Dell PowerConnect J–Series J-EX8208 Ethernet Switch

Hardware Guide

DELL

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How to Use This Guide

This guide, the *Dell PowerConnect J-Series J-EX8208 Ethernet Switch Hardware Guide*, covers the Dell PowerConnect J-Series J-EX8208 switch.

To download the Dell PowerConnect J-EX Series documentation listed in Table 1 on page xiii, see the following Dell support website:

http://www.support.dell.com/manuals

Table 1: List of J-EX Series Guides

Title	Description
Dell PowerConnect J-Series J-EX4200 Ethernet Switch Hardware Guide	Component descriptions, site preparation, installation, replacement, and safety and compliance information for J-EX4200 switches
Dell PowerConnect J-Series J-EX8208 Ethernet Switch Hardware Guide	Component descriptions, site preparation, installation, replacement, and safety and compliance information for J-EX8208 switches
Dell PowerConnect J-Series J-EX8216 Ethernet Switch Hardware Guide	Component descriptions, site preparation, installation, replacement, and safety and compliance information for J-EX8216 switches
Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS	Software feature descriptions, configuration examples, and tasks for Juniper Networks Junos Operating System (Junos OS) for J-EX Series switches

To download additional Junos OS documentation for J-EX Series and all other PowerConnect J-Series products, see the following Juniper Networks support website: http://www.juniper.net/techpubs/ .

If the information in the latest release notes differs from the information in the documentation, follow the release notes.

Downloading Software

You can download Junos OS for J-EX Series switches from the Download Software area at http://www.support.dell.com/ . To download the software, you must have a Juniper Networks user account. For information about obtaining an account, see http://www.support.dell.com.

Documentation Conventions

Table 2: 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.

Table 3: 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* **>;**

Table 3: Text and Syntax Conventions *(continued)*

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**.

Repair and Warranty

> ⚠ CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

For more information, see "Getting Help" on page 187.

Requesting Technical Support

For technical support, see http://www.support.dell.com. For more information, see "Getting Help" on page 187.

Switch and Components Overview and Specifications

Dell PowerConnect J-Series J-EX8208 Switch Overview

J-EX8208 Switch Hardware Overview

Dell PowerConnect J-Series J-EX8208 Ethernet Switches provide high performance, scalable connectivity, and carrier-class reliability for high-density environments such as campus-aggregation and data-center networks. The J-EX8208 switch is a modular system that provides high availability and redundancy for all major hardware components, including Routing Engines, switch fabric, fan tray, and power supplies.

You can manage J-EX8208 switches using the same Junos OS interfaces that you use for other Junos OS platforms—the Junos OS command-line interface (CLI) and the J-Web graphical interface.

Software

The Dell PowerConnect J-EX Series Switches— PowerConnect J-Series J-EX4200 Ethernet Switches and PowerConnect J-Series J-EX8200 Ethernet Switches—run under Junos OS, which provides Layer 2 and Layer 3 switching, routing, and security services. The same Junos OS code base that runs on J-EX Series switches also runs on Dell PowerConnect J-SRX Series Services Gateways.

Chassis Physical Specifications

The J-EX8208 switch is 14 rack units (14 U) in size (1/3 rack); three J-EX8208 switches can fit in a standard 42 U rack. Each J-EX8208 switch is designed to optimize rack space and cabling. See Figure 1 on page 4.

Figure 1: J-EX8208 Switch
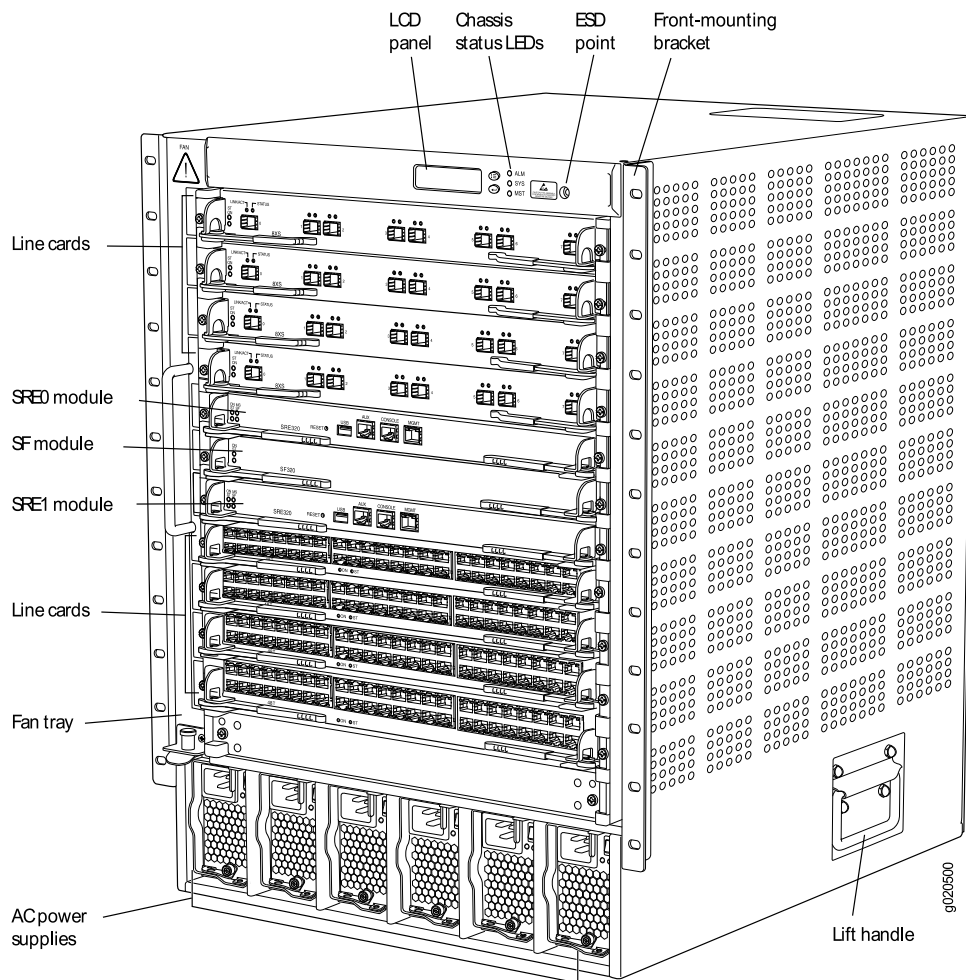
The J-EX8208 switch has a chassis-level LCD panel that displays Routing Engine and switch fabric status as well as chassis components' alarm information for rapid problem identification. The LCD panel provides a user-friendly interface for performing initial switch configuration, rolling back a configuration, or restoring the switch to its default settings. See "LCD Panel in a J-EX8200 Switch" on page 15.

The J-EX8208 chassis backplane distributes the data, control, and management signals to various system components along with distributing power throughout the system.

See "Chassis Physical Specifications of a J-EX8208 Switch" on page 7.

Routing Engines and Switch Fabric

Switching functionality, system management, and system control functions of a J-EX8208 switch are performed by the Switch Fabric and Routing Engine (SRE) module. See "Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch" on page 22. An SRE module contains a Routing Engine and switch fabric. The SRE modules are installed in the front of the chassis in the slots labeled SRE0 and SRE1. See "Slot Numbering for a J-EX8208 Switch" on page 11. A redundant configuration J-EX8208 switch has two SRE modules. See "J-EX8208 Switch Configurations" on page 6.

The Switch Fabric (SF) module, working with the SRE module, provides the necessary switching functionality to a J-EX8208 switch. The SF module is installed in the front of the chassis in the slot labeled SF. In a redundant configuration switch, the additional switch fabric in the module provides full 2+1 switch fabric redundancy to the switch. See "Switch Fabric (SF) Module in a J-EX8208 Switch" on page 25.

Line Cards

The J-EX8208 switch features eight horizontal line card slots and supports the line rate for each line card. The line cards in J-EX8200 switches combine a Packet Forwarding Engine and Ethernet interfaces on a single assembly. They are field-replaceable units (FRUs) that can be installed in the line card slots labeled 0 through 7 on the front of the switch chassis. See "Slot Numbering for a J-EX8208 Switch" on page 11. All line cards are hot-removable and hot-insertable.

The following line cards are available for J-EX8208 switches:

- 8-port 10-Gigabit Ethernet SFP+ line card: This line card has eight 10-gigabit SFP+ ports on its faceplate in which you can install SFP+ transceivers. See "8-port SFP+ Line Card in a J-EX8200 Switch" on page 27.

- 48-port 100/1000 SFP line card: This line card has 48 1-gigabit SFP ports on its faceplate in which you can install SFP transceivers. See "48-port SFP Line Card in a J-EX8200 Switch" on page 28.

- 48-port 10/100/1000 RJ-45 line card: This line card had 48 10/100/1000 Gigabit Ethernet ports with RJ-45 connectors on its faceplate. See "48-port RJ-45 Line Card in a J-EX8200 Switch" on page 29.

Cooling System

The cooling system in a J-EX8208 switch consists of a hot-removable and hot-insertable fan tray. The fan tray contains 12 fans. The fan tray installs vertically on the left front of the chassis and provides side-to-side chassis cooling. See "Cooling System and Airflow in a J-EX8208 Switch" on page 38.

Power Supplies

Power supplies for the J-EX8208 switch are fully redundant, load-sharing, and hot-removable and hot-insertable field-replaceable units (FRUs). Each J-EX8208 switch chassis can hold up to six 2000 W AC power supplies.

The 2000 W AC power supplies support both low-line (100–120 VAC) and high-line (200–240 VAC) AC power configurations on a J-EX8208 switch. Each 2000 W AC power supply delivers 2000 W of power at high line (200–240 VAC) or 1200 W at low line (100–120 VAC) to the J-EX8208 chassis.

The redundant AC configuration ships with six AC power supplies to provide the capacity to power the system using N+1 or N+N power redundancy.

Related Documentation
- Field-Replaceable Units in a J-EX8208 Switch on page 21
- Connecting and Configuring a J-EX Series Switch (CLI Procedure) on page 144
- Connecting and Configuring a J-EX Series Switch (J-Web Procedure) on page 146

J-EX8208 Switch Configurations

Table 4 on page 6 lists sample hardware configurations for a J-EX8208 switch— redundant AC and fully loaded chassis AC—and the components included in each configuration.

The switch is shipped in a redundant AC configuration.

Table 4: J-EX8208 Switch Hardware Configurations

Switch Configuration	Configuration Components
Redundant configuration (AC)	• Chassis with backplane • One fan tray • Two SRE modules • One SF module • Six 2000 W AC power supplies • Six power cords • Eight line card cover panels
Fully loaded chassis configuration (AC)	• Chassis with backplane • One fan tray • Two SRE modules • One SF module • Six 2000 W AC power supplies • Six power cords • Eight line cards

NOTE: You can install up to eight line cards (any combination of line cards) in the switch.

NOTE: Line cards are not part of the redundant configuration. You must order them separately.

> ✎ NOTE: If you want to purchase additional AC power supplies for your switch configuration, you must order them separately.

Related Documentation

- Chassis Physical Specifications of a J-EX8208 Switch on page 7
- Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch on page 22
- Switch Fabric (SF) Module in a J-EX8208 Switch on page 25
- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27
- 48-port SFP Line Card in a J-EX8200 Switch on page 28
- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29
- AC Power Supply in a J-EX8200 Switch on page 34
- Cooling System and Airflow in a J-EX8208 Switch on page 38
- Backplane in a J-EX8208 Switch on page 41

Chassis Physical Specifications of a J-EX8208 Switch

The J-EX8208 switch chassis is a rigid sheet-metal structure that houses the other switch components. Table 5 on page 7 summarizes the physical specifications of the J-EX8208 switch chassis. See Figure 2 on page 8.

Table 5: Physical Specifications of the J-EX8208 Switch Chassis

Description	Value
Chassis height	24.25 in. (61.6 cm)
Chassis width	• 17.25 in. (43.82 cm) • The outer edges of the front-mounting brackets extend the width to 19 in. (48.3 cm).
Chassis depth	• 20 in. (50.8 cm) • The depth from the front-mounting bracket to chassis rear is 20.69 in. (52.6 cm).
Weight	• Chassis with backplane: 89 lb (41 kg) • Redundant configuration: 187 lb (85 kg) • Fully loaded chassis: 284 lb (129 kg) See "J-EX8208 Switch Configurations" on page 6. NOTE: The fully loaded chassis weight includes the heaviest line cards in all eight slots. If your switch configuration has lighter line cards, the fully loaded chassis weight will be in the 268–284 lb (122–129 kg) range.

Figure 2: J-EX8208 Switch
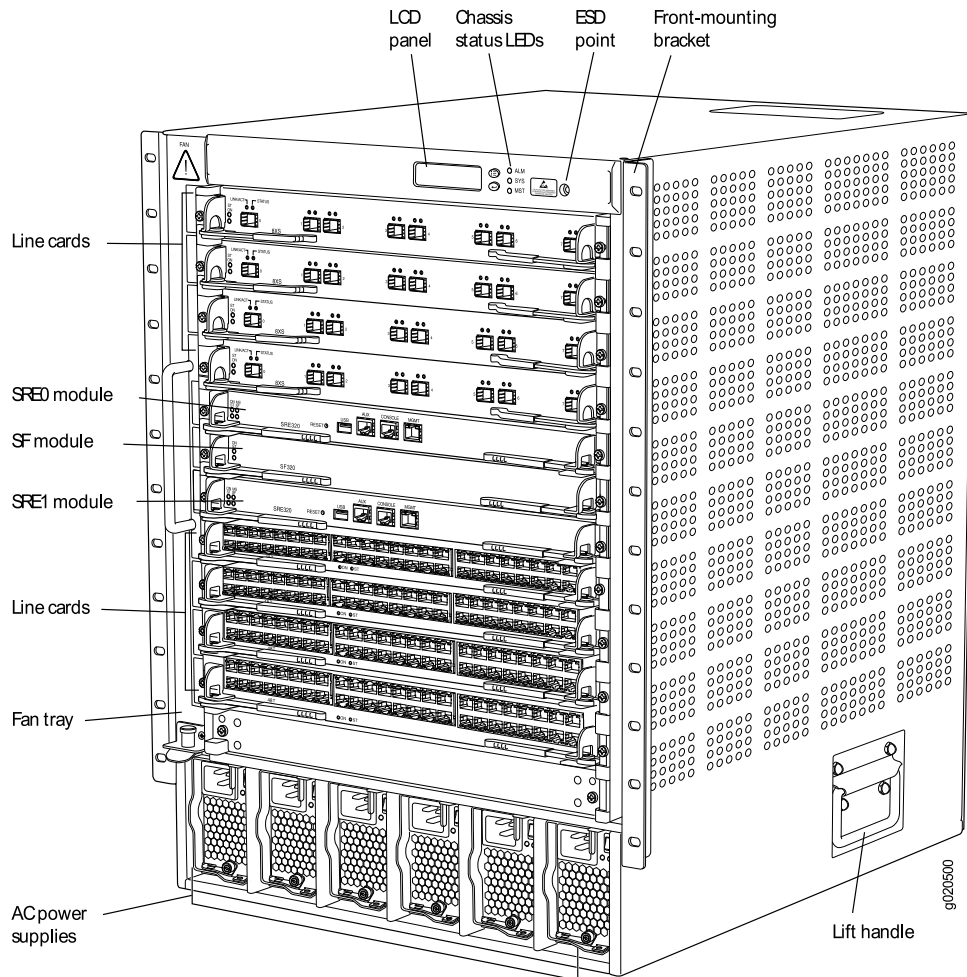
You can mount a J-EX8200 switch on a standard 19-in. four-post rack or a standard 800-mm enclosed cabinet. Up to three J-EX8208 switches can be installed in a standard (42 rack unit (U)) rack provided the rack can handle their combined weight.

Lift handles are provided on either side of the switch to facilitate the handling of a chassis with only the backplane installed.

> ⚠️ **WARNING:** Do not use the lift handles to lift the chassis unless the chassis is empty (that is, contains only the backplane). Failure to heed this warning can result in injury. See "Mounting a J-EX8208 Switch on a Rack or Cabinet Using a Mechanical Lift" on page 104 or "Mounting a J-EX8208 Switch on a Rack or Cabinet Without Using a Mechanical Lift" on page 107 for instructions for moving a loaded chassis.

Related Documentation
- Rack Requirements for a J-EX8208 Switch on page 63
- Cabinet Requirements and Specifications for a J-EX8208 Switch on page 66

- Mounting a J-EX8208 Switch on a Rack or Cabinet on page 101
- Installing and Removing J-EX8208 Switch Hardware Components on page 113

Understanding J-EX8208 Switch Component and Functionality Redundancy

The J-EX8208 Ethernet switch is available as a fully redundant system. A redundant J-EX8208 switch configuration is designed so that no single point of failure can cause the entire switch to fail. See "J-EX8208 Switch Configurations" on page 6.

This topic describes:

- Hardware Components That Provide Redundancy on page 9
- Routing Engine and Control Redundancy on page 10
- Switch Fabric Redundancy on page 10

Hardware Components That Provide Redundancy

The following hardware components provide redundancy to a J-EX8208 switch:

- SRE modules—A redundant J-EX8208 switch has two Switch Fabric and Routing Engine (SRE) modules. When two SRE modules are installed, one SRE module functions as the master and the other functions as the backup. If the master SRE module fails or is removed the backup module takes over as the master SRE module.

  When the SRE modules are configured for graceful switchover, the backup SRE module automatically synchronizes its configuration and state with those of the master SRE module. Any update to the master SRE module is replicated on the backup SRE module. If the backup module assumes mastership, packet forwarding continues through the switch.

- Power supplies—You can install up to six AC power supplies in a J-EX8208 switch. Each power supply connects to the backplane of the chassis, which distributes the output power produced by the power supplies to different switch components. (See "Backplane in a J-EX8208 Switch" on page 41.) Each power supply provides power to all the components in the switch.

  An N+1 power configuration is required for J-EX8200 Ethernet switches. In an N+1 power configuration, if one power supply fails or is removed, the remaining power supplies continue to supply power for the entire system without interruption. If dual power feed redundancy is required, the required power configuration is N+N. See "AC Power Supply in a J-EX8200 Switch" on page 34.

- Cooling system—The cooling system in a J-EX8200 switch consists of a single fan tray. The fan tray contains 12 fans. Under normal operating conditions, the fans in the fan tray run at less than full speed.

  The fans are controlled by two fan tray controllers. The fans are numbered 1 through 12. Fans 1 through 6 are controlled by the first fan tray controller. Fans 7 through 12 are controlled by the second fan tray controller. If one fan tray controller fails, the other fan tray controller keeps half the fans working. This allows the switch to continue to operate normally as long as the remaining fans cool the chassis sufficiently.

The fan tray continues to operate indefinitely and provides sufficient cooling even when a single fan fails provided the room temperature is within the operating range. See "Cooling System and Airflow in a J-EX8208 Switch" on page 38.

Routing Engine and Control Redundancy

Each SRE module contains switch fabric circuitry, Routing Engine circuitry, and switch control and management circuitry. A redundant J-EX8208 switch has two SRE modules: one functions as the master while the other functions as a backup and is in standby mode. This provides the switch with full redundancy (1+1) for Routing Engine and switch control functionality.

Table 6 on page 10 shows the available slots in the J-EX8208 chassis and the Routing Engine and control redundancy associated with different SRE module and Switch Fabric (SF) module combinations.

Table 6: Routing Engine and Control Redundancy for J-EX8208 Switches

Switch Configuration	Slot SRE0	Slot SRE1	Slot SF	Routing Engine and Control Redundancy
User-defined configuration	SRE module	SRE module	Empty	Yes
Redundant configuration	SRE module	SRE module	SF module	Yes

Switch Fabric Redundancy

The switch fabric circuitry in a J-EX8208 switch is distributed across three modules—two SRE modules and one SF module. Any two of these three modules must be installed and functional to provide a working switch fabric with no redundancy. The third module, when present, provides partial redundancy (2+1) for the switching functionality, such that if any one of the two functional modules becomes nonoperational, the third module takes over.

Table 7 on page 10 shows the available slots in a J-EX8208 chassis and the switch fabric redundancy associated with different SRE module and SF module combinations.

Table 7: Switch Fabric Redundancy for J-EX8208 Switches

Switch Configuration	Slot SRE0	Slot SRE1	Slot SF	Switch Fabric Redundancy
User-defined configuration	SRE module	SRE module	Empty	No
Redundant configuration	SRE module	SRE module	SF module	Yes

Related Documentation
- Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch on page 22
- Switch Fabric (SF) Module in a J-EX8208 Switch on page 25

Slot Numbering for a J-EX8208 Switch

A J-EX8208 chassis accepts eight line cards, two Switch Fabric and Routing Engine (SRE) modules, one Switch Fabric (SF) module, one fan tray, and six AC power supplies. All 11 slots for the line cards and the modules run horizontally across the front of the chassis. The fan tray slot runs vertically on the left of the chassis front. The six power supply slots run vertically across the front bottom of the chassis.

This topic describes:

- Slot Numbering for SRE and SF Module Slots and Line Card Slots on page 11
- Slot Numbering for the Power Supply Slots on page 13

Slot Numbering for SRE and SF Module Slots and Line Card Slots

Table 8 on page 11 lists the slot numbers on the J-EX8208 chassis and the components those slots accept.

Table 8: Slot Numbering for a J-EX8208 Switch

Slot Label	Components Accepted in Slot
0	Line card
1	Line card
2	Line card
3	Line card
SRE0	SRE module
SF	SF module
SRE1	SRE module
4	Line card
5	Line card
6	Line card
7	Line card

Figure 3 on page 12 shows the slot numbering, which is on the front left of the chassis.

Figure 3: Slot Numbering for a J-EX8208 Switch
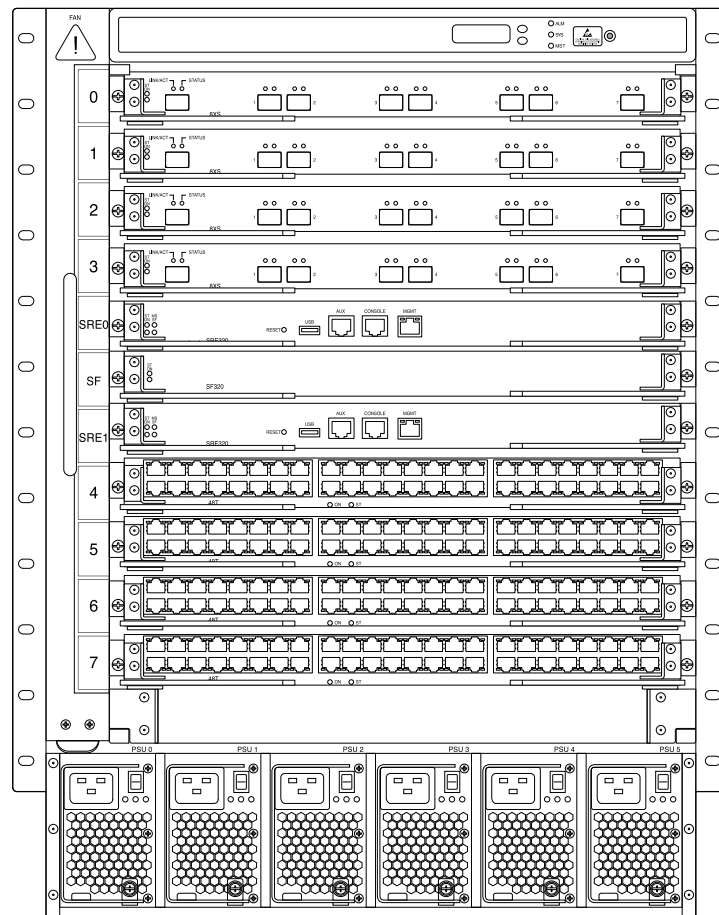
Slots 0 through 7 accept one of the line cards available. See "Installing a Line Card in a J-EX8200 Switch" on page 122.

Slots SRE0 and SRE1 accept only the SRE module. You can install one SRE module or two SRE modules based on the configuration of your switch. See "Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch" on page 22.

> ✎ NOTE: We recommend that you install two SRE modules for redundancy. If you install only one SRE module, we recommend that you install it in the slot SRE0. See "Installing an SRE Module in a J-EX8208 Switch" on page 118.

Slot SF accepts only the SF module. See "Switch Fabric (SF) Module in a J-EX8208 Switch" on page 25. A redundant J-EX8208 switch has one SF module. The SF module is keyed so that it does not fit in any other slot in the chassis. See "Installing an SF Module in a J-EX8208 Switch" on page 120.

Slot Numbering for the Power Supply Slots

The chassis has six vertical slots on its front bottom. You can install up to six power supplies in these slots, which are labeled PSU 0 through PSU 5 (from left to right). Table 9 on page 13 lists the slot numbers for the power supplies on a J-EX8208 switch. See "AC Power Supply in a J-EX8200 Switch" on page 34.

⚠️ **CAUTION:** Mixing different types of power supplies in the same chassis is not a supported configuration.

Table 9: Slot Numbering for Power Supply Slots on a J-EX8208 Switch Chassis Front

Slot Label	Components Accepted in Slot
PSU 0	Power supply
PSU 1	Power supply
PSU 2	Power supply
PSU 3	Power supply
PSU 4	Power supply
PSU 5	Power supply

Figure 4 on page 13 shows the slot numbering for the power supply slots in a J-EX8208 switch.

Figure 4: Slot Numbering for Power Supply Slots on a J-EX8208 Switch Chassis Front
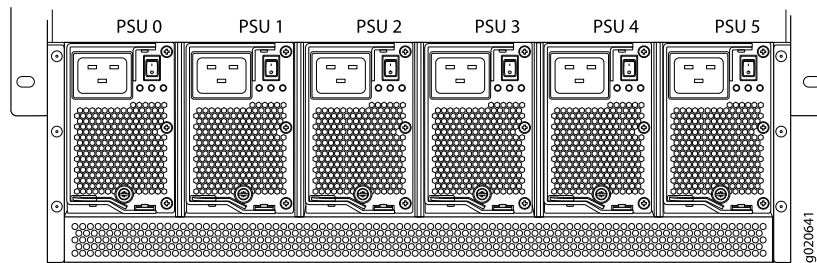
📝 **NOTE:** Power supplies can be installed in any slot. You do not have to install them in serial order. See "Installing an AC Power Supply in a J-EX8200 Switch" on page 114.

Related Documentation

- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27

Component Descriptions

LCD Panel in a J-EX8200 Switch

The LCD panel on the top front of the J-EX8200 switch chassis shows two lines of text with a maximum of 16 characters in each line. The LCD panel displays a variety of information about the switch and provides menu options to perform basic operations such as initial configuration and switch reboot.

There are two navigation buttons—**Menu** and **Enter**—to the right of the LCD panel.

See Figure 5 on page 16.

Figure 5: LCD Panel in a J-EX8200 Switch
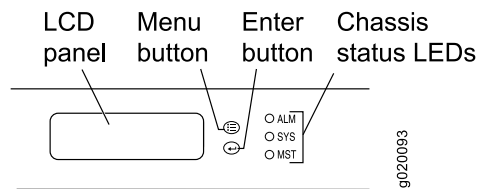
You can configure the second line of the LCD panel to display a custom message. If the LCD panel is configured to display a custom message, the **Menu** button and the **Enter** button are disabled. For instructions, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

The LCD panel has a backlight. If the LCD panel is idle for 60 seconds, the backlight turns off. You can turn on the backlight by pressing the **Menu** or **Enter** button once. After turning on the backlight, you can toggle between the LCD menus by pressing the **Menu** button and navigate through the menu options by pressing the **Enter** button.

> NOTE: The chassis viewer in the J-Web interface also displays the LCD panel. From the J-Web interface, you can view real-time status information in the LCD panel. For more information, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

This topic describes:

LCD Panel Modes

The LCD operates in four modes: boot, idle, status, and maintenance.

The LCD operates in boot mode during switch reboot.

The boot mode displays the key milestones in the switch boot process. The boot mode does not have any menu options. After the boot process is complete, the LCD automatically reverts to the Idle menu.

In the idle mode, line two of the Idle menu displays the network ports' Status LED modes and the total number of alarms in the system. The number of alarms is updated every second.

The status mode allows you to get status information for the following items:

- Switch fabric in Switch Fabric and Routing Engine (SRE) modules in J-EX8208 switches
- Power supplies
- Fan tray(s) and chassis temperature
- Junos OS version installed

The maintenance mode allows you to cycle through options for configuring and troubleshooting the switch:

- System halt

- Reboot system

- Load rescue configuration

- Revert to factory configuration

- EZSetup

LCD Panel Menus

The LCD has three menus: Idle, Status, and Maintenance. In each of these menus, line one of the LCD panel displays the hostname of the switch. Toggle between the LCD menus by pressing the **Menu** button. Navigate through the menu options by pressing the **Enter** button.

Table 10 on page 17 describes the LCD menu options.

Table 10: LCD Panel Menu Options for the J-EX8200 Switch

Menu	Description
Idle	In the Idle menu: • Press **Enter** to cycle through the Status LED modes, which are port status indicators: • ADM (enabled/disabled) • SPD (speed) • DPX (duplex) See "Network Port LEDs in a J-EX8200 Switch" on page 31 for information on the Status LED. • Press **Menu** to exit the Idle menu and go to the Status menu.

Table 10: LCD Panel Menu Options for the J-EX8200 Switch *(continued)*

Menu	Description

Status	The Status menu has the following options:
	
	• Switch fabric status—Choose one of the following:
	   • Press **Enter** to display the status of the switch fabric in the SRE modules (SRE0 and SRE1) in J-EX8208 switches: OK, Fld (failed), ABS (absent)
	   • Press **Menu** to go to the next option in the Status menu.
	
	• Power supply status (1)—Choose one of the following:
	   • Press **Enter** to display the status of power supplies 0 and 1: OK, Fld, ABS.
	   • Press **Menu** to go to the next option in the Status menu.
	
	• Power supply status (2)—Choose one of the following:
	   • Press **Enter** to display the status of power supplies 2, 3, 4, and 5: OK, Fld, ABS.
	   • Press **Menu** to go to the next option in the Status menu.
	
	• Environment status—Choose one of the following:
	   • Press **Enter** to display the status of the fan tray(s) and the chassis temperature:
	      • Fan tray(s) status: OK, Fld, ABS
	      • Chassis temperature status: OK, High, Shutdown
	   • Press **Menu** to go to the next option in the Status menu.
	
	• Junos OS version status—Choose one of the following:
	   • Press **Enter** to display the version of Junos OS for J-EX Series switches loaded on the switch.
	   • Press **Menu** to go to the next option in the Status menu.
	
	• EXIT STAT MENU?—Choose one of the following:
	   • Press **Enter** to exit the Status menu.
	   • Press **Menu** to return to the Switch fabric status option.
	
	If you do not want users to use Status menu options, disable the entire menu or individual menu options. For instructions, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

Table 10: LCD Panel Menu Options for the J-EX8200 Switch *(continued)*

Menu	Description
Maintenance	The Maintenance menu has the following options:

- SYSTEM HALT?—Choose one of the following:
  - Press **Enter** to halt the master SRE module in a J-EX8208 switch. Press **Enter** again to confirm the halt. In a redundant configuration, the backup SRE module takes over mastership when the master SRE module is halted. To completely halt the switch, use the **request system halt other-routing-engine** CLI command to halt the backup SRE module before halting the master SRE module. Press **Enter** on your management device or power cycle the switch to bring the switch back up.

    See "J-EX8208 Switch Configurations" on page 6 for information on configuration types.
  - Press **Menu** to go to the next option in the Maintenance menu.

- SYSTEM REBOOT?—Choose one of the following:
  - Press **Enter** to reboot the master SRE module. Press **Enter** again to confirm the reboot.
  - Press **Menu** to go to the next option in the Maintenance menu.

- LOAD RESCUE?—Choose one of the following:
  - Press **Enter** to roll back the switch to the previous valid configuration. Press **Enter** again to confirm the rollback.
  - Press **Menu** to go to the next option in the Maintenance menu.

- FACTORY DEFAULT?—Choose one of the following:
  - Press **Enter** to restore the switch to the factory default configuration. Press **Enter** again to confirm the restoration. The LCD flashes a success or failure message and returns to the Idle menu.
  - Press **Menu** to go to the next option in the Maintenance menu.

- ENTER EZSETUP?—Choose one of the following:
  - Press **Enter** to launch EZSetup. Press **Enter** again to confirm the launch. EZSetup configures DHCP and enables the J-Web user interface on the switch. The LCD flashes a success or failure message for approximately 10 seconds and returns to the Idle menu.
  - Press **Menu** to go to the next option in the Maintenance menu.

NOTE: You can use the EZSetup option only if the switch is in the factory default configuration.

- EXIT MAINT MENU?—Choose one of the following:
  - Press **Enter** to exit the Maintenance menu.
  - Press **Menu** to return to the SYSTEM HALT option.

If you do not want users to use Maintenance menu options, disable the entire menu or individual menu options. For instructions, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

You can view the information about the LCD panel in J-EX8200 switches by executing the command **show chassis hardware**. It shows the version, part number, serial number, and description of the LCD panel.

Related Documentation

- Chassis Status LEDs in a J-EX8200 Switch on page 20

- Field-Replaceable Units in a J-EX8208 Switch on page 21

- Connecting and Configuring a J-EX Series Switch (CLI Procedure) on page 144

- Connecting and Configuring a J-EX Series Switch (J-Web Procedure) on page 146

Chassis Status LEDs in a J-EX8200 Switch

The top front of the chassis of a J-EX8200 switch has three LEDs on the right side of the LCD panel.

See Figure 6 on page 20.

Figure 6: Chassis Status LEDs
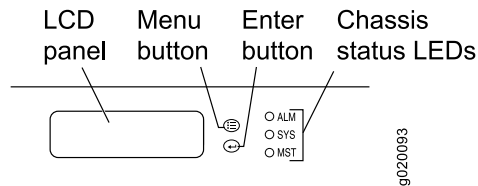
Table 11 on page 20 describes the chassis status LEDs in a J-EX8200 switch, their colors and states, and the status they indicate. You can view the colors of the three LEDs remotely through the CLI by issuing the operational mode command **show chassis lcd**.

Table 11: Chassis Status LEDs in a J-EX8200 Switch

LED Label (Description)	Color	State and Description
ALM (Alarm)	Unlit	No alarm.
	Red	Major alarm.
	Yellow	Minor alarm.
SYS (System)	Unlit	Switch is powered off.
	Yellow	One or more component failures are generating one or more alarms.
	Green	Switch is operating normally.
MST (Master)	Unlit	Switch is powered off.
	Green	Master Routing Engine is operational.

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

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

All three LEDs can be lit simultaneously.

Related Documentation

- LCD Panel in a J-EX8200 Switch on page 15

- For information about alarm types and severity levels on the switch, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

Field-Replaceable Units in a J-EX8208 Switch

Field-replaceable units (FRUs) are switch components that you can replace at your site. The switch uses these types of FRUs:

- Hot-insertable and hot-removable—You can remove and replace these components without powering off the switch or disrupting the switching function.

- Hot-pluggable—You can remove and replace these components without powering off the switch, but the switching function is interrupted until you replace the component.

Table 12 on page 21 lists the FRUs for the J-EX8208 switch and their types.

Table 12: FRUs in a J-EX8208 Switch

FRU	Type
Power supplies	Hot-insertable and hot-removable.
Fan tray	Hot-insertable and hot-removable.
Switch Fabric and Routing Engine (SRE) module	Redundant configuration: - Master SRE module is hot-pluggable. - Backup SRE module is hot-insertable and hot-removable.
Switch Fabric (SF) module	Redundant configuration: - SF module is hot-insertable and hot-removable.
8-port SFP+ line card 48-port SFP line card 48-port RJ-45 line card	Hot-insertable and hot-removable. We recommend that you take the line cards offline before removing them. See "Removing a Line Card from a J-EX8200 Switch" on page 170.
SFP and SFP+ transceivers	Hot-insertable and hot-removable.

