connecting Earth Ground to an EX Series Switch on page 67

Cooling System and Airflow in an EX2200 Switch

The cooling system in an EX2200 switch consists of two fans along the rear of the chassis that provide side-to-rear chassis cooling. In switch models with network ports in which PoE is available, there is an additional fan in the power supply.

Figure 8 on page 16 shows the airflow in an EX2200 switch with network ports in which PoE is not available.

Figure 8: Airflow Through Non-PoE Models of EX2200 Switches

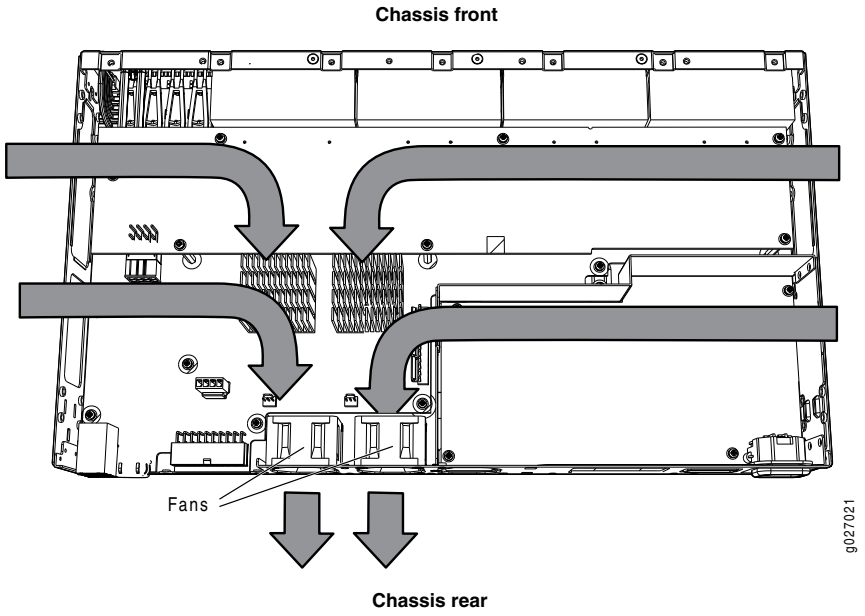
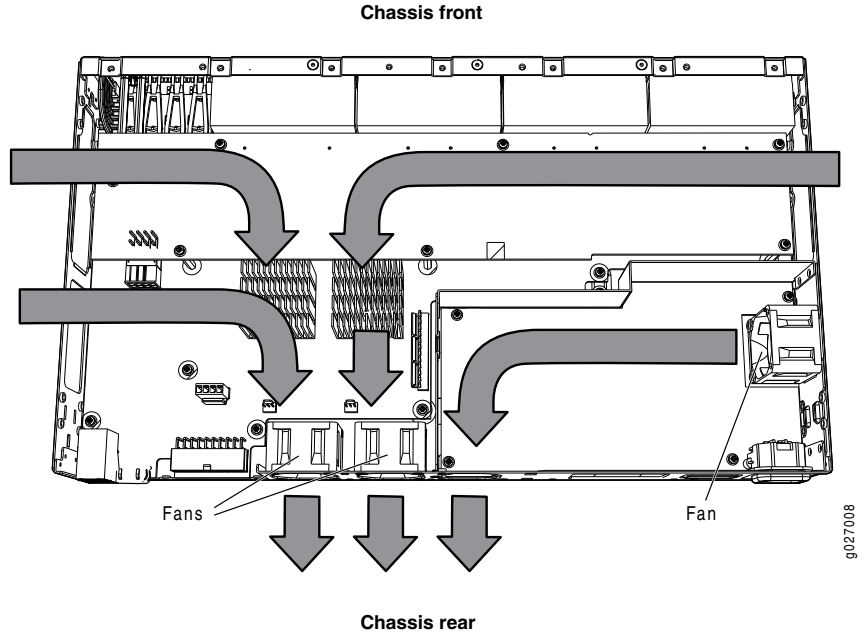


Figure 9 on page 16 shows the airflow in an EX2200 switch with network ports in which PoE is available.

Figure 9: Airflow Through PoE Models of EX2200 Switches



Under normal operating conditions, the fans operate at reduced speed to reduce noise. Temperature sensors in the chassis monitor the temperature within the chassis. If any fan fails or if the temperature inside the chassis rises above the threshold, the switch raises an alarm and all functioning fans operate at a higher speed than normal. If the

temperature inside the chassis rises above the threshold, the switch shuts down automatically.

Related Documentation

- Rear Panel of an EX2200 Switch on page 6
- Chassis Status LEDs in EX2200 Switches on page 11
- Understanding Alarm Types and Severity Levels on EX Series Switches
- Prevention of Electrostatic Discharge Damage on EX Series Switches on page 142

CHAPTER 3

Component Specifications

USB Port Specifications for an EX Series Switch

The following Juniper Networks USB flash drives have been tested and are officially supported for the USB port on all EX Series switches:

- RE-USB-1G-S
- RE-USB-2G-S
- RE-USB-4G-S

CAUTION: Any USB memory product not listed as supported for EX Series switches has not been tested by Juniper Networks. The use of any unsupported USB memory product could expose your EX Series switch to unpredictable behavior. Juniper Networks Technical Assistance Center (JTAC) can provide only limited support for issues related to unsupported hardware. We strongly recommend that you use only supported USB flash drives.

All USB flash drives used on EX Series switches must have the following features:

- USB 2.0 or later.
- Formatted with a FAT or MS-DOS file system.
- If the switch is running Junos OS Release 9.5 or earlier, the formatting method must use a master boot record. Microsoft Windows formatting, by default, does not use a master boot record. See the documentation for your USB flash drive for information on how your USB flash drive is formatted.

Related Documentation

- See Rear Panel of an EX2200 Switch on page 6 for port location.
- See Rear Panel of an EX3200 Switch for port location.
- See Rear Panel of an EX4200 Switch for port location.
- See Front Panel of an EX4500 Switch for port location.
- See Switch Fabric and Routing Engine (SRE) Module in an EX8208 Switch for port location.
- See Routing Engine (RE) Module in an EX8216 Switch for port location.
- Booting an EX Series Switch Using a Software Package Stored on a USB Flash Drive

Network Port Connector Pinout Information for an EX2200 Switch

A network port on an EX2200 switch uses an RJ-45 connector to connect to a device.

The port uses an autosensing RJ-45 connector to support a 10/100/1000Base-T connection. Two LEDs on the port indicate link/activity on the port and the port status. See "Network Port and Uplink Port LEDs in EX2200 Switches" on page 12.

Table 10 on page 20 provides the pinout information for the RJ-45 connector. An RJ-45 cable, with a connector attached, is supplied with the switch.

Table 10: Network Port Connector Pinout Information for EX2200 Switches

Pin	Signal	Description
1	TRP1+	Transmit/receive data pair 1 Negative Vport (in PoE models)
2	TRP1-	Transmit/receive data pair 1 Negative Vport (in PoE models)
3	TRP2+	Transmit/receive data pair 2 Positive Vport (in PoE models)
4	TRP3+	Transmit/receive data pair 3
5	TRP3-	Transmit/receive data pair 3
6	TRP2-	Transmit/receive data pair 2 Positive Vport (in PoE models)
7	TRP4+	Transmit/receive data pair 4
8	TRP4-	Transmit/receive data pair 4

Related Documentation

- Front Panel of an EX2200 Switch on page 5

Console Port Connector Pinout Information for an EX Series Switch

The console port on an EX Series switch is an RS-232 serial interface that uses an RJ-45 connector to connect to a console management device. The default baud rate for the console port is 9600 baud.

Table 11 on page 21 provides the pinout information for the RJ-45 console connector. An RJ-45 cable and an RJ-45 to DB-9 serial port adapter are supplied with the switch.

NOTE: If your laptop or PC does not have a DB-9 male connector pin and you want to connect your laptop or PC directly to an EX Series switch, use a combination of the RJ-45 to DB-9 female adapter supplied with the switch and a USB to DB-9 male adapter. You must provide the USB to DB-9 male adapter.

Table 11: EX Series Switches Console Port Connector Pinout Information

Pin	Signal	Description
1	RTS Output	Request to send
2	DTR Output	Data terminal ready
3	TxD Output	Transmit data
4	Signal Ground	Signal ground
5	Signal Ground	Signal ground
6	RxD Input	Receive data
7	CD Input	Data carrier detect
8	CTS Input	Clear to send

Related Documentation

- See Rear Panel of an EX2200 Switch on page 6 for port location.
- See Rear Panel of an EX3200 Switch for port location.
- See Rear Panel of an EX4200 Switch for port location.
- See Front Panel of an EX4500 Switch for port location.
- See Switch Fabric and Routing Engine (SRE) Module in an EX8208 Switch for port location.
- See Routing Engine (RE) Module in an EX8216 Switch for port location.

- Connecting an EX Series Switch to a Management Console on page 76

Management Port Connector Pinout Information for an EX2200 Switch

The management port on an EX2200 switch uses an RJ-45 connector to connect to a management device for out-of-band management.

The port uses an autosensing RJ-45 connector to support a 10/100Base-T connection. Two LEDs on the port indicate link/activity on the port and the administrative status of the port. See “Management Port LEDs in EX2200 Switches” on page 14.

Table 12 on page 22 provides the pinout information for the RJ-45 connector for the management port. An RJ-45 cable, with a connector attached, is supplied with the switch.

Table 12: Management Port Connector Pinout Information for EX2200 Switches

Pin	Signal	Description
1	TRP1+	Transmit/receive data pair 1
2	TRP1-	Transmit/receive data pair 1
3	TRP2+	Transmit/receive data pair 2
6	TRP2-	Transmit/receive data pair 2

Related Documentation

- See Rear Panel of an EX2200 Switch on page 6 for port location.
- Connecting an EX Series Switch to a Network for Out-of-Band Management on page 74

Optical Interface Support in EX2200 Switches

Uplink ports on the front panel in EX2200 switches support SFP transceivers. This topic describes the optical interfaces supported for those transceivers. It also lists the copper interface supported for the SFP transceivers.

NOTE: Use only optical transceivers and optical connectors purchased from Juniper Networks for your EX2200 switch.

The two tables in this topic describe the optical interface support over single-mode fiber-optic (SMF) and multimode fiber-optic (MMF) cables and over the copper interface for SFP transceivers:

- Table 13 on page 23—Optical interface support and copper interface support for Gigabit Ethernet SFP transceivers
- Table 14 on page 27—Optical interface support for Fast Ethernet SFP transceivers

Table 13: Optical Interface Support and Copper Interface Support for Gigabit Ethernet SFP Transceivers in EX2200 Switches

Ethernet Standard	Specification	Value
1000Base-T	Model Number	EX-SFP-1GE-T
	Rate	10/100/1000 Mbps
	Connector Type	RJ-45
	Transmitter Wavelength	–
	Minimum Launch Power	–
	Maximum Launch Power	–
	Minimum Receiver Sensitivity	–
	Maximum Input Power	–
	Core/Cladding Size	–
	Modal Bandwidth	–
	Distance	100 m (328 ft)
	Software required	Junos OS for EX Series switches, Release 10.1 or later

Table 13: Optical Interface Support and Copper Interface Support for Gigabit Ethernet SFP Transceivers in EX2200 Switches *(continued)*

Ethernet Standard	Specification	Value			
1000Base-SX	Model Number	EX-SFP-1GE-SX			
	Rate	1000 Mbps			
	Connector Type	LC			
	Fiber Count	Dual			
	Transmitter Wavelength	850 nm			
	Minimum Launch Power	–9.5 dBm			
	Maximum Launch Power	–3 dBm			
	Minimum Receiver Sensitivity	–21 dBm			
	Maximum Input Power	0 dBm			
	Fiber Type	MMF			
	Core/Cladding Size	62.5/125 µm	62.5/125 µm	50/125 µm	50/125 µm
	Fiber Grade	FDDI	OM1	–	OM2
	Modal Bandwidth	160 MHz/km	200 MHz/km	400 MHz/km	500 MHz/km
	Distance	220 m (722 ft)	275 m (902 ft)	500 m (1640 ft)	550 m (1804 ft)
	Software required	Junos OS for EX Series switches, Release 10.1 or later			

Table 13: Optical Interface Support and Copper Interface Support for Gigabit Ethernet SFP Transceivers in EX2200 Switches *(continued)*

Ethernet Standard	Specification	Value
1000Base-LX	Model Number	EX-SFP-1GE-LX
	Rate	1000 Mbps
	Connector Type	LC
	Fiber Count	Dual
	Transmitter Wavelength	1310 nm
	Minimum Launch Power	–9.5 dBm
	Maximum Launch Power	–3 dBm
	Minimum Receiver Sensitivity	–25 dBm
	Maximum Input Power	–3 dBm
	Fiber Type	SMF
	Core/Cladding Size	9/125 µm
	Modal Bandwidth	–
	Distance	10 km (6.2 miles)
	Software required	Junos OS for EX Series switches, Release 10.1 or later

Table 13: Optical Interface Support and Copper Interface Support for Gigabit Ethernet SFP Transceivers in EX2200 Switches *(continued)*

Ethernet Standard	Specification	Value
1000Base-LH (or 1000Base-ZX)	Model Number	EX-SFP-1GE-LH
	Rate	1000 Mbps
	Connector Type	LC
	Fiber Count	Dual
	Transmitter Wavelength	1550 nm
	Minimum Launch Power	–2 dBm
	Maximum Launch Power	5 dBm
	Minimum Receiver Sensitivity	–25 dBm
	Maximum Input Power	–3 dBm
	Fiber Type	SMF
	Core/Cladding Size	9/125 µm
	Modal Bandwidth	–
	Distance	70 km (43.5 miles)
	Software required	Junos OS for EX Series switches, Release 10.1 or later

Table 14: Optical Interface Support for Fast Ethernet SFP Transceivers in EX2200 Switches

Ethernet Standard	Specification	Value
100Base-FX	Model Number	EX-SFP-1FE-FX
	Rate	100 Mbps
	Connector Type	LC
	Fiber Count	Dual
	Transmitter Wavelength	1310 nm
	Minimum Launch Power	–20 dBm
	Maximum Launch Power	–14 dBm
	Minimum Receiver Sensitivity	–32.5 dBm
	Maximum Input Power	–8 dBm
	Fiber Type	MMF
	Core/Cladding Size	62.5/125 µm
	Fiber Grade	FDDI/OM1
	Modal Bandwidth	500 Mhz/km
	Distance	2 km (1.2 miles)
	Software required	Junos OS for EX Series switches, Release 10.1 or later

Table 14: Optical Interface Support for Fast Ethernet SFP Transceivers in EX2200 Switches *(continued)*

Ethernet Standard	Specification	Value
100Base-BX-U	Model Number	EX-SFP-FE20KT13R15
	Rate	100 Mbps
	Connector Type	LC
	Fiber Count	Single
	Transmitter Wavelength	1310 nm
	Receiver Wavelength	1550 nm
	Minimum Launch Power	–14 dBm
	Maximum Launch Power	–8 dBm
	Minimum Receiver Sensitivity	–45 dBm
	Maximum Input Power	–8 dBm
	Fiber Type	SMF
	Core/Cladding Size	9/125 µm
	Modal Bandwidth	–
	Distance	20 km (12.4 miles)
	Software required	Junos OS for EX Series switches, Release 10.1 or later

Table 14: Optical Interface Support for Fast Ethernet SFP Transceivers in EX2200 Switches *(continued)*

Ethernet Standard	Specification	Value
100Base-BX-D	Model Number	EX-SFP-FE20KT15R13
	Rate	100 Mbps
	Connector Type	LC
	Fiber Count	Single
	Transmitter Wavelength	1550 nm
	Receiver Wavelength	1310 nm
	Minimum Launch Power	–14 dBm
	Maximum Launch Power	–8 dBm
	Minimum Receiver Sensitivity	–45 dBm
	Maximum Input Power	–8 dBm
	Fiber Type	SMF
	Core/Cladding Size	9/125 µm
	Modal Bandwidth	–
	Distance	20 km (12.4 miles)
	Software required	Junos OS for EX Series switches, Release 10.1 or later

Related Documentation

- Front Panel of an EX2200 Switch on page 5
- Installing a Transceiver in an EX Series Switch on page 65
- Removing a Transceiver from an EX Series Switch on page 95

PART 2

Planning for Switch Installation

CHAPTER 4

Site Preparation

Site Preparation Checklist for EX2200 Switches

The checklist in Table 15 on page 33 summarizes the tasks you need to perform when preparing a site for EX2200 switch installation.

Table 15: Site Preparation Checklist

Item or Task	For More Information	Performed By	Date
Environment			
Verify that environmental factors such as temperature and humidity do not exceed switch tolerances.	"Environmental Requirements and Specifications for EX Series Switches" on page 36		
Power			
Measure distance between external power sources and switch installation site.			
Locate sites for connection of system grounding.			
Calculate the power consumption and requirements.	"Power Specifications for EX2200 Switches" on page 47		
Hardware Configuration			
Choose the number and types of switches you want to install.	"EX2200 Switches Hardware Overview" on page 3		
Rack or Cabinet			

Table 15: Site Preparation Checklist *(continued)*

Item or Task	For More Information	Performed By	Date
Verify that your rack or cabinet meets the minimum requirements for the installation of the switch.	"Rack Requirements for EX2200 Switches" on page 39 "Cabinet Requirements for EX2200 Switches" on page 40		
Plan rack or cabinet location, including required space clearances.	"Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches" on page 42		
Secure the rack or cabinet to the floor and building structure.			
Wall			
Verify that the wall meets the minimum requirements for the installation of the switch.	"Requirements for Mounting an EX2200 Switch on a Desktop or Wall" on page 42		
Verify that there is appropriate clearance in your selected location.	"Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches" on page 42		
Cables			
Acquire cables and connectors: • Determine the number of cables needed based on your planned configuration. • Review the maximum distance allowed for each cable. Choose the length of cable based on the distance between the hardware components being connected.			
Plan the cable routing and management.			

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Site Guidelines for EX Series Switches on page 35
- Installing and Connecting an EX2200 Switch on page 51
- Mounting an EX2200 Switch on page 53

General Site Guidelines for EX Series Switches

Efficient device operation requires proper site planning and maintenance and proper layout of the equipment, rack or cabinet (if used), and wiring closet.

To plan and create an acceptable operating environment for your device and prevent environmentally caused equipment failures:

- Keep the area around the chassis free from dust and conductive material, such as metal flakes.
- Follow prescribed airflow guidelines to ensure that the cooling system functions properly and that exhaust from other equipment does not blow into the intake vents of the switch.
- Follow the prescribed ESD prevention procedures to avoid damaging the equipment. Static discharge can cause components to fail completely or intermittently over time.
- Install the switch in a secure area, so that only authorized personnel can access the switch.

Related Documentation

- Prevention of Electrostatic Discharge Damage on EX Series Switches on page 142
- Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches on page 42
- Clearance Requirements for Airflow and Hardware Maintenance for EX3200 Switches
- Clearance Requirements for Airflow and Hardware Maintenance for EX4200 Switches
- Clearance Requirements for Airflow and Hardware Maintenance for EX4500 Switches
- Clearance Requirements for Airflow and Hardware Maintenance for an EX8208 Switch
- Clearance Requirements for Airflow and Hardware Maintenance for an EX8216 Switch
- Environmental Requirements and Specifications for EX Series Switches on page 36

Site Electrical Wiring Guidelines for EX Series Switches

Table 16 on page 36 describes the factors you must consider while planning the electrical wiring at your site.

WARNING: It is particularly important to provide a properly grounded and shielded environment and to use electrical surge-suppression devices.

Table 16: Site Electrical Wiring Guidelines

Site Wiring Factor	Guidelines
Signaling limitations	If your site experiences any of the following problems, consult experts in electrical surge suppression and shielding: • Improperly installed wires cause radio frequency interference (RFI). • Damage from lightning strikes occurs when wires exceed recommended distances or pass between buildings. • Electromagnetic pulses (EMPs) caused by lightning damages unshielded conductors and electronic devices.
Radio frequency interference	To reduce or eliminate radio frequency interference (RFI) from your site wiring, do the following: • Use twisted-pair cable with a good distribution of grounding conductors. • If you must exceed the recommended distances, use a high-quality twisted-pair cable with one ground conductor for each data signal when applicable.
Electromagnetic compatibility	If your site is susceptible to problems with electromagnetic compatibility (EMC), particularly from lightning or radio transmitters, seek expert advice. Some of the problems caused by strong sources of electromagnetic interference (EMI) are: • Destruction of the signal drivers and receivers in the switch • Electrical hazards as a result of power surges conducted over the lines into the equipment

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- Prevention of Electrostatic Discharge Damage on EX Series Switches on page 142
- Power Supply in EX2200 Switches on page 14
- Power Supply in EX3200 Switches
- Power Supply in EX4200 Switches
- AC Power Supply in EX4500 Switches
- DC Power Supply in EX4500 Switches
- AC Power Supply in an EX8200 Switch
- DC Power Supply in an EX8200 Switch

Environmental Requirements and Specifications for EX Series Switches

The switch must be installed in a rack or cabinet housed in a dry, clean, well-ventilated, and temperature-controlled environment.

Ensure that these environmental guidelines are followed:

- The site must be as dust-free as possible, because dust can clog air intake vents and filters, reducing the efficiency of the switch cooling system.
- Maintain ambient airflow for normal switch operation. If the airflow is blocked or restricted, or if the intake air is too warm, the switch might overheat, leading to the switch temperature monitor shutting down the switch to protect the hardware components.

Table 17 on page 37 provides the required environmental conditions for normal switch operation.