NOTE: Line cards are not part of the redundant configuration. You must order them separately.

Related Documentation

- Installing and Removing J-EX8208 Switch Hardware Components on page 113

- Removing an SRE Module from a J-EX8208 Switch on page 167

- Removing an SF Module from a J-EX8208 Switch on page 169

- Removing a Line Card from a J-EX8200 Switch on page 170

- Removing an AC Power Supply from a J-EX8200 Switch on page 161

- Removing a Fan Tray from a J-EX8208 Switch on page 163

- Removing a Transceiver from a J-EX Series Switch on page 173

Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch

The Switch Fabric and Routing Engine (SRE) module performs switching and system management functions in a J-EX8208 switch. See Figure 7 on page 22.

A J-EX8208 switch has two SRE modules for Routing Engine and switch control redundancy. See "Understanding J-EX8208 Switch Component and Functionality Redundancy" on page 9.

The SRE modules install horizontally into the front of the chassis in slots labeled SRE0 and SRE1.

Figure 7: SRE Module in a J-EX8208 Switch
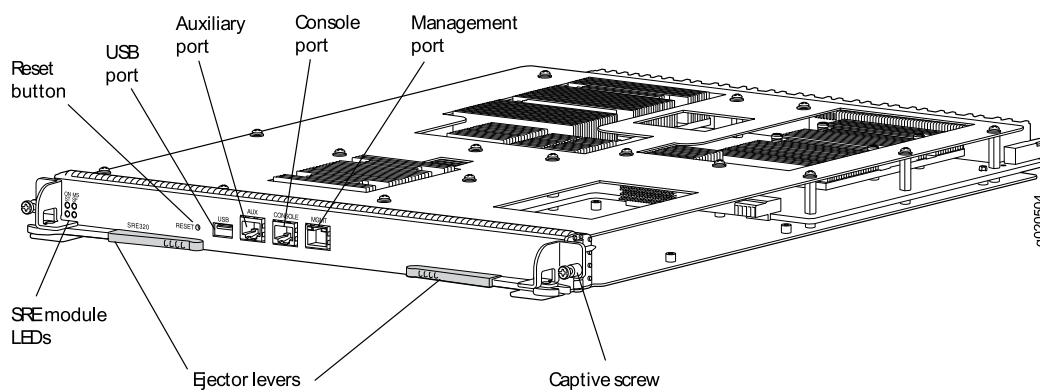
NOTE: We recommend that you install two SRE modules for redundancy. If you install only one SRE module, we recommend that you install it in slot SRE0. See "Slot Numbering for a J-EX8208 Switch" on page 11.

When two SRE modules are installed, one functions as the master and the other acts as the backup. If the master SRE module fails or is removed, the backup takes over as the master.

When two SRE modules are installed, the backup SRE module is hot-insertable and hot-removable, but the master SRE module is hot-pluggable. If only one SRE module is installed, you must halt the SRE module before removing it.

The SRE module provides these functions:

- Provides full fabric connectivity to all line cards installed in the chassis

- Through the switching plane, provides switching functionality to the switch

- Powers the line cards on and off

- Controls system resets and boot sequence for the switch

- Monitors and controls the fan speed, power status for various chassis components, LCD panel and chassis status LEDs

The SRE module has these components:

- SRE module LEDs—Indicate system status. See "SRE Module LEDs in a J-EX8208 Switch" on page 23.

- Recessed reset button—Power cycles the SRE module when pressed.

- USB port—Provides an interface through which you can install Junos OS manually. See "USB Port Specifications for a J-EX Series Switch" on page 43.

- Auxiliary port—This port is not enabled on the J-EX8200 switch. It is reserved for future use.

- Console port—Connects the SRE module to a system console through a cable with an RJ-45 connector. See "Connecting a J-EX Series Switch to a Management Console" on page 135.

- Management port—Connects the SRE module through an Ethernet connection to a management LAN (or any other device that plugs into an Ethernet connection) for out-of-band management. See "Connecting a J-EX Series Switch to a Network for Out-of-Band Management" on page 140.

- Ejector levers—Used for installing and removing the SRE module.

- Captive screws—Secure the SRE module in place.

Related Documentation
- Installing an SRE Module in a J-EX8208 Switch on page 118

- Removing an SRE Module from a J-EX8208 Switch on page 167

- Taking the SRE Module Offline in a J-EX8208 Switch on page 165

SRE Module LEDs in a J-EX8208 Switch

Each Switch Fabric and Routing Engine (SRE) module has four LEDs on the left side of the module's front panel. See Figure 8 on page 24. Table 13 on page 24 describes these LEDs, their colors and states, and the status they indicate.

Figure 8: SRE Module LEDs in a J-EX8208 Switch
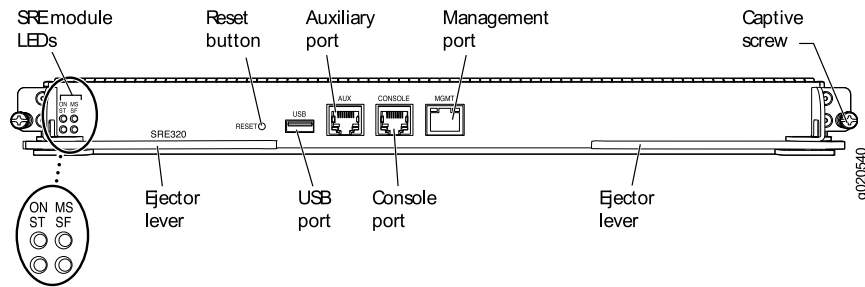
Table 13: SRE Module LEDs of a J-EX8208 Switch

LED Label (Description)	Color	State and Description
ON (Power On)	Green	SRE module is powered on.
	Unlit	SRE module is powered off.
ST (Status)	Green	• On steadily—SRE module is operating normally. • Blinking—SRE module is booting.
	Yellow	• On steadily—SRE module has failed.
	Unlit	SRE module is offline.
MS (Master)	Green	• On steadily—SRE module is the master. • Blinking—SRE module is in standby mode.
	Unlit	SRE module is powered off.
SF (Switch Fabric)	Green	• On steadily—Switch fabric in the SRE module is operating normally. • Blinking—Switch fabric in the SRE module is in standby mode.
	Yellow	Switch fabric in the SRE module has failed.
	Unlit	SRE module is powered off.

Related Documentation

- Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch on page 22
- Installing an SRE Module in a J-EX8208 Switch on page 118
- Removing an SRE Module from a J-EX8208 Switch on page 167
- Taking the SRE Module Offline in a J-EX8208 Switch on page 165

Management Port LEDs in J-EX8200 Switches

The management port on J-EX8200 switches has two LEDs that indicate link/activity and port status (see Figure 9 on page 25). The management port is set to full-duplex and the speed is set to 100 Mbps.

Figure 9: LEDs on the Management Port on a J-EX8200 Switch
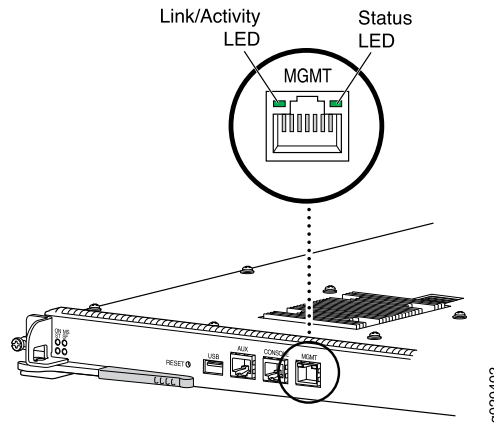
Table 14 on page 25 describes the Link/Activity LED.

Table 14: Link/Activity LED on the Management Port on J-EX8200 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.

Table 15 on page 25 describes the Status LED (administrative status).

Table 15: Status LED on the Management Port on J-EX8200 Switches

LED	Color	State and Description
Status	Green	• On steadily—Administrative status is enabled. • Off—Administrative status is disabled.

Related Documentation
- See Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch on page 22 for port location.
- Connecting a J-EX Series Switch to a Network for Out-of-Band Management on page 140

Switch Fabric (SF) Module in a J-EX8208 Switch

The Switch Fabric (SF) module provides switching functionality. See Figure 10 on page 26.

A redundant J-EX8208 switch has one SF module.

Figure 10: SF Module in a J-EX8208 Switch
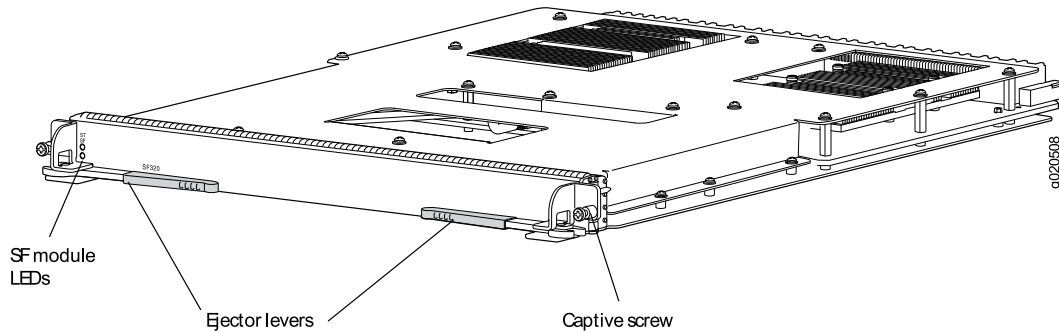
The SF module can be installed only in the slot labeled SF. The SF module is keyed so that it does not fit in the other slots in the chassis. See "Slot Numbering for a J-EX8208 Switch" on page 11.

In a redundant configuration, an SF module is used with two SRE modules to achieve full bandwidth along with Routing Engine and switch control redundancy and switch fabric redundancy. In a redundant configuration, the main function of the SF module is to provide a redundant switching plane for the switch. See "Understanding J-EX8208 Switch Component and Functionality Redundancy" on page 9.

In a redundant configuration, the SF module is hot-pluggable.

The SF module contains logic that determines which SRE module is the master. The master SRE module controls many internal functions of the SF module.

The SF module provides redundant data path connectivity for the switch in the redundant configuration.

The SF module has these components:

- SF module LEDs—Indicate system status. See "SF Module LEDs in a J-EX8208 Switch" on page 26.

- Ejector levers—Used for installing and removing the SF module.

- Captive screws—Secure the SF module in place.

Related Documentation

- Installing an SF Module in a J-EX8208 Switch on page 120

- Removing an SF Module from a J-EX8208 Switch on page 169

- Taking the SF Module Offline in a J-EX8208 Switch on page 168

SF Module LEDs in a J-EX8208 Switch

The Switch Fabric (SF) module has two LEDs on the left side of the module's front panel. See Figure 11 on page 27. Table 16 on page 27 describes these LEDs, their colors and states, and the status they indicate.

Figure 11: SF Module LEDs in a J-EX8208 Switch
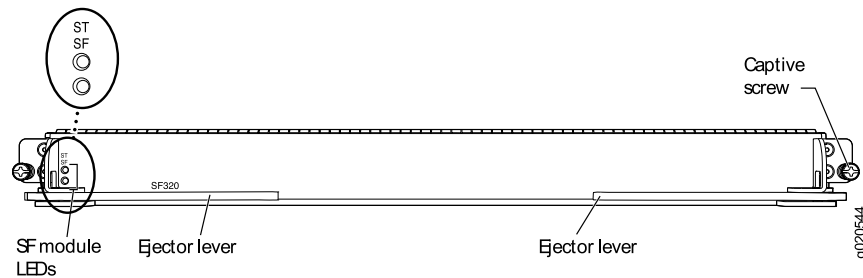
Table 16: SF Module LEDs of a J-EX8208 Switch

LED (Description)	Color	State and Description
ST (Status)	Green	• On steadily—SF module is operating normally. • Blinking—Waiting to be configured by the master Switch Fabric and Routing Engine (SRE) module.
	Yellow	SF module has failed.
	Unlit	SF module is offline.
SF (Switch Fabric)	Green	On steadily—Switch fabric in SF module is operating normally. Blinking—Switch fabric in SF module is offline.
	Yellow	On steadily—Switch fabric in SF module has failed.
	Unlit	SF module is powered off.

Related Documentation

- Installing an SF Module in a J-EX8208 Switch on page 120
- Removing an SF Module from a J-EX8208 Switch on page 169
- Taking the SF Module Offline in a J-EX8208 Switch on page 168

8-port SFP+ Line Card in a J-EX8200 Switch

The line cards in J-EX8200 switches combine a Packet Forwarding Engine and Ethernet interfaces on a single assembly. They are field-replaceable units (FRUs) that can be installed in the line card slots on the front of the switch chassis. The line cards are hot-insertable and hot-removable: You can remove and replace them without powering off the switch or disrupting switch functions.

J-EX8200 switches use the following types of line cards:

- 8-port SFP+ line card
- 48-port SFP line card
- 48-port RJ-45 line card

You can use any combination of line cards in a J-EX8200 switch.

The 8-port SFP+ line card for J-EX8200 switches (see Figure 12 on page 28) has eight 10-gigabit SFP+ ports on the faceplate in which you can install SFP+ transceivers. The line card is shipped with dust covers preinstalled in the ports. Each port has two LEDs. See "Network Port LEDs in a J-EX8200 Switch" on page 31.

Figure 12: 8-port SFP+ Line Card
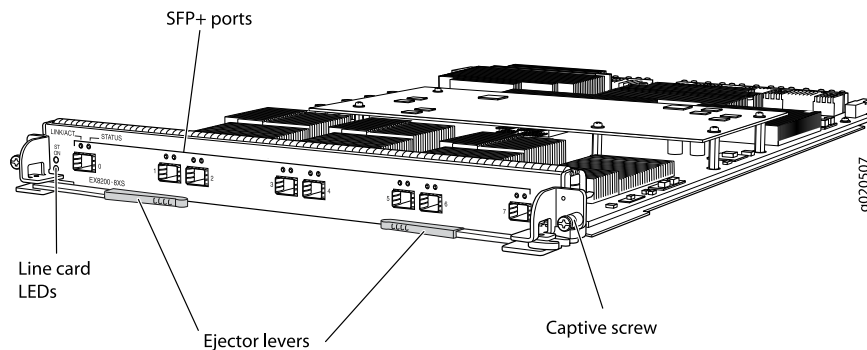
The line card has two status LEDs labeled ON and ST on the faceplate that indicate the online and status information for the line card. See "Line Card LEDs in a J-EX8200 Switch" on page 30.

Related Documentation

- 48-port SFP Line Card in a J-EX8200 Switch on page 28
- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29
- Optical Interface Support in J-EX8200 Switches on page 45
- Installing a Line Card in a J-EX8200 Switch on page 122
- Handling and Storing Line Cards in J-EX8200 Switches on page 179

48-port SFP Line Card in a J-EX8200 Switch

The line cards in J-EX8200 switches combine a Packet Forwarding Engine and Ethernet interfaces on a single assembly. They are field-replaceable units (FRUs) that can be installed in the line card slots on the front of the switch chassis. The line cards are hot-insertable and hot-removable: You can remove and replace them without powering off the switch or disrupting switch functions.

J-EX8200 switches use the following types of line cards:

- 8-port SFP+ line card
- 48-port SFP line card
- 48-port RJ-45 line card

You can use any combination of line cards in a J-EX8200 switch.

The 48-port SFP line card for J-EX8200 switches (see Figure 13 on page 29) has 48 1-gigabit SFP ports on the faceplate in which you can install SFP transceivers. The line

card is shipped with 48 dust covers (in the accessory bag). Each port has two LEDs. See "Network Port LEDs in a J-EX8200 Switch" on page 31.

Figure 13: 48-port SFP Line Card
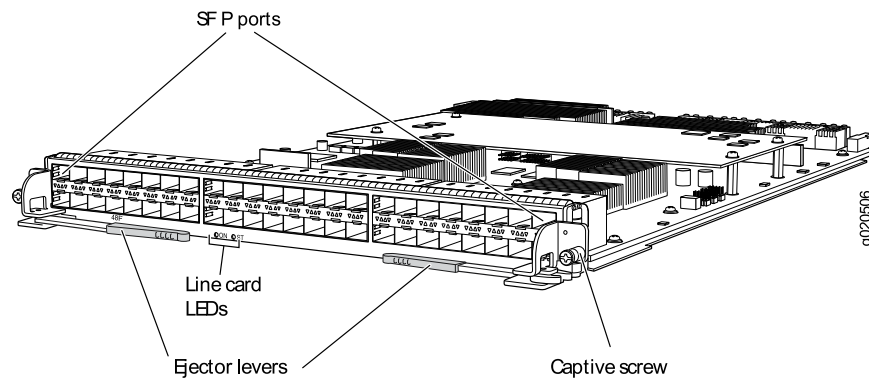
The line card has two status LEDs labeled ON and ST on the faceplate that indicate the online and status information for the line card. See "Line Card LEDs in a J-EX8200 Switch" on page 30.

Related Documentation

- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27
- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29
- Optical Interface Support in J-EX8200 Switches on page 45
- Installing a Line Card in a J-EX8200 Switch on page 122
- Handling and Storing Line Cards in J-EX8200 Switches on page 179

48-port RJ-45 Line Card in a J-EX8200 Switch

The line cards in J-EX8200 switches combine a Packet Forwarding Engine and Ethernet interfaces on a single assembly. They are field-replaceable units (FRUs) that can be installed in the line card slots on the front of the switch chassis. The line cards are hot-insertable and hot-removable: You can remove and replace them without powering off the switch or disrupting switch functions.

J-EX8200 switches use the following types of line cards:

- 8-port SFP+ line card
- 48-port SFP line card
- 48-port RJ-45 line card

You can use any combination of line cards in a J-EX8200 switch.

The 48-port RJ-45 line card for J-EX8200 switches (see Figure 14 on page 30) has 48 10/100/1000 Gigabit Ethernet ports with RJ-45 connectors on the faceplate. Each port has two LEDs. See "Network Port LEDs in a J-EX8200 Switch" on page 31.

Figure 14: 48-port RJ-45 Line Card
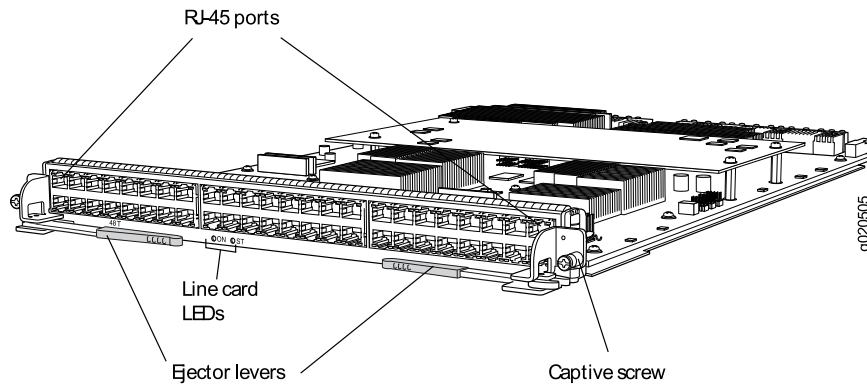
The line card has two status LEDs labeled ON and ST on the faceplate that indicate the online and status information for the line card. See "Line Card LEDs in a J-EX8200 Switch" on page 30.

Related Documentation

- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27

- 48-port SFP Line Card in a J-EX8200 Switch on page 28

- Installing a Line Card in a J-EX8200 Switch on page 122

- Handling and Storing Line Cards in J-EX8200 Switches on page 179

Line Card LEDs in a J-EX8200 Switch

The line cards in J-EX8200 switches have two status LEDs labeled ON and ST on the faceplate (see Figure 15 on page 30, Figure 16 on page 30, and Figure 17 on page 31) that indicate the online and status information of the line cards.

Figure 15: Status LEDs on 8-port SFP+ Line Card
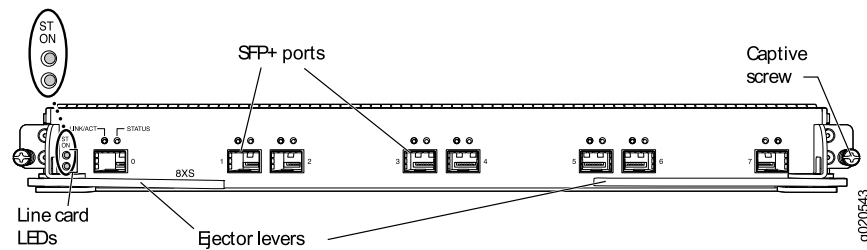
Figure 16: Status LEDs on 48-port SFP Line Card
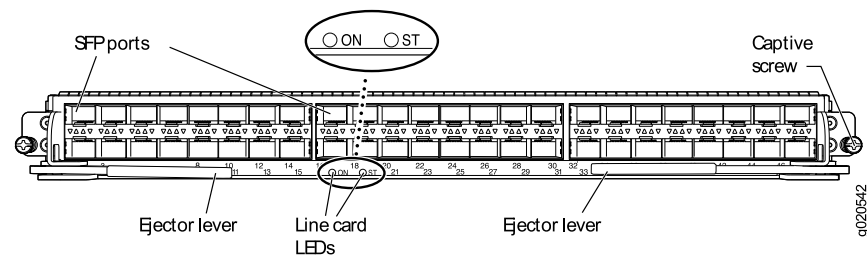
Figure 17: Status LEDs on 48-port RJ-45 Line Card
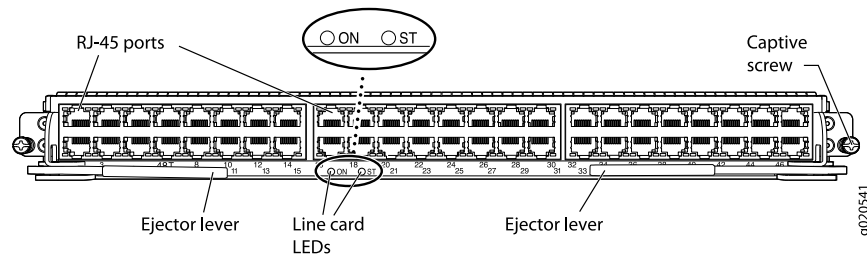
Table 17 on page 31 describes the status LEDs on line cards for the J-EX8200 switch, their colors and state, and the status they indicate.

Table 17: Status LEDs on Line Cards for J-EX8200 Switches

LED	Color	State and Description
ON	Green	The line card is enabled/online.
	Yellow	The line card is disabled/offline.
	Unlit	There is no power being supplied to the line card.
ST	Green	- On steadily—The line card is functioning normally. - Blinking—The line card is booting.
	Yellow	- On steadily—There is a line card failure or alarm. - Blinking—The line card is in diagnostic mode.
	Unlit	The line card is disabled/offline.

Related Documentation

- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27
- 48-port SFP Line Card in a J-EX8200 Switch on page 28
- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29
- Network Port LEDs in a J-EX8200 Switch on page 31

Network Port LEDs in a J-EX8200 Switch

Each network port on the faceplate of a line card in a J-EX8200 switch has two LEDs.

Figure 18 on page 32 shows the network port LEDs on an 8-port SFP+ line card.

Figure 18: Network Port LEDs on an 8-port SFP+ Line Card
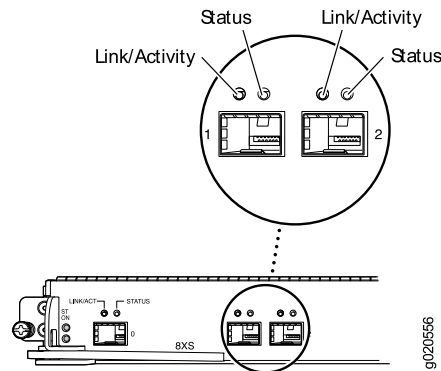
Figure 19 on page 32 shows the network port LEDs on a 48-port SFP line card. The LEDs point toward the port to which the LEDs belong.

Figure 19: Network Port LEDs on a 48-port SFP Line Card
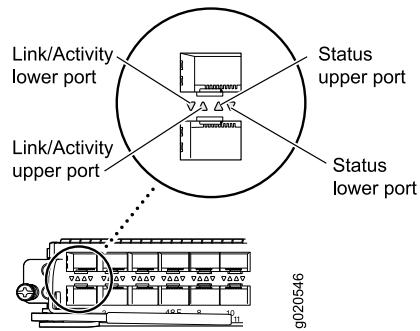
Figure 20 on page 32 shows the network port LEDs on a 48-port RJ-45 line card.

Figure 20: Network Port LEDs on a 48-port RJ-45 Line Card
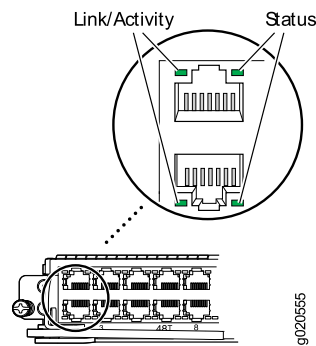
The LEDs labeled Link/Activity in Figure 18 on page 32, Figure 19 on page 32, and Figure 20 on page 32, indicate link activity.

Table 18 on page 33 describes the Link/Activity LED.

Table 18: Network Port LEDs on Line Cards in a J-EX8200 Switch—Link/Activity LED

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

The LEDs labeled Status in Figure 18 on page 32, Figure 19 on page 32, and Figure 20 on page 32 indicate the status of one of the three port parameters. The port parameters are administrative status, duplex mode, and speed.

Table 19 on page 33 describes the Status LED. From the Idle menu of the LCD, use the **Enter** button on the LCD panel to toggle between the ADM, DPX, and SPD indicators.

Table 19: Network Port LEDs on Line Cards in a J-EX8200 Switch—Status LED

LED	LCD Indicator	State, Color, and Description
Status	LED: ADM	Indicates the administrative status (enabled or disabled). The status indicators are: • Green—Administrative status enabled. • Unlit—Administrative status disabled.
	LED: DPX	Indicates the duplex mode. The status indicators are: • Green—Port is set to full-duplex mode. • Unlit—Port is not set to full-duplex mode.
	LED: SPD	Indicates the speed. The speed indicators are different in the line cards. The speed indicators for 8-port SFP+ line cards are: • Unlit—Less than 10 Gbps • Green—10 Gbps The speed indicators for 48-port SFP line cards are: • Unlit—Less than 1 Gbps • Green—1 Gbps The speed indicators for 48-port RJ-45 line cards are: • Unlit—10 Mbps • Green—Blinking—100 Mbps • Green—On steadily—1000 Mbps

Related Documentation

• 8-port SFP+ Line Card in a J-EX8200 Switch on page 27

• 48-port SFP Line Card in a J-EX8200 Switch on page 28

• 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29

- Line Card LEDs in a J-EX8200 Switch on page 30
- LCD Panel in a J-EX8200 Switch on page 15

AC Power Supply in a J-EX8200 Switch

This topic describes the AC power supplies in J-EX8200 switches:

- AC Power Supply Description on page 34
- N+1 Redundancy Configuration of AC Power Supplies on page 35
- N+N Redundancy Configuration of AC Power Supplies on page 36

AC Power Supply Description

The AC power supplies in J-EX8200 switches are hot-insertable and hot-removable field-replaceable units (FRUs).

You can install up to six AC power supplies in a J-EX8200 switch. Power supplies are installed at the bottom of the chassis in slots PSU 0 through PSU 5 (left to right). All power supplies are accessible from the front of the chassis.

⚠ WARNING: The switch is pluggable type A equipment installed in a restricted-access location. It has a separate protective earthing terminal provided on the chassis in addition to the grounding pin of the power supply cord. This separate protective earthing terminal must be permanently connected to earth ground.

Each AC power supply weighs approximately 7 lb (3.2 kg) and has an independent 16 A rated AC inlet on its front. Each inlet requires a dedicated AC power feed. Each AC power supply has an **Enable** switch, a fan, and three LEDs on the faceplate that indicate the status of the power supply. See Figure 21 on page 34.

Figure 21: AC Power Supply
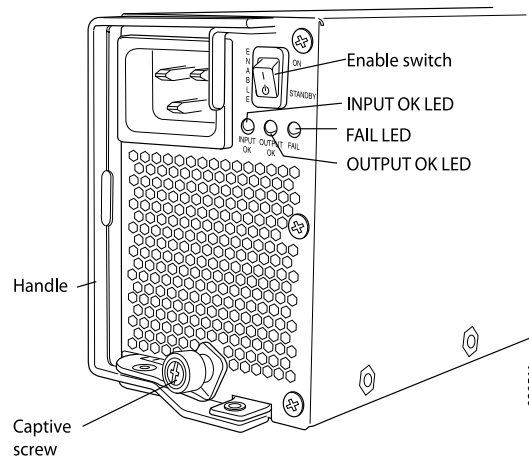
Each AC power supply comes with a power retainer that holds the power cord in place. See Figure 22 on page 35. The power retainer has a clip and an adjustment nut. The L-shaped ends of the clip hook into the bracket holes on each side of the AC appliance inlet on the faceplate. The adjustment nut holds the power cord in the correct position. For instructions for installing the power retainer, see "Connecting AC Power to a J-EX8200 Switch" on page 130.

Figure 22: Power Retainer for an AC Power Supply
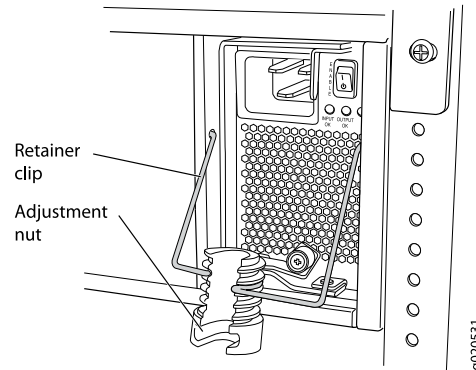
Each power supply connects to the backplane in a J-EX8208 switch . The backplane distributes the output power produced by the power supplies to different switch components. Each AC power supply provides power to all the components in the switch.

Each power supply has its own fan and is cooled by its own internal cooling system. The airflow is from the front of the power supply to the back. Hot air exhausts from the rear of the chassis.

A J-EX8208 switch supports 2000 W AC power supplies.

The 2000 W AC power supply supports both the low-line (100–120 VAC) and the high-line (200–240 VAC) AC power configurations. In both cases, the output is 52 VDC. The output power is 1200 W for low-line input and 2000 W for high-line input.

The 3000 W AC power supply supports only the high-line (200–240 VAC) AC power configuration. The output is 52 VDC. The output power is 3000 W for high-line input.

N+1 Redundancy Configuration of AC Power Supplies

N+1 redundancy configuration is required for normal operation of J-EX8200 switches. In an N+1 redundancy configuration, if one power supply fails or is removed, the remaining power supplies continue to supply power for the switch without interruption.

The number and type of line cards installed in the switch and the input voltage determine the number of power supplies needed (N) for a switch. You must then install an additional power supply to meet the required N+1 redundancy configuration.

Table 20 on page 36 lists the N+1 power requirements of J-EX8208 switch configurations that use 2000 W AC power supplies.

Table 20: N+1 Power Redundancy Configurations for Different J-EX8208 Switch Configurations Using 2000 W AC Power Supplies

Switch Configuration	Input Voltage	Power Supplies Needed (N)	Power Supplies Needed for N+1
No line cards installed	High line (200–240 VAC)	1	2
	Low line (100–120 VAC)	2	3
Fully loaded with 8-port SFP+ line cards	High line (200–240 VAC)	3	4
	Low line (100–120 VAC)	5	6

N+N Redundancy Configuration of AC Power Supplies

You can optionally configure your switch for N+N redundancy, in which N power supplies can be removed or fail and the remaining N power supplies continue to supply power for the switch without interruption. A common application for N+N redundancy is to have a dual power feed for AC power supplies.

When you configure power management for N+N redundancy, power management lowers the chassis maximum power consumption by lowering the maximum fan speed. It does so to compensate for the fact that because more power is held in reserve in an N+N configuration than in an N+1 configuration, less power would ordinarily be available to power line cards. By reducing the chassis maximum power consumption, power management allows the switch to power more line cards.

The number and type of line cards installed in the switch and the input voltage determine the number of power supplies needed (N) for the switch. You must then install additional power supplies to meet the N+N redundancy configuration.

Table 21 on page 36 lists the N+N power requirements of J-EX8208 switch configurations that use 2000 W AC power supplies.

Table 21: N+N Power Supply Requirements for J-EX8208 Switch Configurations Using 2000 W AC Power Supplies

Switch Configuration	Input Voltage	Power Supplies Needed (N)	Power Supplies Needed for N+N
No line cards installed	High line (200–240 VAC)	1	2
	Low line (100–120 VAC)	1	2
Fully loaded with 8-port SFP+ line cards	High line (200–240 VAC)	3	6
	Low line (100–120 VAC)	4	Not Supported

Related Documentation

- AC Power Specifications for J-EX8200 Switches on page 75

- AC Power Supply LEDs in a J-EX8200 Switch on page 37

- Calculating Power Requirements for a J-EX8208 Switch on page 79

- Installing an AC Power Supply in a J-EX8200 Switch on page 114

- Removing an AC Power Supply from a J-EX8200 Switch on page 161

AC Power Supply LEDs in a J-EX8200 Switch

An AC power supply has three LEDs on its faceplate. These LEDs display information about the status of the power supply. See Figure 23 on page 37.

Figure 23: AC Power Supply LEDs on a J-EX8200 Switch
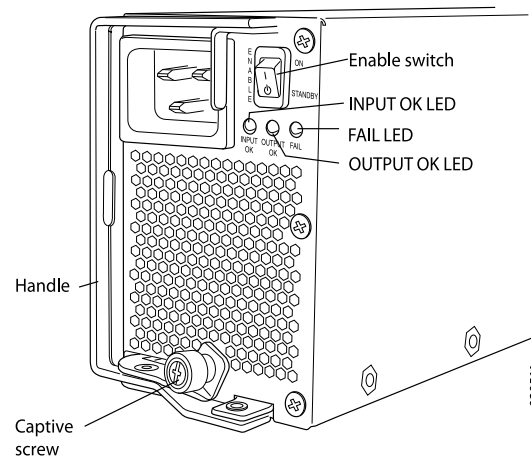
Table 22 on page 37 describes the LEDs on an AC power supply in a J-EX8200 switch.

Table 22: Power Supply LEDs on J-EX8200 Switches

LED	State	Description
INPUT OK	Unlit	Indicates one of the following: - Power supply is disconnected from AC power feed. - AC power input voltage is not within normal operating range. - No AC power input.
	Green	- AC power input voltage is high line (200–240 VAC).
	Yellow NOTE: This LED state applies only to 2000 W AC power supplies.	- AC power input voltage is low line (100–120 VAC).

Table 22: Power Supply LEDs on J-EX8200 Switches *(continued)*

LED	State	Description
OUTPUT OK	Unlit	Indicates one of the following: • DC output voltage is not within normal operating range. • Power supply is not supplying DC power correctly.
	Green	• DC power output is within normal operating range.
	Yellow	• Power supply has been disabled internally by the system.
FAIL	Unlit	• Power supply is functioning normally.
	Yellow	• On steadily—Power supply has failed. • Blinking—Demand for output power exceeds the supply.

NOTE: If the INPUT OK LED and the OUTPUT OK LED are unlit, the AC power cord is not installed properly or the power supply has failed.

If the INPUT OK LED is lit and the OUTPUT OK LED is unlit, the AC power supply is not installed properly or the power supply has an internal failure.

If the FAIL LED is lit, the power supply has failed and must be replaced. If the FAIL LED is blinking, add a power supply to balance the power demand and supply.

Related Documentation

- AC Power Specifications for J-EX8200 Switches on page 75

- Power Requirements for J-EX8208 Switch Components on page 76

- AC Power Cord Specifications for a J-EX8200 Switch on page 76

- Connecting AC Power to a J-EX8200 Switch on page 130

Cooling System and Airflow in a J-EX8208 Switch

The cooling system in a J-EX8208 switch consists of a single fan tray. The fan tray is a hot-insertable and hot-removable field-replaceable unit (FRU). The fan tray contains 12 fans.

The fan tray installs vertically on the left side on the front of the chassis and provides side-to-side chassis cooling. A handle on the front faceplate facilitates handling of the fan tray. See Figure 24 on page 39.

Figure 24: Fan Tray for a J-EX8208 Switch
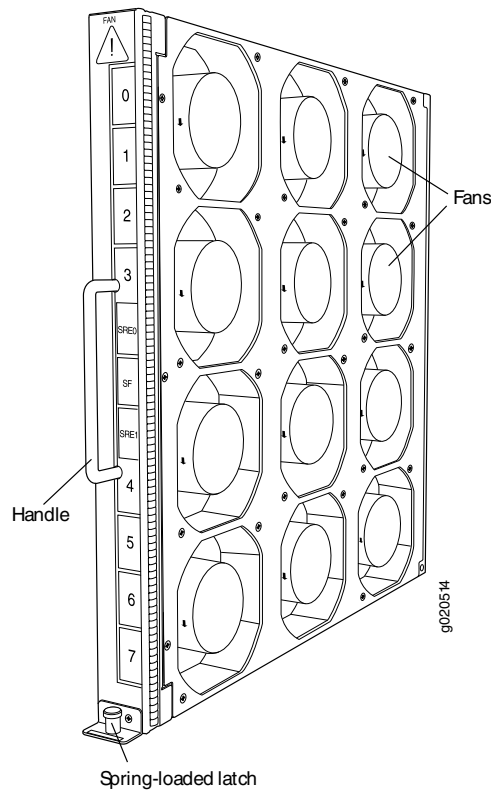
The fan tray can be removed and replaced from the front of the chassis. The switch continues to operate for a limited time (2 minutes) during the replacement of the fan tray without thermal shutdown.

⚠ CAUTION: You must replace the fan tray within 2 minutes of removing it.

The air intake to cool the chassis is located on the right side of the chassis. Air is pulled into the chassis and is pushed thorough the line card cage towards the fan tray. Hot air exhausts from the left side of the chassis. See Figure 25 on page 40.

Figure 25: Airflow Through the J-EX8208 Switch Chassis
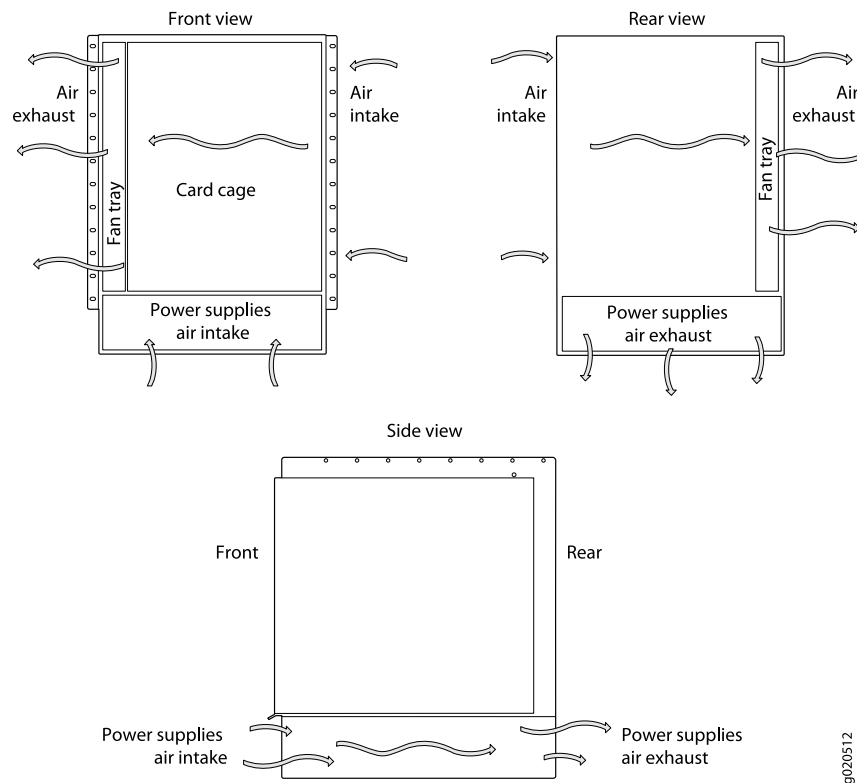
The Switch Fabric and Routing Engine (SRE) module monitors the temperature of switch components. Under normal operating conditions, the fans in the fan tray run at less than full speed. The fans are controlled by two fan tray controllers. The fans are numbered 1 through 12. Fans 1 through 6 are controlled by the first fan tray controller. Fans 7 through 12 are controlled by the second fan tray controller. If one fan tray controller fails, the other fan tray controller keeps half the fans working. This allows the switch to continue to operate normally as long as the remaining fans cool the chassis sufficiently.

If a fan fails or the ambient temperature rises above the threshold 113°F (45°C), the speed of the remaining fans is automatically adjusted to keep the temperature within the acceptable range, 32°F (0°C) through 104°F (40°C).

The fan tray continues to operate indefinitely and provide sufficient cooling even when a single fan fails provided the room temperature is within the operating range. You can check the status of fans and the chassis temperature from the Environment Status option in the Status menu on the LCD panel. See "LCD Panel in a J-EX8200 Switch" on page 15.

You cannot replace a single fan. If one or more fans fail, you must replace the entire fan tray.

⚠️ WARNING: There is no fan guard on the fans. Be careful to keep your fingers clear of moving fan blades when you are removing the fan tray.

Related Documentation
- Field-Replaceable Units in a J-EX8208 Switch on page 21
- Installing a Fan Tray in a J-EX8208 Switch on page 116
- Removing a Fan Tray from a J-EX8208 Switch on page 163

Backplane in a J-EX8208 Switch

The backplane is a printed circuit board that forms the back of the line card cage. The Switch Fabric and Routing Engine (SRE) modules, Switch Fabric (SF) module, power supplies, and line cards plug into the backplane from the front of the chassis. The backplane contains an EEPROM that stores the serial number and revision level of the backplane.

The backplane performs the following functions:

- Power distribution—The backplane distributes power to all the switch components from the power supplies that plug into it.
- Control-signal connectivity—The backplane transports the control signals exchanged by system components for monitoring, control, and management purposes.
- Transfer of data between line cards and SRE modules—The backplane provides connectivity for data traffic to and from the line cards and the SRE modules.

⚠️ WARNING: High levels of electrical energy are distributed across the switch backplane. Do not touch the backplane connectors, or any component connected to the backplane, with any metallic object while servicing components installed in the switch.

Related Documentation
- AC Power Supply in a J-EX8200 Switch on page 34

Component Specifications

USB Port Specifications for a J-EX Series Switch

The USB port on a J-EX Series switch accepts a USB flash drive. All USB flash drives used on the switches must have the following features:

- USB 2.0 or later.

- Formatted with a FAT or MS-DOS file system.

> ⚠️ CAUTION: The use of any USB memory product not supported for J-EX Series switches could expose your switch to unpredictable behavior. Dell can provide only limited support for issues related to unsupported hardware. We strongly recommend that you use only supported USB flash drives.

Related Documentation
- See Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch on page 22 for port location.

- For information about booting the switch from a software package installed on a USB flash drive, see the the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

Console Port Connector Pinout Information for a J-EX Series Switch

The console port on a J-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 23 on page 44 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 a J-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 23: J-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 Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch on page 22 for port location.

- Connecting a J-EX Series Switch to a Management Console on page 135

Management Port Connector Pinout Information for a J-EX8200 Switch

The management port on a J-EX8200 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 10/100/1000Base-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 J-EX8200 Switches" on page 25.

Table 24 on page 45 provides the pinout information of the RJ-45 connector. An RJ-45 cable, with a connector attached, is supplied with the switch.

Table 24: Management Port Connector Pinout Information for J-EX8200 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
4	TRP3+	Transmit/receive data pair 3
5	TRP3-	Transmit/receive data pair 3
6	TRP2-	Transmit/receive data pair 2
7	TRP4+	Transmit/receive data pair 4
8	TRP4-	Transmit/receive data pair 4

Related Documentation

- See Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch on page 22 for port location.

- Connecting a J-EX Series Switch to a Network for Out-of-Band Management on page 140

Optical Interface Support in J-EX8200 Switches

SFP+ ports in 8-port SFP+ line cards used in J-EX8200 switches support SFP+ transceivers. SFP ports in 48-port SFP line cards used in J-EX8200 switches support SFP transceivers. This topic describes the optical interfaces supported for transceivers used in the SFP and SFP+ line cards for J-EX8200 switches. It also lists the copper interface supported for the SFP transceivers.

> NOTE: Use only optical transceivers and optical connectors purchased from Dell for your J-EX Series switch.

The Gigabit Ethernet SFP and SFP+ transceivers installed in J-EX8200 switches support digital optical monitoring (DOM): you can view the diagnostic details for these transceivers by issuing the operational mode CLI command **show interfaces diagnostics**. The command does not give any output for copper transceivers, Fast Ethernet transceivers, or transceivers not purchased from Dell.

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

- Table 25 on page 46—Optical interface support for SFP+ transceivers in 8-port SFP+ line cards

Table 25: Optical Interface Support for SFP+ Transceivers in 8-port SFP+ Line Cards Used in J-EX8200 Switches

Ethernet Standard	Specifications					
10GBase-SR	Model Number	EX-SFP-10GE-SR				
	Rate	10 Gbps				
	Connector Type	LC				
	Transmitter Wavelength	850 nm				
	Minimum Launch Power	−7.3 dBm				
	Maximum Launch Power	−1 dBm				
	Minimum Receiver Sensitivity	−9.9 dBm				
	Maximum Input Power	−1 dBm				
	Fiber Type	MMF				
	Core/Cladding Size	62.5/125 µm	62.5/125 µm	50/125 µm	50/125 µm	50/125 µm
	Fiber Grade	FDDI	OM1	–	OM2	OM3
	Modal Bandwidth	160 MHz/km	200 MHz/km	400 MHz/km	500 MHz/km	1500 MHz/km
	Distance	26 m (85 ft)	33 m (108 ft)	66 m (216 ft)	82 m (269 ft)	300 m (984 ft)
	DOM Support	Available				
	Software required	Junos OS for J-EX Series switches				

Table 25: Optical Interface Support for SFP+ Transceivers in 8-port SFP+ Line Cards Used in J-EX8200 Switches *(continued)*

Ethernet Standard	Specifications			
10GBase-LRM	Model Number	EX-SFP-10GE-LRM		
	Rate	10 Gbps		
	Connector Type	LC		
	Fiber Count	Dual		
	Transmitter Wavelength	1310 nm		
	Minimum Launch Power	−6.5 dBm		
	Maximum Launch Power	0.5 dBm		
	Minimum Receiver Sensitivity	−21 dBm		
	Maximum Input Power	0.5 dBm		
	Fiber Type	MMF		
	Core/Cladding Size	62.5/125 µm	50/125 µm	50/125 µm
	Fiber Grade	FDDI/OM1	OM2	OM3
	Modal Bandwidth	500 MHz/km	500 MHz/km	500 MHz/km
	Distance	220 m (722 ft)	220 m (722 ft)	220 m (722 ft)
	DOM Support	Available		
	Software required	Junos OS for J-EX Series switches		

Table 25: Optical Interface Support for SFP+ Transceivers in 8-port SFP+ Line Cards Used in J-EX8200 Switches *(continued)*

Ethernet Standard	Specifications	
10GBase-LR	Model Number	EX-SFP-10GE-LR
	Rate	10 Gbps
	Connector Type	LC
	Transmitter Wavelength	1310 nm
	Minimum Launch Power	−8.2 dBm
	Maximum Launch Power	0.5 dBm
	Minimum Receiver Sensitivity	−18 dBm
	Maximum Input Power	0.5 dBm
	Fiber Type	SMF
	Core/Cladding Size	9/125 µm
	Modal Bandwidth	−
	Distance	10 km (6.2 miles)
	DOM Support	Available
	Software required	Junos OS for J-EX Series switches

Table 26: Optical Interface Support and Copper Interface Support for SFP Transceivers in 48-port SFP Line Cards Used in J-EX8200 Switches

Ethernet Standard	Specifications	
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	–
	Fiber Type	Copper
	Core Size	–
	Modal Bandwidth	–
	Distance	100 m (328 ft)
	DOM Support	Not available
	Software required	Junos OS for J-EX Series switches

Table 26: Optical Interface Support and Copper Interface Support for SFP Transceivers in 48-port SFP Line Cards Used in J-EX8200 Switches *(continued)*

Ethernet Standard	Specifications				
1000Base-SX	Model Number	EX-SFP-1GE-SX			
	Rate	1000 Mbps			
	Connector Type	LC			
	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 Size	62.5 μm	62.5 μm	50 μm	50 μm
	Modal Bandwidth	160 MHz/km	200 MHz/km	400 MHz/km	500 MHz/km
	Distance	220 m (721 ft)	275 m (902 ft)	500 m (1640 ft)	550 m (1804 ft)
	DOM Support	Available			
	Software required	Junos OS for J-EX Series switches			

Table 26: Optical Interface Support and Copper Interface Support for SFP Transceivers in 48-port SFP Line Cards Used in J-EX8200 Switches *(continued)*

Ethernet Standard	Specifications	
100Base-FX	Model Number	EX-SFP-1FE-FX
	Rate	100 Mbps
	Connector Type	LC
	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 Size	62.5 μm
	Modal Bandwidth	−
	Distance	2 km (1.2 miles)
	DOM Support	Not available
	Software required	Junos OS for J-EX Series switches

Table 26: Optical Interface Support and Copper Interface Support for SFP Transceivers in 48-port SFP Line Cards Used in J-EX8200 Switches *(continued)*

Ethernet Standard	Specifications	
1000Base-LX	Model Number	EX-SFP-1GE-LX
	Rate	1000 Mbps
	Connector Type	LC
	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 Size	9 µm
	Modal Bandwidth	−
	Distance	10 km (6.2 miles)
	DOM Support	Available
	Software required	Junos OS for J-EX Series switches

Table 26: Optical Interface Support and Copper Interface Support for SFP Transceivers in 48-port SFP Line Cards Used in J-EX8200 Switches *(continued)*

Ethernet Standard	Specifications	
1000Base-LH (also called 1000Base-ZX)	Model Number	EX-SFP-1GE-LH
	Rate	1000 Mbps
	Connector Type	LC
	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 Size	10 µm
	Modal Bandwidth	−
	Distance	70 km (43.5 miles)
	DOM Support	Available
	Software required	Junos OS for J-EX Series switches

Related Documentation

- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27
- 48-port SFP Line Card in a J-EX8200 Switch on page 28
- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29
- For **show interfaces diagnostics optics** command syntax, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.
- Installing a Transceiver in a J-EX Series Switch on page 125
- Removing a Transceiver from a J-EX Series Switch on page 173

Grounding Cable and Lug Specifications for J-EX8200 Switches

For installations that require a separate grounding conductor to the chassis, the switch must be adequately grounded before power is connected to ensure proper operation and to meet safety and electromagnetic interference (EMI) requirements. To ground a

J-EX8200 switch, connect a grounding cable to earth ground and then attach it to the chassis grounding points.

⚠ CAUTION: For installations that require a separate grounding conductor to the chassis, use the protective earthing terminal on the J-EX8200 switch chassis to connect to earth ground. Before switch installation begins, a licensed electrician must attach a cable lug to the grounding cables that you supply. See "Connecting Earth Ground to a J-EX Series Switch" on page 129. A cable with an incorrectly attached lug can damage the switch.

A pair of threaded inserts (PEM nuts) is provided on the right side towards the top rear corner of the J-EX8208 chassis for connecting the switch to earth ground. The grounding points fit UNC ¼–20 screws. The grounding points are spaced at 0.625 in. (15.86 mm).

✎ NOTE: Grounding is provided to an AC-powered switch when you plug its power supplies into grounded AC power receptacles.

Figure 26 on page 54 shows the cable lug that attaches to the grounding cable in a J-EX8208 switch.

Figure 26: Grounding Cable Lug For a J-EX8208 Switch
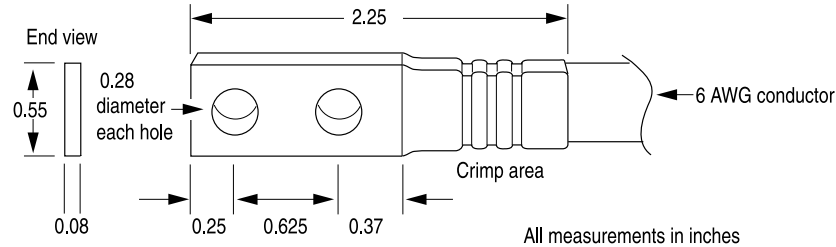
The grounding cable that you provide for a J-EX8208 switch must be 6 AWG (13.3 mm^2), minimum 60ºC wire, or as permitted by the local code.

⚠ WARNING: The switch is pluggable type A equipment installed in a restricted-access location. It has a separate protective earthing terminal provided on the chassis in addition to the grounding pin of the power supply cord. This separate protective earthing terminal must be permanently connected to earth ground for installations that require a separate grounding conductor to the chassis.

Related Documentation

- AC Power Supply in a J-EX8200 Switch on page 34

- Connecting AC Power to a J-EX8200 Switch on page 130

Planning for Switch Installation

Site Preparation

- Site Preparation Checklist for a J-EX8200 Switch on page 57
- General Site Guidelines for J-EX Series Switches on page 58
- Site Electrical Wiring Guidelines for J-EX Series Switches on page 59
- Environmental Requirements and Specifications for J-EX Series Switches on page 60

Site Preparation Checklist for a J-EX8200 Switch

The checklist in Table 27 on page 57 summarizes the tasks you need to perform to prepare a site for installing a J-EX8200 switch.

Table 27: 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 J-EX Series Switches" on page 60		
Power			
Measure distance between external power sources and switch installation site.			
Calculate the power consumption and requirements.	"AC Power Specifications for J-EX8200 Switches" on page 75		
	"Power Requirements for J-EX8208 Switch Components" on page 76		
	"Calculating Power Requirements for a J-EX8208 Switch" on page 79		
	"Calculating the J-EX8200 Switch Fiber-Optic Cable Power Budget" on page 84		
	"Calculating the J-EX8200 Switch Fiber-Optic Cable Power Margin" on page 85		

Table 27: Site Preparation Checklist *(continued)*

Item or Task	For More Information	Performed By	Date
Rack or Cabinet			
Select the type of rack or cabinet and verify that it meets the minimum requirements for the installation of the switch.	"Rack Requirements for a J-EX8208 Switch" on page 63 "Cabinet Requirements and Specifications for a J-EX8208 Switch" on page 66		
Plan rack or cabinet location, ensuring the required space clearances.	"Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch" on page 67		
Secure the rack or cabinet to the floor and building structure.	"Rack Requirements for a J-EX8208 Switch" on page 63 "Cabinet Requirements and Specifications for a J-EX8208 Switch" on page 66		
Cables			
Plan the cable routing and management. Acquire cables and connectors: • Determine the number of cables needed based on your planned configuration. • Ensure that the distance between hardware components to be connected allows for cable lengths to be within the specified maximum limits.			

Related Documentation

- General Safety Guidelines and Warnings for J-EX Series Switches on page 207
- Mounting a J-EX8208 Switch on a Rack or Cabinet on page 101

General Site Guidelines for J-EX Series Switches

Efficient switch 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 J-EX Series switch 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 J-EX Series Switches on page 236

- Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch on page 67

- Environmental Requirements and Specifications for J-EX Series Switches on page 60

Site Electrical Wiring Guidelines for J-EX Series Switches

Table 28 on page 59 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 28: 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.

Table 28: Site Electrical Wiring Guidelines *(continued)*

Site Wiring Factor	Guidelines
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 J-EX Series Switches on page 207
- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235
- Prevention of Electrostatic Discharge Damage on J-EX Series Switches on page 236
- AC Power Supply in a J-EX8200 Switch on page 34

Environmental Requirements and Specifications for J-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 29 on page 60 provides the required environmental conditions for normal switch operation.

Table 29: J-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%, noncondensing
Temperature	Normal operation ensured in temperature range of 32º F through 104º F (0º C through 40º C)

Table 29: J-EX Series Switch Environmental Tolerances *(continued)*

Description	Tolerance
Seismic	Complies with Zone 4 earthquake requirements as per GR-63, Issue 3.

> NOTE: Install J-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 a J-EX8208 Switch on page 67

Rack and Cabinet Requirements

- Rack Requirements for a J-EX8208 Switch on page 63
- Cabinet Requirements and Specifications for a J-EX8208 Switch on page 66
- Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch on page 67

Rack Requirements for a J-EX8208 Switch

You can mount J-EX8208 switches on four-post racks or two-post racks. See Figure 27 on page 65 and Figure 28 on page 65.

Rack requirements consist of:

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

Table 30 on page 64 summarizes rack requirements and specifications for J-EX8208 switches.

Figure 27 on page 65 shows four-post rack installation. Figure 28 on page 65 shows two-post rack installation.

> NOTE: To manage airflow in a hot-aisle-cold-aisle data center setup, you might want to use the customized rack solution for J-EX8200 switches offered by Chatsworth Products, Inc.

Table 30: Rack Requirements and Specifications for a J-EX8208 Switch

Rack Requirement	Guidelines
Rack type and mounting bracket hole spacing	Use a four-post rack or a two-post rack. You can mount the switch on any four-post or two-post rack that provides bracket holes or hole patterns spaced at 1 U (1.75 in./4.44 cm) increments and that meets the size and strength requirements specified in this table. 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). You can stack three J-EX8208 switches in a four-post rack that has at least 42 U; if you install the optional power cord tray, a minimum of 45 U are required. You can stack three J-EX8208 switches in a two-post rack that has 45 U (installing the power cord tray is mandatory for two-post rack installations). In all cases, the rack must meet the strength requirements to support the weight.

Rack size and strength	• Ensure that the rack is 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 is one of the following standard lengths:
	  • 23.62 in. (600 mm)
	  • 30.0 in. (762 mm)
	  • 21.5 in. (546 mm)
	 • Ensure that the rack rails are spaced widely enough to accommodate the J-EX8208 switch chassis' external dimensions of 24.25 in. (61.6 cm) height, 17.25 in. (43.815 cm) width, 20 in. (50.8 cm) depth. The outer edges of the front-mounting brackets extend the width to 19 in. (48.3 cm).
	 • The J-EX8208 switch chassis height of 24.25 in. (61.6 cm) is approximately 14 U. If you install the power cord tray (optional for four-post rack installations, mandatory for two-post rack installations), the chassis and power cord tray consume 15 U.
	 • The rack must be strong enough to support the weight of the fully configured switch. A fully configured J-EX8208 switch weighs up to 284 lb (130 kg). If you stack three fully configured J-EX8208 switches in one rack, that rack must support up to 852 lb (487 kg).
	 • Ensure that the spacing of rails and adjacent racks allows for the proper clearance around the switch and rack as specified in "Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch" on page 67.

Rack connection to the 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.

Figure 27: Installing a J-EX8208 Switch in a Four-Post Rack
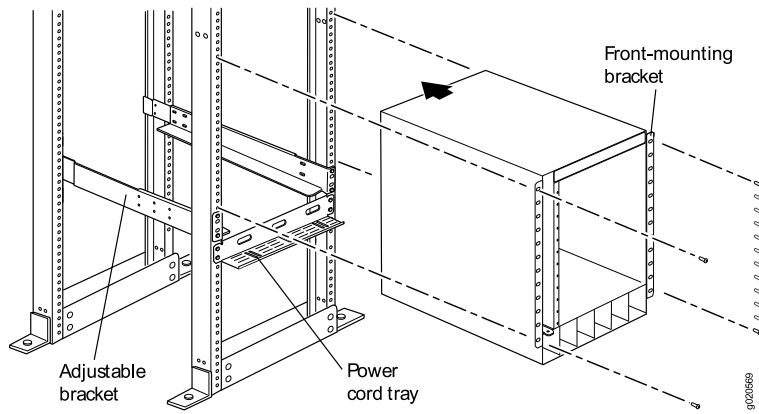
Figure 28: Installing a J-EX8208 Switch in a Two-Post Rack
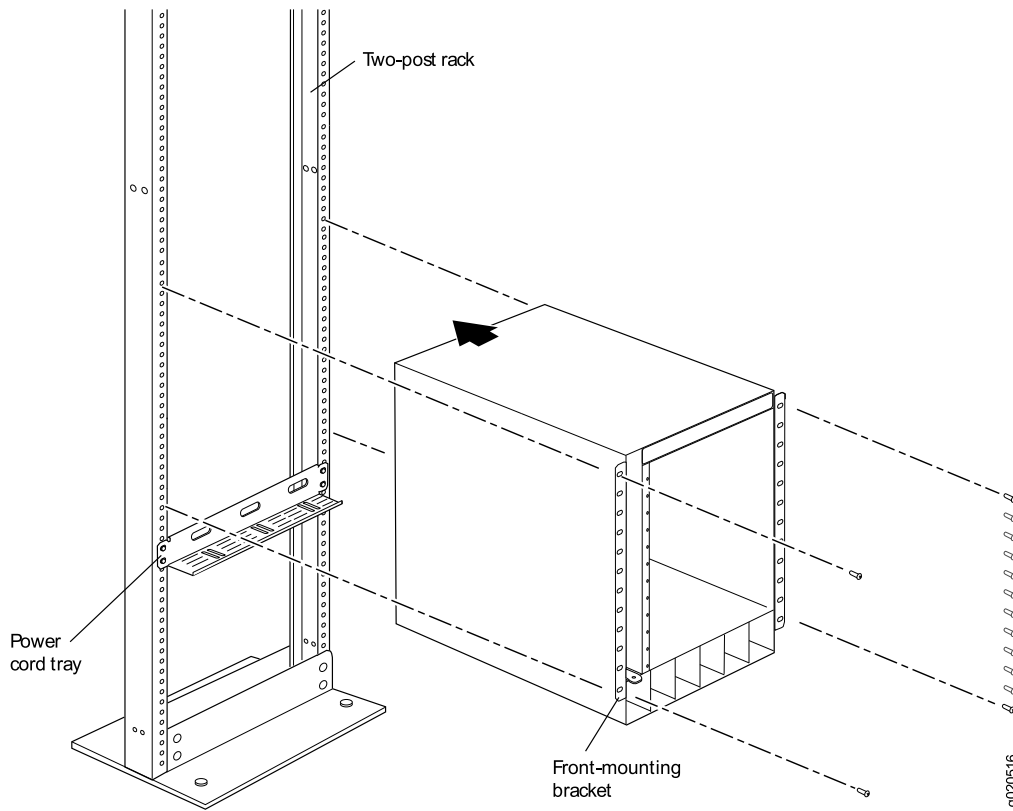
Related Documentation

- Rack-Mounting and Cabinet-Mounting Warnings for J-EX Series Switches on page 221

- Cabinet Requirements and Specifications for a J-EX8208 Switch on page 66

- Chassis Physical Specifications of a J-EX8208 Switch on page 7

Cabinet Requirements and Specifications for a J-EX8208 Switch

You can mount a J-EX8208 switch on 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).

Cabinet requirements consist of:

- Cabinet size and clearance

- Cabinet airflow requirements

Table 31 on page 66 summarizes cabinet requirements and specifications for J-EX8208 switches.

Table 31: Cabinet Requirements and Specifications for a J-EX8208 Switch

Cabinet Requirement	Guidelines for the J-EX8208 Switch
Cabinet size and clearance	• The minimum cabinet size for accommodating a J-EX8208 switch is 23.62 in. (60 cm) wide and 30.0 in. (76.2 cm) deep. Large cabinets improve airflow and reduce the chance of overheating. To accommodate a single J-EX8208 switch in a four-post rack, the cabinet must be at least 14 U high (or 15 U if you install the power cord tray, which is optional for the four-post rack). To accommodate a single J-EX8208 switch in a two-post rack, the cabinet must be at least 15 U high.
	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).
	• With adequate cooling air and airflow clearance, you can stack three J-EX8208 switches in a cabinet with a four-post rack that has at least 42 U of usable vertical space. (45 U are required if you install the optional power cord tray.) You can stack three J-EX8208 switches in a cabinet with a two-post rack that has at least 45 U of usable vertical space (for two-post rack installations, installing the power cord tray is mandatory). In all cases, the rack must meet the strength requirements to support the weight.
	• The minimum total clearance inside the cabinet is 29.2 in. (74.17 cm) between the inside of the front door and the inside of the rear door.

Table 31: Cabinet Requirements and Specifications for a J-EX8208 Switch *(continued)*

Cabinet Requirement	Guidelines for the J-EX8208 Switch
Cabinet airflow requirements	When you mount the switch on a cabinet, ensure that ventilation through the cabinet is sufficient to prevent overheating. Consider the following requirements list when planning for chassis cooling: • Ensure that the cool air supply you provide through the cabinet adequately dissipates 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. For an illustration of chassis airflow, see "Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch" on page 67. • The switch fans exhaust hot air through the right side of the chassis (the left side when you face the front of the chassis, where the fan tray slides in). Install the switch in the cabinet in a way that maximizes the open space on the fan tray side of the chassis. 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 racks allows for the proper clearance around the switch and rack as specified in "Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch" on page 67.

Related Documentation

- Rack-Mounting and Cabinet-Mounting Warnings for J-EX Series Switches on page 221
- Rack Requirements for a J-EX8208 Switch on page 63
- Chassis Physical Specifications of a J-EX8208 Switch on page 7

Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch

When planning the site for installing a J-EX8208 switch, you must allow sufficient clearance around the switch.

> NOTE: To manage airflow in a hot-aisle--cold-aisle data center setup, you might want to use the customized rack solution for J-EX8200 switches offered by Chatsworth Products, Inc.

- Allow at least 6 in. (15.2 cm) of clearance on each side of the chassis. For the cooling system to function properly, the airflow around the chassis must be unrestricted. See Figure 29 on page 68.

Figure 29: Airflow Through the J-EX8208 Switch Chassis
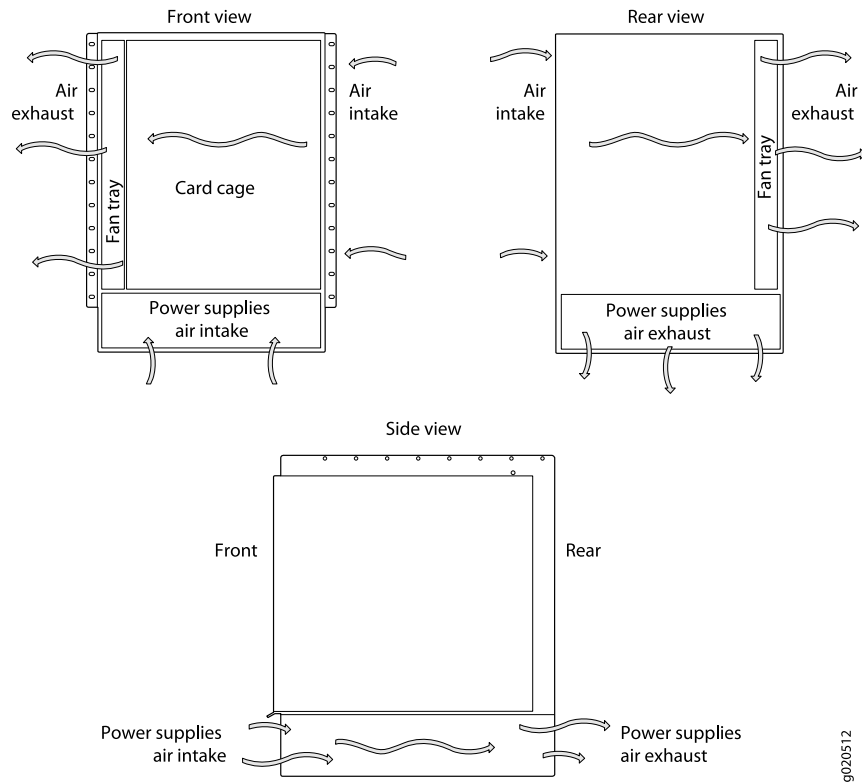
- If you are mounting the switch on a rack or cabinet along with other equipment, ensure that the exhaust from other equipment does not blow into the intake vents of the chassis.

- Leave at least 24 in. (61 cm) both in front of and behind the switch. Allow at least 6 in. (15.2 cm) of clearance on each side of the chassis. Leave adequate space at the front of the switch for service personnel to remove and install hardware components. 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. See Figure 30 on page 69.

Figure 30: Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch Chassis
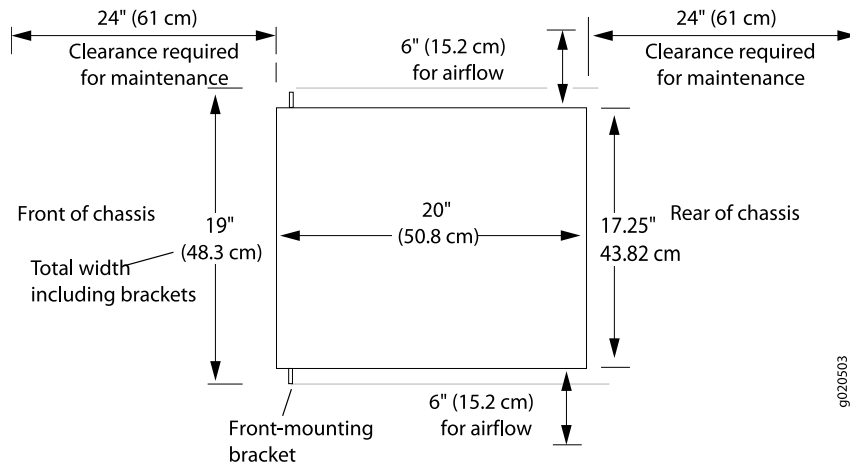
Cable Requirements

- Cables Connecting the J-EX8200 Switch to Management Devices on page 71
- Understanding J-EX8200 Switch Fiber-Optic Cable Signal Loss, Attenuation, and Dispersion on page 72

Cables Connecting the J-EX8200 Switch to Management Devices

Table 32 on page 71 lists the specifications for the cables that connect the Switch Fabric and Routing Engine (SRE) module in the switch to a management device.

Table 32: Cable Specifications for Switch-to-Management-Device Connections

Port on SRE Module	Cable Specification	Cable/Wire Supplied	Maximum Length	Switch Receptacle
Console (CON) port (9600 baud)	RS-232 (EIA-232) serial cable	One 6-foot (1.83-meter) length with RJ-45/DB-9 connectors	6 feet (1.83 meters)	RJ-45
Management (MGMT) Ethernet port (10/100/1000)	Category 5 cable or equivalent suitable for 1000Base-T operation	One 15-foot (4.57-meter) length with RJ-45 connectors	328 feet (100 meters)	RJ-45 autosensing

Related Documentation

- Connecting a J-EX Series Switch to a Management Console on page 135
- Connecting a J-EX Series Switch to a Network for Out-of-Band Management on page 140

Understanding J-EX8200 Switch Fiber-Optic Cable Signal Loss, Attenuation, and Dispersion

To determine the power budget and power margin needed for fiber-optic connections, you need to understand how signal loss, attenuation, and dispersion affect transmission. J-EX8200 Ethernet Switches use various types of network cable, including multimode and single-mode fiber-optic cable.