Table 17: EX Series Switch Environmental Tolerances

Description	Tolerance
Altitude	No performance degradation to 10,000 feet (3048 meters)
Relative humidity	Normal operation ensured in relative humidity range of 10% through 85%, noncondensi
Temperature	• EX2200, EX3200, EX4200, and EX4500 switches: Normal operation ensured in temp through 113º F (0º C through 45º C) • EX8208 and EX8216 switches: Normal operation ensured in temperature range of 32º through 40º C) • XRE200 External Routing Engines: Normal operation ensured in temperature range of (5º C through 40º C)
Seismic	Complies with Zone 4 earthquake requirements as per GR-63, Issue 3.

NOTE: Install EX Series switches only in restricted areas, such as dedicated equipment rooms and equipment closets, in accordance with Articles 110–16, 110–17, and 110–18 of the National Electrical Code, ANSI/NFPA 70.

Related Documentation

- Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches on page 42
- Clearance Requirements for Airflow and Hardware Maintenance for EX3200 Switches
- Clearance Requirements for Airflow and Hardware Maintenance for EX4200 Switches
- Clearance Requirements for Airflow and Hardware Maintenance for EX4500 Switches
- Clearance Requirements for Airflow and Hardware Maintenance for an EX8208 Switch
- Clearance Requirements for Airflow and Hardware Maintenance for an EX8216 Switch

CHAPTER 5

Mounting and Clearance Requirements

Rack Requirements for EX2200 Switches

You can mount the switch on two-post racks or four-post racks.

Rack requirements consist of:

- Rack type
- Mounting bracket hole spacing
- Rack size and strength
- Rack connection to the building structure

Table 18 on page 39 provides the rack requirements and specifications for the switch.

Table 18: Rack Requirements and Specifications for the Switch

Rack Requirement	Guidelines
Rack type	Use a two-post rack or a four-post rack. You can mount the switch on any two-post or four-post rack that provides bracket holes or hole patterns spaced at 1 U (1.75 in./4.45 cm) increments and that meets the size and strength requirements to support the weight. A U is the standard rack unit defined in *Cabinets, Racks, Panels, and Associated Equipment* (document number EIA-310–D) published by the Electronics Industry Association (http://www.eia.org). The rack must meet the strength requirements to support the weight of the chassis.
Mounting bracket hole spacing	The holes in the mounting brackets are spaced at 1 U (1.75 in. or 4.45 cm), so that the switch can be mounted in any rack that provides holes spaced at that distance.

Table 18: Rack Requirements and Specifications for the Switch *(continued)*

Rack Requirement	Guidelines
Rack size and strength	• Ensure that the rack complies with one of these standards: ◦ A 19-in. rack as defined in *Cabinets, Racks, Panels, and Associated Equipment* (document number EIA-310–D) published by the Electronics Industry Association (http://www.eia.org). • Ensure that the rack rails are spaced widely enough to accommodate the switch chassis' external dimensions . The outer edges of the front-mounting brackets extend the width of the chassis to 19 in. (48.2 cm). • The rack must be strong enough to support the weight of the switch. • Ensure that the spacing of rails and adjacent racks allows for the proper clearance around the switch and rack.
Rack connection to building structure	• Secure the rack to the building structure. • If earthquakes are a possibility in your geographical area, secure the rack to the floor. • Secure the rack to the ceiling brackets as well as wall or floor brackets for maximum stability.

One pair of mounting brackets for mounting the switch on two posts of a rack is supplied with each switch. For mounting the switch on four posts of a rack or cabinet, you can order a four-post rack-mount kit separately.

Related Documentation

- Chassis Physical Specifications for EX2200 Switches on page 5
- Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches on page 42
- Rack-Mounting and Cabinet-Mounting Warnings for EX Series Switches on page 129
- Mounting an EX2200 Switch on Two Posts in a Rack or Cabinet on page 55
- Mounting an EX2200 Switch on Four Posts in a Rack or Cabinet on page 57
- Mounting an EX2200 Switch in a Recessed Position in a Rack or Cabinet on page 61

Cabinet Requirements for EX2200 Switches

You can mount the switch in a cabinet that contains a 19-in. rack.

Cabinet requirements consist of:

- Cabinet size
- Clearance requirements
- Cabinet airflow requirements

Table 19 on page 41 provides the cabinet requirements and specifications for the switch.

Table 19: Cabinet Requirements and Specifications for the Switch

Cabinet Requirement	Guidelines
Cabinet size	• You can mount the switch in a cabinet that contains a 19-in. rack as defined in *Cabinets, Racks, Panels, and Associated Equipment* (document number EIA-310–D) published by the Electronics Industry Association (http://www.eia.org). NOTE: The rack must meet the strength requirements to support the weight of the switch. • The minimum cabinet size must be able to accommodate the maximum external dimensions of the switch.
Cabinet clearance	• The outer edges of the mounting brackets extend the width of the chassis to 19 in. (48.3 cm). • The minimum total clearance inside the cabinet is 30 in. (76.2 cm) between the inside of the front door and the inside of the rear door.
Cabinet airflow requirements	When you mount the switch in a cabinet, ensure that ventilation through the cabinet is sufficient to prevent overheating. • Ensure adequate cool air supply to dissipate the thermal output of the switch or switches. • Ensure that the cabinet allows the chassis hot exhaust air to exit the cabinet without recirculating into the switch. An open cabinet (without a top or doors) that employs hot air exhaust extraction from the top allows the best airflow through the chassis. If the cabinet contains a top or doors, perforations in these elements assist with removing the hot air exhaust. • Install the switch in the cabinet in a way that maximizes the open space on the side of the chassis that has the hot air exhaust. This maximizes the clearance for critical airflow. • Route and dress all cables to minimize the blockage of airflow to and from the chassis. • Ensure that the spacing of rails and adjacent cabinets allows for the proper clearance around the switch and cabinet. • A cabinet larger than the minimum required provides better airflow and reduces the chance of overheating.

Related Documentation

- Chassis Physical Specifications for EX2200 Switches on page 5
- Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches on page 42
- Rack-Mounting and Cabinet-Mounting Warnings for EX Series Switches on page 129
- Mounting an EX2200 Switch on Two Posts in a Rack or Cabinet on page 55
- Mounting an EX2200 Switch on Four Posts in a Rack or Cabinet on page 57
- Mounting an EX2200 Switch in a Recessed Position in a Rack or Cabinet on page 61

Requirements for Mounting an EX2200 Switch on a Desktop or Wall

You can install the switch on a desktop or wall. When choosing a location, allow at least 6 in. (15.2 cm) of clearance between the front and back of the chassis and adjacent equipment or walls.

Ensure that the wall onto which the switch is installed is stable and securely supported.

If you are mounting the switch in sheetrock (wall board with a gypsum plaster core) or in wall board not backed by wall studs, use hollow wall anchors capable of supporting the combined weight of two fully loaded chassis. Insert the screws into wall studs wherever possible to provide added support for the chassis.

Use the wall-mount kit from Juniper Networks to mount the switch on a wall. The wall-mount kit is not part of the standard package and needs to be ordered separately.

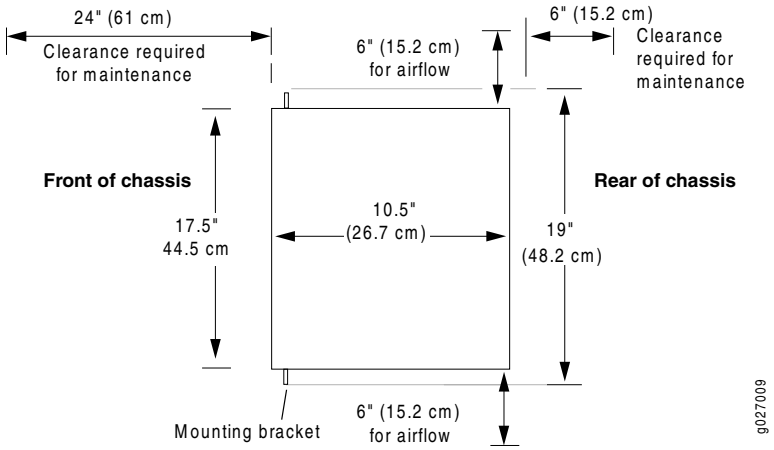
Related Documentation

- Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches on page 42
- Wall-Mounting Warnings for EX2200 Switches on page 134
- Mounting an EX2200 Switch on a Desk or Other Level Surface on page 54
- Mounting an EX2200 Switch on a Wall on page 61

Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches

When planning the site for installing an EX2200 switch, you must allow sufficient clearance around the installed switch (see Figure 10 on page 42).

Figure 10: Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches



The power cord retainer clips extend out of the rear of the chassis by 3 in.

- Allow at least 6 in. (15.2 cm) of clearance on the side between devices that have fans or blowers installed. Allow 2.8 in. (7 cm) between the side of the chassis and any

non-heat-producing surface such as a wall. For the cooling system to function properly, the airflow around the chassis must be unrestricted.

Figure 11 on page 43 shows the airflow in an EX2200 switch with network ports in which PoE is available. Figure 12 on page 43 shows the airflow in an EX2200 switch with network ports in which PoE is not available.

Figure 11: Airflow Through PoE Models of EX2200 Switches

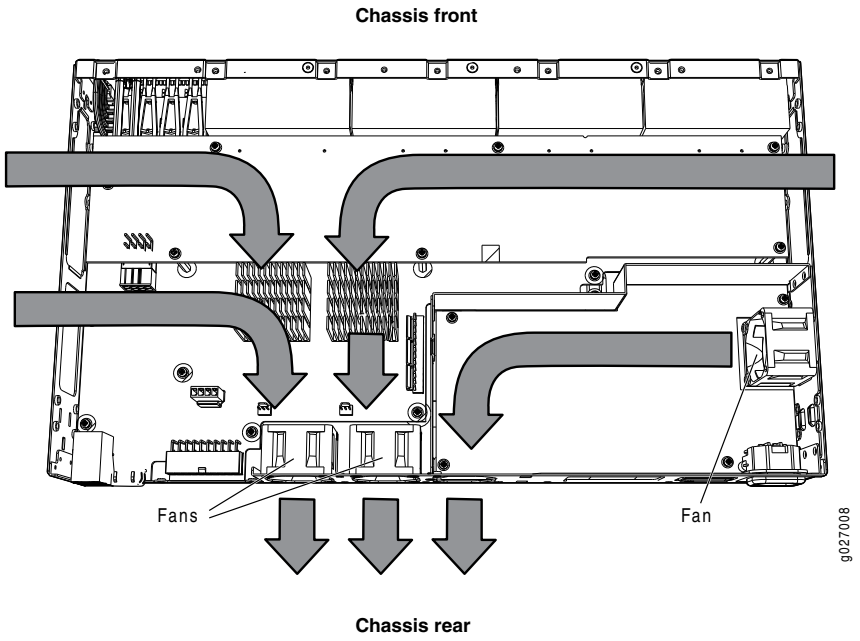
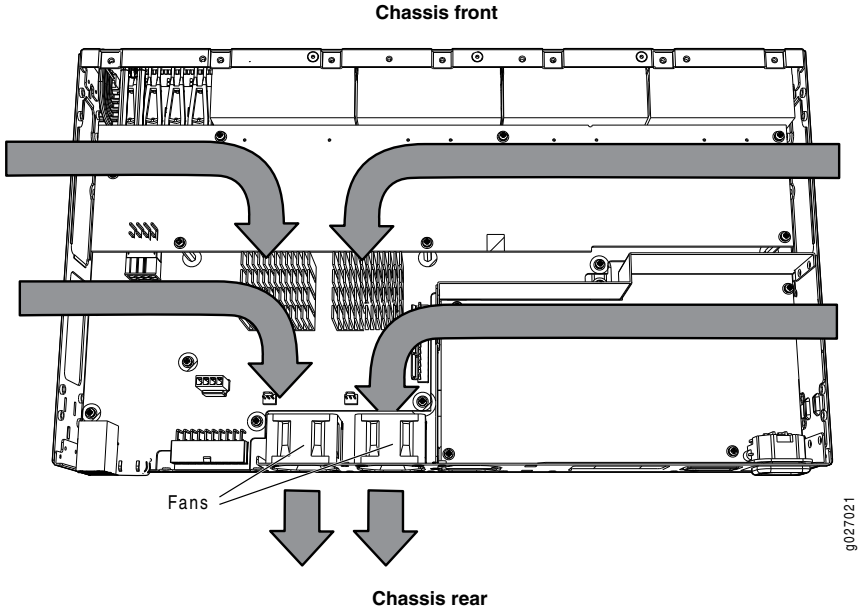


Figure 12: Airflow Through Non-PoE Models of EX2200 Switches



- If you are mounting an EX2200 switch in a rack or cabinet with other equipment, or if you are placing it on the desktop or floor near other equipment, ensure that the exhaust from other equipment does not blow into the intake vents of the chassis.
- Leave at least 24 in. (61 cm) in front of the switch and 6 in. (15.2 cm) behind the switch. For service personnel to remove and install hardware components, you must leave adequate space at the front and back of the switch. NEBS GR-63 recommends that you allow at least 30 in. (76.2 cm) in front of the rack or cabinet and 24 in. (61 cm) behind the rack or cabinet.

Related Documentation

- Rack Requirements for EX2200 Switches on page 39
- Cabinet Requirements for EX2200 Switches on page 40
- General Site Guidelines for EX Series Switches on page 35
- Rack-Mounting and Cabinet-Mounting Warnings for EX Series Switches on page 129
- Cooling System and Airflow in an EX2200 Switch on page 15

CHAPTER 6

Cable Specifications

Network Cable Specifications for EX2200 Switches

EX2200 switches have interfaces that use various types of network cables.

For instructions on connecting the switch to a network for out-of-band management using an Ethernet cable with an RJ-45 connector, see “Connecting an EX Series Switch to a Network for Out-of-Band Management” on page 74.

For instructions on connecting the switch to a management console using an Ethernet cable with an RJ-45 connector, see “Connecting an EX Series Switch to a Management Console” on page 76.

For instructions on connecting a fiber-optic cable to the switch, see “Connecting a Fiber-Optic Cable to an EX Series Switch” on page 81.

Related Documentation

- Management Port Connector Pinout Information for an EX2200 Switch on page 22
- Console Port Connector Pinout Information for an EX Series Switch on page 21
- Front Panel of an EX2200 Switch on page 5
- Rear Panel of an EX2200 Switch on page 6

CHAPTER 7

Planning Power Requirements

Power Specifications for EX2200 Switches

This topic describes the power supply electrical specifications for EX2200 switches.

Table 20 on page 47 provides the AC power supply electrical specifications for EX2200 switches.

Table 20: AC Power Supply Electrical Specifications for EX2200 Switches

Item	Specification
AC input voltage	100 through 240 VAC
AC input line frequency	50 Hz/60 Hz nominal
AC system current rating	• 7 A at 100 VAC and 2.9 A at 230 VAC (for switches with ports equipped for PoE) • 1.8 A at 100 VAC and 0.5 A at 230 VAC (for switches with no ports equipped for PoE)

Related Documentation

- AC Power Cord Specifications for EX2200 Switches on page 47
- Power Supply in EX2200 Switches on page 14
- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141

AC Power Cord Specifications for EX2200 Switches

Detachable AC power cords are supplied with the switch. The coupler is type C13 as described by International Electrotechnical Commission (IEC) standard 60320. The plug at the male end of the power cord fits into the power source outlet that is standard for your geographical location.

CAUTION: The AC power cord for each switch is intended for use with that switch only and not for any other use.

NOTE: In North America, AC power cords must not exceed 4.5 meters (approximately 14.75 feet) in length, to comply with National Electrical Code (NEC) Sections 400-8 (NFPA 75, 5-2.2) and 210-52 and Canadian Electrical Code (CEC) Section 4-010(3). The cords supplied with the switch are in compliance.

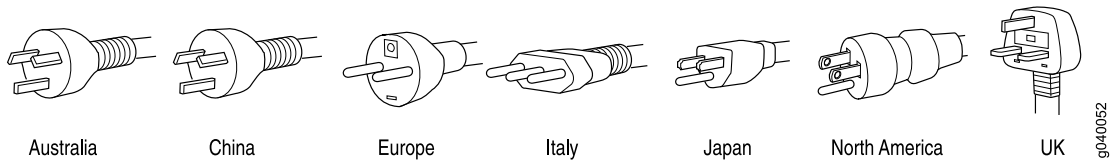
Table 21 on page 48 lists AC power cord specifications provided for each country or region.

Table 21: AC Power Cord Specifications

Country/Region	Electrical Specifications	Plug Standards
Australia	250 VAC, 10 A, 50 Hz	AS/NZ 3112
China	250 VAC, 10 A, 50 Hz	GB2099 and GB1002
Europe (except Italy, Switzerland, and United Kingdom)	250 VAC, 10 A, 50 Hz	CEE (7) VII
Italy	250 VAC, 10 A, 50 Hz	CEI 23-16
Japan	125 VAC, 12 A, 50 Hz or 60 Hz	JIS C8303
North America	125 VAC, 13 A, 60 Hz	NEMA 5-15
Switzerland	250 VAC, 10 A, 50 Hz	SEV 1011 SEV 6534/2
United Kingdom	250 VAC, 10 A, 50 Hz	BS 1363/A

Figure 13 on page 48 illustrates the plug on the power cord for each country or region listed in Table 21 on page 48.

Figure 13: AC Plug Types



Related Documentation

- Power Supply in EX2200 Switches on page 14
- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- Prevention of Electrostatic Discharge Damage on EX Series Switches on page 142

PART 3

Installing and Connecting the Switch and Switch Components

CHAPTER 8

Installing the Switch

Installing and Connecting an EX2200 Switch

To install and connect the EX2200 switch:

1. Follow instructions in "Unpacking an EX2200 Switch" on page 52.
2. Mount the switch by following instructions appropriate for your site:
   - "Mounting an EX2200 Switch on Two Posts in a Rack or Cabinet" on page 55 (using the mounting brackets provided)
   - "Mounting an EX2200 Switch on Four Posts in a Rack or Cabinet" on page 57 (using the separately orderable four-post rack-mount kit)
   - "Mounting an EX2200 Switch in a Recessed Position in a Rack or Cabinet" on page 61 (using the 2-in.-recess front brackets from the separately orderable four-post rack-mount kit)
   - "Mounting an EX2200 Switch on a Desk or Other Level Surface" on page 54 (using the rubber feet provided)
   - "Mounting an EX2200 Switch on a Wall" on page 61 (using the separately orderable wall-mount kit)
3. Follow instructions in "Connecting Earth Ground to an EX Series Switch" on page 67.
4. Follow instructions in "Connecting AC Power to an EX2200 Switch" on page 73.

5. Perform initial configuration of the switch by following instructions in "Connecting and Configuring an EX Series Switch (CLI Procedure)" on page 87 or "Connecting and Configuring an EX Series Switch (J-Web Procedure)" on page 89.
6. Set the switch's management options by following the appropriate instructions:
   - Connecting an EX Series Switch to a Network for Out-of-Band Management on page 74
   - Connecting an EX Series Switch to a Management Console on page 76

Related Documentation

- Rack Requirements for EX2200 Switches on page 39
- Cabinet Requirements for EX2200 Switches on page 40
- Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches on page 42

Unpacking an EX2200 Switch

The EX2200 switches are shipped in a cardboard carton, secured with foam packing material. The carton has an accessory compartment and contains the quick start instructions.

CAUTION: EX2200 switches are maximally protected inside the shipping carton. Do not unpack the switches until you are ready to begin installation.

To unpack the switch:

1. Open the carton.
2. Pull out the packing material holding the switch in place.
3. Verify the parts received against the inventory on the label attached to the carton and listed in Table 22 on page 52.
4. Save the shipping carton and packing materials in case you need to move or ship the switch later.

Table 22: Inventory of Components Provided with an EX2200 Switch

Component	Quantity
Switch with built-in power supply	1
AC power cord appropriate for your geographical location	1
Power cord retainer clip	1
Mounting brackets	2

Table 22: Inventory of Components Provided with an EX2200 Switch *(continued)*

Component	Quantity
Mounting screws	8
Rubber feet	4
RJ-45 cable and RJ-45 to DB-9 serial port adapter	1

Related Documentation

- Mounting an EX2200 Switch on page 53
- Installing and Connecting an EX2200 Switch on page 51
- Connecting and Configuring an EX Series Switch (CLI Procedure) on page 87
- Connecting and Configuring an EX Series Switch (J-Web Procedure) on page 89

Mounting an EX2200 Switch

You can mount the switch:

- On two posts in a 19-in. rack or cabinet by using the mounting brackets provided with the switch.
- On four posts in a 19-in. rack or cabinet by using the separately orderable four-post rack-mount kit.
- In a position recessed 2 in. from the front of a 19-in. rack or cabinet by using the 2-in.-recess front brackets in the separately orderable four-post rack-mount kit. You can mount the switch in this recessed position on two-post or four-post racks and cabinets.
- On a desk or other level surface by using rubber feet. The switch is shipped with four rubber feet to be used to stabilize the chassis on a desk or other level surface.
- On a wall by using the separately orderable wall-mount kit.

WARNING:

- When mounting an EX2200 switch chassis in a vertical position, orient the front panel of the chassis downward to ensure proper airflow and meet safety requirements in the event of a fire.
- When wall mounting Power over Ethernet (PoE) models (EX2200-24P and EX2200-48P), install the wall-mount baffle above the units to reduce the risk of objects or substances falling into the air exhaust or power supply, which could cause a fire.

The holes in the mounting brackets are placed at 1 U (1.75 in. or 4.45 cm.) apart so that the switch can be mounted in any rack or cabinet that provides holes spaced at that distance.

Related Documentation

- Mounting an EX2200 Switch on Two Posts in a Rack or Cabinet on page 55
- Mounting an EX2200 Switch on Four Posts in a Rack or Cabinet on page 57
- Mounting an EX2200 Switch in a Recessed Position in a Rack or Cabinet on page 61
- Mounting an EX2200 Switch on a Desk or Other Level Surface on page 54
- Mounting an EX2200 Switch on a Wall on page 61
- Connecting Earth Ground to an EX Series Switch on page 67

Mounting an EX2200 Switch on a Desk or Other Level Surface

You can mount an EX2200 switch on a desk or other level surface by using the four rubber feet that are shipped with the switch. The rubber feet stabilize the chassis.