- Signal Loss in Multimode and Single-Mode Fiber-Optic Cable on page 72
- Attenuation and Dispersion in Fiber-Optic Cable on page 72

Signal Loss in Multimode and Single-Mode Fiber-Optic Cable

Multimode fiber is large enough in diameter to allow rays of light to reflect internally (bounce off the walls of the fiber). Interfaces with multimode optics typically use LEDs as light sources. However, LEDs are not coherent light sources. They spray varying wavelengths of light into the multimode fiber, which reflects the light at different angles. Light rays travel in jagged lines through a multimode fiber, causing signal dispersion. When light traveling in the fiber core radiates into the fiber cladding (layers of lower refractive index material in close contact with a core material of higher refractive index), higher-order mode loss (HOL) occurs. Together, these factors reduce the transmission distance of multimode fiber compared to that of single-mode fiber.

Single-mode fiber is so small in diameter that rays of light reflect internally through one layer only. Interfaces with single-mode optics use lasers as light sources. Lasers generate a single wavelength of light, which travels in a straight line through the single-mode fiber. Compared to multimode fiber, single-mode fiber has a higher bandwidth and can carry signals for longer distances. It is consequently more expensive.

For information about the maximum transmission distance and supported wavelength range for the types of single-mode and multimode fiber-optic cables that are connected to line cards on the J-EX8200 switches, see "Optical Interface Support in J-EX8200 Switches" on page 45. Exceeding the maximum transmission distances can result in significant signal loss, which causes unreliable transmission.

Attenuation and Dispersion in Fiber-Optic Cable

An optical data link functions correctly provided that modulated light reaching the receiver has enough power to be demodulated correctly. *Attenuation* is the reduction in strength of the light signal during transmission. Passive media components such as cables, cable splices, and connectors cause attenuation. Although attenuation is significantly lower for optical fiber than for other media, it still occurs in both multimode and single-mode transmission. An efficient optical data link must transmit enough light to overcome attenuation.

Dispersion is the spreading of the signal over time. The following two types of dispersion can affect signal transmission through an optical data link:

- Chromatic dispersion, which is the spreading of the signal over time caused by the different speeds of light rays.

- Modal dispersion, which is the spreading of the signal over time caused by the different propagation modes in the fiber.

For multimode transmission, modal dispersion, rather than chromatic dispersion or attenuation, usually limits the maximum bit rate and link length. For single-mode transmission, modal dispersion is not a factor. However, at higher bit rates and over longer distances, chromatic dispersion limits the maximum link length.

An efficient optical data link must have enough light to exceed the minimum power that the receiver requires to operate within its specifications. In addition, the total dispersion must be within the limits specified for the type of link in Telcordia Technologies document GR-253-CORE (Section 4.3) and International Telecommunications Union (ITU) document G.957.

When chromatic dispersion is at the maximum allowed, its effect can be considered as a power penalty in the power budget. The optical power budget must allow for the sum of component attenuation, power penalties (including those from dispersion), and a safety margin for unexpected losses.

Related Documentation

- Calculating the J-EX8200 Switch Fiber-Optic Cable Power Budget on page 84

- Calculating the J-EX8200 Switch Fiber-Optic Cable Power Margin on page 85

- Optical Interface Support in J-EX8200 Switches on page 45

Planning Power Requirements

- AC Power Specifications for J-EX8200 Switches on page 75
- Power Requirements for J-EX8208 Switch Components on page 76
- AC Power Cord Specifications for a J-EX8200 Switch on page 76
- Calculating Power Requirements for a J-EX8208 Switch on page 79
- Calculating the J-EX8200 Switch Fiber-Optic Cable Power Budget on page 84
- Calculating the J-EX8200 Switch Fiber-Optic Cable Power Margin on page 85

AC Power Specifications for J-EX8200 Switches

Table 33 on page 75 lists the AC power specifications for a 2000 W power supply used in J-EX8200 switches.

Table 33: Power Specifications for a 2000 W AC Power Supply in a J-EX8200 Switch

Item	Specifications
AC input voltage	Operating range: - Low line—100–120 VAC - High line—200–240 VAC
AC input line frequency	50–60 Hz
AC input current rating	- Low line—13.8 A - High line—12 A
AC output power	- Low line—1200 W - High line—2000 W

Related Documentation
- AC Power Supply in a J-EX8200 Switch on page 34
- AC Power Supply LEDs in a J-EX8200 Switch on page 37
- AC Power Cord Specifications for a J-EX8200 Switch on page 76

Power Requirements for J-EX8208 Switch Components

Table 34 on page 76 lists the power requirements for different hardware components of a J-EX8208 switch under typical voltage conditions.

Table 34: J-EX8208 Switch Component Power Requirements

Components	Power Requirements (Watts)
Fan tray	• 300 W (at normal fan speed) • 1100 W (at maximum fan speed)
Switch Fabric and Routing Engine (SRE) module	200 W
Switch Fabric (SF) module	100 W
8-port SFP+ line card (including optical transceivers)	450 W
48-port SFP line card (including optical transceivers)	330 W
48-port RJ-45 line card	350 W

Related Documentation

- AC Power Supply in a J-EX8200 Switch on page 34
- Calculating Power Requirements for a J-EX8208 Switch on page 79

AC Power Cord Specifications for a J-EX8200 Switch

Each AC power supply has a single AC appliance inlet located on the power supply that requires a dedicated AC power feed. Sites can distribute power through a main conduit that leads to frame-mounted power distribution panels, one of which can be located at the top of the rack that houses the switch.

> NOTE: A jumper cable for each power supply was shipped with your switch. If your site uses a power distribution unit (PDU) to distribute power to the rack that houses the switch, you do not have to purchase AC power cords.

If your site does not use a PDU, you need an AC power cord for your geographical location to connect each power supply on the switch to the power distribution panel. Detachable AC power cords for the switch are separately orderable as a field-replaceable unit (FRU) item.

Each detachable AC power cord is 2.5 meters (approximately 8 feet) long. The appliance coupler at the female end of the cord inserts into the AC appliance inlet on the faceplate of the AC power supply. The coupler type is C19 as described by the 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.

> 📝 NOTE: In North America, AC power cords must not exceed 4.5 meters (approximately 15 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 separately orderable as FRUs are in compliance.

Table 35 on page 77 lists the AC power cord specifications for a J-EX8200 switch for the countries and regions listed in the table.

Table 35: AC Power Cord Specifications for a J-EX8200 Switch

Country/Region	Electrical Specifications	Plug Standards
Argentina	250 VAC, 16 A, 50 Hz	RA/3/20, IRAM 2073
Australia	250 VAC, 15 A, 50 Hz	AS/NZS 3112
Brazil	250 VAC, 16 A, 60 Hz	BR/3/20, NBR 14136:2002
China	250 VAC, 16 A, 50 Hz	GB 1002
Europe (except Italy, Switzerland, and United Kingdom)	250 VAC, 16 A, 50 Hz	CEE (7) VII
India	250 VAC, 16 A, 50 Hz or 60 Hz	ZA/3, SABS 164/1:1992
Israel	250 VAC, 16 A, 50 Hz	IL/3, SI 32/1971
Italy	250 VAC, 16 A, 50 Hz	CEI 23-16
Japan	250 VAC, 16 A, 50 Hz	NEMA 6–20 NEMA L6–20
North America	250 VAC, 16 A, 50 Hz	• NEMA 6–20 • NEMA L6–20
	125 VAC, 15 A, 50 Hz	• NEMA 5–15 NOTE: Only for use with 2000 W AC power supply.
	125 VAC, 20 A, 50 Hz	• NEMA 5–20 NOTE: Only for use with 2000 W AC power supply.
South Africa	250 VAC, 10 A, 50 Hz	ZA/3, SABS 164/1:1992
Switzerland	250 VAC, 16 A, 50 Hz	SEV 1011 SEV 5934/2

Table 35: AC Power Cord Specifications for a J-EX8200 Switch *(continued)*

Country/Region	Electrical Specifications	Plug Standards
United Kingdom	250 VAC, 13 A, 50 Hz	BS 1363/A

Figure 31 on page 78 shows the plug on the power cord for many of the countries and regions listed in Table 35 on page 77.

Figure 31: AC Plug Types
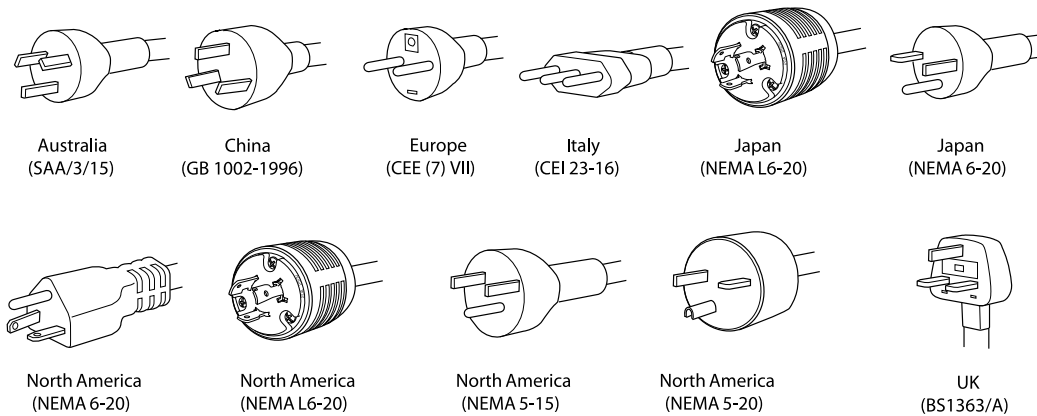
CAUTION: AC power cords for J-EX8200 switches are intended for use with this switch only and not for any other use.

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。

CAUTION: Power cords must not block access to switch components. We recommend that you route all AC power cord cables through the power cord tray provided with the switch.

⚠️ WARNING: The switch is pluggable type A equipment installed in a restricted-access location. It has a separate protective earthing terminal provided on the chassis in addition to the grounding pin of the power supply cord. This separate protective earth terminal must be permanently connected to earth ground. See "Connecting Earth Ground to a J-EX Series Switch" on page 129.

Related Documentation

- AC Power Supply in a J-EX8200 Switch on page 34

- AC Power Electrical Safety Guidelines for J-EX Series Switches on page 238

- AC Power Disconnection Warning for J-EX Series Switches on page 239

- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235

- Connecting AC Power to a J-EX8200 Switch on page 130

Calculating Power Requirements for a J-EX8208 Switch

Use the information in this topic to calculate power consumption, system thermal output, and number of power supplies required for different J-EX8208 switch configurations.

Before you begin these calculations:

- Ensure you understand the different switch configurations. See "J-EX8208 Switch Configurations" on page 6.

- Ensure that you know the power requirements of different switch components. See "Power Requirements for J-EX8208 Switch Components" on page 76.

This topic describes these tasks:

- Calculating the Power Consumption of Your J-EX8208 Switch Configuration on page 79
- Calculating System Thermal Output for Your J-EX8208 Switch Configuration on page 81
- Calculating the Number of Power Supplies Required for Your J-EX8208 Switch Configuration on page 81

Calculating the Power Consumption of Your J-EX8208 Switch Configuration

Use the following procedure to determine the maximum power you need to supply to the switch. To calculate maximum system power consumption, you first determine the combined maximum internal power requirements of all the switch components and then divide this result by the power supply efficiency.

To calculate maximum system power consumption:

1. Determine the maximum power consumption of the chassis components other than the line cards:

- Use Table 36 on page 80 if your switch has power management configured for N+1 power redundancy.

- Use Table 37 on page 80 if your switch has power management configured for N+N power redundancy.

> **NOTE:** If power management is configured for N+N redundancy, the maximum fan speed is lowered, reducing the chassis' maximum power consumption.

Table 36: Chassis Power Consumption for N+1 Configurations

Chassis Component	Redundant Configuration
Fan tray	1100 W
Switch Fabric and Routing Engine (SRE) module	200 W
Second SRE module	200 W
Switch Fabric module	100 W
Total	**1600 W**

Table 37: Chassis Power Consumption for N+N Configurations

Chassis Component	Redundant Configuration
Fan tray	700 W
SRE module	200 W
SRE module	200 W
SF module	100 W
Total	**1200 W**

2. Calculate the maximum internal power consumption of the entire switch by adding in the power requirements of each line card.

   For example, for a switch fully loaded with 8-port SFP+ line cards and using N+1 power redundancy, the maximum internal power consumption:

   = (chassis watts) + 8 (8-port SFP+ line card watts)

   = (1600 W + 8 (450 W))

   = (1600 W + 3600 W)

   = 5200 W

3. Calculate the maximum system power consumption by dividing the maximum internal power consumption by the efficiency of the power supply. This accounts for the loss of energy within the power supply.

> NOTE: The efficiency of a 2000 W AC power supply is approximately 90 percent when input voltage is high line (200–240 VAC).
>
> The efficiency of a 2000 W AC power supply is approximately 87 percent when input voltage is low line (100–120 VAC).

For example, for a switch fully loaded with 8-port SFP+ line cards and using N+1 power redundancy with high-line input voltage, the maximum system power consumption:

= (maximum internal power consumption) / (power supply efficiency)

= (5200 W) / (0.90)

= 5778 W

Calculating System Thermal Output for Your J-EX8208 Switch Configuration

Use the following procedure to calculate the system thermal output in British thermal units (BTU) per hour for your switch configuration.

To calculate the system thermal output:

1. Determine the maximum system power consumption of your switch in watts. See "Calculating the Power Consumption of Your J-EX8208 Switch Configuration" on page 79 for how to do so.

2. Multiply the maximum system power consumption by 3.41.

   For example, for a switch fully loaded with 8-port SFP+ line cards and using N+1 power redundancy with high-line input voltage, the system thermal output:

   = (maximum system power consumption) x (3.41)

   = (5778 W) x (3.41) =

   = 19,703 BTU/hr

> NOTE: Using the maximum system power consumption values to calculate the system thermal output often results in overprovisioning the cooling systems. Typical power consumption is about one-third lower than these calculated values.

Calculating the Number of Power Supplies Required for Your J-EX8208 Switch Configuration

Use this procedure to calculate the number of power supplies required by your switch configuration. The required power configuration for J-EX8208 switches is N+1. You can optionally configure your switch for N+N configuration. For example, you might want dual power feed redundancy with AC power supplies, which requires an N+N configuration.

To calculate the number of power supplies required for your switch configuration:

1. Determine the power requirement of the chassis—with the fan tray, SRE modules, and SF module, but no line cards—by consulting Table 38 on page 82.

   The watt values shown in Table 38 on page 82 are the amount of power reserved by power management for the chassis in its power budget. It uses these values when calculating used and available power and when determining whether sufficient power exists to meet N, N+1, or N+N requirements.

   When power management is configured for N+N power redundancy, it reserves less power for the chassis so that more power is available for line cards.

Table 38: Power Reserved for the Chassis

	Junos OS Release 10.2 or Later
N+1 Configuration	1600 W
N+N Configuration	1200 W

> NOTE: The amount of power that power management reserves for the chassis is a set value that does not vary depending on chassis components installed.

2. To the power reserved for the chassis, add the power requirements of the line cards.

   For line card power requirements, refer to "Power Requirements for J-EX8208 Switch Components" on page 76.

   For example, for a switch fully loaded with 8-port SFP+ line cards and using N+1 power redundancy, the total power requirement:

   = reserved chassis power + 8 (8–port SFP + line cards)

   = 1600 W + 8 (450) W

   = 1600 W + 3600 W

   = 5200 W

   For a switch fully loaded with 8-port SFP+ line cards, using N+N power redundancy, and running Junos OS Release 10.2, the total power requirement:

   = reserved chassis power + 8 (8–port SFP + line cards)

   = 1200 W + 8 (450) W

   = 1200 W + 3600 W

   = 4800 W

3. Calculate the number of power supplies (N) required to meet the total power requirement by dividing the total power requirement by the output wattage of one power supply and then rounding up.

> ✎ NOTE: If the input voltage is high line (200–220 VAC), the output wattage of a 2000 W AC power supply is 2000 W.
>
> If the input voltage is low line (100–120 VAC), the output wattage of a 2000 W AC power supply is 1200 W.

For example, for a switch fully loaded with 8-port SFP+ line cards and using N+1 power redundancy with high-line input voltage, the required power supplies (N):

= (total power requirement) / (output wattage of power supply)

= (5200 W) / (2000 W)

= 2.6

= 3 (rounded up)

For a switch fully loaded with 8-port SFP+ line cards, using N+N power redundancy with high-line input voltage, and running Junos OS Release 10.2, the required power supplies (N):

= (total power requirement) / (output wattage of power supply)

= (4800 W) / (2000 W)

= 2.4

= 3 (rounded up)

4. Add the number of power supplies needed to achieve the required power redundancy:

- To achieve N+1 power redundancy, add a single power supply.

   For example, for a switch fully loaded with 8-port SFP+ line cards and using high-line input voltage, the total number of power supplies:

   = N + 1

   = 3 + 1

   = 4

- To achieve N+N power redundancy, add N power supplies.

   For example, for a switch fully loaded with 8-port SFP+ line cards and using high-line input voltage, the total number of power supplies:

   = N + N

   = 3 + 3

   = 6

NOTE: We recommend that you maintain N +1 or N+N power supplies in your switch at all times. Replace failed power supplies immediately to prevent unexpected failures.

Power management raises a minor alarm if the number of online power supplies in your switch is less than the number required to maintain the configured N+1 or N+N power redundancy. If the problem is not corrected in 5 minutes, a major alarm is issued.

Power management raises a major alarm if the number of online power supplies in your switch is less than N power supplies. Power management provides power to line cards in priority order until power is exhausted. The remaining line cards are powered off.

If a new line card is installed in an operational switch, power management does not power on the line card if the increased power demand exceeds the total available power, including redundant power. If redundant power is used to power on the line card, a minor alarm is raised, which becomes a major alarm in 5 minutes if the condition is not corrected.

Related Documentation

- AC Power Supply in a J-EX8200 Switch on page 34
- For more information about power management on the switch, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

Calculating the J-EX8200 Switch Fiber-Optic Cable Power Budget

Calculate the link's power budget when planning fiber-optic cable layout and distances to ensure that fiber-optic connections have sufficient power for correct operation. The power budget is the maximum amount of power the link can transmit. When you calculate the power budget, you use a worst-case analysis to provide a margin of error, even though all the parts of an actual system do not operate at the worst-case levels.

To calculate the worst-case estimate for fiber-optic cable power budget (P_B) for the link:

1. Determine values for the link's minimum transmitter power (P_T) and minimum receiver sensitivity (P_R). For example, here, (P_T) and (P_R) are measured in decibels, and decibels are referred to one milliwatt (dBm).

   P_T = –15 dBm

   P_R = –28 dBm

   NOTE: See the specifications for your transmitter and receiver to find the minimum transmitter power and minimum receiver sensitivity.

2. Calculate the power budget (P_B) by subtracting (P_R) from (P_T):

   −15 dBm − (−28 dBm) = 13 dBm

Calculating the J-EX8200 Switch Fiber-Optic Cable Power Margin

Calculate the link's power margin when planning fiber-optic cable layout and distances to ensure that fiber-optic connections have sufficient signal power to overcome system losses and still satisfy the minimum input requirements of the receiver for the required performance level. The power margin (P_M) is the amount of power available after attenuation or link loss (**LL**) has been subtracted from the power budget (P_B).

When you calculate the power margin, you use a worst-case analysis to provide a margin of error, even though all the parts of an actual system do not operate at worst-case levels. A power margin (P_M) greater than zero indicates that the power budget is sufficient to operate the receiver and that it does not exceed the maximum receiver input power. This means the link will work. A (P_M) that is zero or negative indicates insufficient power to operate the receiver. See the specification for your receiver to find the maximum receiver input power.

Before you begin to calculate the power margin:

- Calculate the power budget. See "Calculating the J-EX8200 Switch Fiber-Optic Cable Power Budget" on page 84.

To calculate the worst-case estimate for the power margin (P_M) for the link:

1. Determine the maximum value for link loss (**LL**) by adding estimated values for applicable link-loss factors—for example, use the sample values for various factors as provided in Table 39 on page 85 (here, the link is 2 km long and multimode, and the (P_B) is 13 dBm):

Table 39: Estimated Values for Factors Causing Link Loss

Link-Loss Factor	Estimated Link-Loss Value	Sample (LL) Calculation Values
Higher-order mode losses (HOL)	- Multimode—0.5 dBm - Single mode—None	- 0.5 dBm - 0 dBm
Modal and chromatic dispersion	- Multimode—None, if product of bandwidth and distance is less than 500 MHz/km - Single mode—None	- 0 dBm - 0 dBm

Table 39: Estimated Values for Factors Causing Link Loss *(continued)*

Link-Loss Factor	Estimated Link-Loss Value	Sample (LL) Calculation Values
Connector	0.5 dBm	This example assumes 5 connectors. Loss for 5 connectors: 5(0.5 dBm) = 2.5 dBm
Splice	0.5 dBm	This example assumes 2 splices. Loss for two splices: 2(0.5 dBm) = 1dBm
Fiber attenuation	• Multimode—1 dBm/km • Single mode—0.5 dBm/km	This example assumes the link is 2 km long. Fiber attenuation for 2 km: • 2 km(1.0 dBm/km) = 2 dBm • 2 km(0.5 dBm/km) = 1 dBm
Clock Recovery Module (CRM)	1 dBm	1 dBm

NOTE: For information about the actual amount of signal loss caused by equipment and other factors, see your vendor documentation for that equipment.

2. Calculate the (P_M) by subtracting (**LL**) from (P_B):

$P_B - LL = P_M$

13 dBm − 0.5 dBm [HOL] − 5 (0.5 dBm) − 2 (0.5 dBm) − 2 km (1.0 dBm/km) − 1 dB [CRM] = P_M

13 dBm − 0.5 dBm − 2.5 dBm − 1 dBm − 2 dBm − 1 dBm = P_M

P_M = 6 dBm

The calculated power margin is greater than zero, indicating that the link has sufficient power for transmission. Also, the power margin value does not exceed the maximum receiver input power. Refer to the specification for your receiver to find the maximum receiver input power.

Related Documentation

• Calculating the J-EX8200 Switch Fiber-Optic Cable Power Budget on page 84

• Optical Interface Support in J-EX8200 Switches on page 45

• Understanding J-EX8200 Switch Fiber-Optic Cable Signal Loss, Attenuation, and Dispersion on page 72

Installing and Connecting the Switch and Switch Components

Installing the Switch

Installing and Connecting a J-EX8208 Switch

The J-EX8208 switch chassis is a rigid sheet-metal structure that houses the other hardware components such as Switch Fabric and Routing Engine (SRE) modules, a Switch Fabric (SF) module, and line cards. The switch ships in a cardboard box that has a two-layer wooden pallet base. The switch chassis is bolted to the pallet base.

To unpack a J-EX8208 switch, follow instructions in "Unpacking a J-EX8200 Switch" on page 90.

You can install a J-EX8208 switch in a 19-in. equipment rack or cabinet by using the front-mounting bracket attached to the chassis. To install the switch in a rack or cabinet, follow the instructions in "Mounting a J-EX8208 Switch on a Rack or Cabinet Using a Mechanical Lift" on page 104 or "Mounting a J-EX8208 Switch on a Rack or Cabinet Without Using a Mechanical Lift" on page 107.

To connect a J-EX8208 switch to earth ground, follow instructions in "Connecting Earth Ground to a J-EX Series Switch" on page 129.

To connect power to the switch chassis, follow instructions in "Connecting AC Power to a J-EX8200 Switch" on page 130.

To connect and configure the switch, follow instructions in "Connecting and Configuring a J-EX Series Switch (CLI Procedure)" on page 144 or "Connecting and Configuring a J-EX Series Switch (J-Web Procedure)" on page 146.

To connect the switch to a network for out-of-band management, follow instructions in "Connecting a J-EX Series Switch to a Network for Out-of-Band Management" on page 140. To connect the switch to a management console, follow instructions in "Connecting a J-EX Series Switch to a Management Console" on page 135.

Related Documentation
- Rack Requirements for a J-EX8208 Switch on page 63
- Cabinet Requirements and Specifications for a J-EX8208 Switch on page 66
- Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch on page 67
- Chassis Lifting Guidelines for J-EX8200 Switches on page 220

Unpacking a J-EX8200 Switch

After you prepare the installation site as described in "Site Preparation Checklist for a J-EX8200 Switch" on page 57, you may unpack the switch.

> ✎ NOTE: The switch is maximally protected inside the shipping box. Do not unpack it until you are ready to begin installation.

Ensure that you have the following parts and tools available to unpack the J-EX8200 switch:

- A 7/16-in. or 11-mm open-end or socket wrench to remove the bracket bolts from the shipping pallet
- A box cutter or packing knife to slice open the tape that seals the top of the box

The switch ships in a cardboard box that has a two-layer wooden pallet base with foam cushioning between the layers. The switch chassis is bolted to the pallet base.

The J-EX8208 chassis ships with the Switch Fabric and Routing Engine (SRE) modules, Switch Fabric (SF) module, fan tray, and power supplies for the configuration you ordered already installed. Any line cards ordered ship separately.

To unpack the switch (see Figure 33 on page 92):

1. Move the shipping box to a staging area as close to the installation site as possible. For a J-EX8208 switch, make sure there is enough space to remove components from the chassis if necessary (for example, if you do not have a mechanical lift to use when you install the switch). While the chassis is bolted to the pallet, you can use a forklift or pallet jack to move it.

2. Position the shipping box with the arrows pointing up.

3. Open the four pallet fasteners near the bottom of the shipping box that attach the cardboard box to the wooden pallet. To open a pallet fastener, squeeze together the two ridges ("fins") in the depression in the latch, then slide the pallet fastener out of the cardboard box slot in which it is inserted. See Figure 32 on page 91.

Figure 32: Pallet Fastener
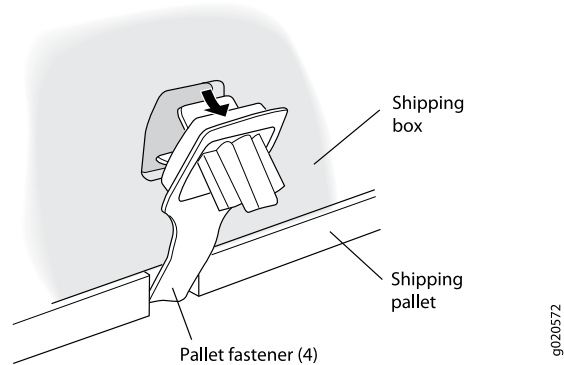
4. Carefully slice open the tape that holds the top of the cardboard box closed and open the top of the box.

5. Remove the cardboard accessory box from the center of the foam padding.

6. Remove the foam padding from the top of the box.

7. Slide the cardboard box off the pallet.

8. Remove the plastic cover from the switch chassis.

9. Use a 7/16-in. or 11-mm open-end or socket wrench to remove the four sets of bracket bolts that secure the chassis to the shipping pallet.

10. Unpack the accessory box and lay out the contents so that they are ready for use.

11. Verify that your order includes all appropriate parts. See "Parts Inventory (Packing List) for a J-EX8208 Switch" on page 92.

12. Store the brackets and bolts inside the accessory box.

13. Save the shipping box, pallet, and packing materials in case you need to move or ship the switch at a later time.

Figure 33: Unpacking a J-EX8208 Switch
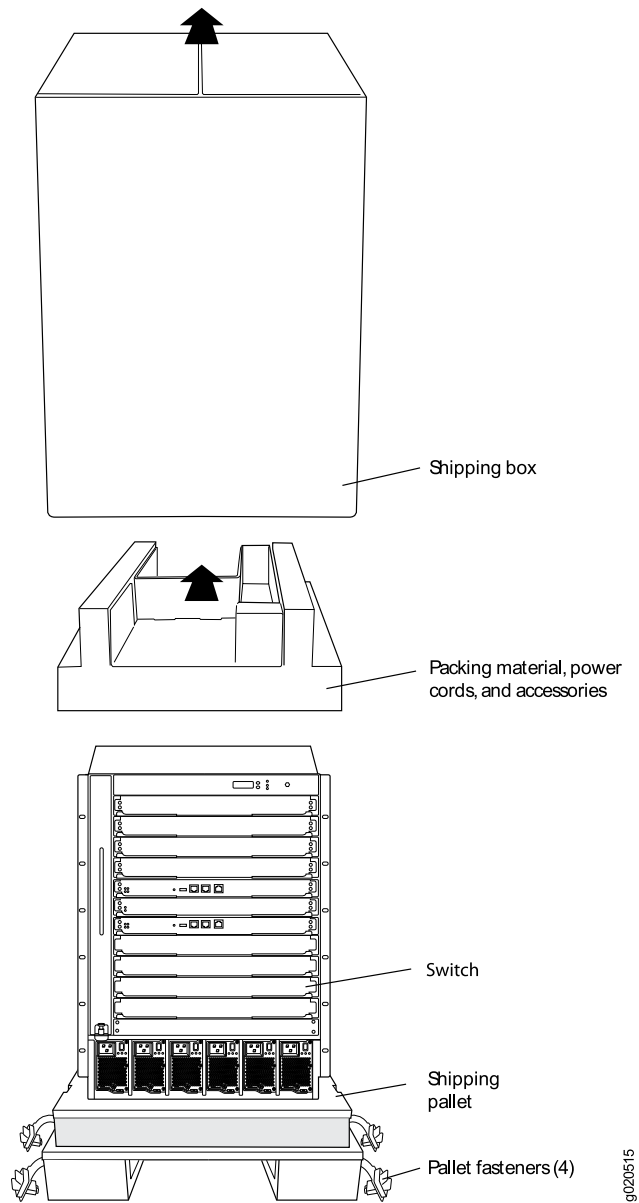
Related Documentation
- Mounting a J-EX8208 Switch on a Rack or Cabinet on page 101

Parts Inventory (Packing List) for a J-EX8208 Switch

The switch shipment includes a packing list. Check the parts you receive in the switch shipping crate against the items on the packing list. The packing list specifies the part number and description of each part in your order. The parts shipped depend on the configuration you order. See "J-EX8208 Switch Configurations" on page 6 for more information.

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call for your region, see "Contacting Dell" on page 191.

> NOTE: All line cards ordered are shipped separately. Line cards are not listed on the switch's packing list.

Table 40 on page 93 lists the parts and their quantities in the packing list for a redundant configuration switch.

Table 40: Parts List for the J-EX8208 Switch

Component	Quantity
Chassis, including the backplane and front-mounting brackets	1
Switch Fabric and Routing Engine (SRE) module	2
Switch Fabric (SF) module	1
Power supplies	6 AC
Power supply jumper cords	6 (1 per power supply)
Fan tray	1
Line card cover panels	8

Table 41 on page 93 lists the parts contained in the accessory box.

Table 41: Accessory Box Parts List

Component	Quantity
Label, accessories contents	1
Accessory kit box	1
Quick Start installation instructions	1
Left front adjustable mounting bracket	1
Right front adjustable mounting bracket	1
Rear adjustable mounting brackets	2

Table 41: Accessory Box Parts List *(continued)*

Component	Quantity
Screws to connect the front pieces and rear pieces of the adjustable mounting brackets for four-post rack installation. Each bracket consists of a front piece and a rear piece. Six screws connect the front-and-rear pieces of each of the two adjustable mounting brackets.	12
Cage nuts for a round-hole rack (clip nuts), #10-32, 0.375-in.(9.525-mm), for mounting the switch in a rack or cabinet	40
Cage nuts for a square-hole rack, #10-32, 0.375-in. (9.525-mm), for mounting the switch in a rack or cabinet	40
Phillips pan-head screws, #10-32 x 5/8-in (15.8-mm), for mounting the switch in a rack or cabinet	40
Phillips pan-head screws, #12-24 x 1/2-in. (12.7-mm), for mounting the switch in a rack or cabinet	40
Washers, #10, for mounting the switch in a rack or cabinet	40
Power cord tray	1
Velcro tie-wraps for power cord tray	12
Power cord retainers	6
Dell PowerConnect Safety, Environmental, and Regulatory Information	1
End User License Agreement	1
DellPowerConnect Warranty and Support Information	1
Registration and Software Updates for Your Dell PowerConnect J-Series Product	1
Open Source Code Notice	1
Ethernet cable, RJ-45/RJ-45, 4-pair stranded UTP, category #5	1
RJ-45 to female DB-9 cable, to connect to the switch's console port using a management PC's serial port	1
ESD grounding strap	1

> NOTE: For four-post rack installation, if you install the optional power cord tray you must provide 4 mounting screws—plus 4 cage nuts and washers—that are appropriate for your rack or cabinet.

Related Documentation

- Unpacking a J-EX8200 Switch on page 90
- J-EX8208 Switch Hardware Overview on page 3

Installing Adjustable Mounting Brackets in a Rack or Cabinet for a J-EX8200 Switch

To mount the switch on a four-post rack or cabinet, you must first install the adjustable mounting brackets in the rack or cabinet. (The remainder of this topic uses "rack" to mean "rack or cabinet.") The J-EX8200 switch comes with a four-piece set of adjustable mounting brackets that supports the chassis in the rack.

> 📝 NOTE: The adjustable mounting brackets are not for installation in two-post racks.

The four adjustable mounting bracket pieces are:

- 1 left front adjustable mounting bracket. The bracket is labeled "LEFT FRONT" on the side of the bracket that faces the interior of the rack, near the holes for attaching the bracket to the rack.

- 1 right front adjustable mounting bracket. The bracket is labeled "RIGHT FRONT" on the side of the bracket that faces the interior of the rack, near the holes for attaching the bracket to the rack.

- 2 rear adjustable mounting brackets. These brackets are labeled "REAR" on the side of the bracket that faces the interior of the rack, near the holes for attaching the bracket to the rack. The rear brackets are interchangeable; you can use either of the rear brackets with the right or left front adjustable mounting bracket.

Ensure that you have the following parts and tools available to install the adjustable mounting brackets:

- A Phillips (+) screwdriver, number 1, 2, or 3, depending on the size of your rack mounting screws

- A Phillips (+) screwdriver, number 2 to install the screws that connect the rear and front mounting brackets

- A flat-blade (-) screwdriver if you are installing the switch in a rack with square, nonthreaded holes

- 16 screws—and 16 cage nuts and washers if your rack requires them—of the appropriate size to attach the four mounting bracket pieces to the rack

When you install the adjustable mounting brackets, the "arms" of the brackets overlap. The overlap area adjusts the total bracket length to fit three standard rack sizes: 23.62 in. (600 mm), 30 in. (762 mm), and 31.5 in. (800 mm).

To install the mounting brackets in a four-post rack (see Figure 37 on page 98):

1. Remove the adjustable mounting brackets from the accessory box.

2. Decide where to position the switch in the rack. If the rack is empty, position the switch in the lowest possible location. See "Rack Requirements for a J-EX8208 Switch" on

page 63 and "Cabinet Requirements and Specifications for a J-EX8208 Switch" on page 66.

3. If your rack has unthreaded round or square holes, install 8 cage nuts in the appropriate holes on the *left front* and *left rear* rack posts, making sure that the 4 cage nuts on each post are on the same rack level front and back.

Use Figure 34 on page 96 or Figure 35 on page 96 to help you with cage-nut installation.

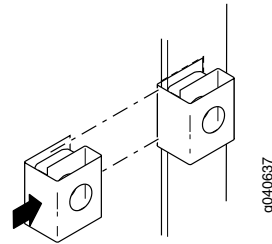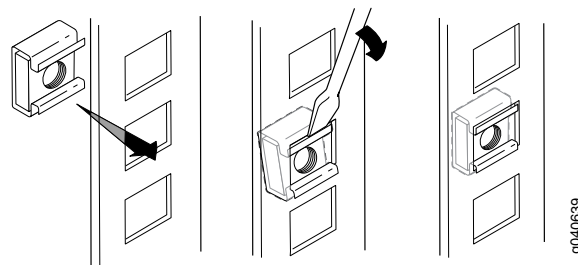Figure 34: Installing a Round-Hole Cage Nut (Clip Nut)

Figure 35: Installing a Square-Hole Cage Nut

4. Position the left front adjustable mounting bracket at the desired position in the left side of the rack and line up its front screw holes with the holes in the rack.