Before mounting the switch on a desk or other level surface:

- Verify that the site meets the requirements described in "Site Preparation Checklist for EX2200 Switches" on page 33.
- Place the desk in its permanent location, allowing adequate clearance for airflow and maintenance, and secure it to the building structure.
- Read "General Safety Guidelines and Warnings for EX Series Switches" on page 113, with particular attention to "Chassis Lifting Guidelines for EX2200 Switches" on page 128.
- Remove the switch from the shipping carton (see "Unpacking an EX2200 Switch" on page 52).

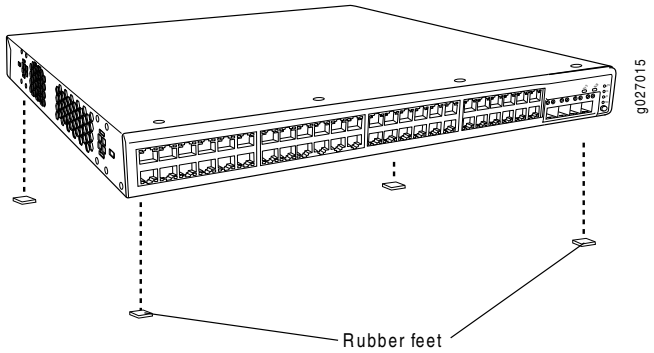
Ensure that you have the following parts and tools available:

- 4 rubber feet to stabilize the chassis on the a desk or other level surface (provided in the accessory compartment in the switch carton)

To mount a switch on a desk or other level surface:

1. Turn the chassis upside down on the desk or the level surface where you intend to mount the switch.
2. Attach the rubber feet to the bottom of the chassis, as shown in Figure 14 on page 55.
3. Turn the chassis right side up on the desk or the level surface.

Figure 14: Attaching Rubber Feet to a Switch Chassis



Related Documentation

- Connecting AC Power to an EX2200 Switch on page 73
- Connecting and Configuring an EX Series Switch (CLI Procedure) on page 87
- Connecting and Configuring an EX Series Switch (J-Web Procedure) on page 89
- Clearance Requirements for Airflow and Hardware Maintenance for EX2200 Switches on page 42

Mounting an EX2200 Switch on Two Posts in a Rack or Cabinet

You can mount the switch on two posts of a 19-in. rack or cabinet by using the mounting brackets provided with the switch. (The remainder of this topic uses “rack” to mean “rack or cabinet”.)

You can mount the switch on four posts of a four-post rack by using the mounting brackets provided with the separately orderable four-post rack-mount kit. See “Mounting an EX2200 Switch on Four Posts in a Rack or Cabinet” on page 57.

NOTE: If you need to mount the switch in a recessed position on either a two-post rack or a four-post rack, you can use the 2-in.-recess front mount brackets provided in the separately orderable four-post rack-mount kit.

Before mounting the switch on two posts in a rack:

- Verify that the site meets the requirements described in “Site Preparation Checklist for EX2200 Switches” on page 33.
- Place the rack in its permanent location, allowing adequate clearance for airflow and maintenance, and secure it to the building structure.
- Read “General Safety Guidelines and Warnings for EX Series Switches” on page 113, with particular attention to “Chassis Lifting Guidelines for EX2200 Switches” on page 128.
- Remove the switch from the shipping carton (see “Unpacking an EX2200 Switch” on page 52).

Ensure that you have the following parts and tools available:

- Phillips (+) screwdriver, number 2
- 2 mounting brackets and 8 mounting screws (provided in the accessory compartment in the switch carton)
- Screws to secure the chassis to the rack (not provided)
- 2-in.-recess front brackets if you will mount the switch in a recessed position (brackets from the separately orderable four-post rack-mount kit)

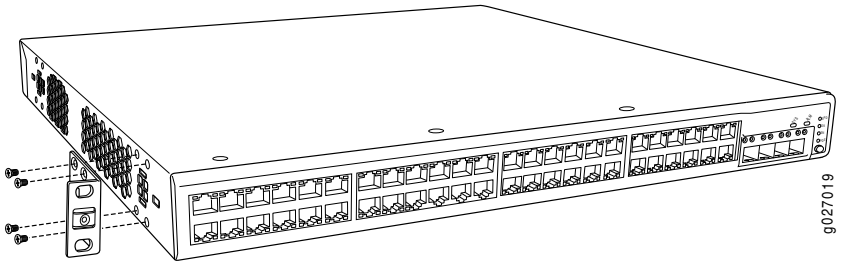
NOTE: One person must be available to lift the switch while another secures the switch to the rack.

CAUTION: If you are mounting multiple units on a rack, mount the heaviest unit at the bottom of the rack and mount the other units from the bottom of the rack to the top in decreasing order of the weight of the units.

To mount the switch on two posts in a rack:

1. Place the switch on a flat, stable surface.
2. Align the mounting brackets along the front or rear of the side panels of the switch chassis depending on how you want to mount the switch. For example, if you want to front-mount the switch, align the brackets along the front of the chassis. See Figure 15 on page 56.

Figure 15: Attaching the Mounting Bracket Along the Front of the Switch

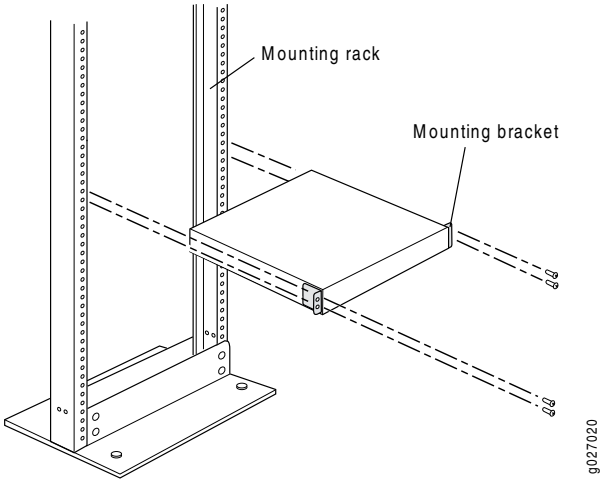


NOTE: If you need to mount the switch in a recessed position, use the 2-in.-recess front mount brackets from the separately orderable four-post rack-mount kit.

3. Align the bottom holes in the mounting brackets with holes on the side panels of the switch chassis.
4. Insert the mounting screws into the aligned holes. Tighten the screws.
5. Ensure that the other holes in the mounting brackets are aligned with the holes in the side panels. Insert a screw in each hole and tighten the screws.

6. Have one person grasp both sides of the switch, lift the switch, and position it in the rack, aligning the mounting bracket holes with the threaded holes in the rack or cabinet rail. Align the bottom hole in each mounting bracket with a hole in each rack rail, making sure the chassis is level. See Figure 16 on page 57.

Figure 16: Mounting the Switch on Two Posts in a Rack



7. Have a second person secure the switch to the rack by using the appropriate screws. Tighten the screws.
8. Ensure that the switch chassis is level by verifying that all screws on one side of the rack are aligned with the screws on the other side.

Related Documentation

- Connecting Earth Ground to an EX Series Switch on page 67
- Connecting AC Power to an EX2200 Switch on page 73
- Connecting and Configuring an EX Series Switch (CLI Procedure) on page 87
- Connecting and Configuring an EX Series Switch (J-Web Procedure) on page 89
- Mounting an EX2200 Switch in a Recessed Position in a Rack or Cabinet on page 61
- Rack-Mounting and Cabinet-Mounting Warnings for EX Series Switches on page 129

Mounting an EX2200 Switch on Four Posts in a Rack or Cabinet

You can mount an EX2200 switch on four posts of a 19-in. rack or cabinet by using the separately orderable four-post rack-mount kit. (The remainder of this topic uses “rack” to mean “rack or cabinet.”)

You can mount the switch on two posts in either a two-post rack or a four-post rack by using the mounting brackets provided with the switch. See “Mounting an EX2200 Switch on Two Posts in a Rack or Cabinet” on page 55.

NOTE: If you need to mount the switch in a recessed position on either a two-post rack or a four-post rack, you can use the 2-in.-recess front brackets provided in the separately orderable four-post rack-mount kit.

Before mounting the switch on four posts in a rack:

- Verify that the site meets the requirements described in “Site Preparation Checklist for EX2200 Switches” on page 33.
- Place the rack in its permanent location, allowing adequate clearance for airflow and maintenance, and secure it to the building structure.
- Read “General Safety Guidelines and Warnings for EX Series Switches” on page 113, with particular attention to “Chassis Lifting Guidelines for EX2200 Switches” on page 128.
- Remove the switch from the shipping carton (see “Unpacking an EX2200 Switch” on page 52).

Ensure that you have the following parts and tools available:

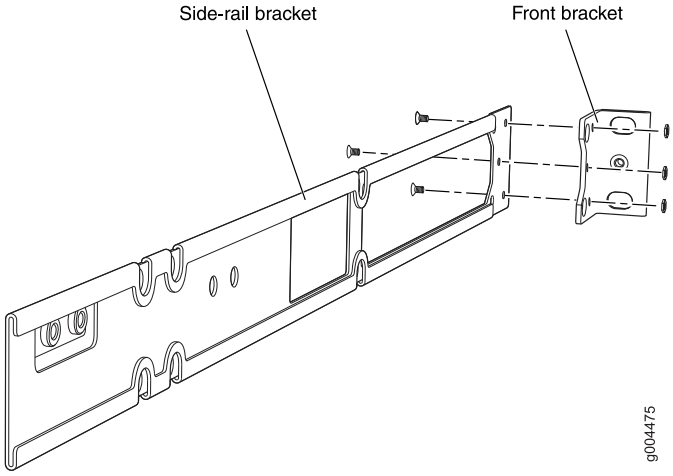
- Phillips (+) screwdriver, number 2
- 6 flat-head 4-40 mounting screws (provided with the four-post rack-mount kit)
- 8 flat-head 4x6-mm Phillips mounting screws (provided with the four-post rack-mount kit)
- One pair each of flush or 2-in.-recess front brackets
- One pair of side-rail brackets
- One pair of rear brackets
- Screws to secure the chassis and the rear brackets to the rack (not provided)

CAUTION: If you are mounting multiple units on a rack, mount the heaviest unit at the bottom of the rack and mount the other units from the bottom of the rack to the top in decreasing order of the weight of the units.

To mount the switch on four posts in a rack:

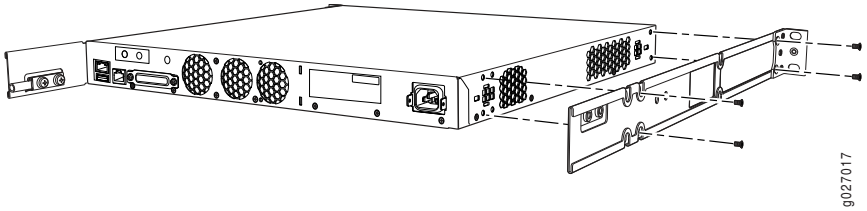
1. Attach the front brackets (either the flush or the 2-in.-recess brackets) to the side-rail brackets using six 4-40 flat-head Phillips mounting screws. See Figure 17 on page 59.

Figure 17: Attaching the Front Bracket to the Side-Rail Bracket



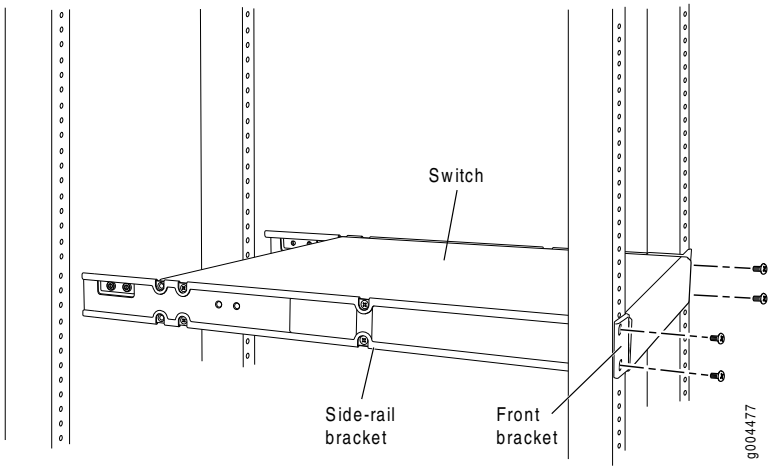
2. Place the switch on a flat, stable surface.
3. Align the side-rail brackets along the side panels of the switch chassis. Align the two holes in the rear of the side-rail brackets with the two holes on the rear of the side panel.
4. Insert 4x6-mm Phillips flat-head mounting screws into the two aligned holes and tighten the screws. Ensure that the two holes in the rear of the side-rail brackets are aligned with the remaining two holes in the side panel. See Figure 18 on page 59.

Figure 18: Attaching the Side-Rail Bracket to the Switch Chassis



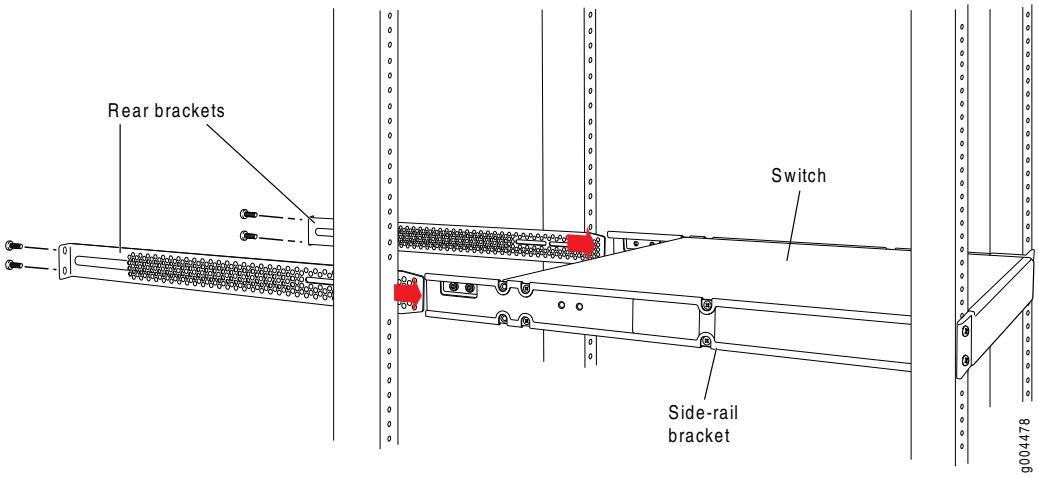
5. Insert the 4x6-mm Phillips flat-head mounting screws into the remaining two holes in the side-rail brackets and tighten the screws.
6. Have one person grasp both sides of the switch, lift the switch, and position it in the rack, aligning the side-rail bracket holes with the threaded holes in the front post of the rack. Align the bottom hole in both the mounting brackets with a hole in each rack rail, making sure the chassis is level. See Figure 19 on page 60.

Figure 19: Mounting the Switch to the Front Posts in a Rack



7. Have a second person secure the front of the switch to the rack by using the appropriate screws for your rack.
8. Slide the rear brackets into the side-rail brackets. See Figure 20 on page 60.

Figure 20: Sliding the Rear Brackets to the Rear of a Four-Post Rack



9. Attach the rear brackets to the rear post by using the appropriate screws for your rack. Tighten the screws.
10. Ensure that the switch chassis is level by verifying that all the screws on the front of the rack are aligned with the screws at the back of the rack.

Related Documentation

- Connecting Earth Ground to an EX Series Switch on page 67
- Connecting AC Power to an EX2200 Switch on page 73
- Connecting and Configuring an EX Series Switch (CLI Procedure) on page 87
- Connecting and Configuring an EX Series Switch (J-Web Procedure) on page 89
- Mounting an EX2200 Switch in a Recessed Position in a Rack or Cabinet on page 61

- Rack-Mounting and Cabinet-Mounting Warnings for EX Series Switches on page 129

Mounting an EX2200 Switch in a Recessed Position in a Rack or Cabinet

You can mount an EX2200 switch in a rack or cabinet such that the switch is recessed inside the rack from the rack front by 2 inches. You can use the 2-in.-recess front brackets provided in the separately orderable four-post rack-mount kit to mount the switch in a recessed position.

Reasons that you might want to mount the switch in a recessed position include:

- You are mounting the switch in a cabinet and the cabinet doors will not close completely unless the switch is recessed.
- The switch you are mounting has transceivers installed in the uplink ports—the transceivers in the uplink ports protrude from the front of the switch.

To mount the switch in a recessed position on four posts, follow the instructions in "Mounting an EX2200 Switch on Four Posts in a Rack or Cabinet" on page 57. To mount the switch in a recessed position on two posts, follow the instructions in "Mounting an EX2200 Switch on Two Posts in a Rack or Cabinet" on page 55.

Related Documentation

- Connecting Earth Ground to an EX Series Switch on page 67
- Rack-Mounting and Cabinet-Mounting Warnings for EX Series Switches on page 129

Mounting an EX2200 Switch on a Wall

You can mount an EX2200 switch on a wall by using the separately orderable wall-mount kit.

WARNING:

- When mounting an EX2200 switch chassis in a vertical position, orient the front panel of the chassis downward to ensure proper airflow and meet safety requirements in the event of a fire.
- When wall mounting Power over Ethernet (PoE) models (EX2200-24P and EX2200-48P), install the wall-mount baffle above the units to reduce the risk of objects or substances falling into the air exhaust or power supply, which could cause a fire.

Before mounting the switch on a wall:

- Verify that the site meets the requirements described in "Site Preparation Checklist for EX2200 Switches" on page 33.
- Read "General Safety Guidelines and Warnings for EX Series Switches" on page 113, with particular attention to "Chassis Lifting Guidelines for EX2200 Switches" on page 128.

- Remove the switch from the shipping carton (see “Unpacking an EX2200 Switch” on page 52).

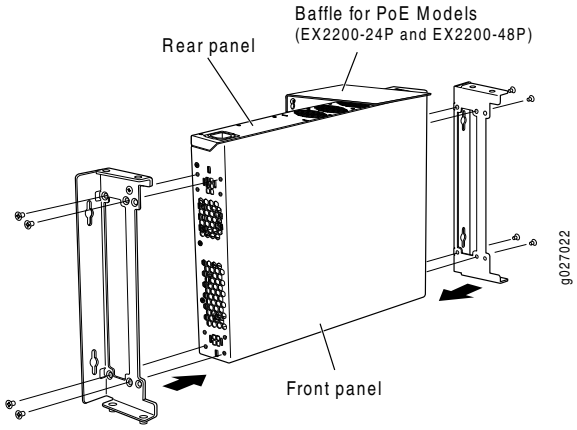
Ensure that you have the following parts and tools available:

- 2 wall-mount brackets (provided in the wall-mount kit)
- 1 wall-mount baffle (provided in the wall-mount kit)
- 12 wall-mount bracket screws (provided in the wall-mount kit)
- 6 mounting screws (8-32 x 1.25 in. or M4 x 30 mm) (not provided)
- Hollow wall anchors rated to support up to 75 lb (34 kg) if you are not screwing the screws directly into wall studs (not provided)
- Phillips (+) screwdriver, number 2 (not provided)

To mount one or two switches on a wall:

1. Attach the wall-mount brackets to the sides of the chassis using four wall-mount bracket screws on each side, as shown in Figure 21 on page 62.

Figure 21: Attaching Wall-Mount Brackets to a Switch Chassis



2. If you are mounting two switches together, align the second switch on top of the first and attach it to the mounting brackets using two additional wall-mount bracket screws on each side (Figure 23 on page 64 shows two aligned switches).
3. Install six mounting screws in the wall for the wall-mount brackets and baffle as shown in Figure 22 on page 63:
   - Use hollow wall anchors rated to support up to 75 lb (34 kg) if you are not inserting the mounting screws directly into wall studs.
   - Turn the screws only part way in, leaving about 1/4 in. (6 mm) distance between the head of the screw and the wall.

   a. Install screw **A**.

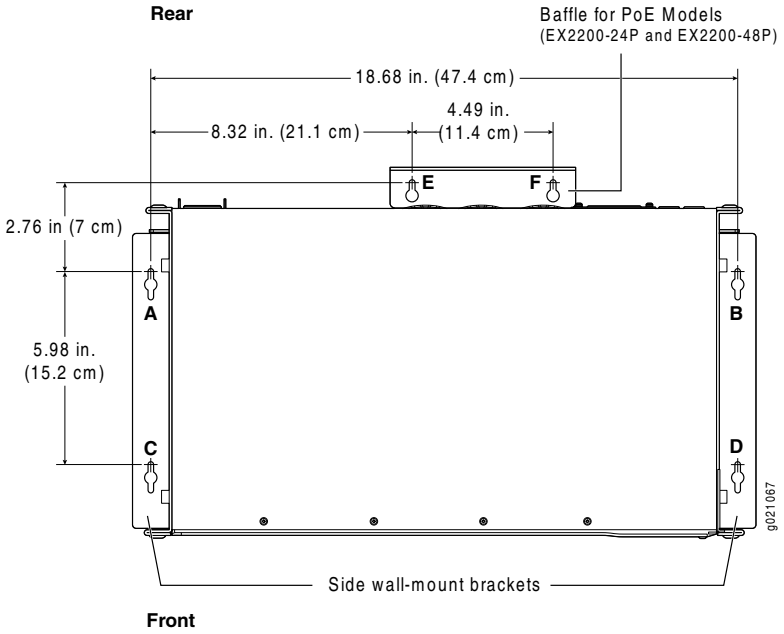
   b. Install screw **B** 18.68 in. (47.4 cm) from screw **A** on a level line.

c. Install screw **C** 5.98 in. (15.2 cm) on a plumb line down from screw **A** and screw **D** 5.98 in. down from screw **B**.

d. For PoE models, install screw **E** 2.76 in. (7 cm) up from and 8.32 in. (21.1 cm) to the right of screw **A**.

e. For PoE models, install screw **F** 4.49 in. (11.4 cm) to the right of screw **E**.

Figure 22: Measuring for Mounting Screws

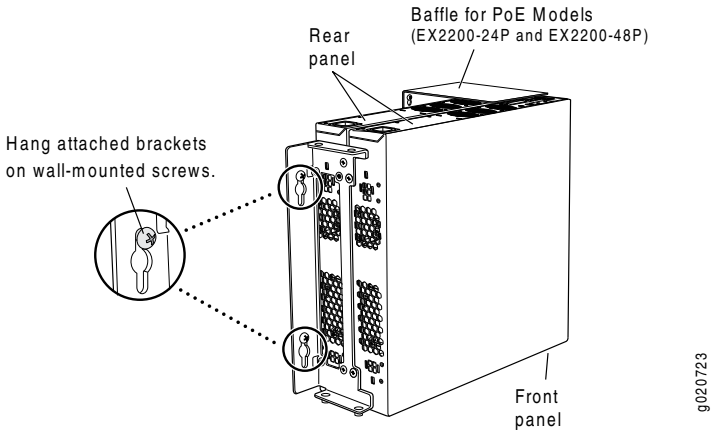


4. Lift the unit (one switch or two) by grasping each side, and hang the unit by attaching the brackets to the mounting screws as shown in Figure 23 on page 64.

5. For PoE models, install the baffle by attaching it to mounting screws **E** and **F** as shown in Figure 23 on page 64.

6. Tighten all mounting screws.

Figure 23: Mounting a Switch on a Wall



Related Documentation

- Connecting AC Power to an EX2200 Switch on page 73
- Connecting and Configuring an EX Series Switch (CLI Procedure) on page 87
- Connecting and Configuring an EX Series Switch (J-Web Procedure) on page 89
- Wall-Mounting Warnings for EX2200 Switches on page 134

CHAPTER 9

Installing Switch Components

Installing a Transceiver in an EX Series Switch

The transceivers for EX Series switches are hot-removable and hot-insertable field-replaceable units (FRUs): You can remove and replace them without powering off the switch or disrupting switch functions.

Use only optical transceivers and optical connectors purchased from Juniper Networks for your EX Series switch.

NOTE: On an EX3200 switch, if you install a transceiver in a 1-gigabit uplink module port, a corresponding network port from the last four built-in ports is disabled. For example, if you install a transceiver in the 1-gigabit uplink module port 2 (ge-0/1/3), then built-in port 23 (ge-0/0/23) is disabled. The disabled port is not listed in the output of show interface commands.

Before you begin installing a transceiver in an EX Series switch, ensure that you have taken the necessary precautions for safe handling of lasers (see “Laser and LED Safety Guidelines and Warnings for EX Series Switches” on page 121).

Ensure that you have a rubber safety cap available to cover the transceiver.

Figure 24 on page 66 shows how to install an SFP transceiver. The procedure is the same for all transceiver types.

To install a transceiver in an EX Series switch:

CAUTION: To avoid electrostatic discharge (ESD) damage to the transceiver, do not touch the connector pins at the end of the transceiver.

1. Remove the transceiver from its bag.
2. Check to see whether the transceiver is covered by a rubber safety cap. If it is not, cover the transceiver with a rubber safety cap.

WARNING: Do not leave a fiber-optic transceiver uncovered except when inserting or removing a cable. The rubber safety cap keeps the port clean and prevents accidental exposure to laser light.

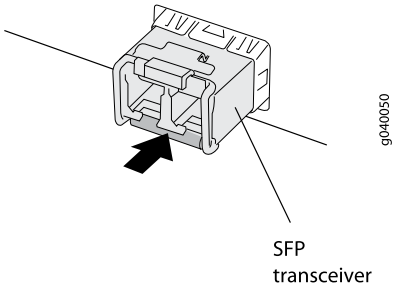
3. If the port in which you want to install the transceiver is covered with a dust cover, remove the dust cover and save it in case you need to cover the port later. If you are hot-swapping a transceiver, wait for at least 10 seconds after removing the transceiver from the port before installing a transceiver.
4. Using both hands, carefully place the transceiver in the empty port. The connectors must face the switch chassis.

CAUTION: Before you slide the transceiver into the port, ensure the transceiver is aligned correctly. Misalignment might cause the pins to bend, making the transceiver unusable.

5. Slide the transceiver in gently until it is fully seated.
6. Remove the rubber safety cap when you are ready to connect the cable to the transceiver.

WARNING: Do not look directly into a fiber-optic transceiver or into the ends of fiber-optic cables. Fiber-optic transceivers and fiber-optic cables connected to transceivers emit laser light that can damage your eyes.

Figure 24: Installing a Transceiver in an EX Series Switch



Related Documentation

- Removing a Transceiver from an EX Series Switch on page 95
- Connecting a Fiber-Optic Cable to an EX Series Switch on page 81
- Optical Interface Support in EX2200 Switches on page 22
- Optical Interface Support in EX3200 Switches
- Optical Interface Support in EX4200 Switches
- Optical Interface Support in EX4500 Switches
- Optical Interface Support in EX8200 Switches

CHAPTER 10

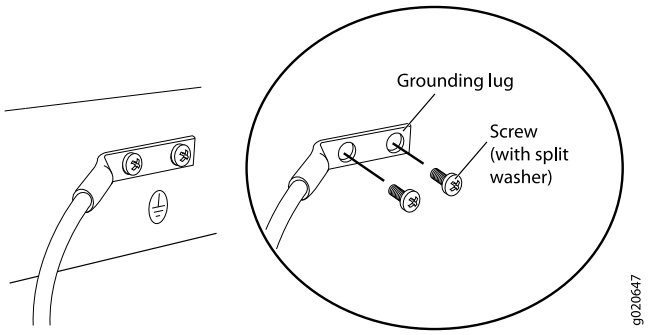
Connecting the Switch

Connecting Earth Ground to an EX Series Switch

To meet safety and electromagnetic interference (EMI) requirements and to ensure proper operation, you must connect the switches to earth ground before you connect them to power.

For installations that require a separate grounding conductor to the chassis, use the protective earthing terminal on the EX Series switch chassis to connect to the earth ground (see Figure 25 on page 67).

Figure 25: Connecting a Grounding Cable to an EX Series Switch



Before you connect earth ground to the protective earthing terminal of an EX Series switch, ensure that a licensed electrician has attached an appropriate grounding lug to the grounding cable.

CAUTION: Using a grounding cable with an incorrectly attached lug can damage the switch.

Follow the procedure that applies to your switch:

- Connecting Earth Ground to an EX2200 or EX3200 Switch on page 68
- Connecting Earth Ground to an EX4200 Switch on page 69
- Connecting Earth Ground to an EX4500 Switch on page 70
- Connecting Earth Ground to an EX8208 Switch on page 71
- Connecting Earth Ground to an EX8216 Switch on page 72

Connecting Earth Ground to an EX2200 or EX3200 Switch

The protective earthing terminal is located on the rear of the chassis in an EX2200 switch and in an EX3200 switch.

An AC-powered EX Series switch chassis gets additional grounding when you plug the power supply in the switch into a grounded AC power outlet by using an AC power cord appropriate for your geographical location. For EX2200 switches, see "AC Power Cord Specifications for EX2200 Switches" on page 47. For EX3200 switches, see AC Power Cord Specifications for EX3200 Switches.

Ensure that you have the following parts and tools available:

- Grounding cable for your switch—The grounding cable must be minimum 14 AWG (2 mm^2), minimum 90ºC wire, or as permitted by the local code.
- Grounding lug for your grounding cable—The grounding lug required is a Panduit LCD6-14BH-L or equivalent.
- Washers and 10-32x.25-in. screws to secure the grounding lug to the protective earthing terminal

  NOTE: Some early models of EX3200 switches require 10-24x.25-in. screws rather than 10-32x.25-in. screws. If the Juniper Networks product number on the label next to the protective earthing terminal is from 750-021xxx through 750-030xxx, the switch requires 10-24x.25-in. screws.

- Phillips (+) screwdriver, number 2

To connect earth ground to an EX2200 or EX3200 switch:

1. Connect one end of the grounding cable to a proper earth ground, such as the rack in which the switch is mounted.
2. Place the grounding lug attached to the grounding cable over the protective earthing terminal. See Figure 25 on page 67.

3. Secure the grounding lug to the protective earthing terminal with screws.
4. Dress the grounding cable and ensure that it does not touch or block access to other switch components and that it does not drape where people could trip over it.

Connecting Earth Ground to an EX4200 Switch

The protective earthing terminal is located on the left side of the chassis in an EX4200 switch.

An AC-powered EX Series switch chassis gets additional grounding when you plug the power supply in the switch into a grounded AC power outlet by using an AC power cord appropriate for your geographical location. See AC Power Cord Specifications for EX4200 Switches.

Ensure that you have the following parts and tools available:

- Grounding cable for your EX4200 switch—The grounding cable must be minimum 14 AWG (2 mm^2), minimum 90°C wire, or as permitted by the local code.
- Grounding lug for your grounding cable—The grounding lug required is a Panduit LCD6-14BH-L or equivalent.
- Washers and 10-32x.25-in. screws to secure the grounding lug to the protective earthing terminal

NOTE: Some early models of EX4200 switches require 10-24x.25-in. screws rather than 10-32x.25-in. screws. If the Juniper Networks product number on the label next to the protective earthing terminal is from 750-021xxx through 750-030xxx, the switch requires 10-24x.25-in. screws.

- Phillips (+) screwdriver, number 2

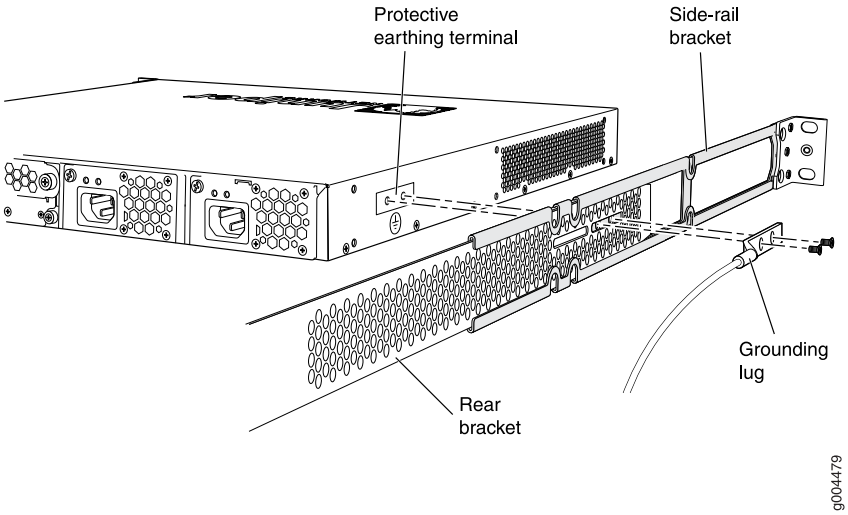
To connect earth ground to an EX4200 switch:

1. Connect one end of the grounding cable to a proper earth ground, such as the rack in which the switch is mounted.
2. Place the grounding lug attached to the grounding cable over the protective earthing terminal. See Figure 25 on page 67.

   If you mounted an EX4200 switch on four posts of a rack using the four-post rack-mount kit, the protective earthing terminal on the switch is accessible through the slot on the left rear bracket. See Figure 26 on page 70.

NOTE: The protective earthing terminal on an EX4200 switch mounted on four posts is available only if the rack is 27.5 in. deep through 30.5 in. deep for a switch mounted flush with the rack front and 29.5 in. deep through 32.5 in. deep for a switch mounted 2 in. recessed from the rack front.

Figure 26: Connecting the Grounding Lug to an EX4200 Switch on a Four-Post Rack



NOTE: The brackets must be attached to the chassis before the grounding lug is attached. (The brackets are shown pulled away from the chassis so that the protective earthing terminal can be seen.)

3. Secure the grounding lug to the protective earthing terminal with screws.
4. Dress the grounding cable and ensure that it does not touch or block access to other switch components and that it does not drape where people could trip over it.

Connecting Earth Ground to an EX4500 Switch

The protective earthing terminal is located on the left rear of the chassis in an EX4500 switch.

An AC-powered EX Series switch chassis gets additional grounding when you plug the power supply in the switch into a grounded AC power outlet by using an AC power cord appropriate for your geographical location. See AC Power Cord Specifications for an EX4500 Switch.

NOTE: If you plan to mount your switch on four posts of a rack or cabinet, mount your switch in the rack or cabinet before attaching the grounding lug to the switch. See Mounting an EX4500 Switch on Four Posts in a Rack or Cabinet

Ensure that you have the following parts and tools available:

- Grounding cable for your EX4500 switch—The grounding cable must be 14 AWG (2 mm^2), minimum 90ºC wire, or as permitted by the local code.
- Grounding lug for your grounding cable. See Grounding Cable and Lug Specifications for EX4500 Switches.

- Washers and 10-32x.25-in. screws to secure the grounding lug to the protective earthing terminal
- Phillips (+) screwdriver, number 2

To connect earth ground to an EX4500 switch:

1. Connect one end of the grounding cable to a proper earth ground, such as the rack in which the switch is mounted.
2. Place the grounding lug attached to the grounding cable over the protective earthing terminal. See Figure 25 on page 67.

   NOTE: If you mounted the switch on four posts of a rack using the four-post rack-mount kit, the protective earthing terminal on the switch is accessible through the slot on the left rear bracket.

   The protective earthing terminal on the switch mounted on four posts is available only if the rack is 27.5 in. deep through 30.5 in. deep for a switch mounted flush with the rack front and 29.5 in. deep through 32.5 in. deep for a switch mounted 2 in. recessed from the rack front.

3. Secure the grounding lug to the protective earthing terminal with screws.
4. Dress the grounding cable and ensure that it does not touch or block access to other switch components and that it does not drape where people could trip over it.

Connecting Earth Ground to an EX8208 Switch

The protective earthing terminal is located on the left side of the chassis in an EX8208 switch.

An AC-powered EX Series switch chassis gets additional grounding when you plug the power supply in the switch into a grounded AC power outlet by using an AC power cord appropriate for your geographical location. See AC Power Cord Specifications for an EX8200 Switch.

Ensure that you have the following parts and tools available:

- Grounding cable for your EX8208 switch—The grounding cable must be 6 AWG (13.3 mm^2), minimum 60°C wire, or as permitted by the local code.
- Grounding lug for your grounding cable. See Grounding Cable and Lug Specifications for EX8200 Switches.
- Washers and ¼-20x.75-in. screws to secure the grounding lug to the protective earthing terminal
- Phillips (+) screwdriver, number 2

To connect earth ground to an EX8208 switch:

1. Connect one end of the grounding cable to a proper earth ground, such as the rack in which the switch is mounted.
2. Place the grounding lug attached to the grounding cable over the protective earthing terminal. See Figure 25 on page 67.
3. Secure the grounding lug to the protective earthing terminal with screws.
4. Dress the grounding cable and ensure that it does not touch or block access to other switch components and that it does not drape where people could trip over it.

Connecting Earth Ground to an EX8216 Switch

There are two protective earthing terminals on an EX8216 switch: one on the left side of the chassis and the other on the rear of the chassis. Only one of the two protective earthing terminals needs to be permanently connected to earth ground.

An AC-powered EX Series switch chassis gets additional grounding when you plug the power supply in the switch into a grounded AC power outlet by using an AC power cord appropriate for your geographical location. See AC Power Cord Specifications for an EX8200 Switch.

Ensure that you have the following parts and tools available:

- Grounding cable for your EX8216 switch—The grounding cable must be 2 AWG (33.6 mm^2), minimum 60°C wire, or as permitted by the local code.
- Grounding lug for your grounding cable. See Grounding Cable and Lug Specifications for EX8200 Switches.
- Washers and ¼-20x.5/8-in. screws to secure the grounding lug to the protective earthing terminal
- Phillips (+) screwdriver, number 2

To connect earth ground to an EX8216 switch:

1. Connect one end of the grounding cable to a proper earth ground, such as the rack in which the switch is mounted.
2. Place the grounding lug attached to the grounding cable over the protective earthing terminal. See Figure 25 on page 67.
3. Secure the grounding lug to the protective earthing terminal with screws.
4. Dress the grounding cable and ensure that it does not touch or block access to other switch components and that it does not drape where people could trip over it.

Related Documentation

- Connecting AC Power to an EX2200 Switch on page 73
- Connecting AC Power to an EX3200 Switch
- Connecting DC Power to an EX3200 Switch
- Connecting AC Power to an EX4200 Switch
- Connecting DC Power to an EX4200 Switch

- Connecting AC Power to an EX4500 Switch
- Connecting DC Power to an EX4500 Switch
- Connecting AC Power to an EX8200 Switch
- Connecting DC Power to an EX8200 Switch
- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Grounded Equipment Warning for EX Series Switches on page 134

Connecting AC Power to an EX2200 Switch

The power supply in an EX2200 switch is located on the rear panel.

Ensure that you have the following parts and tools available:

- A power cord appropriate for your geographical location
- A power cord retainer clip

Ensure that you have connected the switch chassis to earth ground.

CAUTION: To meet safety and electromagnetic interference (EMI) requirements and to ensure proper operation, you must connect the switches to earth ground before you connect them to power. For installations that require a separate grounding conductor to the chassis, use the protective earthing terminal on the switch chassis to connect to the earth ground. For instructions on connecting earth ground, see "Connecting Earth Ground to an EX Series Switch" on page 67. An EX2200 switch gets additional grounding when you plug the power supply in the switch into a grounded AC power outlet by using the AC power cord appropriate for your geographical location (see "AC Power Cord Specifications for EX2200 Switches" on page 47).

To connect AC power to the switch:

1. Squeeze the two sides of the power cord retainer clip and insert the L-shaped ends of the wire clip into the holes in the bracket on each side of the AC power cord inlet on the rear panel (Figure 27 on page 74).

   The power cord retainer clip extends out of the chassis by 3 in.

2. Locate the power cord or cords shipped with the switch; the cords have plugs appropriate for your geographical location. See "AC Power Cord Specifications for EX2200 Switches" on page 47.

   WARNING: Ensure that the power cord does not drape where people can trip on it or block access to switch components.

3. Insert the coupler end of the power cord into the AC power cord inlet on the rear panel.

4. Push the power cord into the slot in the adjustment nut of the power cord retainer clip. Turn the nut until it is tight against the base of the coupler and the slot in the nut is turned 90º from the top of the switch (see Figure 28 on page 74).
5. If the AC power source outlet has a power switch, set it to the OFF (0) position.
6. Insert the power cord plug into an AC power source outlet.
7. If the AC power source outlet has a power switch, set it to the ON (|) position.

Figure 27: Connecting an AC Power Cord Retainer Clip to the AC Power Cord Inlet on an EX2200 Switch

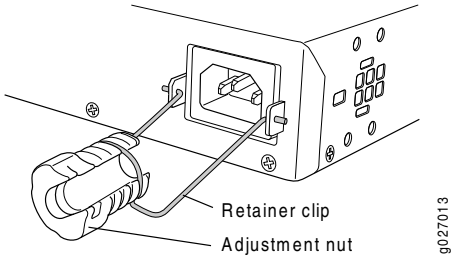
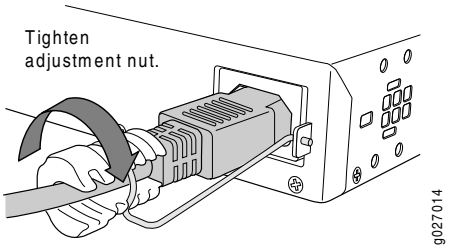


Figure 28: Connecting an AC Power Cord to the AC Power Cord Inlet on an EX2200 Switch



Related Documentation

- Connecting and Configuring an EX Series Switch (CLI Procedure) on page 87
- Connecting and Configuring an EX Series Switch (J-Web Procedure) on page 89
- Power Supply in EX2200 Switches on page 14

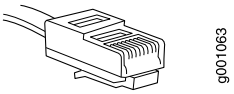
Connecting an EX Series Switch to a Network for Out-of-Band Management

This topic applies to multiple hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

You can monitor and manage these devices using a dedicated management channel. Each device has a management port with an RJ-45 connector for out-of-band management. Use the management port to connect the EX Series switch or external Routing Engine to the management device.

Ensure that you have an Ethernet cable with an RJ-45 connector available. One such cable is provided with the device. Figure 29 on page 75 shows the RJ-45 connector of the Ethernet cable supplied with the device.

Figure 29: Ethernet Cable Connector



To connect a device to a network for out-of-band management (see Figure 30 on page 75):

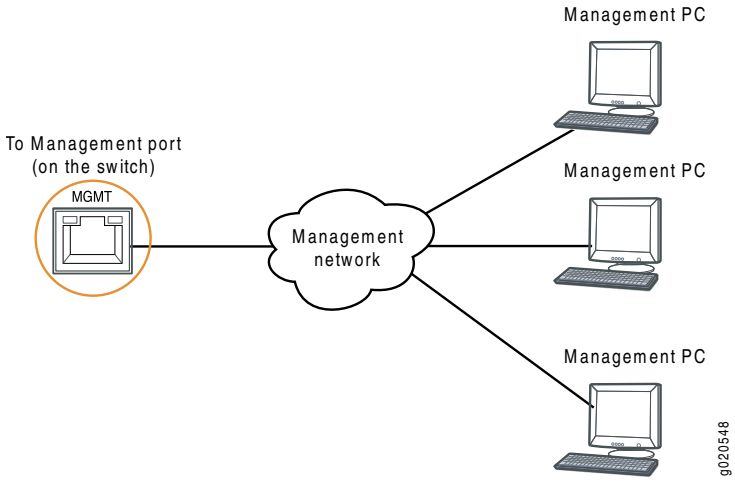
1. Connect one end of the Ethernet cable to the management port (labeled **MGMT**) on the device.