5. Use 4 mounting screws appropriate for your rack—plus washers if you installed cage nuts—to attach the left front bracket to the rack.

6. Position one of the rear brackets at the left rear of the rack on the same level as the left front bracket, so that the rear bracket overlaps with the left front bracket. The screw holes for connecting the front and rear brackets should overlap.

7. Use 4 mounting screws appropriate for your rack—plus washers if you installed cage nuts—to attach the left rear bracket to the rack.

8. Connect left front and rear brackets (see Figure 36 on page 97):

   a. Insert 6 of the screws provided with the mounting brackets into the overlapping bracket holes.

   b. Hand tighten the screws fully (to 12–16 in.-lb torque) using a number 2 Phillips screwdriver.

Figure 36: Adjustable Mounting Brackets for Four-Post Rack Installation
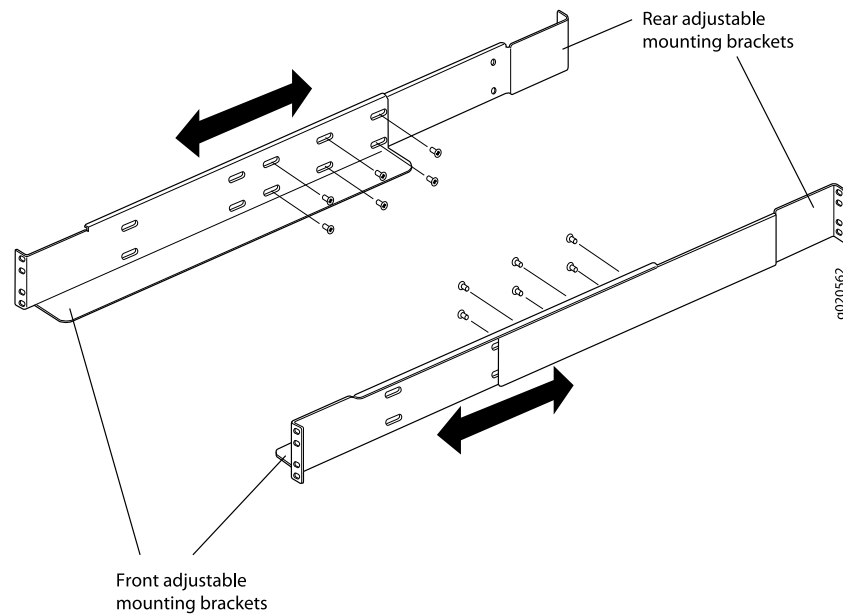
9. If your rack has unthreaded round or square holes, install 8 cage nuts in the appropriate holes on the *right front* and *right rear* rack posts, making sure that the 4 cage nuts on each post are on the same rack level front and back.

   Use Figure 34 on page 96 or Figure 35 on page 96 to help you with cage-nut installation.

10. Position the right front adjustable mounting bracket at the desired position in the right side of the rack opposite the installed left front bracket, so that it is on the same rack level as the left bracket. If the right and left front brackets are not on the same level, the chassis will rest at an angle in the rack instead of resting flat and level. Line up the right bracket's front screw holes with the holes in the rack.

11. Use 4 mounting screws appropriate for your rack—plus washers if you installed cage nuts—to attach the right front bracket to the rack.

12. Position the other rear bracket at the right rear of the rack on the same level as the right front bracket, so that the rear bracket overlaps with the right front bracket. The screw holes for connecting the front and rear brackets should overlap.

13. Use 4 mounting screws appropriate for your rack—plus washers if you installed cage nuts—to attach the right rear bracket to the rack.

14. Connect the right front and rear brackets (see Figure 36 on page 97):

    a. Insert 6 of the screws provided with the mounting brackets into the overlapping bracket holes.

    b. Hand tighten the screws fully (to 12–16 in.-lb torque) using a number 2 Phillips screwdriver.

Figure 37: Adjustable Mounting Brackets Installed in a Four-Post Rack (J-EX8208 Switch)
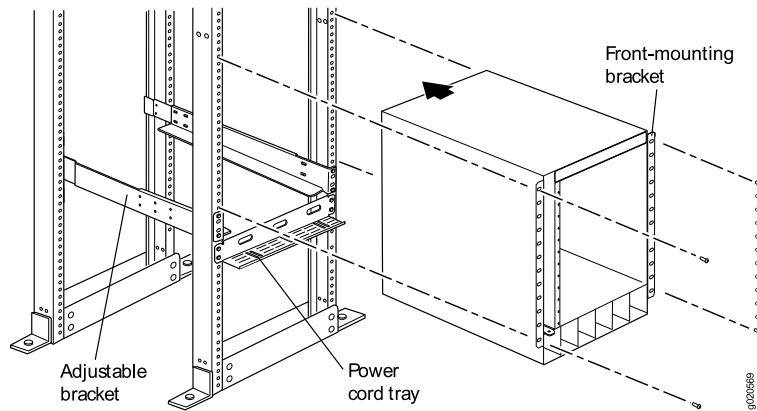
Related Documentation
- Mounting a J-EX8208 Switch on a Rack or Cabinet Using a Mechanical Lift on page 104
- Mounting a J-EX8208 Switch on a Rack or Cabinet Without Using a Mechanical Lift on page 107

Installing the Power Cord Tray in a Rack or Cabinet for a J-EX8200 Switch

The power cord tray is supplied with all J-EX8200 switches. The power cord tray is optional for four-post rack or cabinet installation but mandatory for a two-post rack or cabinet installation. (The remainder of this topic uses "rack" to mean "rack or cabinet.") To mount a J-EX8208 switch in a two-post rack, you must install the power cord tray in the rack before installing the switch.

The power cord tray provides support for the front of the J-EX8208 chassis during installation of the switch in a two-post rack. The front edge of the chassis rests on the upper edge (lip) of the power cord tray.

The power cord tray provides a place to organize and tie down the power cords for the power supplies.

The power cord tray uses 1 U of rack space, so the total space occupied by a J-EX8208 switch chassis and power cord tray is 15 U.

Ensure that you have the following tools and parts available to install the power cord tray:

- A Phillips (+) screwdriver, number 1, 2, or 3, depending on the size of your rack mounting screws
- A flat-blade (-) screwdriver if you are installing the power cord tray in a rack with square, nonthreaded holes
- 4 mounting screws—and 4 cage nuts and washers if your rack requires them—of the appropriate size to attach the power cord tray to the rack (provided for two-post rack installation)

> **NOTE:** For four-post rack installation, if you install the optional power cord tray you must provide 4 mounting screws—plus 4 cage nuts and washers—that are appropriate for your rack or cabinet.

To install the power cord tray (see Figure 40 on page 100 and Figure 41 on page 100):

1. Remove the power cord tray from the accessory box.

2. Decide where to position the switch in the rack. If the rack is empty, choose the lowest possible location. See "Rack Requirements for a J-EX8208 Switch" on page 63 and "Cabinet Requirements and Specifications for a J-EX8208 Switch" on page 66.

   > **NOTE:** To mount a J-EX8208 switch on a two-post rack, you must install the power cord tray in the rack before installing the switch. See Figure 41 on page 100.

3. If your rack has unthreaded round or square holes, install 4 cage nuts in the appropriate holes on the right and left front rack posts, making sure that the 2 cage nuts on each post are on the same rack level front and back.

   Use Figure 38 on page 99 or Figure 39 on page 99 to help you with cage-nut installation.

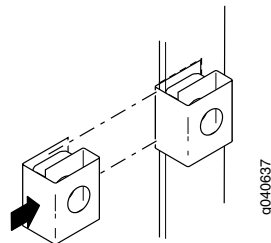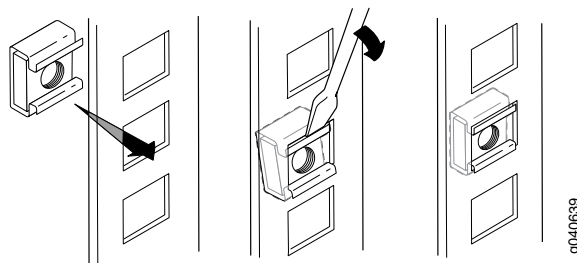Figure 38: Installing a Round-Hole Cage Nut (Clip Nut)

Figure 39: Installing a Square-Hole Cage Nut

4. Position the power cord tray in the rack space immediately below the position in which you want to install the switch (in a two-post rack) or where the switch is installed (in a four-post rack) (see Figure 40 on page 100). Line up the screw holes of the power cord tray with the holes in the rack. Use 4 mounting screws appropriate for your rack—plus washers if you installed cage nuts—to attach the power cord tray to the rack.

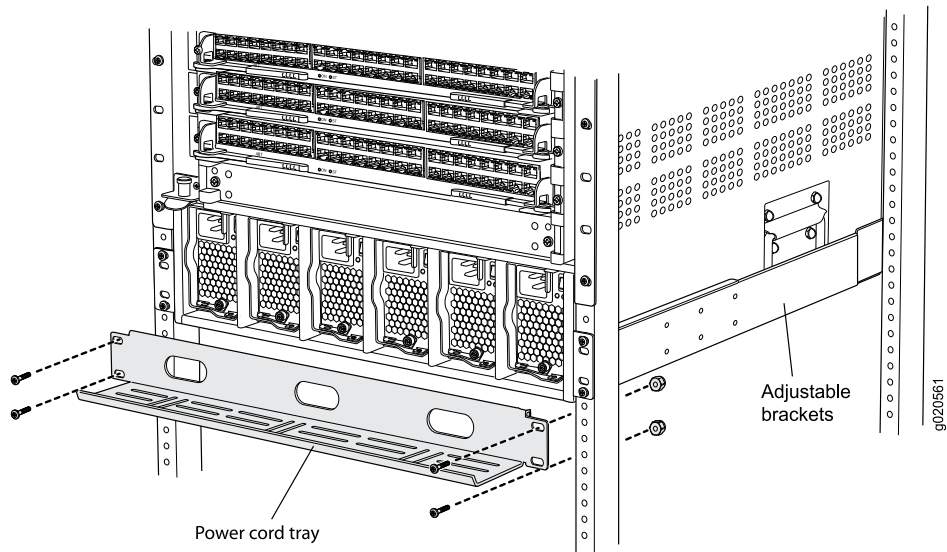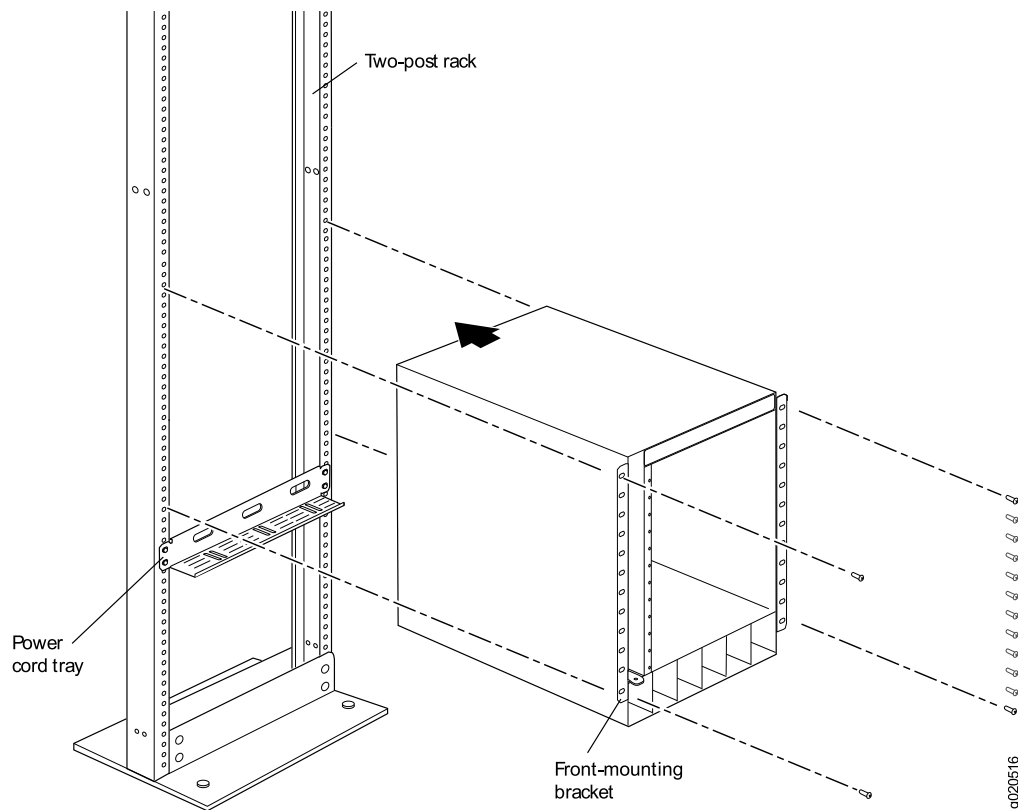Figure 40: Installing the Power Cord Tray in a Four-Post Rack

Figure 41: Power Cord Tray Installed in a Two-Post Rack

Related Documentation

- Mounting a J-EX8208 Switch on a Rack or Cabinet on page 101

Mounting a J-EX8208 Switch on a Rack or Cabinet

The J-EX8208 switch ships installed with front-mounting brackets on the chassis for mounting the switch on a 19-in. equipment rack or cabinet. The switch also comes with adjustable mounting brackets to support it in the rack.

In a four-post rack, the switch consumes 14 U without the optional power cord tray and 15 U with the optional power cord tray. In a two-post rack, the power cord tray is mandatory. The switch with the power cord tray consumes 15 U. You can mount up to three switches on a 42 U four-post rack or on a 45 U two-post rack provided that the racks meet the strength requirements to support the combined weight of the switches.

> **NOTE:** If you are mounting multiple switches on a rack or cabinet, mount a switch on the bottom of the rack or cabinet first and then mount the rest of the switches from bottom to top.

> **WARNING:** If you install the switch without using a mechanical lift, at least three people must be available to lift the unloaded switch chassis (all components except the backplane removed) onto the adjustable mounting brackets (in a four-post rack or cabinet) or onto the lip of the power cord tray (in a two-post rack or cabinet).

> **CAUTION:** Do not install line cards in the chassis until after you mount the chassis securely on a rack or cabinet.

Before mounting a J-EX8208 switch on a rack or cabinet:

- Verify that the site meets the requirements described in "Site Preparation Checklist for a J-EX8200 Switch" on page 57.

- Place the rack or cabinet in its permanent location, allowing adequate clearance for airflow and maintenance, and secure it to the building structure. See "Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch" on page 67 for detailed information.

- Read "General Safety Guidelines and Warnings for J-EX Series Switches" on page 207, with particular attention to "Chassis Lifting Guidelines for J-EX8200 Switches" on page 220.

- Remove the switch from the shipping box (see "Unpacking a J-EX8200 Switch" on page 90).

Ensure that you have the following parts and tools available to mount the switch on a rack or cabinet:

- A Phillips (+) screwdriver, number 2 or number 3, depending on the size of your rack mounting screws, for mounting the switch on a rack or cabinet

- A Phillips (+) screwdriver, number 1, to remove the power supplies from the chassis if you are mounting the switch without using a mechanical lift

- A flat-blade (-) screwdriver if you are installing the switch in a rack with square, nonthreaded holes

- 24 mounting screws—and 24 cage nuts and washers if your rack requires them—of the appropriate size to secure the chassis to the rack (provided)

To mount the J-EX8208 switch on a rack or cabinet (see Figure 44 on page 103 and Figure 45 on page 104):

1. In a four-post rack or cabinet, install the adjustable mounting brackets at the desired position (see "Installing Adjustable Mounting Brackets in a Rack or Cabinet for a J-EX8200 Switch" on page 95).

   In a two-post rack or cabinet, install the power cord tray (see "Installing the Power Cord Tray in a Rack or Cabinet for a J-EX8200 Switch" on page 98). The power cord tray is optional for four-post rack installation.

2. If your rack has unthreaded round or square holes, install 24 cage nuts in the appropriate holes on the left front and right front rack posts, making sure that the 12 cage nuts on each post are on the same rack level front and back.

   Use Figure 42 on page 102 or Figure 43 on page 102 to help you with cage-nut installation.

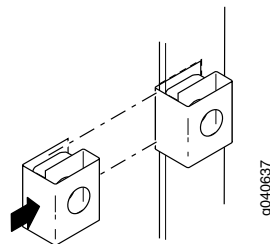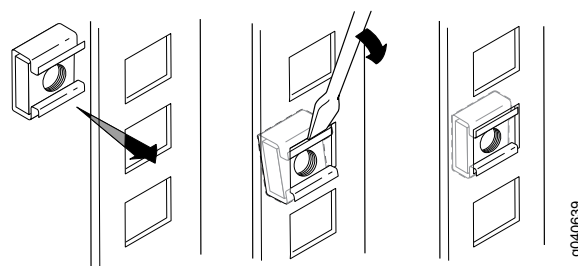Figure 42: Installing a Round-Hole Cage Nut (Clip Nut)

Figure 43: Installing a Square-Hole Cage Nut

3. Lift the chassis into the rack using a mechanical lift. For instructions on how to install the chassis using a mechanical lift, see "Mounting a J-EX8208 Switch on a Rack or Cabinet Using a Mechanical Lift" on page 104.

   In a four-post rack, place the chassis on the adjustable mounting brackets. In a two-post rack, place the front edge of the chassis on the lip of the power cord tray with at least three people supporting the rear of the chassis until you can bolt the chassis into the rack.

   If a mechanical lift is not available, remove all components and ensure that at least three people are available to lift the empty chassis into the rack. For instructions on how to install the chassis without using a mechanical lift, see "Mounting a J-EX8208 Switch on a Rack or Cabinet Without Using a Mechanical Lift" on page 107.

4. Insert 24 mounting screws appropriate for your rack—plus washers if you installed cage nuts—into the aligned holes.

5. Use the appropriate Phillips (+) screwdriver to tighten the screws to the rack or cabinet posts.

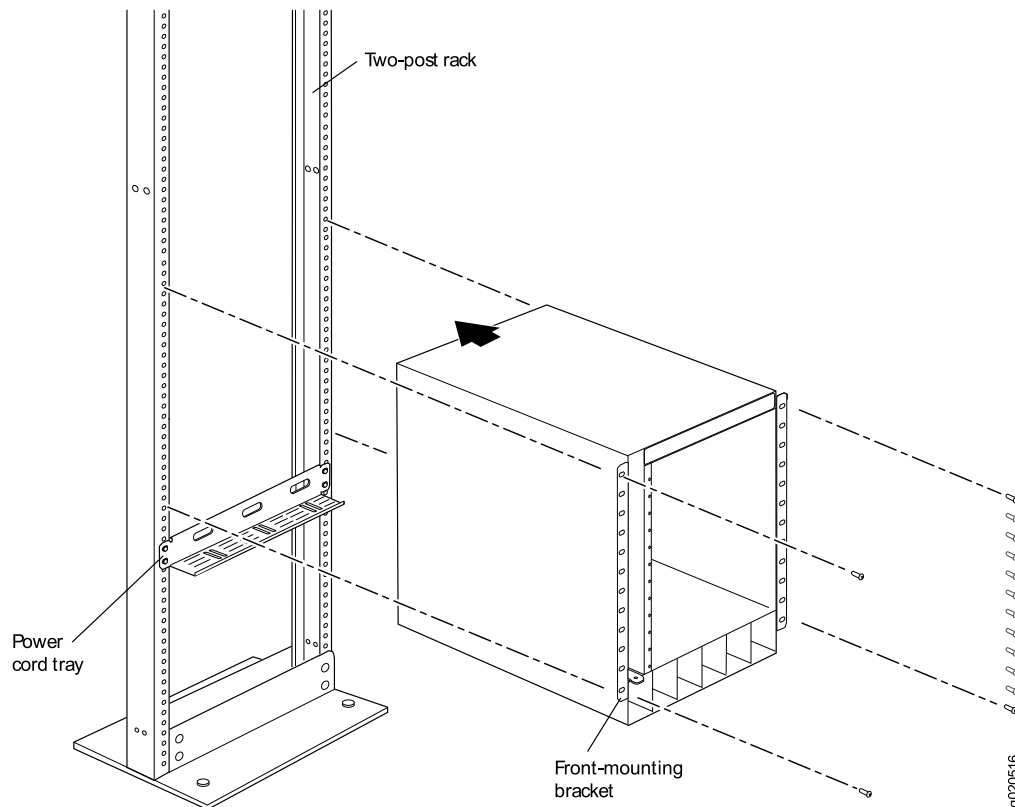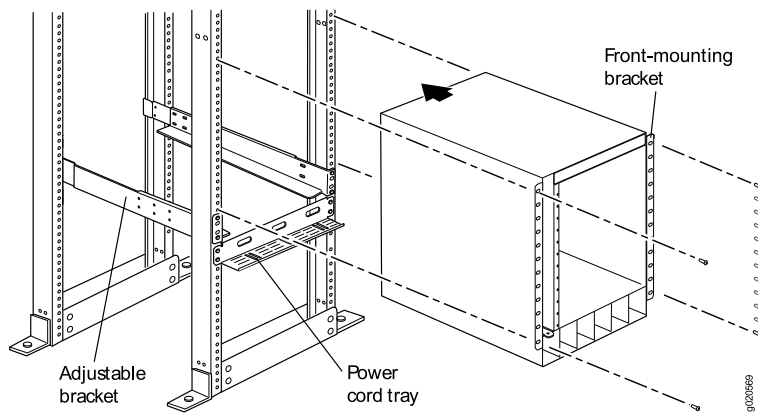Figure 44: Installing a J-EX8208 Switch in a Two-Post Rack

Figure 45: Installing a J-EX8208 Switch in a Four-Post Rack

Related
Documentation
- Connecting AC Power to a J-EX8200 Switch on page 130

- Rack Requirements for a J-EX8208 Switch on page 63

- Cabinet Requirements and Specifications for a J-EX8208 Switch on page 66

Mounting a J-EX8208 Switch on a Rack or Cabinet Using a Mechanical Lift

Because of the switch's size and weight, we strongly recommend using a mechanical lift to install the switch.

> NOTE: For instructions on installing a switch without using a mechanical lift, see "Mounting a J-EX8208 Switch on a Rack or Cabinet Without Using a Mechanical Lift" on page 107.

> CAUTION: Do not install line cards in the chassis until after you mount the chassis securely on a rack or cabinet.

> CAUTION: Before front-mounting the switch on a rack or cabinet, have a qualified technician verify that the rack or cabinet is strong enough to support the switch's weight and is adequately supported at the installation site.

Before you install the switch:

- Prepare the site for installation as described in "Site Preparation Checklist for a J-EX8200 Switch" on page 57.

- Ensure the site has adequate clearance for both airflow and hardware maintenance as described in "Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch" on page 67.

- Unpack the switch as described in "Unpacking a J-EX8200 Switch" on page 90.

- In a two-post rack, install the power cord tray at the desired position (see "Installing the Power Cord Tray in a Rack or Cabinet for a J-EX8200 Switch" on page 98). The lip of the power cord tray will support the front of the chassis when you install the switch in the two-post rack.

- In a four-post rack, install the adjustable mounting brackets at the desired position (see "Installing Adjustable Mounting Brackets in a Rack or Cabinet for a J-EX8200 Switch" on page 95). Optionally, you can also install the power cord tray and use it to manage the power supply cords.

- Review chassis lifting guidelines described in "Chassis Lifting Guidelines for J-EX8200 Switches" on page 220.

Ensure that you have the following parts and tools available to install the switch:

- A mechanical lift

- 24 mounting screws—and 24 cage nuts and washers if your rack requires them—of the appropriate size to secure the chassis to the rack (provided)

- A Phillips (+) screwdriver, number 2 or number 3, depending on the size of your rack mounting screws

- A flat-blade (-) screwdriver if you are installing the switch in a rack with square, nonthreaded holes

> ⚠ CAUTION: If you are installing more than one switch in a rack or cabinet, install the first switch at the bottom of the rack.

To install the switch using a mechanical lift (see Figure 48 on page 106):

1. Ensure that the rack or cabinet is placed in its permanent location and is secured to the building. Ensure that the installation site allows adequate clearance for both airflow and maintenance. For details, see "Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch" on page 67.

2. If your rack has unthreaded round or square holes, ensure that 24 cage nuts are installed in the appropriate holes on the left front and right front rack posts, so that the 12 cage nuts on each post are on the same rack level front and back.

   Use Figure 46 on page 105 or Figure 47 on page 106 to help you with cage-nut installation.

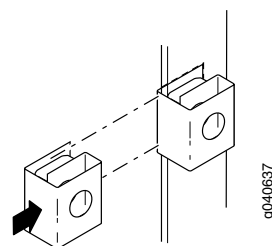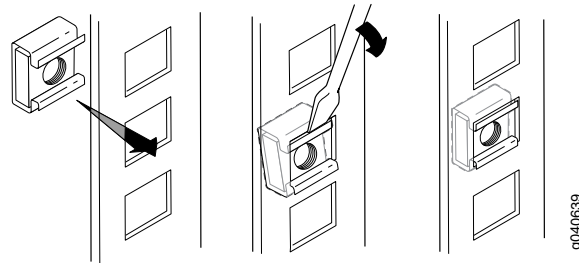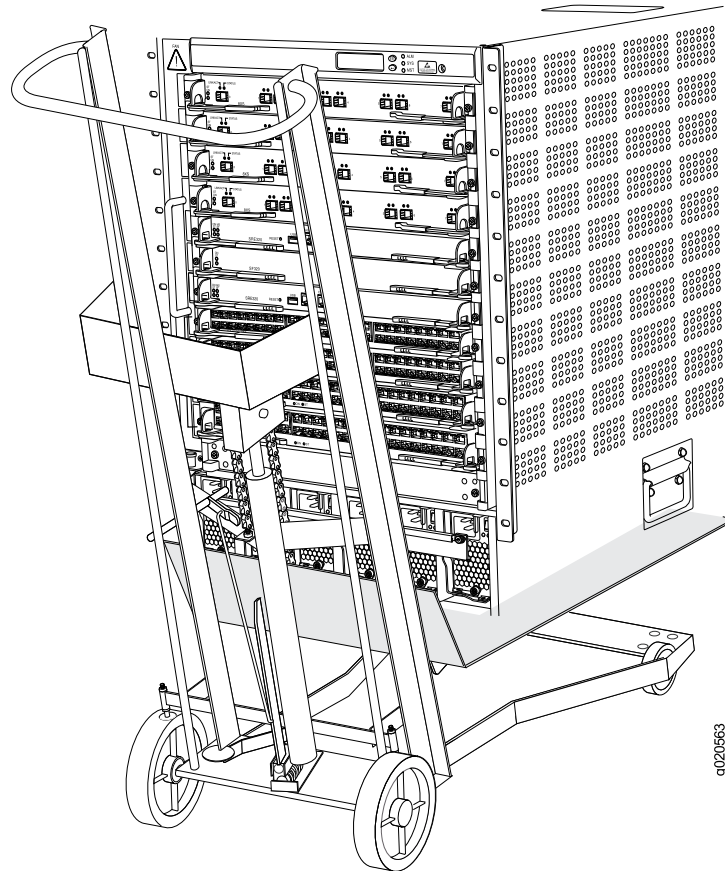Figure 46: Installing a Round-Hole Cage Nut (Clip Nut)

Figure 47: Installing a Square-Hole Cage Nut

3. Load the switch onto the lift, making sure it rests securely on the lift platform.

Figure 48: Installing the J-EX8208 Switch Chassis Using a Mechanical Lift

4. Using the lift, position the switch in front of the rack or cabinet, centering it in front of the adjustable mounting brackets and/or power cord tray installed in the rack.

5. Lift the chassis approximately 0.75 in. (1.9 cm) above the surface of the adjustable mounting brackets or power cord tray. Position the chassis in the rack as close as possible to resting on the support that the mounting brackets and/or power cord tray provide.

6. In a four-post rack, carefully slide the switch onto the adjustable mounting brackets until the front-mounting brackets ("ears") attached to the chassis contact the rack posts. The adjustable mounting brackets installed in the rack ensure that the holes in the front-mounting brackets align with the holes in the rack posts.

    In a two-post rack, carefully slide the switch into the rack ensuring that the front bottom of the chassis rests on the lip of the power cord tray. The front-mounting brackets ("ears") prevent the chassis from tipping too far back.

7. Move the lift away from the rack.

8. In a four-post rack, slide the chassis so that the front-mounting bracket is flush with the front of the rack.

    In a two-post rack, push the bottom of the chassis so that the front-mounting bracket is flush with the front of the rack.

9. Install a mounting screw—plus a washer if you installed cage nuts—into each of the open front-mounting holes aligned with the rack, starting from the bottom.

10. Visually inspect the alignment of the switch. If the switch is installed properly in the rack, all the mounting screws on one side of the rack are aligned with the mounting screws on the opposite side and the switch is level.

11. After ensuring that the switch is aligned properly, tighten the screws.

Related Documentation

- Powering On a J-EX8200 Switch on page 133

- Connecting and Configuring a J-EX Series Switch (CLI Procedure) on page 144

- Connecting and Configuring a J-EX Series Switch (J-Web Procedure) on page 146

Mounting a J-EX8208 Switch on a Rack or Cabinet Without Using a Mechanical Lift

If you cannot use a mechanical lift to install the switch (the preferred method), you can install it manually.

⚠️ CAUTION: The chassis with only the backplane and no other components weighs approximately 89 lb (41 kg). Lifting the chassis and mounting it in a rack or cabinet requires at least three people.

The chassis has two handles. Do not lift a fully loaded chassis by the handles; make sure the chassis is empty (contains only the backplane) before you lift it. If two of the people lifting the chassis use the handles to lift it, the third person must lift from the rear of the chassis. The rear of the chassis is heavier than the front of the chassis, so when you lift the chassis by the handles, the chassis tips toward the heavier back end. The person lifting from the back must be aware of this behavior and must be braced to prevent the chassis from tipping over.

When lifting the chassis, do not grasp the switch by the blue panel at the top front of the chassis. Doing so can cause the panel to pop off of the switch.

△ CAUTION: Before front-mounting the switch in a rack, have a qualified technician verify that the rack is strong enough to support the switch's weight and is adequately supported at the installation site.

Before you install the switch:

1. Prepare the site for installation as described in "Site Preparation Checklist for a J-EX8200 Switch" on page 57.

2. Ensure the site has adequate clearance for both airflow and hardware maintenance as described in "Clearance Requirements for Airflow and Hardware Maintenance for a J-EX8208 Switch" on page 67.

3. Unpack the switch as described in "Unpacking a J-EX8200 Switch" on page 90.

4. Remove all components except the backplane from the chassis. See:

   • Removing an SRE Module from a J-EX8208 Switch on page 167

   • Removing an SF Module from a J-EX8208 Switch on page 169

   • Removing a Line Card from a J-EX8200 Switch on page 170

   • Removing a Fan Tray from a J-EX8208 Switch on page 163

   • Removing an AC Power Supply from a J-EX8200 Switch on page 161

5. In a two-post rack, install the power cord tray at the desired position (see "Installing the Power Cord Tray in a Rack or Cabinet for a J-EX8200 Switch" on page 98). The lip of the power cord tray will support the front of the chassis when you install the switch in the rack.

   In a four-post rack, install the adjustable mounting brackets at the desired position (see "Installing Adjustable Mounting Brackets in a Rack or Cabinet for a J-EX8200 Switch" on page 95). Optionally, you can also install the power cord tray and use it to manage the power supply cords.

6. Review chassis lifting guidelines as described in "Chassis Lifting Guidelines for J-EX8200 Switches" on page 220.

Ensure that you have the following parts and tools available to install the switch:

• 24 mounting screws—and 24 cage nuts and washers if your rack requires them—of the appropriate size to secure the chassis to the rack (provided)

• A Phillips (+) screwdriver, number 2 or number 3, depending on the size of your rack mounting screws

• A flat-blade (-) screwdriver if you are installing the switch in a rack with square, nonthreaded holes

To install the switch in the rack or cabinet (see Figure 52 on page 111 and Figure 53 on page 111):

⚠️ CAUTION: If you are installing more than one switch in a rack or cabinet, install the first one at the bottom of the rack. Do not attempt to install a switch manually in an upper position in a rack or cabinet.

1. Ensure that the rack or cabinet is placed in its permanent location and is secured to the building.

2. If your rack has unthreaded round or square holes, ensure that 24 cage nuts are installed in the appropriate holes on the left front and right front rack posts, so that the 12 cage nuts on each post are on the same rack level front and back.

   Use Figure 49 on page 109 or Figure 50 on page 109 to help you with cage-nut installation.

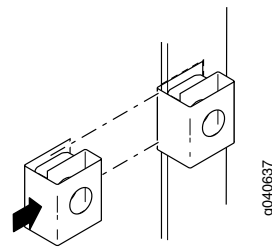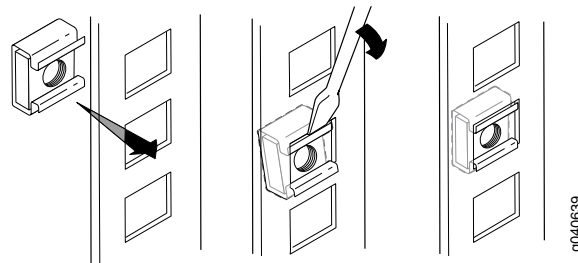Figure 49: Installing a Round-Hole Cage Nut (Clip Nut)

Figure 50: Installing a Square-Hole Cage Nut

3. Position the switch in front of the rack or cabinet, centering it in front of the adjustable mounting brackets. Use a pallet jack if one is available.

4. With one person on each side and one person in the rear, hold the bottom of the chassis and carefully lift it onto the adjustable mounting brackets installed in a four-post rack or onto the power cord tray installed in a two-post rack. See Figure 51 on page 110.

⚠️ WARNING: To prevent injury, keep your back straight and lift with your legs, not your back. Do not twist your body as you lift. Balance the load evenly and be sure that your footing is firm.

Figure 51: Lifting a J-EX8208 Switch Chassis Without Using a Mechanical Lift
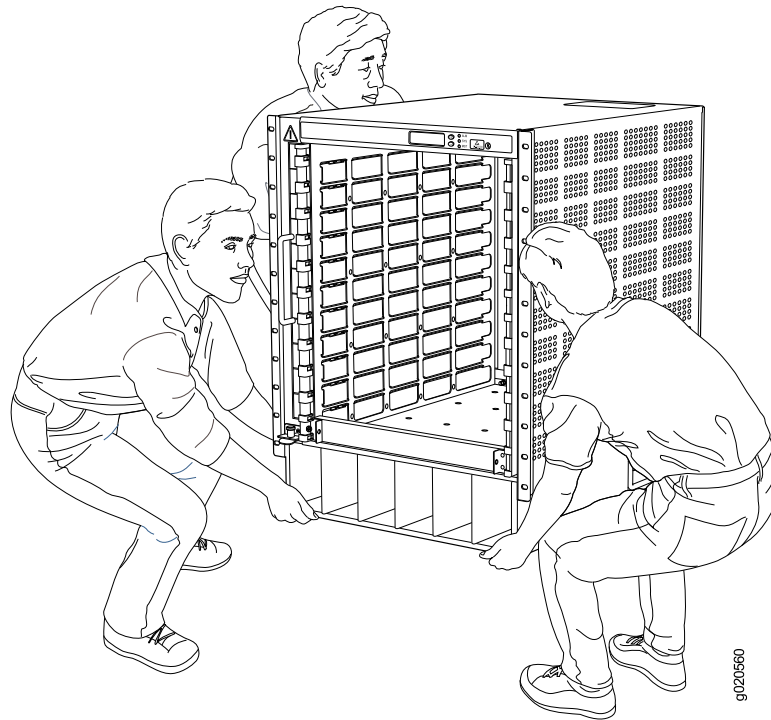
5. In a four-post rack, carefully slide the switch onto the adjustable mounting brackets until the front-mounting brackets attached to the chassis contact the rack posts. The adjustable mounting brackets ensure that the holes in the front-mounting brackets attached to the chassis align with the holes in the rack posts.