   For the location of the **MGMT** port on different devices:

   - See “Rear Panel of an EX2200 Switch” on page 6.
   - See Rear Panel of an EX3200 Switch.
   - See Rear Panel of an EX4200 Switch.
   - See Front Panel of an EX4500 Switch.
   - See Switch Fabric and Routing Engine (SRE) Module in an EX8208 Switch.
   - See Routing Engine (RE) Module in an EX8216 Switch.
   - See Front Panel of an XRE200 External Routing Engine.

2. Connect the other end of the Ethernet cable to the management device.

Figure 30: Connecting an EX Series Switch to a Network for Out-of-Band Management



Related Documentation

- Connecting an EX Series Switch to a Management Console on page 76
- Management Port Connector Pinout Information for an EX2200 Switch on page 22
- Management Port Connector Pinout Information for an EX3200 Switch
- Management Port Connector Pinout Information for an EX4200 Switch

- Management Port Connector Pinout Information for an EX4500 Switch
- Management Port Connector Pinout Information for an EX8200 Switch
- Management Port Connector Pinout Information for an XRE200 External Routing Engine
- Cables Connecting the EX8200 Switch to Management Devices

Connecting an EX Series Switch to a Management Console

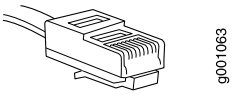
This topic applies to multiple hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

You can configure and manage these devices using a dedicated console. Every device has a console port with an RJ-45 connector. Use the console port to connect the device to the management console or to a console server. The console port accepts a cable with an RJ-45 connector.

Ensure that you have an Ethernet cable with an RJ-45 connector available. An RJ-45 cable and an RJ-45 to DB-9 serial port adapter are supplied with the device.

Figure 31 on page 76 shows the RJ-45 connector of the Ethernet cable supplied with the device.

Figure 31: Ethernet Cable Connector



NOTE: If your laptop or PC does not have a DB-9 male connector pin and you want to connect your laptop or PC directly to the device, use a combination of the RJ-45 to DB-9 female adapter supplied with the device and a USB to DB-9 male adapter. You must provide the USB to DB-9 male adapter.

To connect the device to a management console (see Figure 32 on page 77 and Figure 33 on page 77):

1. Connect one end of the Ethernet cable into the console port (labeled **CON** or **CONSOLE**) on the device.

   For the location of the **CON/CONSOLE** port on different devices:

   - See “Rear Panel of an EX2200 Switch” on page 6.
   - See Rear Panel of an EX3200 Switch.
   - See Rear Panel of an EX4200 Switch.
   - See Front Panel of an EX4500 Switch.
   - See Switch Fabric and Routing Engine (SRE) Module in an EX8208 Switch.

- See Routing Engine (RE) Module in an EX8216 Switch.
- See Front Panel of an XRE200 External Routing Engine.

2. Connect the other end of the Ethernet cable into the console server (see Figure 32 on page 77) or management console (see Figure 33 on page 77).

To configure the device from the management console, see "Connecting and Configuring an EX Series Switch (CLI Procedure)" on page 87 or "Connecting and Configuring an EX Series Switch (J-Web Procedure)" on page 89.

Figure 32: Connecting an EX Series Switch to a Management Console Through a Console Server

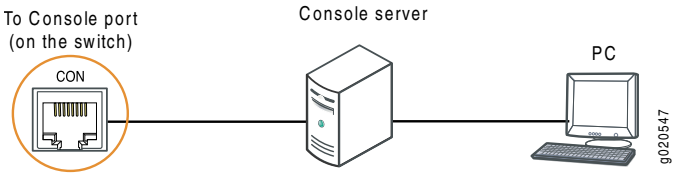
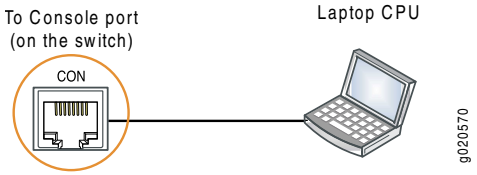


Figure 33: Connecting an EX Series Switch Directly to a Management Console



Related Documentation

- Connecting an EX Series Switch to a Network for Out-of-Band Management on page 74
- Console Port Connector Pinout Information for an EX Series Switch on page 21
- Cables Connecting the EX8200 Switch to Management Devices

Connecting an EX Series Switch to a Modem

You can connect an EX Series switch to a modem through the console port on the switch.

Before you connect the switch to a modem:

- Perform the initial setup and configuration of the switch. See "Connecting and Configuring an EX Series Switch (CLI Procedure)" on page 87 or "Connecting and Configuring an EX Series Switch (J-Web Procedure)" on page 89.

Ensure that you have the following parts available before you begin to connect the switch to the modem:

- A modem (not provided)
- A desktop or notebook computer (not provided)
- An RJ-45 to DB-9 adapter and an Ethernet cable (provided)

- A phone cable (not provided)
- If your computer does not have a DB-9 male connector pin, a USB to DB-9 male adapter (not provided)
- An adapter to connect the RS-232 DB-25 connector on the modem to the RJ-45 to DB-9 adapter on the switch (not provided)

This topic describes:

Setting the Serial Console Speed for the Switch

Before you can connect the switch to a modem, the switch's serial console speed must be set to 115200 baud.

NOTE: The default serial console speed is 9600 baud.

To change the serial console speed:

1. Power on the switch. (If the switch is an EX8208 or EX8216 model, see Powering On an EX8200 Switch.) The loader script starts.
2. You are prompted with:

   ```
   Hit [Enter] to boot immediately, or space bar for command prompt.
   ```

   Press the Spacebar to pause the switch in the loader state (after the Junos OS has loaded on the switch but before the software starts).

   The **loader>** prompt appears.
3. Set the baud rate:

   ```
   loader> set baudrate=115200
   ```

   Press Enter.
4. Press Enter when you see the following message:

   ```
   Switch baud rate to 115200 bps and press Enter.
   ```

   The **loader>** prompt reappears.
5. Save the new serial console speed:

   ```
   loader> save
   ```

   Press Enter. The serial console speed is now set to 115200 baud.
6. Boot the software:

   ```
   loader> boot
   ```

The boot process proceeds as normal and ends with a login prompt.

Configuring the Modem

Before you connect the modem, you must configure the modem with required port settings.

NOTE: The following procedure uses Hayes-compatible-modem commands to configure the modem. If your modem is not Hayes-compatible, see the documentation for your modem for the equivalent modem commands.

To configure the modem:

1. Connect the modem to the desktop or notebook computer.
2. Power on the modem.
3. From the computer, start your asynchronous terminal emulation application (such as Microsoft Windows HyperTerminal) and select the COM port to which the modem is connected (for example, COM1).
4. Configure the port settings shown in Table 23 on page 79.

Table 23: Port Settings

Port Settings	Value
Bits per second	115200
Data bits	8
Parity	None
Stop bits	1
Flow control	None

5. In the HyperTerminal window, type **at**. Press Enter.

   The modem sends an OK response to verify that it can communicate successfully with the COM port on your desktop or notebook computer.
6. To configure the modem to answer a call on the first ring, type **ats0=1** at the prompt. Press Enter.
7. To configure the modem to accept modem-control DTR signals, type **at&d1** at the prompt. Press Enter.
8. To disable flow control on the modem, type **at&k0** at the prompt. Press Enter.
9. To set the fixed serial port speed on the modem, type **at&b1** at the prompt. Press Enter.

NOTE: You must set the serial port to the fixed speed so that the modem will not adjust the serial port speed to the negotiated line speed.

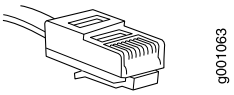
10. To save the new modem settings, type **at&w0** at the prompt. Press Enter.

    The modem sends an OK message. The modem is now ready to be connected to the switch.

Connecting the Modem to the Console Port

The console port on every EX Series switch accepts a cable with an RJ-45 connector. Figure 34 on page 80 shows the RJ-45 connector of the Ethernet cable supplied with the switch.

Figure 34: Ethernet Cable Connector



NOTE: If your laptop or PC does not have a DB-9 male connector pin and you want to connect your laptop or PC directly to the switch, use a combination of the RJ-45 to DB-9 female adapter supplied with the switch and a USB to DB-9 male adapter. You must provide the USB to DB-9 male adapter.

NOTE: Most modems have an RS-232 DB-25 connector. You must separately purchase an adapter to connect your modem to the RJ-45 to DB-9 adapter and Ethernet cable supplied with the switch.

To connect a modem to the console port:

1. Turn off power to the switch.
2. Turn off power to the modem.
3. Connect one end of the cable to the console port (labeled **CON** or **CONSOLE**) on the switch.

   For the location of the console port on different EX Series switches:

   - See “Rear Panel of an EX2200 Switch” on page 6.
   - See Rear Panel of an EX3200 Switch.
   - See Rear Panel of an EX4200 Switch.
   - See Front Panel of an EX4500 Switch.

- See Switch Fabric and Routing Engine (SRE) Module in an EX8208 Switch.
- See Routing Engine (RE) Module in an EX8216 Switch.

4. Connect the other end of the cable to the RJ-45 to DB-9 serial port adapter supplied with your switch.
5. Connect the serial port adapter to the DB-9 female to DB-25 male adapter or other adapter appropriate for your modem.
6. Plug the modem adapter into the DB-25 connector on the modem.
7. Connect one end of the phone cable to the modem and the other end to your telephone network.
8. Turn on the power to your modem.
9. Power on the switch.

Related Documentation

- Connecting an EX Series Switch to a Management Console on page 76
- Console Port Connector Pinout Information for an EX Series Switch on page 21

Connecting a Fiber-Optic Cable to an EX Series Switch

EX Series switches have field-replaceable unit (FRU) optical transceivers to which you can connect fiber-optic cables.

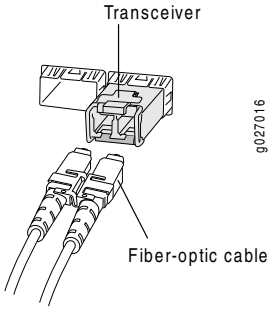
Before you begin connecting a fiber-optic cable to an optical transceiver installed in an EX Series switch, ensure that you have taken the necessary precautions for safe handling of lasers (see “Laser and LED Safety Guidelines and Warnings for EX Series Switches” on page 121).

To connect a fiber-optic cable to an optical transceiver installed in an EX Series switch:

WARNING: Do not look directly into a fiber-optic transceiver or into the ends of fiber-optic cables. Fiber-optic transceivers and fiber-optic cables connected to transceivers emit laser light that can damage your eyes.

1. If the fiber-optic cable connector is covered by a rubber safety cap, remove the cap. Save the cap.
2. Remove the rubber safety cap from the optical transceiver. Save the cap.
3. Insert the cable connector into the optical transceiver (see Figure 35 on page 82).

Figure 35: Connecting a Fiber-Optic Cable to an Optical Transceiver Installed in an EX Series Switch



4. Secure the cables so that they are not supporting their own weight. Place excess cable out of the way in a neatly coiled loop. Placing fasteners on a loop helps cables maintain their shape.

CAUTION: Do not bend fiber-optic cables beyond their minimum bend radius. An arc smaller than a few inches in diameter can damage the cables and cause problems that are difficult to diagnose.

Do not let fiber-optic cables hang free from the connector. Do not allow fastened loops of cables to dangle, which stresses the cables at the fastening point.

Related Documentation

- Disconnecting a Fiber-Optic Cable from an EX Series Switch on page 97
- Installing a Transceiver in an EX Series Switch on page 65
- Maintaining Fiber-Optic Cables in EX Series Switches on page 101
- Optical Interface Support in EX2200 Switches on page 22
- Optical Interface Support in EX3200 Switches
- Optical Interface Support in EX4200 Switches
- Optical Interface Support in EX4500 Switches
- Optical Interface Support in EX8200 Switches

CHAPTER 11

Performing Initial Configuration

EX2200 Switch Default Configuration

Each EX Series switch is programmed with a factory default configuration that contains the values set for each configuration parameter when a switch is shipped. The default configuration file for an EX2200 switch configures Ethernet switching and storm control on all interfaces, configures Power over Ethernet (PoE) on all interfaces of models that provide PoE, and enables the LLDP, LLDP-MED, and RSTP protocols and IGMP snooping.

When you commit changes to the configuration, a new configuration file is created that becomes the active configuration. You can always revert to the factory default configuration. See Reverting to the Default Factory Configuration for the EX Series Switch.

The following factory default configuration file is for an EX2200 switch with 24 ports, all of which have PoE capability:

NOTE: For models that have more than 24 ports, this default configuration file has more interfaces. For models without PoE, the poe stanza does not appear. All models have four uplink ports as listed below, ge-0/1/0 to ge-0/1/3.

```
ethernet-switching-options {
    storm-control {
        interface all {
            level 50;
        }
    }
}
protocols {
    igmp-snooping {
        vlan all;
    }
    lldp {
        interface all;
    }
```

```
    lldp-med {
        interface all;
    }
    rstp;
}
poe {
    interface all;
}
interfaces {
    ge-0/0/0 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/1 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/2 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/3 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/4 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/5 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/6 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/7 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/8 {
        unit 0 {
            family ethernet-switching;
        }
    }
    ge-0/0/9 {
        unit 0 {
```

```
        family ethernet-switching;
    }
}
ge-0/0/10 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/11 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/12 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/13 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/14 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/15 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/16 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/17 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/18 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/19 {
    unit 0 {
        family ethernet-switching;
    }
}
ge-0/0/20 {
    unit 0 {
        family ethernet-switching;
```

```
        }
      }
      ge-0/0/21 {
        unit 0 {
          family ethernet-switching;
        }
      }
      ge-0/0/22 {
        unit 0 {
          family ethernet-switching;
        }
      }
      ge-0/0/23 {
        unit 0 {
          family ethernet-switching;
        }
      }
      ge-0/1/0 {
        unit 0 {
          family ethernet-switching;
        }
      }
      ge-0/1/1 {
        unit 0 {
          family ethernet-switching;
        }
      }
      ge-0/1/2 {
        unit 0 {
          family ethernet-switching;
        }
      }
      ge-0/1/3 {
        unit 0 {
          family ethernet-switching;
        }
      }
    }
    system {
      commit {
        factory-settings {
          reset-chassis-lcd-menu;
          reset-virtual-chassis-configuration;
        }
      }
```

Related Documentation

- Configuration Files Terms
- Connecting and Configuring an EX Series Switch (CLI Procedure) on page 87
- Connecting and Configuring an EX Series Switch (J-Web Procedure) on page 89
- Understanding Configuration Files for EX Series Switches
- EX2200 Switches Hardware Overview on page 3

Connecting and Configuring an EX Series Switch (CLI Procedure)

There are two ways to connect and configure an EX Series switch: one method is through the console using the CLI and the other is using the J-Web interface. This topic describes the CLI procedure.

NOTE: To run the ezsetup script, the switch must have the factory default configuration as the active configuration. If you have configured anything on the switch and want to run ezsetup, revert to the factory default configuration. See Reverting to the Default Factory Configuration for the EX Series Switch.

Before you begin connecting and configuring an EX Series switch through the console using the CLI:

- Set the following parameter values in the console server or PC:
  - Baud Rate—9600
  - Flow Control—None
  - Data—8
  - Parity—None
  - Stop Bits—1
  - DCD State—Disregard

To connect and configure the switch from the console:

1. Connect the console port to a laptop or PC using the RJ-45 to DB-9 serial port adapter. The RJ-45 cable and RJ-45 to DB-9 serial port adapter are supplied with the switch.
   - EX2200, EX3200, or EX4200 switch—The console port is located on the rear panel of the switch.
   - EX4500 switch—The console port is located on the front panel of the switch.
   - EX8200 switch—The console port is located on the Switch Fabric and Routing Engine (SRE) module in slot SRE0 in an EX8208 switch or on the Routing Engine (RE) module in slot RE0 in an EX8216 switch.
2. At the Junos OS shell prompt **root%**, type **ezsetup**.
3. Enter the hostname. This is optional.
4. Enter the root password you plan to use for this device. You are prompted to re-enter the root password.
5. Enter **yes** to enable services like Telnet and SSH. By default, Telnet is not enabled and SSH is enabled.

NOTE: When Telnet is enabled, you will not be able to log in to an EX Series switch through Telnet using **root** credentials. Root login is allowed only for SSH access.

6. Use the Management Options page to select the management scenario:

NOTE: On EX4500 and EX8200 switches, only the out-of-band management option is available.

- **Configure in-band management**. In this scenario you have the following two options:
  - Use the default VLAN.
  - Create a new VLAN—If you select this option, you are prompted to specify the VLAN name, VLAN ID, management IP address, and default gateway. Select the ports that must be part of this VLAN.
- **Configure out-of-band management**. Specify the IP address and gateway of the management interface. Use this IP address to connect to the switch.

7. Specify the SNMP Read Community, Location, and Contact to configure SNMP parameters. These parameters are optional.
8. Specify the system date and time. Select the time zone from the list. These options are optional.

The configured parameters are displayed. Enter **yes** to commit the configuration.

The configuration is committed as the active configuration for the switch. You can now log in with the CLI or the J-Web interface to continue configuring the switch. If you use the J-Web interface to continue configuring the switch, the Web session is redirected to the new management IP address. If the connection cannot be made, the J-Web interface displays instructions for starting a J-Web session.

Related Documentation

- Connecting and Configuring an EX Series Switch (J-Web Procedure) on page 89
- Installing and Connecting an EX2200 Switch on page 51
- Installing and Connecting an EX3200 Switch
- Installing and Connecting an EX4200 Switch
- Installing and Connecting an EX4500 Switch
- Installing and Connecting an EX8208 Switch
- Installing and Connecting an EX8216 Switch

Connecting and Configuring an EX Series Switch (J-Web Procedure)

There are two ways to connect and configure an EX Series switch: one method is through the console using the CLI and the other is using the J-Web interface. This topic describes the J-Web procedure.

NOTE: Before you begin the configuration, enable a DHCP client on the management PC you will connect to the switch so that the switch can obtain an IP address dynamically.

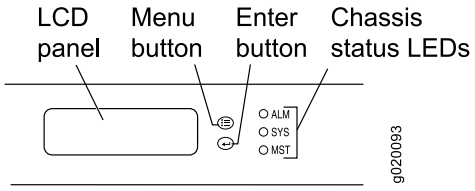
NOTE: Read the following steps before you begin the configuration. You must complete the initial configuration using EZSetup within 10 minutes. The switch exits EZSetup after 10 minutes and reverts to the factory default configuration, and the PC loses connectivity to the switch.

- EX2200 switch—The LEDs on the network ports on the front panel blink when the switch is in the initial setup mode.
- EX3200, EX4200, EX4500, or EX8200 switch—The LCD displays a count-down timer when the switch is in initial setup mode.

To connect and configure the switch using the J-Web interface:

1. Transition the switch into initial setup mode:
   - EX2200 switch—Press the mode button located on the lower right corner of the front panel for 10 seconds.
   - EX3200, EX4200, EX4500, or EX8200 switch—Use the **Menu** and **Enter** buttons located to the right of the LCD panel (see Figure 36 on page 90):

Figure 36: LCD Panel in an EX3200, EX4200, EX4500, or EX8200 Switch



   1. Press the **Menu** button until you see **MAINTENANCE MENU**. Then press the **Enter** button.
   2. Press **Menu** until you see **ENTER EZSetup**. Then press **Enter**.

      If EZSetup does not appear as an option in the menu, select Factory Default to return the switch to the factory default configuration. EZSetup is displayed in the menu only when the switch is set to the factory default configuration.

   3. Press **Enter** to confirm setup and continue with EZSetup.

2. Connect the Ethernet cable from the Ethernet port on the PC to the switch.
   - EX2200, EX3200, or EX4200 switch—Connect the cable to port 0 (**ge-0/0/0**) on the front panel of the switch.
   - EX4500 switch—Connect the cable to the port labeled **MGMT** on the front panel of the switch.
   - EX8200 switch—Connect the cable to the port labeled **MGMT** on the Switch Fabric and Routing Engine (SRE) module in slot SRE0 in an EX8208 switch or on the Routing Engine (RE) module in slot RE0 in an EX8216 switch.

   These ports are configured as the DHCP server with the default IP address, **192.168.1.1**. The switch can assign an IP address to the management PC in the IP address range **192.168.1.2** through **192.168.1.253**.
3. From the PC, open a Web browser, type **http://192.168.1.1** in the address field, and press Enter.
4. On the J-Web login page, type **root** as the username, leave the password field blank, and click **Login**.
5. On the Introduction page, click **Next**.
6. On the Basic Settings page, modify the hostname, the root password, and date and time settings:

- Enter the hostname. This is optional.
- Enter a password and reenter the password.
- Specify the time zone.
- Synchronize the date and time settings of the switch with the management PC or set them manually by selecting the appropriate option button. This is optional.

Click **Next**.

7. Use the Management Options page to select the management scenario:

NOTE: On EX4500 and EX8200 switches, only the out-of-band management option is available.

- **In-band Management—Use VLAN 'default' for management**.

  Select this option to configure all data interfaces as members of the default VLAN. Click **Next**. Specify the management IP address and the default gateway for the default VLAN.

- **In-band Management—Create new VLAN for management**.

  Select this option to create a management VLAN. Click **Next**. Specify the VLAN name, VLAN ID, member interfaces, management IP address, and default gateway for the new VLAN.

- **Out-of-band Management—Configure management port**.

  Select this option to configure only the management interface. Click **Next**. Specify the IP address and default gateway for the management interface.

8. Click **Next**.
9. On the Manage Access page, you may select options to enable Telnet, SSH, and SNMP services. For SNMP, you can configure the read community, location, and contact.
10. Click **Next**. The Summary screen displays the configured settings.
11. Click **Finish**.

The configuration is committed as the active switch configuration. You can now log in with the CLI or the J-Web interface to continue configuring the switch.

If you use the J-Web interface to continue configuring the switch, the Web session is redirected to the new management IP address. If the connection cannot be made, the J-Web interface displays instructions for starting a J-Web session.