In a two-post rack, carefully slide the switch over the lip of the power cord tray and into the rack. Push the bottom of the chassis so that the front-mounting bracket is flush with the front of the rack.

6. Install a mounting screw—plus a washer if you installed cage nuts—into each of the open front-mounting holes aligned with the rack, starting from the bottom.

7. Visually inspect the alignment of the chassis. If the chassis is installed properly in the rack, all the mounting screws on one side of the rack are aligned with the mounting screws on the opposite side and the switch is level.

8. After ensuring that the switch is aligned properly, tighten the screws.

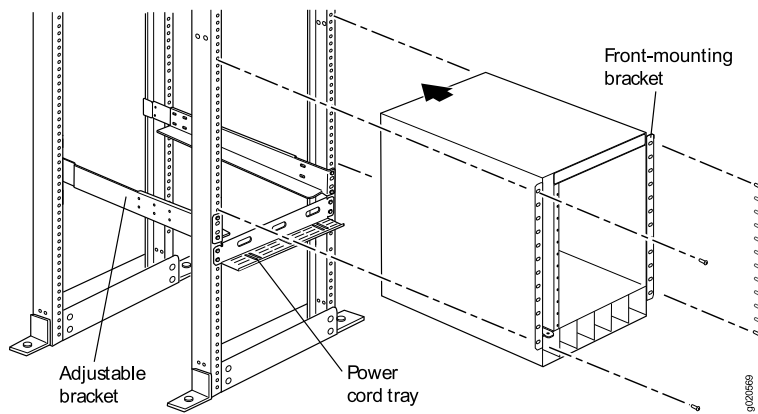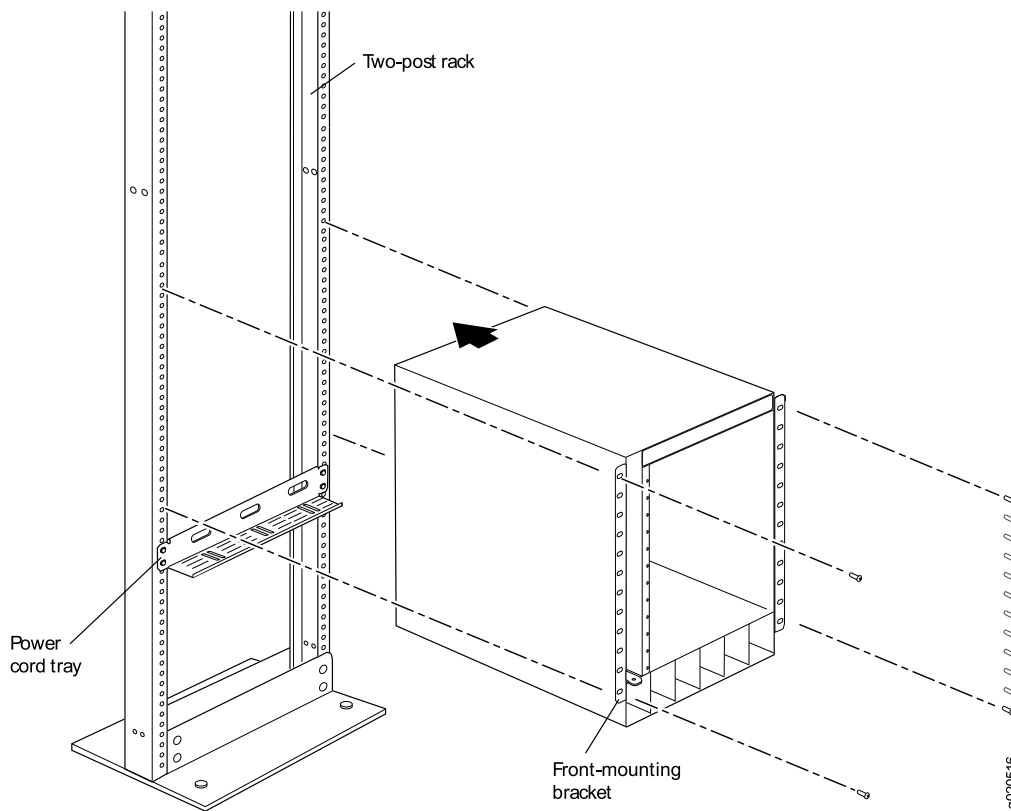Figure 52: Installing a J-EX8208 Switch in a Four-Post Rack

Figure 53: Installing a J-EX8208 Switch in a Two-Post Rack

After you install the mounting screws and securely bolt the chassis to the rack, reinstall the components in the chassis. See:

- Installing an SRE Module in a J-EX8208 Switch on page 118

- Installing an SF Module in a J-EX8208 Switch on page 120

- Installing a Line Card in a J-EX8200 Switch on page 122

- Installing a Fan Tray in a J-EX8208 Switch on page 116

- Installing an AC Power Supply in a J-EX8200 Switch on page 114

Related Documentation
- Powering On a J-EX8200 Switch on page 133

- Connecting and Configuring a J-EX Series Switch (CLI Procedure) on page 144

- Connecting and Configuring a J-EX Series Switch (J-Web Procedure) on page 146

Installing Switch Components

- Installing and Removing J-EX8208 Switch Hardware Components on page 113
- Installing an AC Power Supply in a J-EX8200 Switch on page 114
- Installing a Fan Tray in a J-EX8208 Switch on page 116
- Installing an SRE Module in a J-EX8208 Switch on page 118
- Installing an SF Module in a J-EX8208 Switch on page 120
- Unpacking a Line Card Used in a J-EX8200 Switch on page 121
- Installing a Line Card in a J-EX8200 Switch on page 122
- Installing a Transceiver in a J-EX Series Switch on page 125
- Connecting a Fiber-Optic Cable to a J-EX Series Switch on page 126

Installing and Removing J-EX8208 Switch Hardware Components

The field-replaceable units (FRUs) in a J-EX8208 switch are:

- Switch Fabric and Routing Engine (SRE) module
- Switch Fabric (SF) module
- 8-port SFP+ line card
- 48-port SFP line card
- 48-port RJ-45 line card
- AC power supplies
- Fan tray
- SFP transceiver
- SFP+ transceiver

The SRE module and SF module are hot-removable or hot-pluggable depending on the configuration of the switch. See "J-EX8208 Switch Configurations" on page 6.

All the line cards are hot-removable and hot-insertable. However, we recommend that you take them offline before removing them.

The AC power supplies, fan tray, SFP transceiver, and SFP+ transceiver in J-EX8200 switches are hot-removable and hot-insertable FRUs: you can remove and replace them without powering off the switch or disrupting switch functions.

To install an SRE module in a J-EX8208 switch, follow instructions in "Installing an SRE Module in a J-EX8208 Switch" on page 118. To remove an SRE module, follow instructions in "Removing an SRE Module from a J-EX8208 Switch" on page 167.

To install an SF module in a J-EX8208 switch, follow instructions in "Installing an SF Module in a J-EX8208 Switch" on page 120. To remove an SF module, follow instructions in "Removing an SF Module from a J-EX8208 Switch" on page 169.

To install a line card in a J-EX8208 switch, follow instructions in "Installing a Line Card in a J-EX8200 Switch" on page 122. To remove a line card, follow instructions in "Removing a Line Card from a J-EX8200 Switch" on page 170.

To install an AC power supply in a J-EX8208 switch, follow instructions in "Installing an AC Power Supply in a J-EX8200 Switch" on page 114. To remove a power supply, follow instructions in "Removing an AC Power Supply from a J-EX8200 Switch" on page 161.

To install a fan tray in a J-EX8208 switch, follow instructions in "Installing a Fan Tray in a J-EX8208 Switch" on page 116. To remove a fan tray, follow instructions in "Removing a Fan Tray from a J-EX8208 Switch" on page 163.

To install a transceiver in a J-EX8208 switch, follow instructions in "Installing a Transceiver in a J-EX Series Switch" on page 125. To remove a transceiver, follow instructions in "Removing a Transceiver from a J-EX Series Switch" on page 173.

Related Documentation
- Field-Replaceable Units in a J-EX8208 Switch on page 21
- J-EX8208 Switch Hardware Overview on page 3

Installing an AC Power Supply in a J-EX8200 Switch

The AC power supply in a J-EX8200 switch is a hot-insertable and hot-removable field-replaceable unit (FRU). Up to six AC power supplies can be installed in a J-EX8200 switch. All AC power supplies install in the front of the chassis in the slots provided at the bottom. See "Slot Numbering for a J-EX8208 Switch" on page 11.

Before you install an AC power supply in the switch:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to install an AC power supply in a J-EX8200 switch chassis:

- Electrostatic discharge (ESD) grounding strap
- Phillips (+) screwdriver, number 1

> ✎ NOTE: Each AC power supply must be connected to a dedicated AC power source outlet.

To install an AC power supply in a J-EX8200 switch (see Figure 54 on page 116):

1. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the chassis.

2. If the power supply slot has a cover panel on it, unscrew the screw on the side of the cover panel in the counterclockwise direction using the Phillips (+) screwdriver, number 1, and remove the cover panel. Save the cover panel for later use.

3. Taking care not to touch power supply components, pins, leads, or solder connections, remove the power supply from its bag.

4. Flip the **Enable** switch next to the appliance inlet on the power supply to the Standby position.

5. Unscrew the captive screw in the counterclockwise direction using the Phillips (+) screwdriver, number 1.

6. Pull the captive screw away from the faceplate of the power supply to release the latch.

7. Pull the handle away from the faceplate of the power supply until it is perpendicular to the faceplate.

> ✎ NOTE: Power supplies can be installed in any slot. You do not have to install the power supplies in serial order.

8. Using both hands, place the power supply in the power supply slot on the front of the switch. Slide the power supply straight into the chassis until the power supply is fully seated in the slot. Ensure the power supply faceplate is flush with any adjacent power supply faceplates or power supply cover panels.

9. Push the handle towards the faceplate of the power supply until it is flush against the faceplate.

10. Push the captive screw into the power supply faceplate. Ensure that the screw is seated inside the corresponding hole on the faceplate.

11. Tighten the captive screw by turning it clockwise using the Phillips (+) screwdriver, number 1. When the screw is completely tight, the latch locks into the switch chassis.

Figure 54: Installing an AC Power Supply in a J-EX8200 Switch
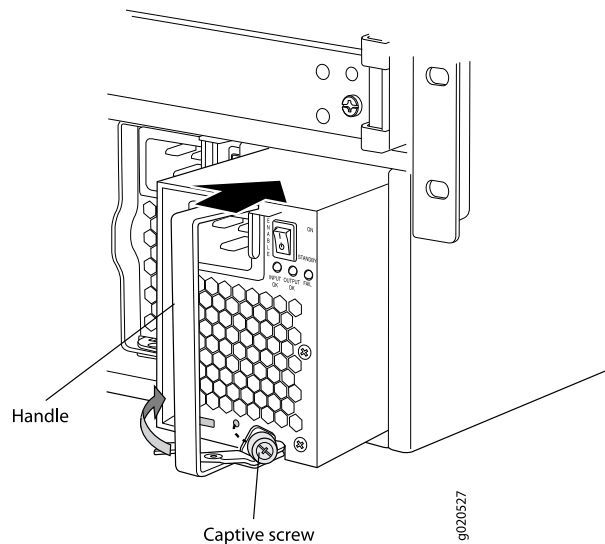
Handle

Captive screw

g020527

Installing a Fan Tray in a J-EX8208 Switch

A J-EX8208 switch has a single, field-replaceable fan tray. The fan tray is a hot-insertable and hot-removable field-replaceable unit (FRU); you can remove and replace the fan tray while the switch is running without turning off power to the switch or disrupting switching functions.

The fan tray installs vertically on the left side on the front of the chassis. A handle on the front faceplate facilitates handling of the fan tray. There is a spring-loaded latch on the base of the fan tray that is used to latch the fan tray into the chassis.

Before you begin to install a fan tray:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to install a fan tray in a J-EX8208 switch:

- Electrostatic discharge (ESD) grounding strap

⚠️ CAUTION: The fan tray can be removed and replaced while the switch is operating. However, the fan tray must be replaced within 2 minutes of removing the fan tray to prevent the chassis from overheating.

To install a fan tray in a J-EX8208 switch (see Figure 55 on page 117):

1. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the chassis.

2. Hold the handle of the fan tray with one hand and support the weight of the tray with the other hand. Align the tray with the fan tray guides on the fan tray slot. Slide in the fan tray until it is fully seated in the chassis.

   You will hear a distinct click sound when the spring-loaded latch locks into the corresponding hole on the strike plate below the fan tray. The latch must be fully engaged in the corresponding hole for the fan tray to be securely installed.

Figure 55: Installing a Fan Tray in a J-EX8208 Switch
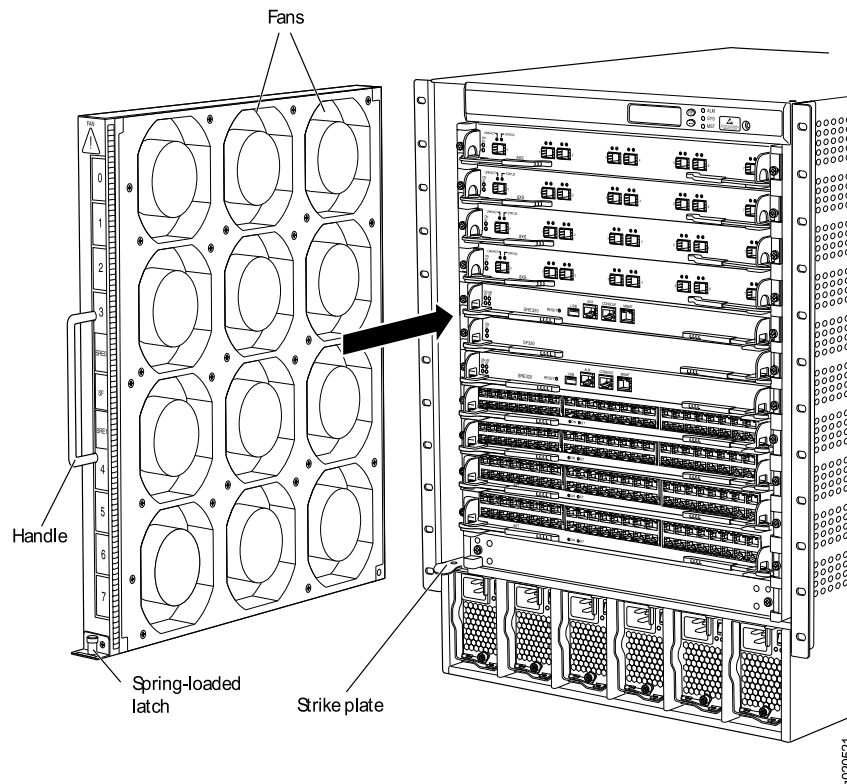
Related Documentation

- Removing a Fan Tray from a J-EX8208 Switch on page 163

- Cooling System and Airflow in a J-EX8208 Switch on page 38

- Field-Replaceable Units in a J-EX8208 Switch on page 21

Installing an SRE Module in a J-EX8208 Switch

You can install either one or two Switch Fabric and Routing Engine (SRE) modules in a J-EX8208 switch. The SRE modules install horizontally in the front of the chassis in the slots labeled SRE0 and SRE1.

> **NOTE:** We recommend that you install two SRE modules for redundancy. If you install only one SRE module, we recommend that you install it in the slot SRE0.

> ⚠ **CAUTION:** Do not lift the SRE module by holding the ejector levers. The levers cannot support the weight of the module. Lifting the modules by the levers might bend the levers, and the bent levers will prevent the SRE module from being properly seated in the chassis.

Before you begin installing an SRE module in a J-EX8208 switch:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to install an SRE module:

- Electrostatic discharge (ESD) grounding strap
- Phillips (+) screwdriver, number 2

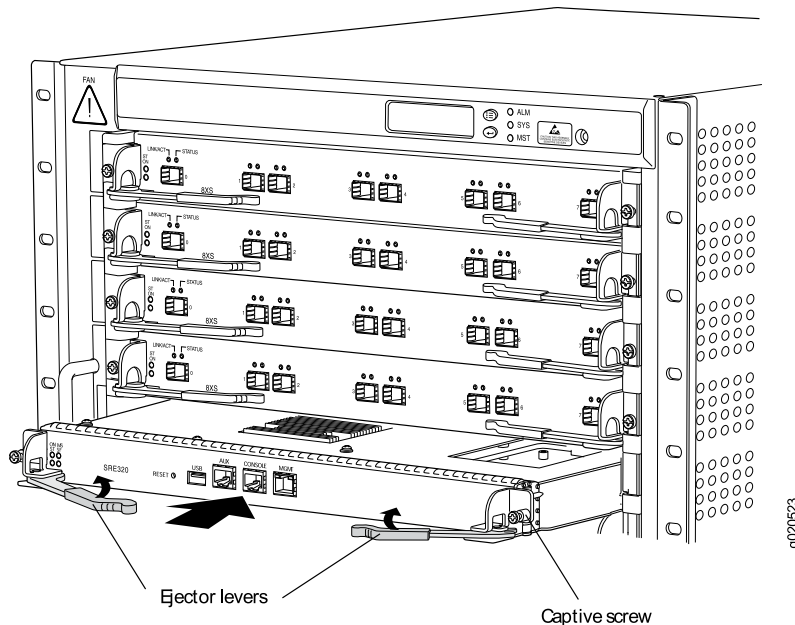To install an SRE module in a J-EX8208 switch (see Figure 56 on page 119):

1. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.

2. Taking care not to touch the leads, pins, or solder connections, pull the SRE module out from the bag.

3. Pull both the ejector levers outward, away from the faceplate of the SRE module, until they go no further.

4. If the slot has a cover panel on it, unscrew the two screws on either side of the cover panel counterclockwise using the Phillips (+) screwdriver, number 2. Remove the cover panel. Save the cover panel for later use.

5. Carefully align the sides of the SRE module with the guides inside the chassis.

6. Ensuring that the SRE module is correctly aligned, carefully slide it into the chassis until you feel resistance.

7. Push both the ejector levers towards the faceplate of the SRE module until the levers are flush against the faceplate and are fully engaged.

8. Tighten the screws, one on each side of the SRE module, by turning them clockwise using the Phillips (+) screwdriver, number 2. Ensure that the SRE module is fully seated in the chassis. It must be fully seated in order for it to be powered up.

9. Verify that the SRE module is installed correctly and functioning normally by checking the LEDs on the faceplate of the SRE module. The **ON** LED and **ST** LED should be lit steady green a few minutes after the SRE module is installed.

    If the **ON** LED is unlit, verify that there are enough power supplies installed. See "Calculating Power Requirements for a J-EX8208 Switch" on page 79. If more power supplies are needed, install additional power supplies. See "Installing an AC Power Supply in a J-EX8200 Switch" on page 114. If there are enough power supplies in the switch, remove and install the SRE module again. See "Removing an SRE Module from a J-EX8208 Switch" on page 167.

    If the **ST** LED is lit steady yellow, the SRE module has failed. Remove the module and install a new SRE module. See "Removing an SRE Module from a J-EX8208 Switch" on page 167.

Figure 56: Installing an SRE Module in a J-EX8208 Switch

Ejector levers

Captive screw

Related Documentation

- Removing an SRE Module from a J-EX8208 Switch on page 167

- Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch on page 22

- SRE Module LEDs in a J-EX8208 Switch on page 23

- Field-Replaceable Units in a J-EX8208 Switch on page 21

Installing an SF Module in a J-EX8208 Switch

One SF module is included in the redundant J-EX8208 switch configuration. The SF module can be installed only in the slot labeled SF. The module is keyed so that it does not fit in any other slot in the chassis.

> 🖉 NOTE: Do not lift the SF module by holding the ejector levers. The levers cannot support the weight of the module. Lifting the module by the levers might bend the levers. Bent levers prevent the SF module from being properly seated in the chassis.

Before you begin installing an SF module in a J-EX8208 switch:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to install an SF module:

- Electrostatic discharge (ESD) grounding strap
- Phillips (+) screwdriver, number 2

To install an SF module (see Figure 57 on page 121):

1. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.

2. If the slot has a cover panel on it, use the Phillips (+) screwdriver, number 2 to remove the two screws on each side of the cover panel. Save the cover panel for later use.

3. Taking care not to touch the leads, pins, or solder connections, pull the SF module out from the bag.

4. Pull both the ejector levers outwards, away from the faceplate of the SF module, until they go no further.

5. Align the sides of the SF module with the guides inside the chassis.

6. Ensuring that the module remains correctly aligned, slide the SF module into the chassis until you feel resistance.

7. Push both the ejector levers towards the faceplate of the SF module until the levers are flush against the faceplate and are fully engaged.

8. Tighten the screws on each side of the SF module by turning them clockwise using the Phillips (+) screwdriver, number 2. Ensure that the SF module is fully seated in the chassis.

9. Verify that the SF module is installed correctly and functioning normally by checking the LEDs on the faceplate of the SF module. The **ST** LED and **SF** LED should be lit steady green a few minutes after the SF module is installed.

If the **ST** LED is unlit, check whether there are enough power supplies installed. See "Calculating Power Requirements for a J-EX8208 Switch" on page 79. If more power supplies are needed, install additional power supplies. See "Installing an AC Power Supply in a J-EX8200 Switch" on page 114. If there are enough power supplies in the switch, remove and install the SF module again. See "Removing an SF Module from a J-EX8208 Switch" on page 169.

If the **ST** LED or the **SF** LED is lit steady yellow, the SF module has failed. Remove the SF module and install a new one. See "Removing an SF Module from a J-EX8208 Switch" on page 169.

Figure 57: Installing an SF Module in a J-EX8208 Switch

Ejector levers

Captive screw
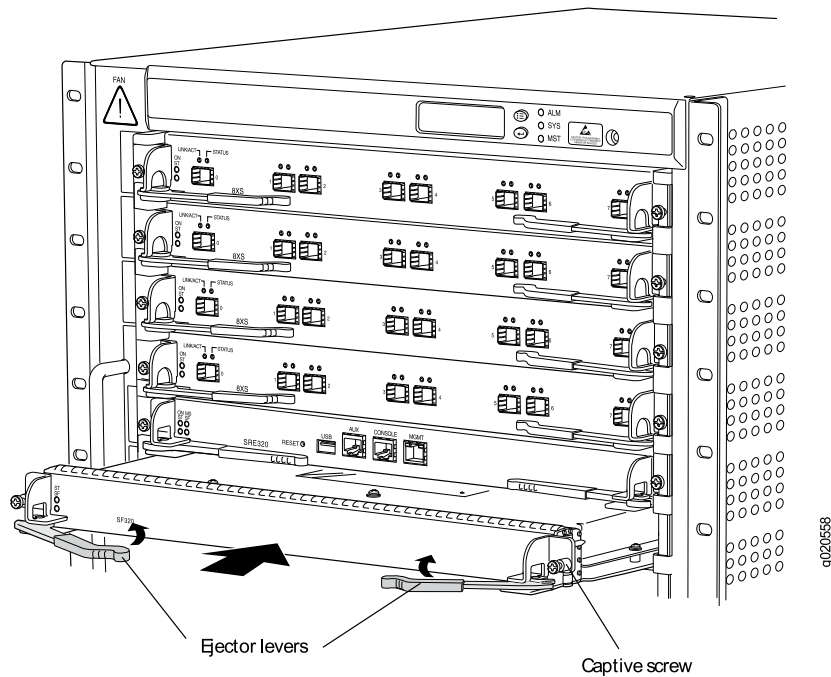
Related Documentation
- Removing an SF Module from a J-EX8208 Switch on page 169
- Switch Fabric (SF) Module in a J-EX8208 Switch on page 25
- SF Module LEDs in a J-EX8208 Switch on page 26
- Packing a Line Card Used in a J-EX8200 Switch on page 202

Unpacking a Line Card Used in a J-EX8200 Switch

The line cards for J-EX8200 switches are rigid sheet-metal structures that house the line card components including network ports. The line cards are shipped in a cardboard carton, secured with foam packing material.

> ⚠ CAUTION: The line cards are maximally protected inside the shipping carton. Do not unpack the line cards until you are ready to install them in the switch chassis.

Before you unpack a line card:

- Ensure that you have taken the necessary precautions to prevent ESD damage (see "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236).

- Ensure that you know how to handle and store the line card (see "Handling and Storing Line Cards in J-EX8200 Switches" on page 179).

To unpack a line card (see Figure 58 on page 122):

1. Move the shipping carton to a staging area as close to the installation site as possible.

2. Position the carton so that the arrows are pointing up.

3. Open the top flaps on the shipping carton.

4. Pull out the packing material, which holds the line card in place.

5. Remove the line card from the antistatic bag.

6. Save the shipping carton and packing materials in case you need to move or ship the line card later.

Figure 58: Unpacking a Line Card Used in a J-EX8200 Switch

Packing material

Line card
(in antistatic bag)

g020550
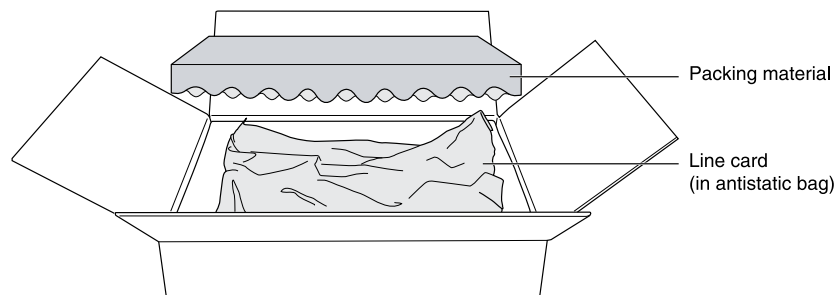
Related Documentation

- Packing a Line Card Used in a J-EX8200 Switch on page 202

- Installing a Line Card in a J-EX8200 Switch on page 122

- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27

- 48-port SFP Line Card in a J-EX8200 Switch on page 28

- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29

Installing a Line Card in a J-EX8200 Switch

J-EX8200 switches have field-replaceable unit (FRU) line cards that can be installed in the line card slots on the front of the switch chassis. The line cards are hot-insertable

and hot-removable: You can remove and replace them without powering off the switch or disrupting switch functions.

Before you begin installing a line card in the switch:

- Ensure that you have taken the necessary precautions to prevent Electrostatic Discharge Damage (ESD) damage (see "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236).

- If there are any transceivers installed in the line card, remove them before you install the line card. For instructions on removing transceivers, see "Removing a Transceiver from a J-EX Series Switch" on page 173.

- Ensure that you know how to handle and store the line card (see "Handling and Storing Line Cards in J-EX8200 Switches" on page 179).

- Ensure the switch has sufficient power to power the line card while maintaining its N+1 or N+N power configuration:

  - To determine the power requirements of the line card, see "Power Requirements for J-EX8208 Switch Components" on page 76.

  - To determine if the switch has enough available power for the line card, use the **show chassis power-budget-statistics** command.

Ensure that you have the following parts and tools available to install a line card in the switch:

- ESD grounding strap

- Phillips (+) screwdriver, number 2

To install a line card in the switch (see Figure 60 on page 125):

1. Attach the ESD grounding strap to your bare wrist and connect the strap to the ESD point on the switch chassis (see Figure 59 on page 123).

Figure 59: Location of the ESD Point on a J-EX8200 Switch Chassis
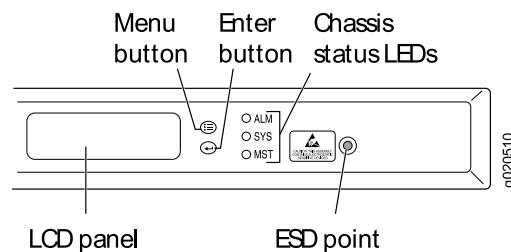
2. If the line card slot has a cover panel on it, use the screwdriver to remove the captive screws on each side of the cover panel. Save the cover panel and the screws for later use.

> ⚠️ CAUTION: Do not lift the line card by holding the ejector levers on the faceplate or the edge connectors. The levers cannot support the weight

of the line card. Lifting the line cards by the levers might bend them. Bent levers prevent the line cards from being properly seated in the chassis.

3. Taking care not to touch line card components, pins, leads, or solder connections, remove the line card from its bag.

4. Grasp the ejector levers on the faceplate of the line card and pull them outward until they are fully open.

△ CAUTION: Before you slide the line card into the slot on the switch chassis, ensure the line card is aligned correctly. Misalignment might cause the pins to bend, making the line card unusable.

5. Place one hand around the faceplate of the line card and the other hand under the line card to support it.

△ CAUTION: The line cards in J-EX8200 switches weigh more than 10 lb (4.5 kg). Be prepared to accept the full weight as you slide the line card into the chassis.

6. Lift the line card, and position it in the chassis with the faceplate facing you and the sides of the line card aligned with the guides in the line card slot on the switch chassis.

7. Using both hands, gently slide the line card into the slot until it is fully seated.

✎ NOTE: You might need to lift the line card slightly to seat it correctly in the slot.

8. Grasp the ejector levers on the line card and push them inward simultaneously until the line card is fully seated. When the **ON** LED turns green, the line card is ready for use.

△ CAUTION: After the ON LED turns green, wait for at least 30 seconds before installing another line card or removing a line card.

9. Tighten the captive screws on the faceplate of the line card by using the screwdriver.

Figure 60: Installing a Line Card in a J-EX8200 Switch Chassis
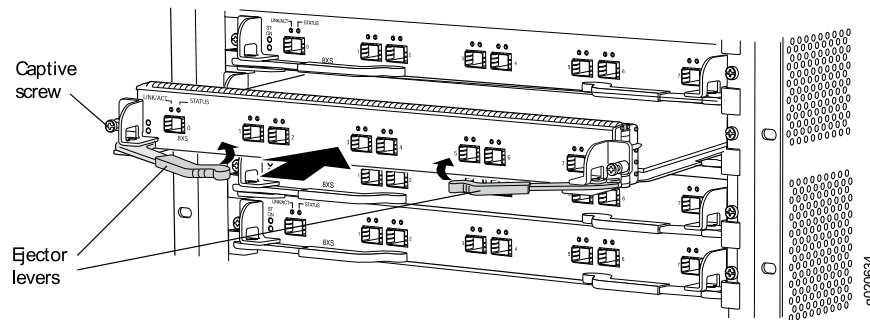
You can verify that the line card is functioning correctly by issuing the **show chassis fpc** and **show chassis fpc pic-status** commands.

Related Documentation

- Removing a Line Card from a J-EX8200 Switch on page 170

- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27

- 48-port SFP Line Card in a J-EX8200 Switch on page 28

- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29

Installing a Transceiver in a J-EX Series Switch

The transceivers for J-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 Dell for your J-EX Series switch.

Before you begin installing a transceiver in a J-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 J-EX Series Switches" on page 213).

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

Figure 61 on page 126 shows how to install an SFP transceiver. The procedure is the same for all transceiver types.

To install a transceiver in a J-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 61: Installing a Transceiver in a J-EX Series Switch
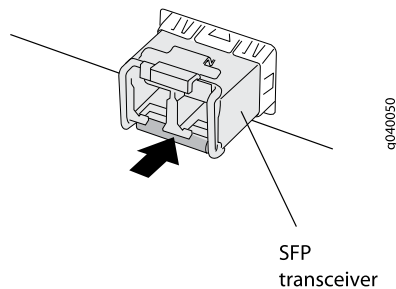
SFP transceiver

Related Documentation

- Removing a Transceiver from a J-EX Series Switch on page 173
- Connecting a Fiber-Optic Cable to a J-EX Series Switch on page 126
- Optical Interface Support in J-EX8200 Switches on page 45

Connecting a Fiber-Optic Cable to a J-EX Series Switch

J-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 a J-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 J-EX Series Switches" on page 213).

To connect a fiber-optic cable to an optical transceiver installed in a J-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 62 on page 127).

Figure 62: Connecting a Fiber-Optic Cable to an Optical Transceiver Installed in a J-EX Series Switch
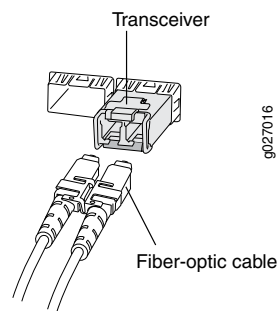
4. Secure the cables so that they are not supporting their own weight. Place excess cable out of the way in a neatly coiled loop. Placing fasteners on a loop helps cables maintain their shape.

⚠️ 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 a J-EX Series Switch on page 172

- Installing a Transceiver in a J-EX Series Switch on page 125

- Maintaining Fiber-Optic Cables in J-EX Series Switches on page 183

- Optical Interface Support in J-EX8200 Switches on page 45

CHAPTER 10

Connecting the Switch

- Connecting Earth Ground to a J-EX Series Switch on page 129
- Connecting AC Power to a J-EX8200 Switch on page 130
- Powering On a J-EX8200 Switch on page 133
- Connecting a J-EX Series Switch to a Management Console on page 135
- Connecting a J-EX Series Switch to a Modem on page 136
- Connecting a J-EX Series Switch to a Network for Out-of-Band Management on page 140

Connecting Earth Ground to a J-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 J-EX Series switch chassis to connect to the earth ground (see Figure 63 on page 129).

Figure 63: Connecting a Grounding Cable to a J-EX Series Switch
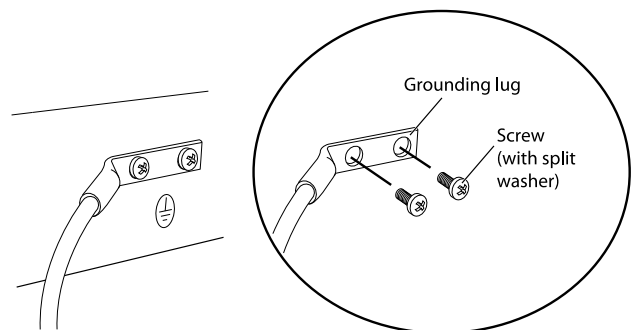
Before you connect earth ground to the protective earthing terminal of a J-EX Series switch, ensure that a licensed electrician has attached an appropriate grounding lug to the grounding cable.

⚠

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 a J-EX8208 Switch on page 130

Connecting Earth Ground to a J-EX8208 Switch

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

An AC-powered J-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 a J-EX8200 Switch" on page 76.

Ensure that you have the following parts and tools available:

- Grounding cable for your J-EX8208 switch—The grounding cable must be 6 AWG (13.3 mm²), minimum 60ºC wire, or as permitted by the local code.
- Grounding lug for your grounding cable. See "Grounding Cable and Lug Specifications for J-EX8200 Switches" on page 53.
- 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 a J-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 63 on page 129.

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 a J-EX8200 Switch on page 130
- General Safety Guidelines and Warnings for J-EX Series Switches on page 207
- Grounded Equipment Warning for J-EX Series Switches on page 225

Connecting AC Power to a J-EX8200 Switch

J-EX8200 switches can be configured with up to six AC power supplies. After you have installed at least one power supply, you can connect power to the switch.

⚠ CAUTION: Mixing different types of power supplies in the same chassis is not a supported configuration.

✎ NOTE: Each power supply must be connected to a dedicated AC power source outlet.

Before you begin to connect power to the switch:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

- 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, J-EX8200 switches must be adequately grounded before they are connected to power.

For installations that require a separate grounding conductor to the chassis, use the protective earthing terminal on the J-EX8200 switch chassis to connect to the earth ground. For instructions on connecting a J-EX8200 switch to ground using a separate grounding conductor, see "Connecting Earth Ground to a J-EX Series Switch" on page 129.

A J-EX8200 switch gets additional grounding when you plug the power supply in the switch into a grounded AC power outlet by using the AC jumper cord or the separately orderable AC power cord appropriate for your geographical location. See "AC Power Cord Specifications for a J-EX8200 Switch" on page 76.

- Install power supplies in the switch. See "Installing an AC Power Supply in a J-EX8200 Switch" on page 114.

Ensure that you have the following parts and tools available to connect power to the switch:

- Electrostatic discharge (ESD) grounding strap

- AC jumper cords or separately orderable AC power cords appropriate for your geographical location. See "AC Power Cord Specifications for a J-EX8200 Switch" on page 76.

⚠ WARNING: Ensure that the jumper cords or power cords do not block access to switch components or drape where people can trip on them.

To connect AC power to a J-EX8200 switch:

1. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the chassis.

2. Ensure that the power supply is fully inserted and latched securely in the chassis. See "Installing an AC Power Supply in a J-EX8200 Switch" on page 114.

3. Flip the **Enable** switch, which is next to the appliance inlet on the power supply faceplate, to the Standby position.

4. Squeeze the two sides of the power cord retainer clip, and insert the L-shaped ends of the clip into the holes in the bracket on each side of the AC appliance inlet on the AC power supply faceplate. See Figure 64 on page 132.

Figure 64: Power Cord Retainer in an AC Power Supply
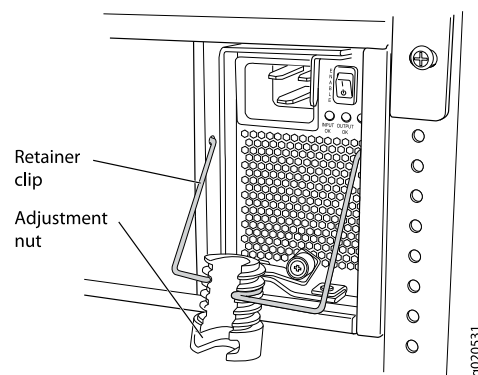
5. Locate the jumper cord or cords shipped with the switch—or the separately orderable power cords that have plugs appropriate for your geographical location.

6. Insert the coupler end of the jumper cord or power cord into the AC appliance inlet on the AC power supply faceplate.

> NOTE: If the power cord tray is installed, you can thread the jumper cord or power cord through the power cord tray. See Figure 65 on page 133.

7. Push the cord (close to the coupler end) into the slot in the adjustment nut of the power cord retainer. Rotate 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 65 on page 133.

8. If the AC power source outlet has a power switch, set it to the OFF (0) position.

9. Insert the jumper cord or power cord plug into an AC power source outlet.

10. If the AC power source outlet has a power switch, set it to the ON (|) position.

11. Verify that the **INPUT OK** LED on the power supply faceplate is lit and is on steadily.

12. Repeat Steps 2 through 11 for the remaining power supplies.

Figure 65: Connecting the Power Supply Cord to a J-EX8200 Switch
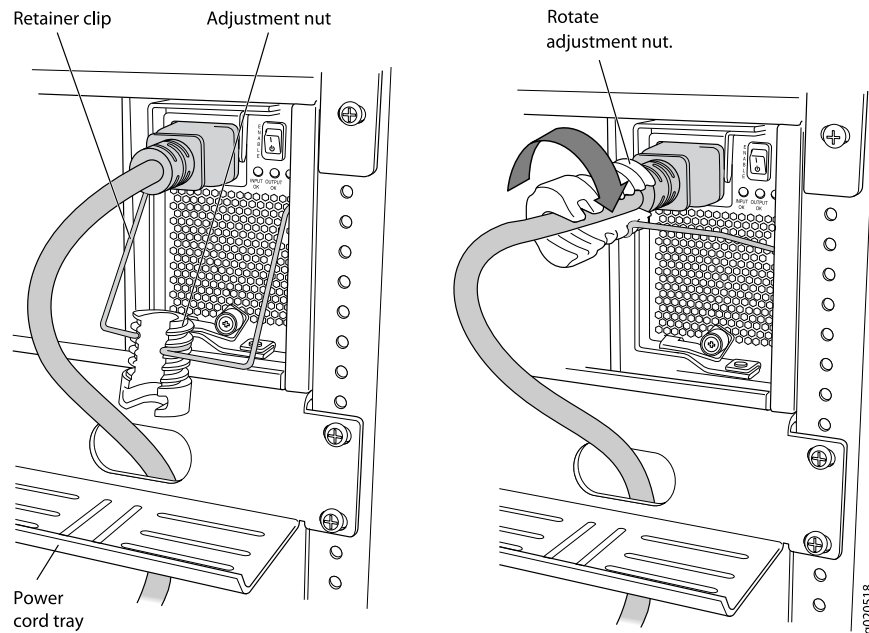
Related Documentation
- Powering On a J-EX8200 Switch on page 133
- AC Power Supply in a J-EX8200 Switch on page 34
- AC Power Supply LEDs in a J-EX8200 Switch on page 37

Powering On a J-EX8200 Switch

Before you power on the switch, ensure that:

- You have installed all required switch components.

- You have installed the required number of power supplies to support redundant operation for the switch configuration (see "Calculating Power Requirements for a J-EX8208 Switch" on page 79.

- You understand how to protect the switch from electrostatic damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to power on the switch:

- An electrostatic discharge (ESD) grounding strap.

- An external management device such as a PC.

- A cable to connect the external management device to the master Switch Fabric and Routing Engine (SRE) module's console (CON) port or management (MGMT) port in a J-EX8208 switch.

For connecting a management device to the console port, see "Connecting a J-EX Series Switch to a Management Console" on page 135. For connecting a management

device to the management port, see "Connecting a J-EX Series Switch to a Network for Out-of-Band Management" on page 140.

To power on the switch:

1. Attach the ESD grounding strap to your bare wrist and connect the strap to the ESD point on the chassis.

2. Connect the external management device to the master SRE or master RE module's management (MGMT) port.

3. Turn on the power to the external management device.

4. Ensure that the power supplies are fully inserted in the chassis and that each of their handles is flush against the faceplate.

5. Ensure that the source power cord is inserted securely into the appliance inlet for each AC power supply.

6. Switch on the site circuit breakers.

7. Flip a power supply's **Enable** switch to the on position (ON). See Figure 66 on page 134. Observe the power supply faceplate LEDs. If the power supply is installed correctly and functioning normally, the **INPUT OK / IN OK** and **OUTPUT OK / OUT OK** LEDs light and remain constantly lit. The **FAIL** LED does not light.

Figure 66: Flip the Enable Switch to the ON position
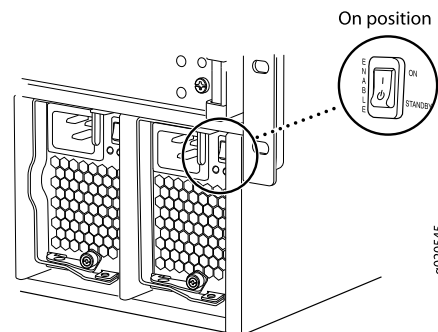
8. Repeat Step 7 for the remaining power supplies installed in the switch.

9. On the external management device, monitor the startup process to ensure that the system boots properly.

![note icon] NOTE: After you power on a power supply, wait for at least 60 seconds before you turn it off. After you power off a power supply, wait for at least 60 seconds before you turn it back on.

If the system is completely powered off when you switch on a power supply, the SRE module boots as the power supply completes its startup sequence.

After you power on a power supply, it can take up to 60 seconds for status indicators such as power supply LEDs and the show chassis operational mode CLI command display to indicate that the power supply is functioning normally. Ignore any error indicators that might appear during the first 60 seconds.

Related Documentation

- Installing an AC Power Supply in a J-EX8200 Switch on page 114
- Connecting AC Power to a J-EX8200 Switch on page 130
- Powering Off a J-EX8200 Switch on page 151

Connecting a J-EX Series Switch to a Management Console

You can configure and manage a J-EX Series switch using a dedicated console. Every J-EX Series switch has a console port with an RJ-45 connector. Use the console port to connect the J-EX Series switch 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 switch.

Figure 67 on page 135 shows the RJ-45 connector of the Ethernet cable supplied with the switch.

Figure 67: Ethernet Cable Connector
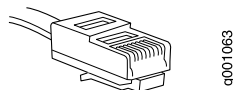
![note icon] NOTE: If your laptop or PC does not have a DB-9 male connector pin and you want to connect your laptop or PC directly to a J-EX Series switch, use a combination of the RJ-45 to DB-9 female adapter supplied with the switch and a USB to DB-9 male adapter. You must provide the USB to DB-9 male adapter.

To connect a J-EX Series switch to a management console (see Figure 68 on page 136 and Figure 69 on page 136):

1. Connect one end of the Ethernet cable into the console port (labeled **CON** or **CONSOLE**) on the J-EX Series switch.

For the location of the **CON/CONSOLE** port, see "Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch" on page 22.

2. Connect the other end of the Ethernet cable into the console server (see Figure 68 on page 136) or management console (see Figure 69 on page 136).

To configure the switch from the management console, see"Connecting and Configuring a J-EX Series Switch (CLI Procedure)" on page 144 or "Connecting and Configuring a J-EX Series Switch (J-Web Procedure)" on page 146.

Figure 68: Connecting a J-EX Series Switch to a Management Console Through a Console Server
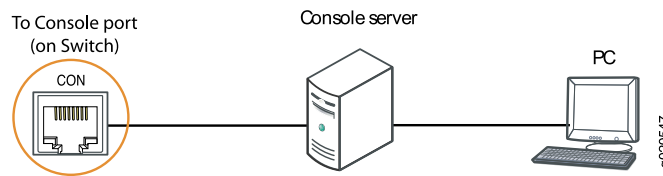
Figure 69: Connecting a J-EX Series Switch Directly to a Management Console
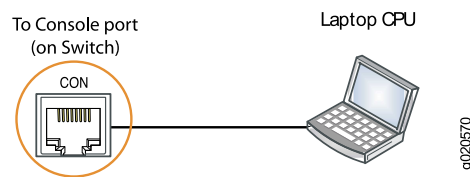
Related Documentation

- Connecting a J-EX Series Switch to a Network for Out-of-Band Management on page 140

- Console Port Connector Pinout Information for a J-EX Series Switch on page 43

- Cables Connecting the J-EX8200 Switch to Management Devices on page 71

Connecting a J-EX Series Switch to a Modem

You can connect a J-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 a J-EX Series Switch (CLI Procedure)" on page 144 or "Connecting and Configuring a J-EX Series Switch (J-Web Procedure)" on page 146.

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:

1. Setting the Serial Console Speed for the Switch on page 137
2. Configuring the Modem on page 138
3. Connecting the Modem to the Console Port on page 139

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. (See "Powering On a J-EX8200 Switch" on page 133.) 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 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 42 on page 138.

Table 42: 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 icon] 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 J-EX Series switch accepts a cable with an RJ-45 connector. Figure 70 on page 139 shows the RJ-45 connector of the Ethernet cable supplied with the switch.

Figure 70: Ethernet Cable Connector
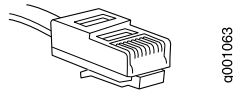
> ![note icon] NOTE: If your laptop or PC does not have a DB-9 male connector pin and you want to connect your laptop or PC directly to the switch, use a combination of the RJ-45 to DB-9 female adapter supplied with the switch and a USB to DB-9 male adapter. You must provide the USB to DB-9 male adapter.

> ![note icon] 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 J-EX Series switches:

   • See "Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch" on page 22.

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.

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

You can monitor and manage a J-EX Series switch using a dedicated management channel. J-EX Series switches have a management port with an RJ-45 connector for out-of-band management. Use the management port to connect the J-EX Series switch to the management device.

Ensure that you have an Ethernet cable with an RJ-45 connector available. One such cable is provided with the switch. Figure 71 on page 140 shows the RJ-45 connector of the Ethernet cable supplied with the switch.

Figure 71: Ethernet Cable Connector
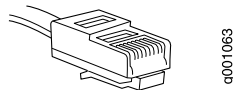
To connect a J-EX Series switch to a network for out-of-band management (see Figure 72 on page 141):

1. Connect one end of the Ethernet cable to the management port (labeled **MGMT**) on the J-EX Series switch.

   For the location of the **MGMT** port, see "Switch Fabric and Routing Engine (SRE) Module in a J-EX8208 Switch" on page 22.

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

Figure 72: Connecting a J-EX Series Switch to a Network for Out-of-Band Management
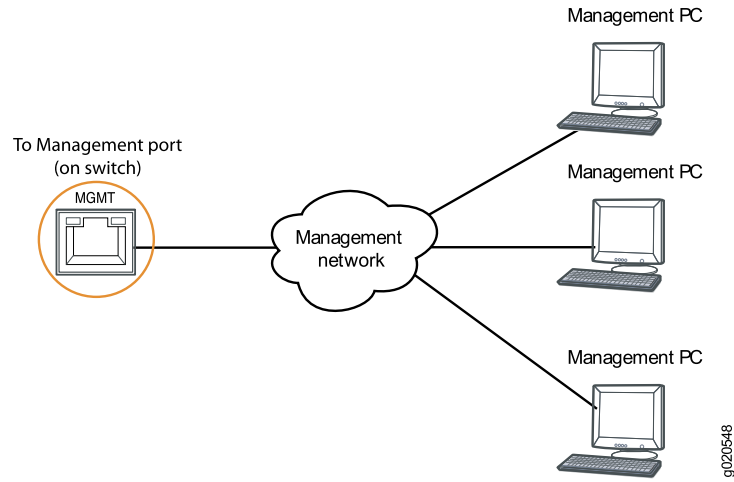
- Connecting a J-EX Series Switch to a Management Console on page 135
- Management Port Connector Pinout Information for a J-EX8200 Switch on page 44
- Cables Connecting the J-EX8200 Switch to Management Devices on page 71

Performing Initial Configuration

J-EX8200 Switch Default Configuration

Each J-EX8200 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 sets values for system parameters such as the ARP aging timer, the system log, and file messages, while also enabling the LLDP protocol, the RSTP protocol, IGMP snooping, and storm control.

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. For instructions for reverting to the factory configuration, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

This topic shows the factory default configuration file of a J-EX8200 switch:

```
system {
  arp {
    aging-timer 5
    }
  }
  syslog {
    user * {
      any emergency;
    }
    file messages {
      any notice;
      authorization info;
    }
    file interactive-commands {
      interactive-commands any;
    }
  }
  commit {
    factory-settings {
```

```
                reset-chassis-lcd-menu;
            }
        }
    }
        protocols {
            igmp-snooping {
                vlan all;
            }
            lldp {
                interface all;
            }
            rstp;
        }
        ethernet-switching-options {
            storm-control {
                interface all;
            }
        }
```

Related Documentation
- Connecting and Configuring a J-EX Series Switch (CLI Procedure) on page 144
- Connecting and Configuring an Switch (J-Web Procedure) on page 146
- For information about J-EX Series switch configuration files and interfaces and instructions for reverting to the factory default configuration, see the *Dell PowerConnect J-Series Ethernet Switch Complete Software Guide for Junos OS* at http://www.support.dell.com/manuals.

Connecting and Configuring a J-EX Series Switch (CLI Procedure)

There are two ways to connect and configure a J-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 J-EX Series Switch.

Before you begin connecting and configuring a J-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.

   The console port is located on the Switch Fabric and Routing Engine (SRE) module in slot SRE0.

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 a J-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—**Configure out-of-band management**. Specify the IP address and gateway of the management interface. Use this IP address to connect to the switch.

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

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 a J-EX Series Switch (J-Web Procedure) on page 146

- Installing and Connecting a J-EX8208 Switch on page 89

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

There are two ways to connect and configure a J-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. 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. To transition the switch into initial setup mode, use the **Menu** and **Enter** buttons located to the right of the LCD panel (see Figure 73 on page 146):

Figure 73: LCD Panel in a J-EX8200 Switch
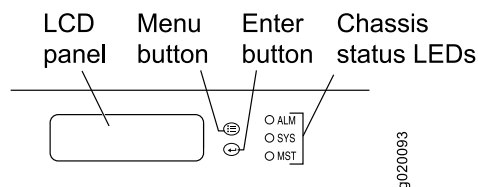
a. Press the **Menu** button until you see **MAINTENANCE MENU**. Then press the **Enter** button.

b. 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.

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

2. Connect the Ethernet cable from the Ethernet port on the PC to the port labeled **MGMT** on the Switch Fabric and Routing Engine (SRE) module in slot SRE0.

   This port is 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—**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.

   > 🖉 NOTE: On J-EX8200 switches, only the out-of-band management option is available.

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 a J-EX Series Switch (CLI Procedure) on page 144

- Installing and Connecting a J-EX8208 Switch on page 89

Removing the Switch and Switch Components

CHAPTER 12

Removing the Switch

- Powering Off a J-EX8200 Switch on page 151
- Removing a J-EX8208 Switch from a Rack or Cabinet on page 152
- Removing a J-EX8208 Switch from a Rack or Cabinet Using a Mechanical Lift on page 154
- Removing a J-EX8208 Switch from a Rack or Cabinet Without Using a Mechanical Lift on page 156

Powering Off a J-EX8200 Switch

Before you power off the switch:

- Ensure that you understand how to prevent electrostatic discharge damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.
- Ensure that you do not need to forward traffic through the switch.

Ensure that you have the following parts and tools available to power off the switch:

- An electrostatic discharge (ESD) grounding strap
- An external management device such as a PC
- A cable to connect the external management device to the console port (CON) or management port (MGMT) on the master Switch Fabric and Routing Engine (SRE) module in a J-EX8208 switch.

To power off a switch:

1. Connect a management device to the master SRE module in a J-EX8208 switch. For connecting a management device to the console (CON) port, see "Connecting a J-EX Series Switch to a Management Console" on page 135. For connecting a management device to the management (MGMT) port, see "Connecting a J-EX Series Switch to a Network for Out-of-Band Management" on page 140.

2. If the switch has two SRE modules, shut down the backup SRE module first. (If your switch has only one SRE module, skip to Step 2.) From the external management PC connected to the master SRE module, issue the **request system halt other-routing-engine** operational mode CLI command.

   This command shuts down the backup SRE module gracefully. A message displays on the console confirming that the backup SRE module has halted.

3. Shut down the master SRE module from the external management device by issuing the **request system halt** operational mode CLI command. This command shuts down the switch gracefully and preserves system state information. A message displays on the console confirming that the operating system has halted.

You will see the following output (or something similar, depending on the hardware being shutdown) after entering the command:

```
Halting re1
*** FINAL System shutdown message from user@switch***
System going down IMMEDIATELY
Shutdown NOW!
[pid 859]
user@switch> JWaiting (max 60 seconds) for system process `vnlru' to stop...done
Waiting (max 60 seconds) for system process `bufdaemon' to stop...done
Waiting (max 60 seconds) for system process `syncer' to stop...
Syncing disks, vnodes remaining...2 2 2 1 1 0 0 0 0 done
syncing disks... All buffers synced.
Uptime: 3h3m49s
recorded reboot as normal shutdown
The operating system has halted. Please press any key to reboot.
```

⚠️ CAUTION: The final output of any version of the request system halt command is the "The operating system has halted. Please press any key to reboot" message. Wait at least 60 seconds after first seeing this message before following the instructions in step 5 to power off the switch.

4. Attach the ESD grounding strap to your bare wrist and connect the strap to the ESD point on the chassis.

5. Flip the power supply **Enable** switch to the off position (OFF). Observe the power supply LEDs. The power supply LEDs should turn off (appear unlit). Repeat this step for all installed power supplies.

📝 NOTE: After you power off a power supply, wait for at least 60 seconds before you turn it back on. After you power on a power supply, wait for at least 60 seconds before you turn it back off.

Related Documentation
- Powering On a J-EX8200 Switch on page 133
- Connecting AC Power to a J-EX8200 Switch on page 130

Removing a J-EX8208 Switch from a Rack or Cabinet

If you want to move an installed J-EX8208 switch to another location, you need to remove it from the rack or cabinet in which it is installed. In a four-post rack, an installed switch rests on adjustable mounting brackets bolted to the rack. In a two-post rack, an installed switch rests on the lip of the power cord tray installed in the rack. The front-mounting brackets ("ears") attached to the chassis are also bolted to the rack.

> **NOTE:** When you remove multiple switches from a rack or cabinet, remove the switch in the top of the rack or cabinet first and proceed to remove the rest of the switches from top to bottom.

> ⚠ **CAUTION:** At least three people must be available to lift an unloaded switch chassis (all components removed) out of a rack or cabinet. For instructions on removing a switch without using a mechanical lift, see "Removing a J-EX8208 Switch from a Rack or Cabinet Without Using a Mechanical Lift" on page 156.

Before removing a J-EX8208 switch from a rack or a cabinet:

- Ensure that the rack or cabinet is stable and secured to the building.

- Ensure that there is enough space to place the removed switch in its new location and along the path to the new location.

- Read "General Safety Guidelines and Warnings for J-EX Series Switches" on page 207, with particular attention to "Chassis Lifting Guidelines for J-EX8200 Switches" on page 220.

- Ensure that the switch has been safely powered off (see "Powering Off a J-EX8200 Switch" on page 151) and that you have unplugged (disconnected) the power cords.

- Ensure that you have disconnected any cables or wires attached to the switch ports.

Ensure that you have the following parts and tools available to remove the switch:

- A Phillips (+) screwdriver, number 2 or number 3, depending on the size of your rack mounting screws, for mounting the switch on a rack or cabinet.

- A Phillips (+) screwdriver, number 1, to remove the power supplies from the chassis if you are mounting the switch without using a mechanical lift

- If you installed the switch with square-hole cage nuts, a flat-blade (-) screwdriver to remove the cage nuts

To remove a J-EX8200 switch from a rack or cabinet:

1. Use the appropriate Phillips (+) screwdriver to remove the mounting screws—and washers if you installed the switch with cage nuts—that attach the chassis front-mounting brackets to the rack or cabinet.

2. Place the removed hardware in a labeled bag. You will need it when you reinstall the chassis.

3. Lift the chassis from the rack or cabinet and place it on a mechanical lift. For instructions on how to remove the chassis using a mechanical lift, see "Removing a J-EX8208 Switch from a Rack or Cabinet Using a Mechanical Lift" on page 154. If a mechanical lift is not available, remove all components and manually lift the empty chassis out of the rack. For instructions on removing the chassis without using a

mechanical lift, see "Removing a J-EX8208 Switch from a Rack or Cabinet Without Using a Mechanical Lift" on page 156.

4. If you installed the switch with cage nuts:

   a. Remove the cage nuts from the rack.

      Use Figure 74 on page 154 or Figure 75 on page 154 to help you with cage-nut removal.

Figure 74: Removing a Round-Hole Cage Nut (Clip Nut)
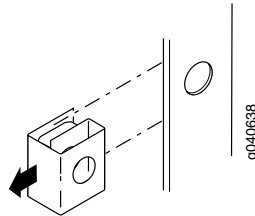
Figure 75: Removing a Square-Hole Cage Nut
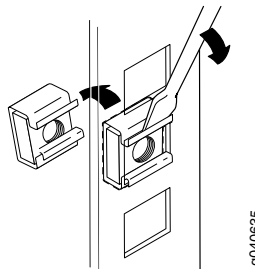
   b. Place the removed cage nuts in the labeled bag with the screws and washers. You will need them when you reinstall the chassis.

Related Documentation

- Removing a J-EX8208 Switch from a Rack or Cabinet Using a Mechanical Lift on page 154

- Removing a J-EX8208 Switch from a Rack or Cabinet Without Using a Mechanical Lift on page 156

Removing a J-EX8208 Switch from a Rack or Cabinet Using a Mechanical Lift

Because of the switch's size and weight, we strongly recommend using a mechanical lift to remove the switch. For instructions on removing a switch without using a mechanical lift, see "Removing a J-EX8208 Switch from a Rack or Cabinet Without Using a Mechanical Lift" on page 156.

Before you remove the switch using a lift:

- Ensure that the rack or cabinet is stable and secured to the building.

- Ensure that there is enough space to place the removed switch in its new location and along the path to the new location.

- Read "General Safety Guidelines and Warnings for J-EX Series Switches" on page 207, with particular attention to "Chassis Lifting Guidelines for J-EX8200 Switches" on page 220.

- Ensure that the switch has been safely powered off (see "Powering Off a J-EX8200 Switch" on page 151) and that you have unplugged (disconnected) the power cords to the power supplies.

- Ensure that you have disconnected any cables or wires attached to the switch ports.

⚠ CAUTION: When removing more than one switch from a rack or cabinet, remove the switch in the top of the rack or cabinet first and proceed to remove the rest of the switches from top to bottom.

Ensure that you have the following parts and tools available to remove the switch:

- A mechanical lift

- A Phillips (+) screwdriver, number 2 or number 3, depending on the size of your rack mounting screws

- If you installed the switch with square-hole cage nuts, a flat-blade (-) screwdriver to remove the cage nuts

To remove the switch using a lift (see Figure 78 on page 156):

1. Use the appropriate Phillips (+) screwdriver to remove the 24 mounting screws—and washers if you installed the switch with cage nuts—that attach the chassis front-mounting brackets to the rack or cabinet.

2. Move the lift to the rack and position it so that its platform is centered about 0.5 in. (1.27 cm) below the bottom of the switch chassis and as close to it as possible.

3. Carefully slide the switch from the adjustable mounting brackets attached to the rack onto the lift.

4. If you installed the switch with cage nuts, remove the cage nuts from the rack.

   Use Figure 76 on page 155 or Figure 77 on page 156 to help you with cage-nut removal.

Figure 76: Removing a Round-Hole Cage Nut (Clip Nut)
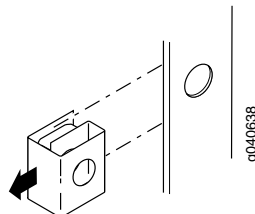
Figure 77: Removing a Square-Hole Cage Nut
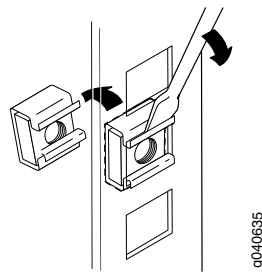
5. Use the lift to transport the switch to its new location.

Figure 78: Removing a J-EX8208 Switch Chassis Using a Mechanical Lift
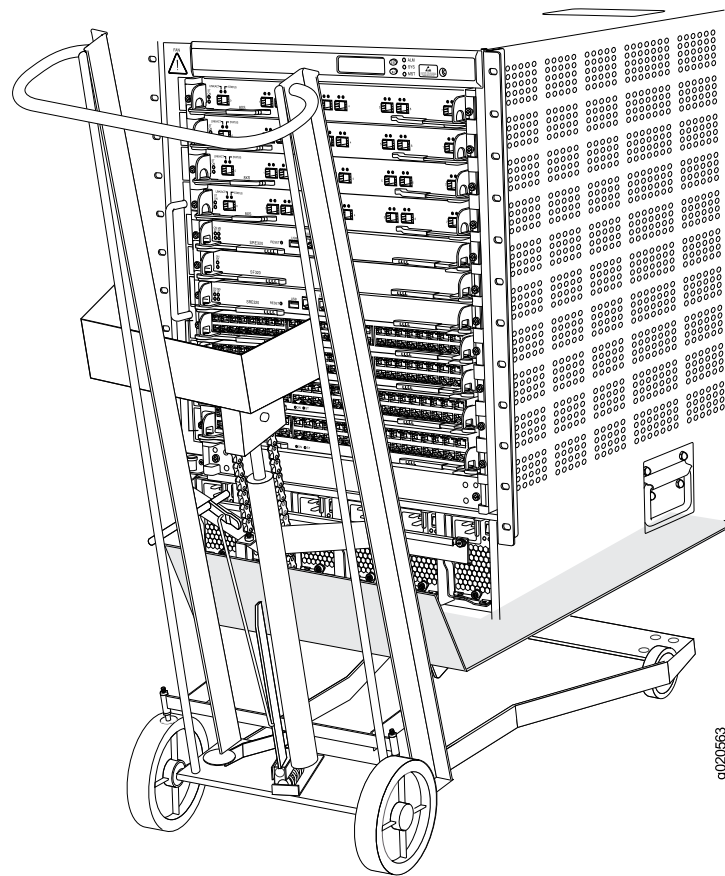
Related Documentation

- Removing a J-EX8208 Switch from a Rack or Cabinet Without Using a Mechanical Lift on page 156

Removing a J-EX8208 Switch from a Rack or Cabinet Without Using a Mechanical Lift

If you cannot use a mechanical lift to remove the switch (the preferred method), you can remove it manually.

⚠ CAUTION: The chassis with only the backplane and no other components weighs approximately 89 lb (41 kg). Lifting the chassis and removing it from a rack or cabinet requires at least three people.

The chassis has two handles. Do not lift a fully loaded chassis by the handles; make sure the chassis is empty before you lift it. If two of the people lifting the chassis use the handles to lift it, the third person must lift from the rear of the chassis. The rear of the chassis is heavier than the front of the chassis, so when you lift the chassis by the handles, the chassis tips toward the heavier back end. The person lifting from the back must be aware of this behavior and must be braced to prevent the chassis from tipping over.

When lifting the chassis, do not grasp the switch by the blue panel at the top front of the chassis. Doing so can cause the panel to pop off of the switch.

⚠ CAUTION: When removing more than one switch from a rack, remove the switch at the top first. We strongly recommend removing a switch that is in an upper position in a rack or cabinet with a lift.

Before you remove the switch:

- Ensure that the rack or cabinet is stable and secured to the building.

- Ensure that there is enough space to place the removed switch in its new location and along the path to the new location.

- Review chassis lifting guidelines as described in "Chassis Lifting Guidelines for J-EX8200 Switches" on page 220.

- Ensure that the switch has been safely powered off (see "Powering Off a J-EX8200 Switch" on page 151) and that you have unplugged (disconnected) the power cords to the power supplies.

- Ensure that you have disconnected any cables or wires attached to the switch ports.

- Remove all components except the backplane from the chassis. See:

  - Removing an SRE Module from a J-EX8208 Switch on page 167

  - Removing an SF Module from a J-EX8208 Switch on page 169

  - Removing a Line Card from a J-EX8200 Switch on page 170

  - Removing a Fan Tray from a J-EX8208 Switch on page 163

  - Removing an AC Power Supply from a J-EX8200 Switch on page 161

Ensure that you have the following parts and tools available to remove the switch:

- A Phillips (+) screwdriver, number 2 or number 3, depending on the size of your rack mounting screws

- If you installed the switch with square-hole cage nuts, a flat-blade (-) screwdriver to remove the cage nuts

To remove the switch from the rack (see Figure 79 on page 158):

1. Use the appropriate Phillips (+) screwdriver to remove the 24 mounting screws—and washers if you installed the switch with cage nuts—that attach the chassis front-mounting brackets to the rack or cabinet.

> ⚠️ WARNING: To prevent injury, keep your back straight and lift with your legs, not your back. Do not twist your body as you lift. Balance the load evenly and be sure that your footing is firm.

2. With one person on each side and one person in the back, hold onto the bottom of the chassis and carefully lift it out of the adjustable mounting brackets attached to the rack. If you have a pallet jack, move the switch onto the pallet jack.

Figure 79: Removing a J-EX8208 Switch Chassis Without Using a Mechanical Lift
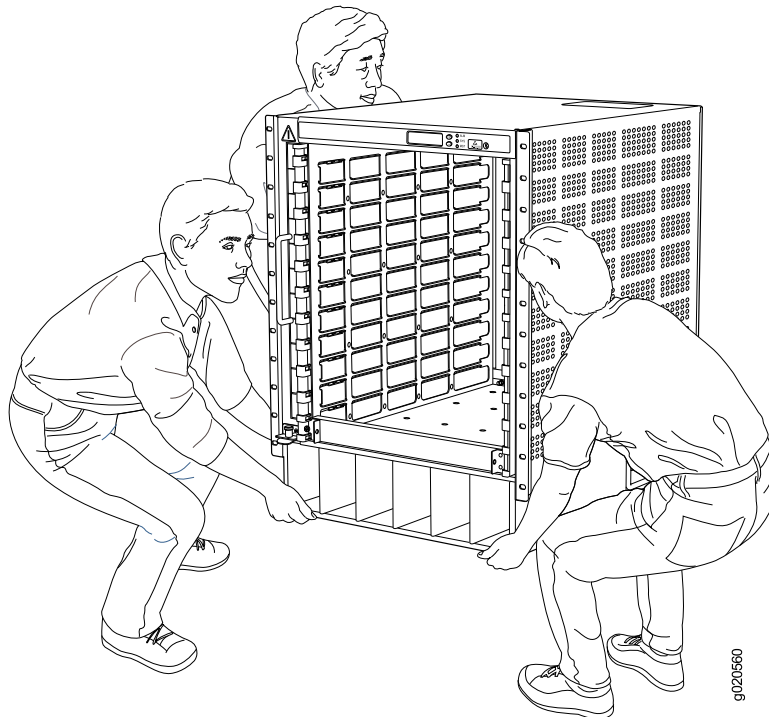
3. Carefully move the chassis to its new location.

4. If you installed the switch with cage nuts, remove the cage nuts from the rack.

   Use Figure 80 on page 159 or Figure 81 on page 159 to help you with cage-nut removal.

Figure 80: Removing a Round-Hole Cage Nut (Clip Nut)
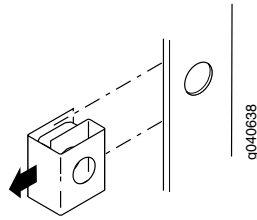
Figure 81: Removing a Square-Hole Cage Nut
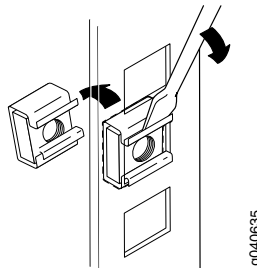
After you move the switch to its new location, reinstall the components in the chassis or store the components in antistatic bags. See:

- Installing an SRE Module in a J-EX8208 Switch on page 118

- Installing an SF Module in a J-EX8208 Switch on page 120

- Installing a Line Card in a J-EX8200 Switch on page 122

- Installing a Fan Tray in a J-EX8208 Switch on page 116

- Installing an AC Power Supply in a J-EX8200 Switch on page 114

Related Documentation

- Removing a J-EX8208 Switch from a Rack or Cabinet Using a Mechanical Lift on page 154

Removing Switch Components

Removing an AC Power Supply from a J-EX8200 Switch

The AC power supply in a J-EX8200 switch is a hot-removable and hot-insertable field-replaceable unit (FRU). You remove AC power supplies from the front of the chassis.

> ⚠️ CAUTION: Before you remove a power supply, ensure that you have power supplies sufficient to power the switch left in the chassis. See "Calculating Power Requirements for a J-EX8208 Switch" on page 79.

Before you remove an AC power supply from the switch:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to remove an AC power supply from a J-EX8200 switch chassis:

- Electrostatic discharge (ESD) grounding strap

- Phillips (+) screwdriver, number 1

- Replacement power supply or a cover panel for the power supply slot

> ⚠ CAUTION: Do not leave the power supply slot empty for a long time while the switch is operational. Either replace the power supply promptly or install a cover panel over the empty slot.

To remove an AC power supply from a J-EX8200 switch (see Figure 82 on page 163):

1. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the chassis.

2. Flip the **Enable** switch next to the appliance inlet on the power supply to the Standby position.

3. Disconnect power from the switch by performing one of the two following tasks:

   - If the AC power source outlet has a power switch, set it to the OFF position.

   - If the AC power source outlet does not have a power switch, gently pull the male end of the power cord connected to the power source outlet out of the outlet.

4. Remove the power cord from the AC appliance inlet on the AC power supply faceplate.

5. Turn the adjustment nut of the power cord retainer counterclockwise till you can see the power cord. Pull the power cord from the slot in the adjustment nut.

6. Squeeze the two sides of the power cord retainer clip, and pull the L-shaped ends of the clip from the holes on each side of the AC appliance inlet to completely remove the power retainer clip.