NOTE: After the configuration is committed, the connectivity between the PC and the switch might be lost. To renew the connection, release and renew the IP address by executing the appropriate commands on the management PC or by removing and reinserting the Ethernet cable.

Related Documentation

- Connecting and Configuring an EX Series Switch (CLI Procedure) on page 87
- Installing and Connecting an EX2200 Switch on page 51
- Installing and Connecting an EX3200 Switch
- Installing and Connecting an EX4200 Switch
- Installing and Connecting an EX4500 Switch
- Installing and Connecting an EX8208 Switch
- Installing and Connecting an EX8216 Switch

PART 4

Removing Switch Components

CHAPTER 12

Removing Switch Components

Removing a Transceiver from an EX Series Switch

The transceivers for EX Series switches are hot-removable and hot-insertable field-replaceable units (FRUs): You can remove and replace them without powering off the switch or disrupting switch functions.

Before you begin removing a transceiver from an EX Series switch, ensure that you have taken the necessary precautions for safe handling of lasers (see "Laser and LED Safety Guidelines and Warnings for EX Series Switches" on page 121).

Ensure that you have the following parts and tools available:

- An antistatic bag or an antistatic mat
- Needlenose pliers
- Rubber safety caps to cover the transceiver and fiber-optic cable connector
- A dust cover to cover the port

Figure 37 on page 96 shows how to remove an SFP transceiver. The procedure is the same for all transceiver types.

To remove a transceiver from an EX Series switch:

1. Place the antistatic bag or antistatic mat on a flat, stable surface.
2. Label the cable connected to the transceiver so that you can reconnect it correctly.

WARNING: Do not look directly into a fiber-optic transceiver or into the ends of fiber-optic cables. Fiber-optic transceivers and fiber-optic cables connected to transceivers emit laser light that can damage your eyes.

WARNING: Do not leave a fiber-optic transceiver uncovered except when inserting or removing a cable. The rubber safety cap keeps the port clean and prevents accidental exposure to laser light.

CAUTION: Do not bend fiber-optic cables beyond their minimum bend radius. An arc smaller than a few inches in diameter can damage the cables and cause problems that are difficult to diagnose.

3. Remove the cable connected to the transceiver (see "Disconnecting a Fiber-Optic Cable from an EX Series Switch" on page 97). Cover the transceiver and the end of each fiber-optic cable connector with a rubber safety cap immediately after disconnecting the fiber-optic cables.
4. Using your fingers, pull the ejector lever on the transceiver to unlock the transceiver.

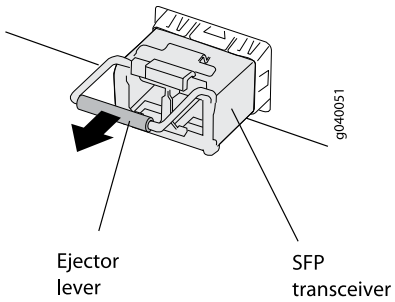
CAUTION: Before removing the transceiver, make sure you open the ejector lever completely until you hear it click. This prevents damage to the transceiver.

5. Using the needlenose pliers, pull the ejector lever out from the transceiver.
6. Grasp the transceiver ejector lever and gently slide the transceiver approximately 0.5 in. (1.3 cm) straight out of the port.

CAUTION: To avoid electrostatic discharge (ESD) damage to the transceiver, do not touch the connector pins at the end of the transceiver.

7. Using your fingers, grasp the body of the transceiver and pull it straight out of the port.
8. Place the transceiver in the antistatic bag or on the antistatic mat placed on a flat, stable surface.
9. Place the dust cover over the empty port.

Figure 37: Removing a Transceiver from an EX Series Switch



Related Documentation

- Installing a Transceiver in an EX Series Switch on page 65
- Optical Interface Support in EX2200 Switches on page 22
- Optical Interface Support in EX3200 Switches
- Optical Interface Support in EX4200 Switches
- Optical Interface Support in EX4500 Switches
- Optical Interface Support in EX8200 Switches

Disconnecting a Fiber-Optic Cable from an EX Series Switch

EX Series switches have field-replaceable unit (FRU) optical transceivers to which you can connect fiber-optic cables.

Before you begin disconnecting a fiber-optic cable from an optical transceiver installed in an EX Series switch, ensure that you have taken the necessary precautions for safe handling of lasers (see "Laser and LED Safety Guidelines and Warnings for EX Series Switches" on page 121).

Ensure that you have the following parts and tools available:

- A rubber safety cap to cover the transceiver
- A rubber safety cap to cover the fiber-optic cable connector

To disconnect a fiber-optic cable from an optical transceiver installed in the switch:

1. Disable the port in which the transceiver is installed by issuing the command:

   ```
   [edit interfaces]
   user@switch# set interface-name disable
   ```

   WARNING: Do not look directly into a fiber-optic transceiver or into the ends of fiber-optic cables. Fiber-optic transceivers and fiber-optic cables connected to transceivers emit laser light that can damage your eyes.

2. Carefully unplug the fiber-optic cable connector from the transceiver.
3. Cover the transceiver with a rubber safety cap.

   WARNING: Do not leave a fiber-optic transceiver uncovered except when inserting or removing a cable. The rubber safety cap keeps the port clean and prevents accidental exposure to laser light.

4. Cover the fiber-optic cable connector with the rubber safety cap.

Related Documentation

- Connecting a Fiber-Optic Cable to an EX Series Switch on page 81
- Removing a Transceiver from an EX Series Switch on page 95
- Maintaining Fiber-Optic Cables in EX Series Switches on page 101
- Optical Interface Support in EX2200 Switches on page 22
- Optical Interface Support in EX3200 Switches
- Optical Interface Support in EX4200 Switches
- Optical Interface Support in EX4500 Switches
- Optical Interface Support in EX8200 Switches

PART 5

Switch and Component Maintenance

CHAPTER 13

Routine Maintenance

Maintaining Fiber-Optic Cables in EX Series Switches

Fiber-optic cables connect to optical transceivers that are installed in EX Series switches.

To maintain fiber-optic cables:

- When you unplug a fiber-optic cable from a transceiver, place rubber safety caps over the transceiver and on the end of the cable.
- Anchor fiber-optic cables to avoid stress on the connectors. When attaching a fiber-optic cable to a transceiver, be sure to secure the fiber-optic cable so that it is not supporting its own weight as it hangs to the floor. Never let a fiber-optic cable hang free from the connector.
- Avoid bending fiber-optic cables beyond their minimum bend radius. Bending fiber-optic cables into arcs smaller than a few inches in diameter can damage the cables and cause problems that are difficult to diagnose.
- Frequent plugging and unplugging of fiber-optic cables in and out of optical instruments can damage the instruments, which are expensive to repair. Attach a short fiber extension to the optical equipment. Any wear and tear due to frequent plugging and unplugging is then absorbed by the short fiber extension, which is easier and less expensive to replace than the instruments.
- Keep fiber-optic cable connections clean. Micro-deposits of oil and dust in the canal of the transceiver or cable connector can cause loss of light, reduction in signal power, and possibly intermittent problems with the optical connection.

  To clean the transceiver canal, use an appropriate fiber-cleaning device such as RIFOCS Fiber Optic Adaptor Cleaning Wands (part number 946). Follow the directions in the cleaning kit you use.

  After cleaning the transceiver, make sure that the connector tip of the fiber-optic cable is clean. Use only an approved alcohol-free fiber-optic cable cleaning kit such as the Opptex Cletop-S® Fiber Cleaner. Follow the directions in the cleaning kit you use.

Related Documentation

- Connecting a Fiber-Optic Cable to an EX Series Switch on page 81
- Laser and LED Safety Guidelines and Warnings for EX Series Switches on page 121

- Optical Interface Support in EX2200 Switches on page 22
- Optical Interface Support in EX3200 Switches
- Optical Interface Support in EX4200 Switches
- Optical Interface Support in EX4500 Switches
- Optical Interface Support in EX8200 Switches

PART 6

Returning Hardware

CHAPTER 14

Returning the Switch or Switch Components

Returning an EX2200 Switch or Component for Repair or Replacement

If you need to return an EX2200 switch or hardware component to Juniper Networks for repair or replacement, follow this procedure:

1. Determine the serial number of the component. For instructions, see "Locating the Serial Number on an EX2200 Switch or Component" on page 106.
2. Obtain an RMA number from JTAC as described in "Contacting Customer Support to Obtain Return Materials Authorization for EX Series Switches" on page 107.

   NOTE: Do not return any component to Juniper Networks unless you have first obtained an RMA number. Juniper Networks reserves the right to refuse shipments that do not have an RMA. Refused shipments are returned to the customer through collect freight.

3. Pack the switch or component for shipping as described in "Packing an EX2200 Switch or Component for Shipping" on page 108.

For more information about return and repair policies, see the customer support page at http://www.juniper.net/support/guidelines.html.

Related Documentation

- EX2200 Switches Hardware Overview on page 3

Locating the Serial Number on an EX2200 Switch or Component

If you are returning an EX2200 switch or hardware component to Juniper Networks for repair or replacement, you must locate the serial number of the switch or component. You must provide the serial number to the Juniper Networks Technical Assistance Center (JTAC) when you contact them to obtain Return Materials Authorization (RMA).

If the switch is operational and you can access the CLI, you can list serial numbers for the switch and for some components with a CLI command. If you do not have access to the CLI or if the serial number for the component does not appear in the command output, you can locate the serial number ID label on the physical switch (see Figure 38 on page 107) or component.

NOTE: If you want to find the serial number on the physical switch component, you will need to remove the component from the switch chassis, for which you must have the required parts and tools available.

Listing the Switch and Components Details with the CLI

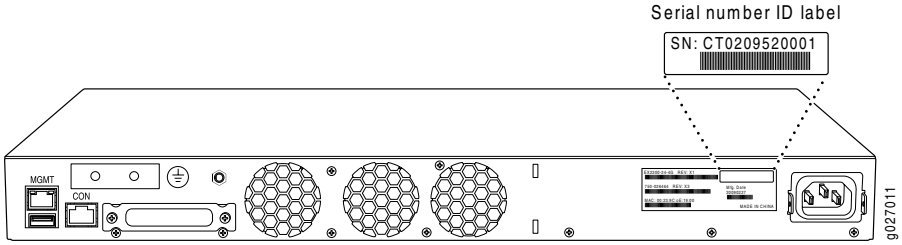
To list the switch and switch components and their serial numbers, enter the following CLI command:

```
user@switch> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                CV0209096579      EX2200-24P-4G
Routing Engine 0 REV 2A   750-026464   CV0209096579      EX2200-24P-4G, POE
FPC 0            REV 2A   750-026464   CV0209096579      EX2200-24P-4G, POE
  CPU                     BUILTIN      BUILTIN           FPC CPU
  PIC 0                   BUILTIN      BUILTIN           24x 10/100/1000 Base-T
  PIC 1          REV 2A   750-026464   CV0209096579      4x GE SFP
Power Supply 0                                           PS 550W AC
Fan Tray                                                 Fan Tray
```

Locating the Chassis Serial Number ID Label on an EX2200 Switch

EX2200 switches have serial number ID labels located on the rear panel of the chassis (see Figure 38 on page 107).

Figure 38: Location of the Serial Number ID Label on EX2200 Switches



Related Documentation

- Contacting Customer Support to Obtain Return Materials Authorization for EX Series Switches on page 107
- Returning an EX2200 Switch or Component for Repair or Replacement on page 105

Contacting Customer Support to Obtain Return Materials Authorization for EX Series Switches

If you are returning a switch or hardware component to Juniper Networks for repair or replacement, obtain a Return Materials Authorization (RMA) from Juniper Networks Technical Assistance Center (JTAC).

After locating the serial number of the switch or hardware component you want to return, open a Case with Juniper Networks Technical Assistance Center (JTAC) on the Web or by telephone.

For instructions on locating the serial number of the switch or hardware component you want to return:

- See “Locating the Serial Number on an EX2200 Switch or Component” on page 106.
- See Locating the Serial Number on an EX3200 Switch or Component.
- See Locating the Serial Number on an EX4200 Switch or Component.
- See Locating the Serial Number on an EX4500 Switch or Component.
- See Locating the Serial Number on an EX8200 Switch or Component.
- See Locating the Serial Number on an XRE200 External Routing Engine or Component.

Before you request an RMA from JTAC, be prepared to provide the following information:

- Your existing case number, if you have one
- Serial number of the component
- Your name, organization name, telephone number, fax number, and shipping address
- Details of the failure or problem
- Type of activity being performed on the switch when the problem occurred
- Configuration data displayed by one or more **show** commands

You can contact JTAC 24 hours a day, seven days a week on the Web or by telephone:

- Case Manager at CSC: http://www.juniper.net/cm/
- Telephone: +1-888-314-JTAC1-888-314-5822, toll free in U.S., Canada, and Mexico

NOTE: For international or direct-dial options in countries without toll free numbers, see http://www.juniper.net/support/requesting-support.html.

If you are contacting JTAC by telephone, enter your 11-digit case number followed by the pound (#) key for an existing case, or press the star (*) key to be routed to the next available support engineer.

The support representative validates your request and issues an RMA number for return of the component.

Related Documentation

- Packing an EX2200 Switch or Component for Shipping on page 108
- Packing an EX3200 Switch or Component for Shipping
- Packing an EX4200 Switch or Component for Shipping
- Packing an EX4500 Switch or Component for Shipping
- Packing an EX8200 Switch or Component
- Packing an XRE200 External Routing Engine or Component for Shipping
- Returning an EX2200 Switch or Component for Repair or Replacement on page 105
- Returning an EX3200 Switch or Component for Repair or Replacement
- Returning an EX4200 Switch or Component for Repair or Replacement
- Returning an EX4500 Switch or Component for Repair or Replacement
- Returning an EX8200 Switch or Component for Repair or Replacement
- Returning an XRE200 External Routing Engine for Repair or Replacement

Packing an EX2200 Switch or Component for Shipping

If you are returning an EX2200 switch or component to Juniper Networks for repair or replacement, pack the item as described in this topic.

Before you begin, ensure that you have retrieved the original shipping carton and packing materials. Contact your JTAC representative if you do not have these materials, to learn about approved packing materials. See “Contacting Customer Support to Obtain Return Materials Authorization for EX Series Switches” on page 107.

Ensure that you have the following parts and tools available:

- Antistatic bag, one for each switch or component
- Phillips (+) screwdriver, number 2

This topic describes:

Packing a Switch for Shipping

To pack a switch for shipping:

1. On the console or other management device connected to the switch, enter the CLI operational mode and issue the following command to shut down the switch software:

   ```
   user@switch> request system halt
   ```

   Wait until a message appears on the console confirming that the operating system has halted.

2. Disconnect power from the switch by performing one of the following:
   - If the power source outlet has a power switch, set it to the OFF (0) position.
   - If the power source outlet does not have a power switch, gently pull out the male end of the power cord connected to the power source outlet.
3. Remove the cables that connect the switch to all external devices. See “Disconnecting a Fiber-Optic Cable from an EX Series Switch” on page 97.
4. Remove all optical transceivers installed in the switch. See “Removing a Transceiver from an EX Series Switch” on page 95.
5. If the switch is mounted on a wall or on two posts, have one person support the weight of the switch while another person unscrews and removes the mounting screws.
6. Use the Phillips (+) screwdriver, number 2 to remove the screws.
7. Remove the switch from the wall, rack, cabinet, or desk and place the switch in an antistatic bag.
8. Slip on the end caps of the packaging foam on both sides of the switch.
9. Place the switch in the shipping carton.
10. Place the packing foam on top of and around the switch.
11. If you are returning accessories or FRUs with the switch, pack them as instructed in “Packing Switch Components for Shipping” on page 109.
12. Close the top of the cardboard carton and seal it with packing tape.
13. Write the RMA number on the exterior of the carton to ensure proper tracking.

Packing Switch Components for Shipping

To pack and ship switch components:

- Place individual components in antistatic bags.
- Ensure that the components are adequately protected with packing materials and packed so that the pieces are prevented from moving around inside the carton.

- Close the top of the cardboard shipping carton and seal it with packing tape.
- Write the RMA number on the exterior of the carton to ensure proper tracking.

Related Documentation

- Returning an EX2200 Switch or Component for Repair or Replacement on page 105

PART 7

Safety Information

CHAPTER 15

General Safety Information

General Safety Guidelines and Warnings for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

The following guidelines help ensure your safety and protect the device from damage. The list of guidelines might not address all potentially hazardous situations in your working environment, so be alert and exercise good judgment at all times.

- Perform only the procedures explicitly described in the hardware documentation for this device. Make sure that only authorized service personnel perform other system services.
- Keep the area around the device clear and free from dust before, during, and after installation.
- Keep tools away from areas where people could trip over them while walking.
- Do not wear loose clothing or jewelry, such as rings, bracelets, or chains, which could become caught in the device.
- Wear safety glasses if you are working under any conditions that could be hazardous to your eyes.
- Do not perform any actions that create a potential hazard to people or make the equipment unsafe.
- Never attempt to lift an object that is too heavy for one person to handle.
- Never install or manipulate wiring during electrical storms.
- Never install electrical jacks in wet locations unless the jacks are specifically designed for wet environments.
- Operate the device only when it is properly grounded.

- Ensure that the separate protective earthing terminal provided on this device is permanently connected to earth.
- Replace fuses only with fuses of the same type and rating.
- Do not open or remove chassis covers or sheet-metal parts unless instructions are provided in the hardware documentation for this device. Such an action could cause severe electrical shock.
- Do not push or force any objects through any opening in the chassis frame. Such an action could result in electrical shock or fire.
- Avoid spilling liquid onto the chassis or onto any device component. Such an action could cause electrical shock or damage the device.
- Avoid touching uninsulated electrical wires or terminals that have not been disconnected from their power source. Such an action could cause electrical shock.
- Always ensure that all modules, power supplies, and cover panels are fully inserted and that the installation screws are fully tightened.

Related Documentation

- AC Power Electrical Safety Guidelines for EX Series Switches on page 144
- DC Power Electrical Safety Guidelines for EX Series Switches
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- Maintenance and Operational Safety Guidelines and Warnings for EX Series Switches on page 135
- Laser and LED Safety Guidelines and Warnings for EX Series Switches on page 121
- Installation Instructions Warning for EX Series Switches on page 127
- Grounded Equipment Warning for EX Series Switches on page 134

Definitions of Safety Warning Levels for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

The EX Series documentation uses the following levels of safety warnings (there are two "Warning" formats):

NOTE: You might find this information helpful in a particular situation, or you might overlook this important information if it was not highlighted in a Note.

CAUTION: You need to observe the specified guidelines to avoid minor injury or discomfort to you or severe damage to the device.

WARNING: This symbol alerts you to the risk of personal injury from a laser.

WARNING: This symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

WARNING: **Waarschuwing** Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen.

WARNING: **Varoitus** Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista.

WARNING: **Attention** Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents.

WARNING: **Warnung** Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt.

WARNING: **Avvertenza** Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti.

WARNING: **Advarsel** Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du vare oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker.

WARNING: **Aviso** Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes.

WARNING: **¡Atención!** Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes.

WARNING: **Varning!** Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Installation Instructions Warning for EX Series Switches on page 127
- Maintenance and Operational Safety Guidelines and Warnings for EX Series Switches on page 135
- Grounded Equipment Warning for EX Series Switches on page 134
- Laser and LED Safety Guidelines and Warnings for EX Series Switches on page 121
- Warning Statement for Norway and Sweden for EX Series Switches on page 118

Fire Safety Requirements for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

In the event of a fire emergency involving switches and other network equipment, the safety of people is the primary concern. You should establish procedures for protecting people in the event of a fire emergency, provide safety training, and properly provision fire-control equipment and fire extinguishers.

In addition, you should establish procedures to protect your equipment in the event of a fire emergency. Juniper Networks products should be installed in an environment suitable for electronic equipment. We recommend that fire suppression equipment be available in the event of a fire in the vicinity of the equipment and that all local fire, safety, and electrical codes and ordinances be observed when installing and operating your equipment.

Fire Suppression

In the event of an electrical hazard or an electrical fire, you should first turn power off to the equipment at the source. Then use a Type C fire extinguisher, which uses noncorrosive fire retardants, to extinguish the fire.

Fire Suppression Equipment

Type C fire extinguishers, which use noncorrosive fire retardants such as carbon dioxide and Halotron™, are most effective for suppressing electrical fires. Type C fire extinguishers displace oxygen from the point of combustion to eliminate the fire. For extinguishing fire on or around equipment that draws air from the environment for cooling, you should use this type of inert oxygen displacement extinguisher instead of an extinguisher that leaves residues on equipment.

Do not use multipurpose Type ABC chemical fire extinguishers (dry chemical fire extinguishers). The primary ingredient in these fire extinguishers is monoammonium phosphate, which is very sticky and difficult to clean. In addition, in the presence of minute amounts of moisture, monoammonium phosphate can become highly corrosive and corrodes most metals.

Any equipment in a room in which a chemical fire extinguisher has been discharged is subject to premature failure and unreliable operation. The equipment is considered to be irreparably damaged.

NOTE: To keep warranties effective, do not use a dry chemical fire extinguisher to control a fire at or near a Juniper Networks switch or other network device provided by Juniper. If a dry chemical fire extinguisher is used, the unit is no longer eligible for coverage under a service agreement.

We recommend that you dispose of any irreparably damaged equipment in an environmentally responsible manner.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- In Case of Electrical Accident: Action to Take on an EX Series Switch on page 147

Qualified Personnel Warning for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

WARNING: Only trained and qualified personnel should install or replace the device.

Waarschuwing Installatie en reparaties mogen uitsluitend door getraind en bevoegd personeel uitgevoerd worden.

Varoitus Ainoastaan koulutettu ja pätevä henkilökunta saa asentaa tai vaihtaa tämän laitteen.

Attention Tout installation ou remplacement de l'appareil doit être réalisé par du personnel qualifié et compétent.

Warnung Gerät nur von geschultem, qualifiziertem Personal installieren oder auswechseln lassen.

Avvertenza Solo personale addestrato e qualificato deve essere autorizzato ad installare o sostituire questo apparecchio.

Advarsel Kun kvalifisert personell med riktig opplæring bør montere eller bytte ut dette utstyret.

Aviso Este equipamento deverá ser instalado ou substituído apenas por pessoal devidamente treinado e qualificado.

¡Atención! Estos equipos deben ser instalados y reemplazados exclusivamente por personal técnico adecuadamente preparado y capacitado.

Varning! Denna utrustning ska endast installeras och bytas ut av utbildad och kvalificerad personal.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- AC Power Electrical Safety Guidelines for EX Series Switches on page 144
- DC Power Electrical Safety Guidelines for EX Series Switches

Warning Statement for Norway and Sweden for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

WARNING: The equipment must be connected to an earthed mains socket-outlet.

Advarsel Apparatet skal kobles til en jordet stikkontakt.

Varning! Apparaten skall anslutas till jordat nätuttag.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113

CHAPTER 16

Radiation and Laser Warnings

Laser and LED Safety Guidelines and Warnings for EX Series Switches

EX Series switches and the XRE200 External Routing Engine are equipped with laser transmitters, which are considered a Class 1 Laser Product by the U.S. Food and Drug Administration and are evaluated as a Class 1 Laser Product per EN 60825-1 requirements.

Observe the following guidelines and warnings:

General Laser Safety Guidelines

When working around ports that support optical transceivers, observe the following safety guidelines to prevent eye injury:

- Do not look into unterminated ports or at fibers that connect to unknown sources.
- Do not examine unterminated optical ports with optical instruments.
- Avoid direct exposure to the beam.

WARNING: Unterminated optical connectors can emit invisible laser radiation. The lens in the human eye focuses all the laser power on the retina, so focusing the eye directly on a laser source—even a low-power laser—could permanently damage the eye.

Class 1 Laser Product Warning

WARNING: Class 1 laser product.

Waarschuwing Klasse-1 laser produkt.

Varoitus Luokan 1 lasertuote.

Attention Produit laser de classe I.

Warnung Laserprodukt der Klasse 1.

WARNING: **Avvertenza** Prodotto laser di Classe 1.

Advarsel Laserprodukt av klasse 1.

Aviso Produto laser de classe 1.

¡Atención! Producto láser Clase I.

Varning! Laserprodukt av klass 1.

Class 1 LED Product Warning

WARNING: Class 1 LED product.

Waarschuwing Klasse 1 LED-product.

Varoitus Luokan 1 valodiodituote.

Attention Alarme de produit LED Class I.

Warnung Class 1 LED-Produktwarnung.

WARNING: **Avvertenza** Avvertenza prodotto LED di Classe 1.

Advarsel LED-produkt i klasse 1.

Aviso Produto de classe 1 com LED.

¡Atención! Aviso sobre producto LED de Clase 1.

Varning! Lysdiodprodukt av klass 1.

Laser Beam Warning

WARNING: Do not stare into the laser beam or view it directly with optical instruments.

WARNING: **Waarschuwing** Niet in de straal staren of hem rechtstreeks bekijken met optische instrumenten.

WARNING: **Varoitus** Älä katso säteeseen äläkä tarkastele sitä suoraan optisen laitteen avulla.

WARNING: **Attention** Ne pas fixer le faisceau des yeux, ni l'observer directement à l'aide d'instruments optiques.

WARNING: **Warnung** Nicht direkt in den Strahl blicken und ihn nicht direkt mit optischen Geräten prüfen.

WARNING: **Avvertenza** Non fissare il raggio con gli occhi né usare strumenti ottici per osservarlo direttamente.

WARNING: **Advarsel** Stirr eller se ikke direkte p strlen med optiske instrumenter.

WARNING: **Aviso** Não olhe fixamente para o raio, nem olhe para ele directamente com instrumentos ópticos.

WARNING: **¡Atención!** No mirar fijamente el haz ni observarlo directamente con instrumentos ópticos.

WARNING: **Varning!** Rikta inte blicken in mot strålen och titta inte direkt på den genom optiska instrument.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Radiation from Open Port Apertures Warning for EX Series Switches on page 124
- Installation Instructions Warning for EX Series Switches on page 127
- Grounded Equipment Warning for EX Series Switches on page 134
- Optical Interface Support in EX2200 Switches on page 22
- Optical Interface Support in EX3200 Switches
- Optical Interface Support in EX4200 Switches
- Optical Interface Support in EX4500 Switches
- Optical Interface Support in EX8200 Switches

Radiation from Open Port Apertures Warning for EX Series Switches

WARNING: Because invisible radiation might be emitted from the aperture of the port when no fiber cable is connected, avoid exposure to radiation and do not stare into open apertures.

WARNING: **Waarschuwing** Aangezien onzichtbare straling vanuit de opening van de poort kan komen als er geen fiberkabel aangesloten is, dient blootstelling aan straling en het kijken in open openingen vermeden te worden.

WARNING: **Varoitus** Koska portin aukosta voi emittoitua näkymätöntä säteilyä, kun kuitukaapelia ei ole kytkettynä, vältä säteilylle altistumista äläkä katso avoimiin aukkoihin.

WARNING: **Attention** Des radiations invisibles à l'il nu pouvant traverser l'ouverture du port lorsqu'aucun câble en fibre optique n'y est connecté, il est recommandé de ne pas regarder fixement l'intérieur de ces ouvertures.

WARNING: **Warnung** Aus der Port-Öffnung können unsichtbare Strahlen emittieren, wenn kein Glasfaserkabel angeschlossen ist. Vermeiden Sie es, sich den Strahlungen auszusetzen, und starren Sie nicht in die Öffnungen!

WARNING: **Avvertenza** Quando i cavi in fibra non sono inseriti, radiazioni invisibili possono essere emesse attraverso l'apertura della porta. Evitate di esporvi alle radiazioni e non guardate direttamente nelle aperture.

WARNING: **Advarsel** Unngå utsettelse for stråling, og stirr ikke inn i åpninger som er åpne, fordi usynlig stråling kan emiteres fra portens åpning når det ikke er tilkoblet en fiberkabel.

WARNING: **Aviso** Dada a possibilidade de emissão de radiação invisível através do orifício da via de acesso, quando esta não tiver nenhum cabo de fibra conectado, deverá evitar a exposição à radiação e não deverá olhar fixamente para orifícios que se encontrarem a descoberto.

WARNING: **¡Atención!** Debido a que la apertura del puerto puede emitir radiación invisible cuando no existe un cable de fibra conectado, evite mirar directamente a las aperturas para no exponerse a la radiación.

WARNING: **Varning!** Osynlig strålning kan avges från en portöppning utan ansluten fiberkabel och du bör därför undvika att bli utsatt för strålning genom att inte stirra in i oskyddade öppningar.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Laser and LED Safety Guidelines and Warnings for EX Series Switches on page 121
- Installation Instructions Warning for EX Series Switches on page 127
- Grounded Equipment Warning for EX Series Switches on page 134

CHAPTER 17

Installation and Maintenance Safety Information

Installation Instructions Warning for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

WARNING: Read the installation instructions before you connect the device to a power source.

Waarschuwing Raadpleeg de installatie-aanwijzingen voordat u het systeem met de voeding verbindt.

Varoitus Lue asennusohjeet ennen järjestelmän yhdistämistä virtalähteeseen.

Attention Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

Warnung Lesen Sie die Installationsanweisungen, bevor Sie das System an die Stromquelle anschließen.

Avvertenza Consultare le istruzioni di installazione prima di collegare il sistema all'alimentatore.

Advarsel Les installasjonsinstruksjonene før systemet kobles til strømkilden.

Aviso Leia as instruções de instalação antes de ligar o sistema à sua fonte de energia.

¡Atención! Ver las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Varning! Läs installationsanvisningarna innan du kopplar systemet till dess strömförsörjningsenhet.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Laser and LED Safety Guidelines and Warnings for EX Series Switches on page 121
- Grounded Equipment Warning for EX Series Switches on page 134
- Connecting AC Power to an EX2200 Switch on page 73
- Connecting AC Power to an EX3200 Switch
- Connecting AC Power to an EX4200 Switch
- Connecting AC Power to an EX4500 Switch
- Connecting AC Power to an EX8200 Switch
- Connecting DC Power to an EX3200 Switch
- Connecting DC Power to an EX4200 Switch
- Connecting DC Power to an EX4500 Switch
- Connecting DC Power to an EX8200 Switch
- Connecting AC Power to an XRE200 External Routing Engine
- Connecting DC Power to an XRE200 External Routing Engine

Chassis Lifting Guidelines for EX2200 Switches

The weight of a fully loaded EX2200 switch chassis is approximately 10 lb (4.5 kg). Observe the following guidelines for lifting and moving an EX2200 switch:

- Before installing the switch, read the guidelines in "Site Preparation Checklist for EX2200 Switches" on page 33 to verify that the intended site meets the specified power, environmental, and clearance requirements.
- Before lifting or moving the switch, disconnect all external cables.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Installation Instructions Warning for EX Series Switches on page 127
- Mounting an EX2200 Switch on page 53

Ramp Warning for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

WARNING: When installing the device, do not use a ramp inclined at more than 10 degrees.

Waarschuwing Gebruik een oprijplaat niet onder een hoek van meer dan 10 graden.

Varoitus Älä käytä sellaista kaltevaa pintaa, jonka kaltevuus ylittää 10 astetta.

Attention Ne pas utiliser une rampe dont l'inclinaison est supérieure à 10 degrés.

Warnung Keine Rampen mit einer Neigung von mehr als 10 Grad verwenden.

Avvertenza Non usare una rampa con pendenza superiore a 10 gradi.

Advarsel Bruk aldri en rampe som heller mer enn 10 grader.

Aviso Não utilize uma rampa com uma inclinação superior a 10 graus.

¡Atención! No usar una rampa inclinada más de 10 grados

Varning! Använd inte ramp med en lutning på mer än 10 grader.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Laser and LED Safety Guidelines and Warnings for EX Series Switches on page 121
- Installation Instructions Warning for EX Series Switches on page 127
- Grounded Equipment Warning for EX Series Switches on page 134

Rack-Mounting and Cabinet-Mounting Warnings for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

Ensure that the rack or cabinet in which the device is installed is evenly and securely supported. Uneven mechanical loading could lead to a hazardous condition.

WARNING: To prevent bodily injury when mounting or servicing the device in a rack, take the following precautions to ensure that the system remains stable. The following directives help maintain your safety:

- The device must be installed in a rack that is secured to the building structure.
- The device should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting the device on a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing equipment, install the stabilizers before mounting or servicing the device in the rack.

WARNING: **Waarschuwing** Om lichamelijk letsel te voorkomen wanneer u dit toestel in een rek monteert of het daar een servicebeurt geeft, moet u speciale voorzorgsmaatregelen nemen om ervoor te zorgen dat het toestel stabiel blijft. De onderstaande richtlijnen worden verstrekt om uw veiligheid te verzekeren:

- De Juniper Networks switch moet in een stellage worden geïnstalleerd die aan een bouwsel is verankerd.
- Dit toestel dient onderaan in het rek gemonteerd te worden als het toestel het enige in het rek is.
- Wanneer u dit toestel in een gedeeltelijk gevuld rek monteert, dient u het rek van onderen naar boven te laden met het zwaarste onderdeel onderaan in het rek.
- Als het rek voorzien is van stabiliseringshulpmiddelen, dient u de stabilisatoren te monteren voordat u het toestel in het rek monteert of het daar een servicebeurt geeft.

WARNING: **Varoitus** Kun laite asetetaan telineeseen tai huolletaan sen ollessa telineessä, on noudatettava erityisiä varotoimia järjestelmän vakavuuden säilyttämiseksi, jotta vältytään loukkaantumiselta. Noudata seuraavia turvallisuusohjeita:

- Juniper Networks switch on asennettava telineeseen, joka on kiinnitetty rakennukseen.
- Jos telineessä ei ole muita laitteita, aseta laite telineen alaosaan.
- Jos laite asetetaan osaksi täytettyyn telineeseen, aloita kuormittaminen sen alaosasta kaikkein raskaimmalla esineellä ja siirry sitten sen yläosaan.
- Jos telinettä varten on vakaimet, asenna ne ennen laitteen asettamista telineeseen tai sen huoltamista siinä.

WARNING: **Attention** Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel:

- Le rack sur lequel est monté le Juniper Networks switch doit être fixé à la structure du bâtiment.
- Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas.
- Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas.
- Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.

WARNING: **Warnung** Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen:

- Der Juniper Networks switch muß in einem Gestell installiert werden, das in der Gebäudestruktur verankert ist.
- Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden.
- Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist.
- Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.

WARNING: **Avvertenza** Per evitare infortuni fisici durante il montaggio o la manutenzione di questa unità in un supporto, occorre osservare speciali precauzioni per garantire che il sistema rimanga stabile. Le seguenti direttive vengono fornite per garantire la sicurezza personale:

- Il Juniper Networks switch deve essere installato in un telaio, il quale deve essere fissato alla struttura dell'edificio.
- Questa unità deve venire montata sul fondo del supporto, se si tratta dell'unica unità da montare nel supporto.

- Quando questa unità viene montata in un supporto parzialmente pieno, caricare il supporto dal basso all'alto, con il componente più pesante sistemato sul fondo del supporto.
- Se il supporto è dotato di dispositivi stabilizzanti, installare tali dispositivi prima di montare o di procedere alla manutenzione dell'unità nel supporto.

WARNING: **Advarsel** Unngå fysiske skader under montering eller reparasjonsarbeid på denne enheten når den befinner seg i et kabinett. Vær nøye med at systemet er stabilt. Følgende retningslinjer er gitt for å verne om sikkerheten:

- Juniper Networks switch må installeres i et stativ som er forankret til bygningsstrukturen.
- Denne enheten bør monteres nederst i kabinettet hvis dette er den eneste enheten i kabinettet.
- Ved montering av denne enheten i et kabinett som er delvis fylt, skal kabinettet lastes fra bunnen og opp med den tyngste komponenten nederst i kabinettet.
- Hvis kabinettet er utstyrt med stabiliseringsutstyr, skal stabilisatorene installeres før montering eller utføring av reparasjonsarbeid på enheten i kabinettet.

WARNING: **Aviso** Para se prevenir contra danos corporais ao montar ou reparar esta unidade numa estante, deverá tomar precauções especiais para se certificar de que o sistema possui um suporte estável. As seguintes directrizes ajudá-lo-ão a efectuar o seu trabalho com segurança:

- O Juniper Networks switch deverá ser instalado numa prateleira fixa à estrutura do edificio.
- Esta unidade deverá ser montada na parte inferior da estante, caso seja esta a única unidade a ser montada.
- Ao montar esta unidade numa estante parcialmente ocupada, coloque os itens mais pesados na parte inferior da estante, arrumando-os de baixo para cima.
- Se a estante possuir um dispositivo de estabilização, instale-o antes de montar ou reparar a unidade.

WARNING: **¡Atención!** Para evitar lesiones durante el montaje de este equipo sobre un bastidor, o posteriormente durante su mantenimiento, se debe poner mucho cuidado en que el sistema quede bien estable. Para garantizar su seguridad, proceda según las siguientes instrucciones:

- El Juniper Networks switch debe instalarse en un bastidor fijado a la estructura del edificio.
- Colocar el equipo en la parte inferior del bastidor, cuando sea la única unidad en el mismo.
- Cuando este equipo se vaya a instalar en un bastidor parcialmente ocupado, comenzar la instalación desde la parte inferior hacia la superior colocando el equipo más pesado en la parte inferior.
- Si el bastidor dispone de dispositivos estabilizadores, instalar éstos antes de montar o proceder al mantenimiento del equipo instalado en el bastidor.

WARNING: **Varning!** För att undvika kroppsskada när du installerar eller utför underhållsarbete på denna enhet på en ställning måste du vidta särskilda försiktighetsåtgärder för att försäkra dig om att systemet står stadigt. Följande riktlinjer ges för att trygga din säkerhet:

- Juniper Networks switch måste installeras i en ställning som är förankrad i byggnadens struktur.
- Om denna enhet är den enda enheten på ställningen skall den installeras längst ned på ställningen.
- Om denna enhet installeras på en delvis fylld ställning skall ställningen fyllas nedifrån och upp, med de tyngsta enheterna längst ned på ställningen.
- Om ställningen är försedd med stabiliseringsdon skall dessa monteras fast innan enheten installeras eller underhålls på ställningen.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Installation Instructions Warning for EX Series Switches on page 127
- Grounded Equipment Warning for EX Series Switches on page 134
- Mounting an EX2200 Switch on page 53
- Mounting an EX3200 Switch
- Mounting an EX4200 Switch
- Mounting an EX4500 Switch
- Mounting an EX8208 Switch on a Rack or Cabinet
- Mounting an EX8216 Switch on a Rack or Cabinet

Wall-Mounting Warnings for EX2200 Switches

WARNING:

- When mounting an EX2200 switch chassis in a vertical position, orient the front panel of the chassis downward to ensure proper airflow and meet safety requirements in the event of a fire.
- When wall mounting Power over Ethernet (PoE) models (EX2200-24P and EX2200-48P), install the wall-mount baffle above the units to reduce the risk of objects or substances falling into the air exhaust or power supply, which could cause a fire.

Related Documentation

- Mounting an EX2200 Switch on a Wall on page 61

Grounded Equipment Warning for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

WARNING: The device is intended to be grounded. During normal use, ensure that you have connected earth ground to the chassis.

Waarschuwing Deze apparatuur hoort geaard te worden Zorg dat de host-computer tijdens normaal gebruik met aarde is verbonden.

Varoitus Tämä laitteisto on tarkoitettu maadoitettavaksi. Varmista, että isäntälaite on yhdistetty maahan normaalikäytön aikana.

Attention Cet équipement doit être relié à la terre. S'assurer que l'appareil hôte est relié à la terre lors de l'utilisation normale.

Warnung Dieses Gerät muß geerdet werden. Stellen Sie sicher, daß das Host-Gerät während des normalen Betriebs an Erde gelegt ist.

Avvertenza Questa apparecchiatura deve essere collegata a massa. Accertarsi che il dispositivo host sia collegato alla massa di terra durante il normale utilizzo.

Advarsel Dette utstyret skal jordes. Forviss deg om vertsterminalen er jordet ved normalt bruk.

Aviso Este equipamento deverá estar ligado à terra. Certifique-se que o host se encontra ligado à terra durante a sua utilização normal.

¡Atención! Este equipo debe conectarse a tierra. Asegurarse de que el equipo principal esté conectado a tierra durante el uso normal.

Varning! Denna utrustning är avsedd att jordas. Se till att värdenheten är jordad vid normal användning.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- Connecting Earth Ground to an EX Series Switch on page 67

Maintenance and Operational Safety Guidelines and Warnings for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

While performing the maintenance activities for devices, observe the following guidelines and warnings:

- Jewelry Removal Warning on page 135
- Lightning Activity Warning on page 137
- Operating Temperature Warning on page 138
- Product Disposal Warning on page 139

Jewelry Removal Warning

WARNING: Before working on equipment that is connected to power lines, remove jewelry, including rings, necklaces, and watches. Metal objects heat up when connected to power and ground and can cause serious burns or can be welded to the terminals.

WARNING: **Waarschuwing** Alvorens aan apparatuur te werken die met elektrische leidingen is verbonden, sieraden (inclusief ringen, kettingen en horloges) verwijderen. Metalen voorwerpen worden warm wanneer ze met stroom en aarde zijn verbonden, en kunnen ernstige brandwonden veroorzaken of het metalen voorwerp aan de aansluitklemmen lassen.

WARNING: **Varoitus** Ennen kuin työskentelet voimavirtajohtoihin kytkettyjen laitteiden parissa, ota pois kaikki korut (sormukset, kaulakorut ja kellot mukaan lukien). Metalliesineet kuumenevat, kun ne ovat yhteydessä sähkövirran ja maan kanssa, ja ne voivat aiheuttaa vakavia palovammoja tai hitsata metalliesineet kiinni liitäntänapoihin.

WARNING: **Attention** Avant d'accéder à cet équipement connecté aux lignes électriques, ôter tout bijou (anneaux, colliers et montres compris). Lorsqu'ils

sont branchés à l'alimentation et reliés à la terre, les objets métalliques chauffent, ce qui peut provoquer des blessures graves ou souder l'objet métallique aux bornes.

WARNING: **Warnung** Vor der Arbeit an Geräten, die an das Netz angeschlossen sind, jeglichen Schmuck (einschließlich Ringe, Ketten und Uhren) abnehmen. Metallgegenstände erhitzen sich, wenn sie an das Netz und die Erde angeschlossen werden, und können schwere Verbrennungen verursachen oder an die Anschlußklemmen angeschweißt werden.

WARNING: **Avvertenza** Prima di intervenire su apparecchiature collegate alle linee di alimentazione, togliersi qualsiasi monile (inclusi anelli, collane, braccialetti ed orologi). Gli oggetti metallici si riscaldano quando sono collegati tra punti di alimentazione e massa: possono causare ustioni gravi oppure il metallo può saldarsi ai terminali.

WARNING: **Advarsel** Fjern alle smykker (inkludert ringer, halskjeder og klokker) før du skal arbeide på utstyr som er koblet til kraftledninger. Metallgjenstander som er koblet til kraftledninger og jord blir svært varme og kan forårsake alvorlige brannskader eller smelte fast til polene.

WARNING: **Aviso** Antes de trabalhar em equipamento que esteja ligado a linhas de corrente, retire todas as jóias que estiver a usar (incluindo anéis, fios e relógios). Os objectos metálicos aquecerão em contacto com a corrente e em contacto com a ligação à terra, podendo causar queimaduras graves ou ficarem soldados aos terminais.

WARNING: **¡Atención!** Antes de operar sobre equipos conectados a líneas de alimentación, quitarse las joyas (incluidos anillos, collares y relojes). Los objetos de metal se calientan cuando se conectan a la alimentación y a tierra, lo que puede ocasionar quemaduras graves o que los objetos metálicos queden soldados a los bornes.

WARNING: **Varning!** Tag av alla smycken (inklusive ringar, halsband och armbandsur) innan du arbetar på utrustning som är kopplad till kraftledningar. Metallobjekt hettas upp när de kopplas ihop med ström och jord och kan förorsaka allvarliga brännskador; metallobjekt kan också sammansvetsas med kontakterna.

Lightning Activity Warning

WARNING: Do not work on the system or connect or disconnect cables during periods of lightning activity.

WARNING: **Waarschuwing** Tijdens onweer dat gepaard gaat met bliksem, dient u niet aan het systeem te werken of kabels aan te sluiten of te ontkoppelen.

WARNING: **Varoitus** Älä työskentele järjestelmän parissa äläkä yhdistä tai irrota kaapeleita ukkosilmalla.

WARNING: **Attention** Ne pas travailler sur le système ni brancher ou débrancher les câbles pendant un orage.

WARNING: **Warnung** Arbeiten Sie nicht am System und schließen Sie keine Kabel an bzw. trennen Sie keine ab, wenn es gewittert.

WARNING: **Avvertenza** Non lavorare sul sistema o collegare oppure scollegare i cavi durante un temporale con fulmini.

WARNING: **Advarsel** Utfør aldri arbeid på systemet, eller koble kabler til eller fra systemet når det tordner eller lyner.

WARNING: **Aviso** Não trabalhe no sistema ou ligue e desligue cabos durante períodos de mau tempo (trovoada).

WARNING: **¡Atención!** No operar el sistema ni conectar o desconectar cables durante el transcurso de descargas eléctricas en la atmósfera.

WARNING: **Varning!** Vid åska skall du aldrig utföra arbete på systemet eller ansluta eller koppla loss kablar.

Operating Temperature Warning

WARNING: To prevent the device from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 104° F (40° C) for EX8208 switches, EX8216 switches, and XRE200 External Routing Engines and 113° F (45° C) for EX2200, EX3200, EX4200, and EX4500 switches. To prevent airflow restriction, allow at least 6 in. (15.2 cm) of clearance around the ventilation openings.

WARNING: **Waarschuwing** Om te voorkomen dat welke switch van de Juniper Networks router dan ook oververhit raakt, dient u deze niet te bedienen op een plaats waar de maximale aanbevolen omgevingstemperatuur van 40° C wordt overschreden. Om te voorkomen dat de luchtstroom wordt beperkt, dient er minstens 15,2 cm speling rond de ventilatie-openingen te zijn.

WARNING: **Varoitus** Ettei Juniper Networks switch-sarjan reititin ylikuumentuisi, sitä ei saa käyttää tilassa, jonka lämpötila ylittää korkeimman suositellun ympäristölämpötilan 40° C. Ettei ilmanvaihto estyisi, tuuletusaukkojen ympärille on jätettävä ainakin 15,2 cm tilaa.

WARNING: **Attention** Pour éviter toute surchauffe des routeurs de la gamme Juniper Networks switch, ne l'utilisez pas dans une zone où la température ambiante est supérieure à 40° C. Pour permettre un flot d'air constant, dégagez un espace d'au moins 15,2 cm autour des ouvertures de ventilations.

WARNING: **Warnung** Um einen Router der switch vor Überhitzung zu schützen, darf dieser nicht in einer Gegend betrieben werden, in der die Umgebungstemperatur das empfohlene Maximum von 40° C überschreitet. Um Lüftungsverschluß zu verhindern, achten Sie darauf, daß mindestens 15,2 cm lichter Raum um die Lüftungsöffnungen herum frei bleibt.

WARNING: **Avvertenza** Per evitare il surriscaldamento dei switch, non adoperateli in un locale che ecceda la temperatura ambientale massima di 40° C. Per evitare che la circolazione dell'aria sia impedita, lasciate uno spazio di almeno 15.2 cm di fronte alle aperture delle ventole.

WARNING: **Advarsel** Unngå overoppheting av eventuelle rutere i Juniper Networks switch Disse skal ikke brukes på steder der den anbefalte maksimale

omgivelsestemperaturen overstiger 40° C (104° F). Sørg for at klaringen rundt lufteåpningene er minst 15,2 cm (6 tommer) for å forhindre nedsatt luftsirkulasjon.

WARNING: **Aviso** Para evitar o sobreaquecimento do encaminhador Juniper Networks switch, não utilize este equipamento numa área que exceda a temperatura máxima recomendada de 40° C. Para evitar a restrição à circulação de ar, deixe pelo menos um espaço de 15,2 cm à volta das aberturas de ventilação.

WARNING: **¡Atención!** Para impedir que un encaminador de la serie Juniper Networks switch se recaliente, no lo haga funcionar en un área en la que se supere la temperatura ambiente máxima recomendada de 40° C. Para impedir la restricción de la entrada de aire, deje un espacio mínimo de 15,2 cm alrededor de las aperturas para ventilación.

WARNING: **Varning!** Förhindra att en Juniper Networks switch överhettas genom att inte använda den i ett område där den maximalt rekommenderade omgivningstemperaturen på 40° C överskrids. Förhindra att luftcirkulationen inskränks genom att se till att det finns fritt utrymme på minst 15,2 cm omkring ventilationsöppningarna.

Product Disposal Warning

WARNING: Disposal of this device must be handled according to all national laws and regulations.

WARNING: **Waarschuwing** Dit produkt dient volgens alle landelijke wetten en voorschriften te worden afgedankt.

WARNING: **Varoitus** Tämän tuotteen lopullisesta hävittämisestä tulee huolehtia kaikkia valtakunnallisia lakeja ja säännöksiä noudattaen.

WARNING: **Attention** La mise au rebut définitive de ce produit doit être effectuée conformément à toutes les lois et réglementations en vigueur.

WARNING: **Warnung** Dieses Produkt muß den geltenden Gesetzen und Vorschriften entsprechend entsorgt werden.

WARNING: **Avvertenza** L'eliminazione finale di questo prodotto deve essere eseguita osservando le normative italiane vigenti in materia

WARNING: **Advarsel** Endelig disponering av dette produktet må skje i henhold til nasjonale lover og forskrifter.

WARNING: **Aviso** A descartagem final deste produto deverá ser efectuada de acordo com os regulamentos e a legislação nacional.

WARNING: **¡Atención!** El desecho final de este producto debe realizarse según todas las leyes y regulaciones nacionales

WARNING: **Varning!** Slutlig kassering av denna produkt bör skötas i enlighet med landets alla lagar och föreskrifter.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- AC Power Electrical Safety Guidelines for EX Series Switches on page 144
- DC Power Electrical Safety Guidelines for EX Series Switches
- Laser and LED Safety Guidelines and Warnings for EX Series Switches on page 121
- Installation Instructions Warning for EX Series Switches on page 127
- Grounded Equipment Warning for EX Series Switches on page 134

CHAPTER 18

Power and Electrical Safety Information

General Electrical Safety Guidelines and Warnings for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

WARNING: Certain ports on the device are designed for use as intrabuilding (within-the-building) interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed outside plant (OSP) cabling. To comply with NEBS requirements and protect against lightning surges and commercial power disturbances, the intrabuilding ports *must not* be metallically connected to interfaces that connect to the OSP or its wiring. The intrabuilding ports on the device are suitable for connection to intrabuilding or unexposed wiring or cabling only. The addition of primary protectors is not sufficient protection for connecting these interfaces metallically to OSP wiring.

CAUTION: Before removing or installing components of a device, attach an ESD strap to an ESD point and place the other end of the strap around your bare wrist. Failure to use an ESD strap could result in damage to the switch.

- Install the device in compliance with the following local, national, and international electrical codes:

  - United States—National Fire Protection Association (NFPA 70), United States National Electrical Code.
  - Other countries—International Electromechanical Commission (IEC) 60364, Part 1 through Part 7.
  - Evaluated to the TN power system.
  - Canada—Canadian Electrical Code, Part 1, CSA C22.1.
- Locate the emergency power-off switch for the room in which you are working so that if an electrical accident occurs, you can quickly turn off the power.
- Make sure that grounding surfaces are cleaned and brought to a bright finish before grounding connections are made.
- Do not work alone if potentially hazardous conditions exist anywhere in your workspace.
- Never assume that power is disconnected from a circuit. Always check the circuit before starting to work.
- Carefully look for possible hazards in your work area, such as moist floors, ungrounded power extension cords, and missing safety grounds.
- Operate the device within marked electrical ratings and product usage instructions.
- To ensure that the device and peripheral equipment function safely and correctly, use the cables and connectors specified for the attached peripheral equipment, and make certain they are in good condition.

You can remove and replace many device components without powering off or disconnecting power to the device, as detailed elsewhere in the hardware documentation for this device. Never install equipment if it appears damaged.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- AC Power Electrical Safety Guidelines for EX Series Switches on page 144
- DC Power Electrical Safety Guidelines for EX Series Switches

Prevention of Electrostatic Discharge Damage on EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

Device components that are shipped in antistatic bags are sensitive to damage from static electricity. Some components can be impaired by voltages as low as 30 V. You can easily generate potentially damaging static voltages whenever you handle plastic or foam packing material or if you move components across plastic or carpets. Observe the following guidelines to minimize the potential for electrostatic discharge (ESD) damage, which can cause intermittent or complete component failures:

- Always use an ESD grounding strap when you are handling components that are subject to ESD damage, and make sure that it is in direct contact with your skin.

  If a grounding strap is not available, hold the component in its antistatic bag (see Figure 39 on page 143) in one hand and touch the exposed, bare metal of the device with the other hand immediately before inserting the component into the device.

  WARNING: For safety, periodically check the resistance value of the ESD strap. The measurement must be in the range of 1 through 10 Mohms.

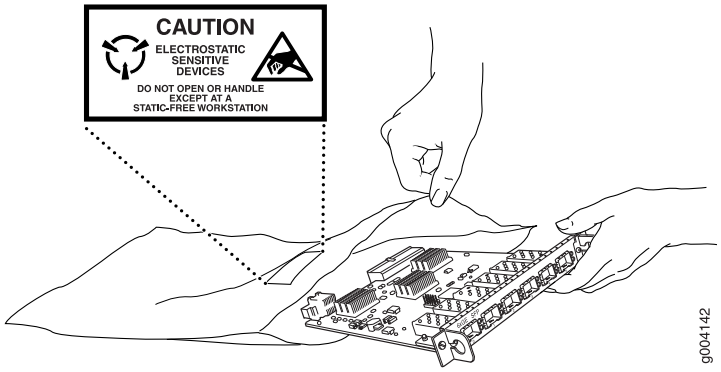
- When handling any component that is subject to ESD damage and that is removed from the device, make sure the equipment end of your ESD strap is attached to the ESD point on the chassis.

  If no grounding strap is available, touch the exposed, bare metal of the device to ground yourself before handling the component.

- Avoid contact between the component that is subject to ESD damage and your clothing. ESD voltages emitted from clothing can damage components.

- When removing or installing a component that is subject to ESD damage, always place it component-side up on an antistatic surface, in an antistatic card rack, or in an antistatic bag (see Figure 39 on page 143). If you are returning a component, place it in an antistatic bag before packing it.

Figure 39: Place a Component into an Antistatic Bag



CAUTION: ANSI/TIA/EIA-568 cables such as category 5e and category 6 can get electrostatically charged. To dissipate this charge, always ground the cables to a suitable and safe earth ground before connecting them to the system.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- See Rear Panel of an EX2200 Switch on page 6 for the ESD point location.
- See Rear Panel of an EX3200 Switch for the ESD point location.
- See Rear Panel of an EX4200 Switch for the ESD point location.

- See Front Panel of an EX4500 Switch for the ESD point location.
- See Chassis Physical Specifications of an EX8208 Switch for the ESD point location.
- See Chassis Physical Specifications of an EX8216 Switch for the ESD point location.

AC Power Electrical Safety Guidelines for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

CAUTION: For devices with AC power supplies, an external surge protective device (SPD) must be used at the AC power source.

The following electrical safety guidelines apply to AC-powered devices:

- Note the following warnings printed on the device:

  "**CAUTION:** THIS UNIT HAS MORE THAN ONE POWER SUPPLY CORD. DISCONNECT ALL POWER SUPPLY CORDS BEFORE SERVICING TO AVOID ELECTRIC SHOCK."

  "**ATTENTION:** CET APPAREIL COMPORTE PLUS D'UN CORDON D'ALIMENTATION. AFIN DE PRÉVENIR LES CHOCS ÉLECTRIQUES, DÉBRANCHER TOUT CORDON D'ALIMENTATION AVANT DE FAIRE LE DÉPANNAGE."
- AC-powered devices are shipped with a three-wire electrical cord with a grounding-type plug that fits only a grounding-type power outlet. Do not circumvent this safety feature. Equipment grounding must comply with local and national electrical codes.
- You must provide an external certified circuit breaker rated minimum 20 A in the building installation.
- The power cord serves as the main disconnecting device for the AC-powered device. The socket outlet must be near the AC-powered device and be easily accessible.
- For devices that have more than one power supply connection, you must ensure that all power connections are fully disconnected so that power to the device is completely removed to avoid electric shock. To disconnect power, unplug all power cords (one for each power supply).

Power Cable Warning (Japanese)

WARNING: The attached power cable is only for this product. Do not use the cable for another product.

注意

附属の電源コードセットはこの製品専用です。
他の電気機器には使用しないでください。

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- Multiple Power Supplies Disconnection Warning for EX Series Switches
- Connecting AC Power to an EX2200 Switch on page 73
- Connecting AC Power to an EX3200 Switch
- Connecting AC Power to an EX4200 Switch
- Connecting AC Power to an EX4500 Switch
- Connecting AC Power to an EX8200 Switch
- Connecting AC Power to an XRE200 External Routing Engine

AC Power Disconnection Warning for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

WARNING: Before working on the switch or near power supplies, unplug all the power cords from an AC switch.

Waarschuwing Voordat u aan een frame of in de nabijheid van voedingen werkt, dient u bij wisselstroom toestellen de stekker van het netsnoer uit het stopcontact te halen.

Varoitus Kytke irti vaihtovirtalaitteiden virtajohto, ennen kuin teet mitään asennuspohjalle tai työskentelet virtalähteiden läheisyydessä.

Attention Avant de travailler sur un châssis ou à proximité d'une alimentation électrique, débrancher le cordon d'alimentation des unités en courant alternatif.

Warnung Bevor Sie an einem Chassis oder in der Nähe von Netzgeräten arbeiten, ziehen Sie bei Wechselstromeinheiten das Netzkabel ab bzw.

Avvertenza Prima di lavorare su un telaio o intorno ad alimentatori, scollegare il cavo di alimentazione sulle unità CA.

Advarsel Før det utføres arbeid på kabinettet eller det arbeides i nærheten av strømforsyningsenheter, skal strømledningen trekkes ut på vekselstrømsenheter.

Aviso Antes de trabalhar num chassis, ou antes de trabalhar perto de unidades de fornecimento de energia, desligue o cabo de alimentação nas unidades de corrente alternada.

¡Atención! Antes de manipular el chasis de un equipo o trabajar cerca de una fuente de alimentación, desenchufar el cable de alimentación en los equipos de corriente alterna (CA).

Varning! Innan du arbetar med ett chassi eller nära strömförsörjningsenheter skall du för växelströmsenheter dra ur nätsladden.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- AC Power Electrical Safety Guidelines for EX Series Switches on page 144

TN Power Warning for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

WARNING: The device is designed to work with a TN power system.

Waarschuwing Het apparaat is ontworpen om te functioneren met TN energiesystemen.

Varoitus Koje on suunniteltu toimimaan TN-sähkövoimajärjestelmien yhteydessä.

Attention Ce dispositif a été conçu pour fonctionner avec des systèmes d'alimentation TN.

Warnung Das Gerät ist für die Verwendung mit TN-Stromsystemen ausgelegt.

Avvertenza Il dispositivo è stato progettato per l'uso con sistemi di alimentazione TN.

Advarsel Utstyret er utfomet til bruk med TN-strømsystemer.

Aviso O dispositivo foi criado para operar com sistemas de corrente TN.

¡Atención! El equipo está diseñado para trabajar con sistemas de alimentación tipo TN.

Varning! Enheten är konstruerad för användning tillsammans med elkraftssystem av TN-typ.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- Grounded Equipment Warning for EX Series Switches on page 134

- Multiple Power Supplies Disconnection Warning for EX Series Switches

In Case of Electrical Accident: Action to Take on an EX Series Switch

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

If an electrical accident results in an injury, take the following actions in this order:

1. Use caution. Be aware of potentially hazardous conditions that could cause further injury.
2. Disconnect power from the device.
3. If possible, send another person to get medical aid. Otherwise, assess the condition of the victim, then call for help.

Related Documentation

- General Safety Guidelines and Warnings for EX Series Switches on page 113
- General Electrical Safety Guidelines and Warnings for EX Series Switches on page 141
- AC Power Electrical Safety Guidelines for EX Series Switches on page 144
- DC Power Electrical Safety Guidelines for EX Series Switches

PART 8

Compliance Information

CHAPTER 19

Compliance Information

Agency Approvals for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

These hardware devices comply with the following standards:

- Safety
  - CAN/CSA-22.2 No. 60950–1–03/UL 60950–1. Safety of Information Technology Equipment
  - EN 60950–1:2001. Safety of Information Technology Equipment
  - EN 60825–1 Safety of Laser Products – Part 1: Equipment Classification, Requirements and User's Guide
- EMC
  - FCC 47CFR Part 15 Class A (USA)
  - EN 55022 Class A Emissions (Europe)
  - ICES-003 Class A
  - VCCI Class A (Japan)
  - AS/NZS CISPR 22 Class A (Australia/New Zealand)
  - CISPR 22 Class A
  - EN 55024
  - EN 300386
  - EN 61000-3-2 Power Line Harmonics

- EN 61000-3-3 Voltage Fluctuations and Flicker
- EN 61000-4-2 ESD
- EN 61000-4-3 Radiated Immunity
- EN 61000-4-4 EFT
- EN 61000-4-5 Surge
- EN 61000-4-6 Low Frequency Common Immunity
- EN 61000-4-11 Voltage Dips and Sags

Related Documentation

- Compliance Statements for EMC Requirements for EX Series Switches on page 152
- Compliance Statements for Acoustic Noise for EX Series Switches on page 154

Compliance Statements for EMC Requirements for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

This topic describes the EMC requirements for these hardware devices for:

Canada

This Class A digital apparatus complies with Canadian ICES-003.

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

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. Industry Canada does not guarantee the equipment will operate to the users' satisfaction.

Before installing this equipment, users should ensure that it is permissible to connect the equipment to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the inside wiring associated with a single line individual service may be extended by means of a certified connector assembly. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

CAUTION: Users should not attempt to make electrical ground connections by themselves, but should contact the appropriate inspection authority or an electrician, as appropriate.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

European Community

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

Japan

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

The preceding translates as follows:

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

VCCI-A

United States

The device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

FCC Part 15 Statement

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio

communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

Non-Regulatory Environmental Standards

NEBS compliance—These EX Series switch models are Network Equipment Building System (NEBS) compliant:

- EX2200-24T and EX2200-48T
- EX3200-24T, EX3200-48T, EX4200-24F, EX4200-24T, and EX4200-48T
- All EX8200 models

Those switch models meet the following NEBS compliance standards:

- SR-3580 NEBS Criteria Levels (Level 3 Compliance)
- GR-1089-CORE: EMC and Electrical Safety for Network Telecommunications Equipment
- GR-63-CORE: NEBS, Physical Protection
  - The equipment is suitable for installation as part of the Common Bonding Network (CBN).
  - The equipment is suitable for installation in locations where the National Electrical Code (NEC) applies.
  - The battery return connection is to be treated as an Isolated DC return (DC-I), as defined in GR-1089-CORE.

Related Documentation

- Agency Approvals for EX Series Switches on page 151
- Compliance Statements for Acoustic Noise for EX Series Switches on page 154

Compliance Statements for Acoustic Noise for EX Series Switches

This topic applies to hardware devices in the EX Series product family, which includes switches and the XRE200 External Routing Engine.

Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 70 dB(A) oder weniger gemäss EN ISO 7779

Translation:

The emitted sound pressure is below 70 dB(A) per EN ISO 7779.

Related Documentation

- Agency Approvals for EX Series Switches on page 151
- Compliance Statements for EMC Requirements for EX Series Switches on page 152

Declaration of Conformity for EX2200 Switches

Declaration of Conformity

CE

Juniper Networks, Inc.
1194 N. Mathilda Ave
Sunnyvale, CA 94089 USA

declares that under our sole responsibility the product series

EX2200

With model numbers:
EX2200-24T-4G EX2200-48T-4G
EX2200-24P-4G EX2200-48P-4G

is in conformity with the provisions of the following EC Directives, including all amendments, and with national legislation implementing these directives:

Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC

The following harmonized standards were applied:

EN 300 386 v1.4.1: **(2008-04)** Telecom Network Equipment - EMC requirements (Telco Center)
EN 55022 +A1 Class A: 2006 European Radiated Emissions
EN 55024 +A1+A2: 1998 Information Technology Equipment Immunity Characteristics
EN 60950-1: 2005 2nd Edition

This product carries the CE Mark, which was first affixed in 2010.

Place
Sunnyvale, CA

Signature

Date
2/18/2010

Kevin Kimma
Compliance Manager
1194 N. Mathilda Ave
Sunnyvale, CA 94089 USA

DoC: 10 EX2200-24T-24P-48T-48P

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Related Documentation

- Agency Approvals for EX Series Switches on page 151
- Compliance Statements for EMC Requirements for EX Series Switches on page 152
- Compliance Statements for Acoustic Noise for EX Series Switches on page 154