7. Unscrew the captive screw counterclockwise using the Phillips (+) screwdriver, number 1.

8. Pull the captive screw away from the faceplate of the power supply to release the latch.

9. Pull the handle away from the faceplate of the power supply until it is perpendicular to the faceplate.

10. Taking care not to touch power supply components, pins, leads, or solder connections, place one hand under the power supply to support it. Grasp the power supply handle with your other hand and pull the power supply completely out of the chassis.

11. If you are not replacing the power supply, install the cover panel over the slot, using the Phillips (+) screwdriver to tighten the screw on the side of the cover panel.

Figure 82: Removing an AC Power Supply from a J-EX8200 Switch
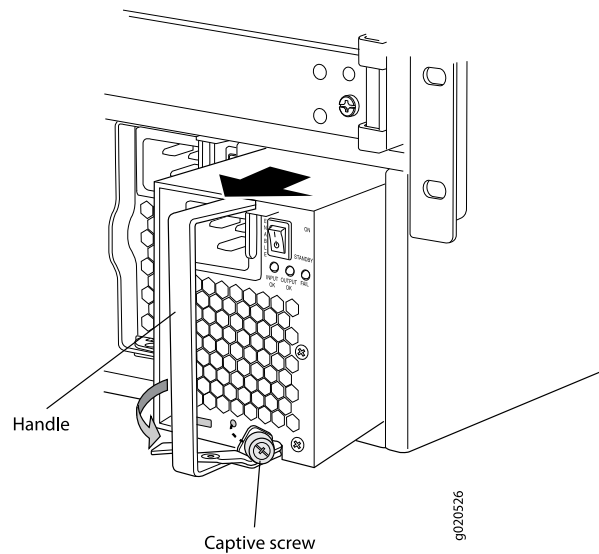
Removing a Fan Tray from a J-EX8208 Switch

A J-EX8208 switch has a single, field-replaceable fan tray. The fan tray is a hot-removable and hot-insertable field-replaceable unit (FRU); you can remove and replace the fan tray while the switch is running without turning off power to the switch or disrupting switching functions.

> ⚠️ **CAUTION:** Do not remove the fan tray unless you have a replacement fan tray available.

The fan tray is installed vertically on the left side on the front of the chassis.

Before you remove a fan tray:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to remove a fan tray from a J-EX8208 switch chassis:

- Electrostatic discharge (ESD) grounding strap

- Replacement fan tray

> ⚠️ **CAUTION:** The fan tray can be removed and replaced while the switch is operating. However, the fan tray must be replaced within 2 minutes of removing the fan tray to prevent overheating of the chassis.

To remove a fan tray from a J-EX8208 switch chassis (see Figure 83 on page 165):

1. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the chassis.

2. Pull the spring-loaded latch, located at the base of the fan tray, upwards until the latch is completely free from the corresponding hole on the strike plate.

3. Hold the handle of the fan tray with one hand while holding the latch up with the other. Pull firmly on the handle to slide the fan tray about 5 in. (13 cm) out of the chassis.

> ⚠️ **WARNING:** There is no fan guard on the fans. Be careful to keep your fingers clear of the moving fan blades when you are removing the fan tray. To avoid injury, do not touch the fans with your hands or any tools as you slide the fan tray out of the chassis—the fans might still be spinning.

4. Wait for approximately 15 seconds to allow all the fans to stop spinning.

5. Release the latch and use that hand to support the weight of the fan tray. Slide the fan tray completely out of the chassis.

Figure 83: Removing a Fan Tray from a J-EX8208 Switch
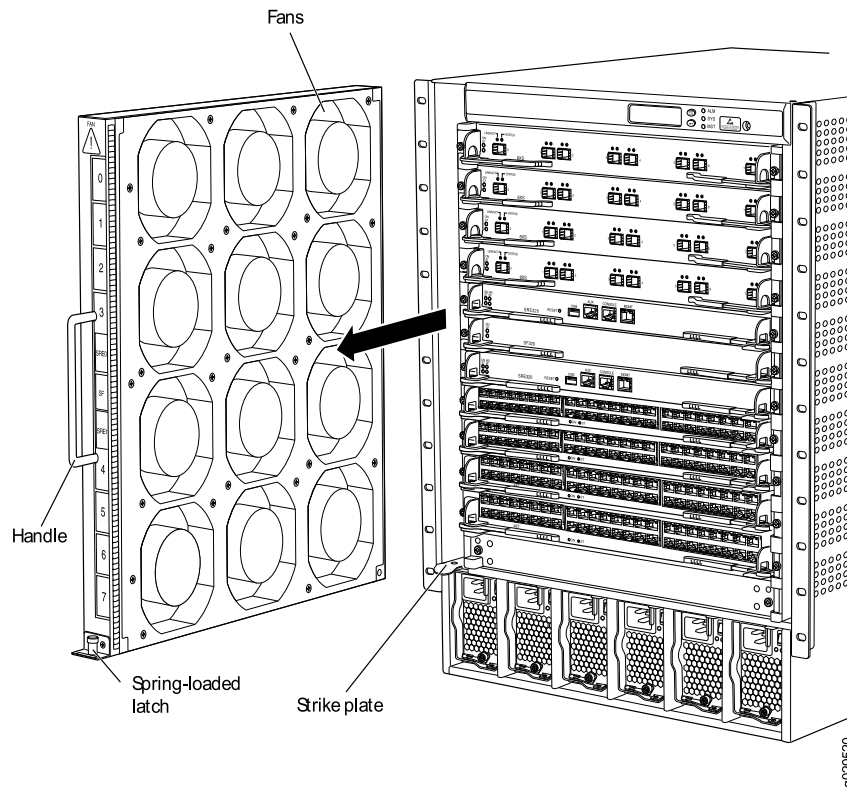
- Installing a Fan Tray in a J-EX8208 Switch on page 116

- Cooling System and Airflow in a J-EX8208 Switch on page 38

- Field-Replaceable Units in a J-EX8208 Switch on page 21

Taking the SRE Module Offline in a J-EX8208 Switch

Before removing a Switch Fabric and Routing Engine (SRE) module from a J-EX8208 switch, take the module offline.

The SRE module performs switching and system management functions in a J-EX8208 switch. Your switch can have either one or two SRE modules.

This topic describes:

- Taking an SRE Module Offline in a Switch with Redundant SRE Modules on page 165
- Taking an SRE Module Offline in a Switch With One SRE Module on page 166

Taking an SRE Module Offline in a Switch with Redundant SRE Modules

To take an SRE module offline in a switch with two SRE modules:

1. Determine whether the SRE module is the master or backup using one of these methods:

   - Look at the **MS** (master) LED on the SRE module faceplate. If the **MS** LED is lit steady green, the SRE module is the master. If it is blinking green, the SRE module is the backup.

   - Issue the following CLI command:

     ```
     user@switch> show chassis routing-engine
     Routing Engine status:
     Slot 0: Current state Master
     Election priority Master (default) ...
     ```

2. If the SRE module that you want to remove is the master, make it the backup module:

   ```
   user@switch> request chassis routing-engine master switch
   ```

3. From the master, halt the other Routing Engine:

   ```
   user@switch> request system halt other-routing-engine
   ```

4. Wait a minute or two for the Routing Engine to halt before proceeding. If you are using a console connection, you will see a message when the system is halted. If the Routing Engine has not yet halted, the following step returns an error.

5. Take the SRE module offline:

   ```
   user@switch> request chassis cb offline slot slot-number
   ```

   where *slot-number* is either **0** (slot SRE0) or **1** (slot SRE1).

6. (Optional) Confirm that the SRE module is offline:

   ```
   user@switch> show chassis environment cb
   ```

If the state field in the command output shows that the module is offline, then it is safe to remove the SRE module.

Taking an SRE Module Offline in a Switch With One SRE Module

To take the SRE module offline:

1. Connect to the console port on the SRE module.

2. From the console, halt the SRE module:

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

   The RE module is gracefully halted but not powered off.

When a message appears confirming that the operating system has halted, it is safe to remove the SRE module. The Routing Engine might take up to 5 minutes to gracefully halt.

Related Documentation

- Installing an SRE Module in a J-EX8208 Switch on page 118

- Removing an SRE Module from a J-EX8208 Switch on page 167

- SRE Module LEDs in a J-EX8208 Switch on page 23

Removing an SRE Module from a J-EX8208 Switch

You must remove the Switch Fabric and Routing Engine (SRE) module from the J-EX8208 switch chassis if you need to replace the module or if you need to remove switch components before moving the chassis without using a mechanical lift.

⚠ CAUTION: Do not lift the SRE module by holding the ejector levers. The levers cannot support the weight of the module. Lifting the module by the levers might bend the levers. Bent levers will prevent the SRE module from being properly seated in the chassis.

Before you begin to remove an SRE module:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to remove an SRE module:

- Electrostatic discharge (ESD) grounding strap

- Phillips (+) screwdriver, number 2

- Antistatic bag or antistatic mat

- Replacement SRE module or cover panel for the SRE module slot

To remove an SRE module from a J-EX8208 switch (see Figure 84 on page 168):

1. Take the SRE module offline. See "Taking the SRE Module Offline in a J-EX8208 Switch" on page 165.

2. Attach the antistatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.

3. Place the antistatic bag or antistatic mat on a flat, stable surface.

4. Loosen the screws on each side of the SRE module by turning them counterclockwise using the screwdriver until they are completely unseated.

5. Pull both the ejector levers outwards, away from the faceplate of the SRE module, until they go no further. This action causes the SRE module to slide out of the chassis slightly.

6. Grasp the ejector levers and pull the SRE module out to about halfway.

7. Taking care not to touch the leads, pins, or solder connections, place one hand underneath the SRE module to support it and slide it completely out of the chassis.

8. Place the SRE module in the antistatic bag or on the antistatic mat.

9. If you are not replacing the SRE module, place the cover panel over the empty slot, insert the screws through the holes on each side of the cover panel, and tighten the screws with the screwdriver.

Figure 84: Removing an SRE Module from a J-EX8208 Switch
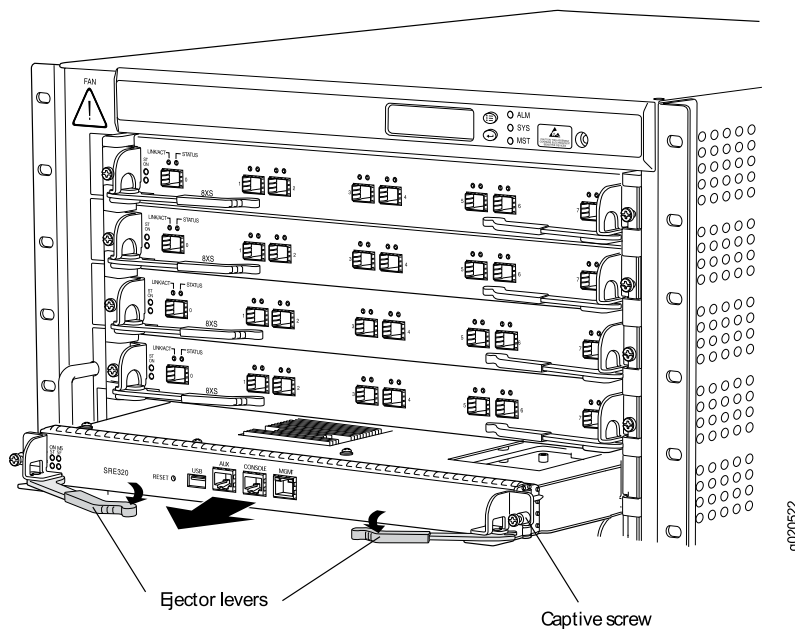
Ejector levers

Captive screw

Taking the SF Module Offline in a J-EX8208 Switch

The SF module provides switching functionality for a J-EX8208 switch. Your switch can have either zero SF modules or one SF module.

NOTE: If you take the SF module offline in a switch configuration having only one Switch Fabric and Routing Engine (SRE) module, throughput will be low.

To take the SF module offline:

1. Take the SF module offline:

    user@switch> **request chassis cb offline slot 2**

    For an SF module, the control board slot number is always **2**.

2. (Optional) Confirm that the SF module is offline:

    user@switch> **show chassis environment cb** *slot-number*

    The state field in the command output shows that the SF module is offline. It is now safe to remove or replace the SF module.

Removing an SF Module from a J-EX8208 Switch

You must remove the Switch Fabric (SF) module from the J-EX8208 switch if you need to replace the module or if you need to remove the switch components before moving the chassis without using a mechanical lift.

The SF module is always installed in the slot labeled SF.

NOTE: Do not lift the SF module by holding the ejector levers. The levers cannot support the weight of the module. Lifting the modules by the levers might bend the levers. Bent levers will prevent the SF module from being properly seated in the chassis.

Before you begin to remove an SF module:

- Ensure you understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236.

Ensure that you have the following parts and tools available to remove an SF module:

- Electrostatic discharge (ESD) grounding strap
- Phillips (+) screwdriver, number 2
- Antistatic bag or antistatic mat
- Replacement SF module or cover panel for the slot

To remove an SF module (see Figure 85 on page 170):

1. Take the SF module offline. See "Taking the SF Module Offline in a J-EX8208 Switch" on page 168.

2. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to the ESD point on the chassis.

3. Place the antistatic bag or antistatic mat on a flat, stable surface.

4. Loosen the screws on each side of the SF module by turning them counterclockwise using the screwdriver until they are completely unseated.

5. Pull both the ejector levers outwards, away from the faceplate of the SF module, until they go no further. This action causes the SF module to slide out of the chassis slightly.

6. Grasping the ejector levers, pull the SF module to about halfway out.

7. Taking care not to touch the leads, pins, or solder connections, place one hand underneath the SF module to support it and slide it out of the chassis completely.

8. Place the SF module in the antistatic bag or on the antistatic mat.

9. If you are not replacing the SF module, install the cover panel over the empty slot by tightening the screws on each side of the cover panel with the screwdriver.

Figure 85: Removing an SF Module from a J-EX8208 Switch

Ejector levers

Captive screw
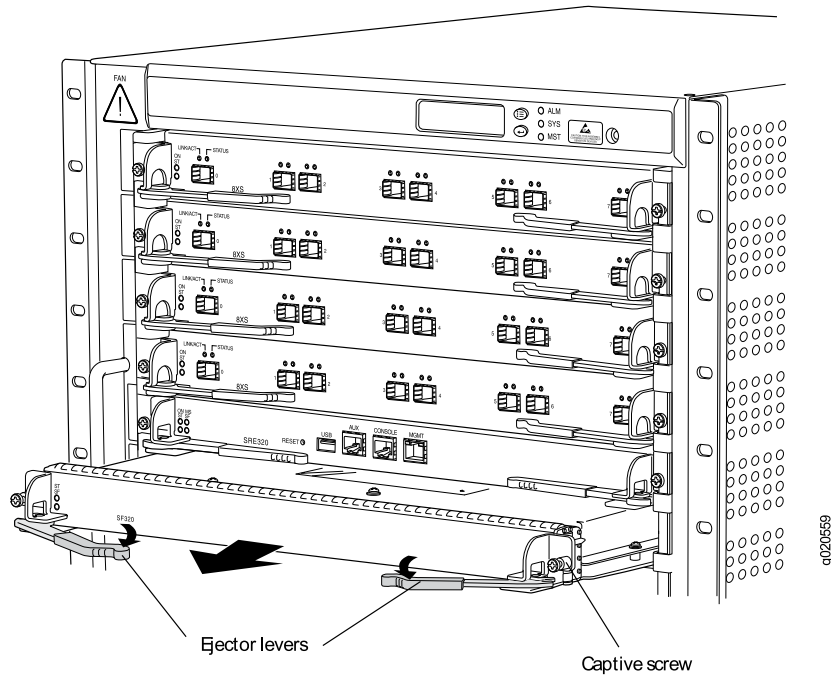
Related Documentation
- Installing an SF Module in a J-EX8208 Switch on page 120
- Switch Fabric (SF) Module in a J-EX8208 Switch on page 25

Removing a Line Card from a J-EX8200 Switch

J-EX8200 switches have field-replaceable unit (FRU) line cards that can be installed in the line card slots on the front of the switch chassis. The line cards are hot-insertable and hot-removable: You can remove and replace them without powering off the switch or disrupting switch functions.

Before you begin removing a line card from a J-EX8200 switch:

- Ensure that you have taken the necessary precautions to prevent ESD damage (see "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236).

- If there are any transceivers installed in the line card, remove them before you remove the line card. See "Removing a Transceiver from a J-EX Series Switch" on page 173.

- Ensure that you know how to handle and store the line card (see "Handling and Storing Line Cards in J-EX8200 Switches" on page 179).

Ensure that you have the following parts and tools available to remove a line card from a J-EX8200 switch chassis:

- Electrostatic discharge (ESD) grounding strap

- Phillips (+) screwdriver, number 2

- An antistatic bag or an antistatic mat

- Replacement line card or a cover panel and its captive screws to cover the empty slot

To remove a line card from a J-EX8200 switch (see Figure 87 on page 172):

1. Place the antistatic bag or antistatic mat on a flat, stable surface.

2. Attach the electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to the ESD point on the switch chassis (see Figure 86 on page 171).

Figure 86: Location of the ESD Point on a J-EX8200 Switch Chassis
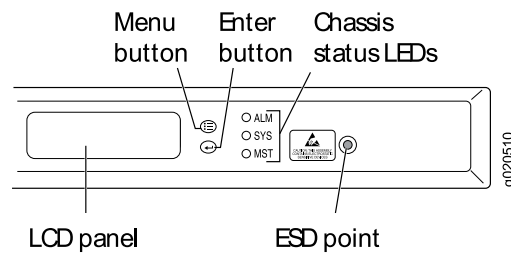
3. Label the cables connected to each port on the line card so you can reconnect the cables to the correct ports.

4. Take the line card offline by issuing the following CLI command:

   `user@switch>` **request chassis fpc slot** *slot-number* **offline**

5. Remove the captive screws on the faceplate of the line card by using the screwdriver.

6. Grasp the ejector levers on the faceplate of the line card and pull them outward simultaneously until the line card is unseated. See "Handling and Storing Line Cards in J-EX8200 Switches" on page 179.

7. Grasp the ejector levers and gently slide the line card halfway out of the chassis.

⚠️ CAUTION: Do not lift the line card by holding the ejector levers on the faceplate or the edge connectors. The levers cannot support the weight of the line card. Lifting the line cards by the levers might bend them. Bent levers prevent the line cards from being properly seated in the chassis.

⚠️ CAUTION: Do not stack line cards on top of one another or on top of any other component. Place each line card separately in the antistatic bag or on the antistatic mat placed on a flat, stable surface.

> ⚠ CAUTION: The line cards in J-EX8200 switches weigh more than 10 lb (4.5 kg). Be prepared to accept the full weight as you slide the line card out of the chassis.

8. Place one hand around the faceplate of the line card and the other hand under the line card to support it. Taking care not to touch line card components, pins, leads, or solder connections, gently slide the line card completely out of the chassis and place it in an antistatic bag or on its own antistatic mat placed on a flat, stable surface.

> ⚠ CAUTION: After removing a line card, wait for at least 30 seconds before installing a line card or removing another line card.

9. If you are not installing a line card in the emptied line card slot within a short time, install a blank cover panel over the slot and secure it with captive screws by using the screwdriver. Do this to protect the interior of the chassis from dust or other foreign substances and to ensure that the airflow inside the chassis is not disrupted.

Figure 87: Removing a Line Card from a J-EX8200 Switch Chassis

Related Documentation

- Installing a Line Card in a J-EX8200 Switch on page 122
- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27
- 48-port SFP Line Card in a J-EX8200 Switch on page 28
- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29

Disconnecting a Fiber-Optic Cable from a J-EX Series Switch

J-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 a J-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 J-EX Series Switches" on page 213).

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 a J-EX Series Switch on page 126

- Removing a Transceiver from a J-EX Series Switch on page 173

- Maintaining Fiber-Optic Cables in J-EX Series Switches on page 183

- Optical Interface Support in J-EX8200 Switches on page 45

Removing a Transceiver from a J-EX Series Switch

The transceivers for J-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 a J-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 J-EX Series Switches" on page 213).

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 88 on page 175 shows how to remove an SFP transceiver. The procedure is the same for all transceiver types.

To remove a transceiver from a J-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 a J-EX Series Switch" on page 172). 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 88: Removing a Transceiver from a J-EX Series Switch

Ejector
lever

SFP
transceiver

<div style="text-align:right">
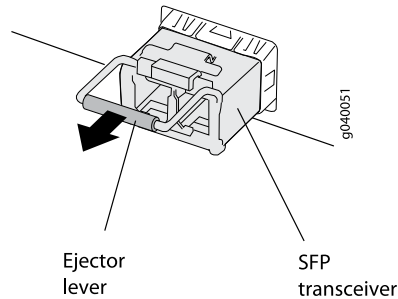
Related
Documentation

</div>

- Installing a Transceiver in a J-EX Series Switch on page 125

- Optical Interface Support in J-EX8200 Switches on page 45

Removing the Power Cord Tray from a Rack or Cabinet for a J-EX8200 Switch

You can remove the power cord tray from a rack or cabinet. (The remainder of this topic uses "rack" to mean "rack or cabinet.")

In two-post rack installations, we recommend that you do not remove the power cord tray unless you are also removing the switch and that you remove the switch before you remove the power cord tray.

If you remove the power cord tray before removing the J-EX8208 switch from a two-post rack, there is no support for the underside of the switch. This creates a problem if and when you need to remove the switch, because the chassis has no support once you remove the screws that hold the front-mounting brackets to the rack. In a four-post rack this is not an issue because the switch rests on the adjustable mounting brackets.

Before you begin to remove the power cord tray:

- Ensure no power cables are resting on or threaded through the power cord tray.

- Remove the switch if the switch and power cord tray are installed on a two-post rack. See "Removing a J-EX8208 Switch from a Rack or Cabinet" on page 152.

Ensure that you have the following parts and tools available to remove the power cord tray:

- A Phillips (+) screwdriver, number 1, 2, or 3, depending on the size of your rack mounting screws

- If you installed the power cord tray with square-hole cage nuts, a flat-blade (-) screwdriver to remove the cage nuts

To remove the power cord tray:

1. Use the appropriate Phillips (+) screwdriver to remove the four mounting screws—and washers if you installed the power cord tray with cage nuts—that hold the power cord tray in the rack.

2. Remove the power cord tray and store it in the original switch accessory box for later use.

3. If you installed the power cord tray with cage nuts, remove the cage nuts from the rack.

   Use Figure 89 on page 176 and Figure 90 on page 176 to help you with cage-nut removal.

Figure 89: Removing a Round-Hole Cage Nut (Clip Nut)
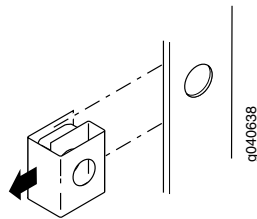
Figure 90: Removing a Square-Hole Cage Nut
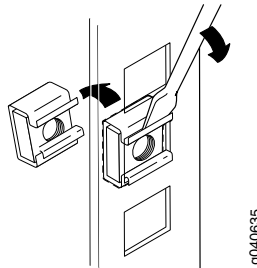
Related Documentation

- Installing the Power Cord Tray in a Rack or Cabinet for a J-EX8200 Switch on page 98

Switch and Component Maintenance

- Routine Maintenance on page 179

Routine Maintenance

- Handling and Storing Line Cards in J-EX8200 Switches on page 179
- Maintaining Line Card Cables in J-EX8200 Switches on page 182
- Maintaining Fiber-Optic Cables in J-EX Series Switches on page 183

Handling and Storing Line Cards in J-EX8200 Switches

Components in the line cards are fragile. To avoid damaging the line cards, follow the procedures in this topic. The procedures use the following terms to describe the four edges of the line cards (see Figure 91 on page 179):

Figure 91: Edges of the Line Cards in a J-EX8200 Switch
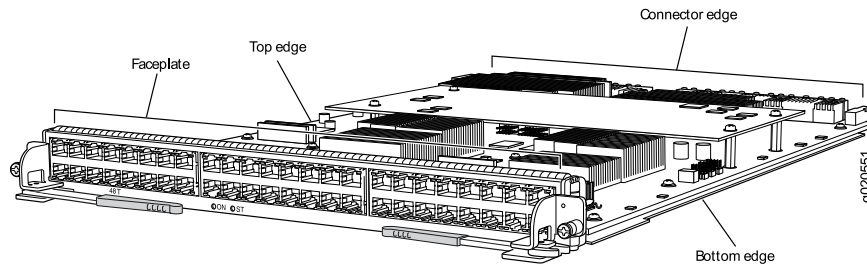
- Faceplate—Edge of the line card that has connectors into which you insert the transceivers or RJ-45 cables.
- Connector edge—Edge opposite the faceplate.
- Top edge—Edge at the top of the line card when the line card is vertical.
- Bottom edge—Edge at the bottom of the line card when the line card is vertical.

⚠️ **CAUTION:** Failure to handle line cards as specified in these procedures can cause irreparable damage to them.

This topic describes the following tasks:

- Holding a Line Card on page 180
- Storing a Line Card on page 182

Holding a Line Card

You must hold a line card horizontally when installing it in the chassis. You may hold a line card vertically or horizontally when carrying it.

⚠ CAUTION: The line cards in J-EX8200 switches weigh more than 10 lb (4.5 kg). Be prepared to accept the full weight as you slide the line card into the chassis.

To hold a line card vertically:

1. Orient the line card so that the faceplate faces you. To verify the orientation, confirm that the text on the line card is right-side up.

2. Place one hand around the line card faceplate about a quarter of the way down from the top edge. Do not press hard on it.

3. Place the other hand at the bottom edge of the line card.

If the line card is horizontal before you grasp it, place your left hand around the faceplate and your right hand along the bottom edge.

To hold a line card horizontally:

1. Orient the line card so that the faceplate faces you.

2. Grasp the top edge with your left hand and the bottom edge with your right hand.

You can rest the faceplate of the line card against your body as you carry it.

⚠ CAUTION: Take care not to hit the line card against any object as you carry it. Line card components are fragile.

Never hold or grasp the line card anywhere except the places mentioned in these procedures. In particular, never grasp the connector edge (see Figure 92 on page 181).

Figure 92: Do Not Grasp the Connector Edge
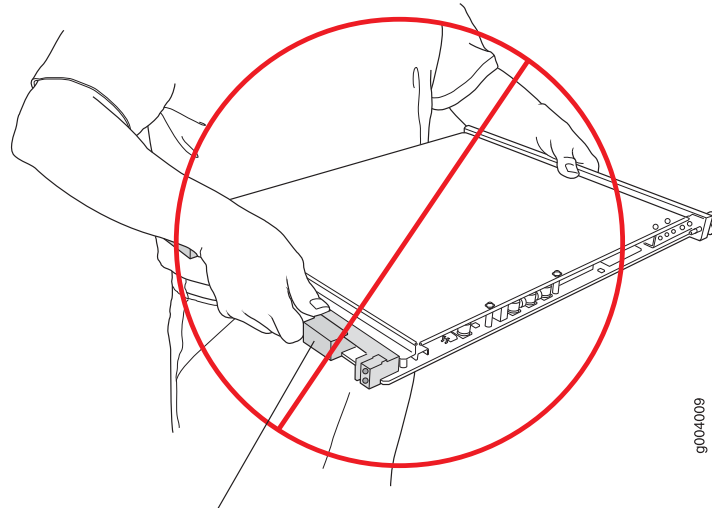
Do not hold connector edge.

Never carry the line card while holding the faceplate with only one hand.

Do not rest any edge of a line card directly against a hard surface (see Figure 93 on page 181).

Figure 93: Do Not Rest the Edge of a Line Card on a Hard Surface
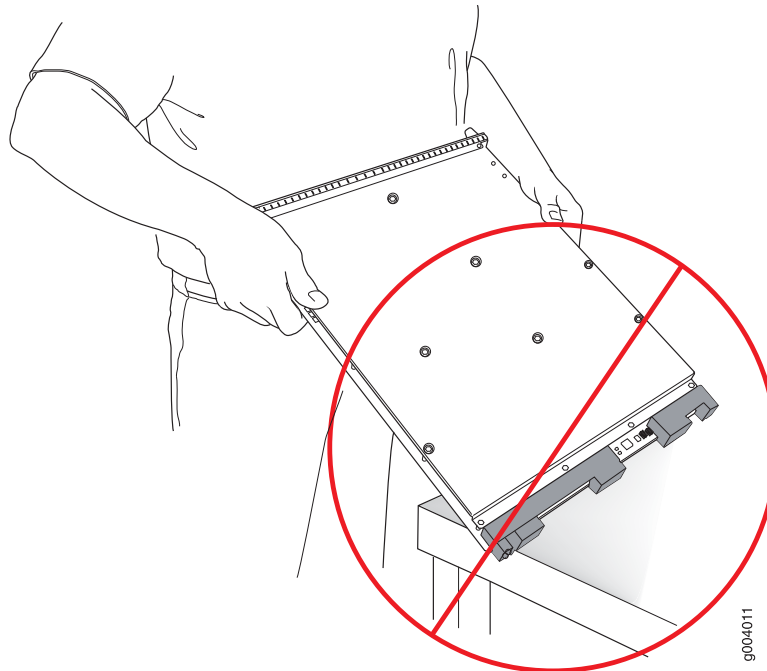
Do not rest connectors on any surface.

If you must rest a line card temporarily on an edge, place a cushion between the edge and the surface.

Do not stack line cards on top of one another or on top of any other component. Place each line card separately in an antistatic bag or on an antistatic mat placed on a flat, stable surface.

Storing a Line Card

You must store a line card in the chassis or in a spare shipping container, horizontally and sheet metal side down. Do not stack line cards on top of one another or on top of any other component. Place each line card separately in an antistatic bag or on an antistatic mat placed on a flat, stable surface.

NOTE: Because the line card is heavy, and because antistatic bags are fragile, inserting the line card into the bag is best done with two people, each to do one of the following steps.

To insert a line card into an antistatic bag:

1. Hold the line card in the horizontal position with the faceplate facing you.

2. Slide the opening of the bag over the line card connector edge.

If you must insert the line card into a bag by yourself:

1. Lay the line card horizontally on a flat, stable surface, sheet metal side down.

2. Orient the line card with the faceplate facing you.

3. Carefully insert the line card connector edge into the opening of the bag and pull the bag toward you to cover the line card.

Related Documentation

- Maintaining Line Card Cables in J-EX8200 Switches on page 182

- Installing a Line Card in a J-EX8200 Switch on page 122

- Removing a Line Card from a J-EX8200 Switch on page 170

- General Safety Guidelines and Warnings for J-EX Series Switches on page 207

- 8-port SFP+ Line Card in a J-EX8200 Switch on page 27

- 48-port SFP Line Card in a J-EX8200 Switch on page 28

- 48-port RJ-45 Line Card in a J-EX8200 Switch on page 29

Maintaining Line Card Cables in J-EX8200 Switches

Components in the line cards are fragile. To extend the lives of your line card cables and to avoid problems that can result from cable damage, follow these procedures:

To maintain line card cables in J-EX8200 switches:

- Place excess cable out of the way. Do not allow fastened loops of cable to dangle from the connector. Placing fasteners on the loops helps retain their shape.

- Keep the cable connections clean and free of dust and other particles, which can cause drops in the received power level. Always inspect cables and clean them if necessary before connecting an interface.

- Label both ends of line card cables to identify them.

Related Documentation

Maintaining Fiber-Optic Cables in J-EX Series Switches

Fiber-optic cables connect to optical transceivers that are installed in J-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

- Handling and Storing Line Cards in J-EX8200 Switches on page 179
- Maintaining Line Card Cables in J-EX8200 Switches on page 182
- Connecting a Fiber-Optic Cable to a J-EX Series Switch on page 126
- Laser and LED Safety Guidelines and Warnings for J-EX Series Switches on page 213
- Optical Interface Support in J-EX8200 Switches on page 45

Returning Hardware

- Getting Help on page 187

Getting Help

This chapter contains information about getting help for questions about the PowerConnect J–EX Series switches. The topics covered in this section include:

- Obtaining Assistance on page 187
- Dell Enterprise Training and Certification on page 189
- Problems With Your Order on page 189
- Product Information on page 189
- Returning Items for Warranty Repair or Credit on page 189
- Before You Call on page 190
- Contacting Dell on page 191
- Locating a J-EX Series Switch Component Serial Number and Agency Labels on page 191
- Packing a J-EX8208 Switch or Component for Shipping on page 197
- Dell Support on page 203

Obtaining Assistance

If you experience a problem with your switch, you can complete the following steps to diagnose and troubleshoot the problem:

1. Fill out the diagnostics checklist. See "Diagnostics Checklist" on page 190.

2. Use Dell's extensive suite of online services available at Dell Support (http://www.support.dell.com) for help with installation and troubleshooting procedures. See "Online Services" on page 188 for a more extensive list of Dell Support

3. If the preceding steps have not resolved the problem, see "Contacting Dell" on page 191.

> NOTE: Call Dell Support from a telephone near or at the computer so that the support staff can assist you with any necessary procedures.

> NOTE: Dell's Express Service Code system may not be available in all countries.

When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. For instructions on using the Dell Support, see "Support Service" on page 189.

🖉 NOTE: Some of the following services are not always available in all locations outside the continental U.S. Call your local Dell representative for information on availability.

Online Services

You can learn about Dell products and services on the following websites:

- http://www.dell.com
- http://www.dell.com/ap (Asian/Pacific countries only)
- http://www.dell.com/jp (Japan only)
- http://www.euro.dell.com (Europe only)
- http://www.dell.com/la (Latin American and Caribbean countries)
- http://www.dell.ca (Canada only)

You can access Dell Support through the following websites and e-mail addresses:

- Dell Support websites
  - http://www.support.dell.com
  - http://support.jp.dell.com (Japan only)
  - http://support.euro.dell.com (Europe only)
- Dell Support e-mail addresses
  - mobile_support@us.dell.com
  - support@us.dell.com
  - la-techsupport@dell.com (Latin America and Caribbean countries only)
  - apsupport@dell.com (Asian/Pacific countries only)
- Dell Marketing and Sales e-mail addresses
  - apmarketing@dell.com (Asian/Pacific countries only)
  - sales_canada@dell.com (Canada only)
- Anonymous file transfer protocol (FTP)
  - ftp://ftp.dell.com

  Log in as user: anonymous, and use your e-mail address as your password.

Automated Order-Status Service

To check on the status of any Dell products that you have ordered, you can go to http://www.support.dell.com, or you can call the automated order-status service. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call for your region, see "Contacting Dell" on page 191.

Support Service

Dell's support service is available 24 hours a day, 7 days a week, to answer your questions about Dell hardware. Our support staff use computer-based diagnostics to provide fast, accurate answers. To contact Dell's support service, see "Before You Call" on page 190 and then see the contact information for your region.

Dell Enterprise Training and Certification

Dell Enterprise Training and Certification is available; see http://www.dell.com/training for more information. This service may not be offered in all locations.

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call for your region, see "Contacting Dell" on page 191.

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit the Dell website at http://www.dell.com. For the telephone number to call for your region or to speak to a sales specialist, see "Contacting Dell" on page 191.

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. Call Dell to obtain a Return Material Authorization (RMA) Number, and write it clearly and prominently on the outside of the box. For the telephone number to call for your region, see "Contacting Dell" on page 191.

2. Include a copy of the invoice and a letter describing the reason for the return.

3. Include a copy of the Diagnostics Checklist (see "Diagnostics Checklist" on page 190), indicating the tests that you have run and any error messages reported by the Dell Diagnostics.

4. Include any accessories that belong with the item(s) being returned (such as power cables and guides) if the return is for credit.

5. Pack the equipment to be returned in the original (or equivalent) packing materials. See "Packing a J-EX8208 Switch or Component for Shipping" on page 197.

You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell. Collect On Delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at Dell's receiving dock and returned to you.

Before You Call

> NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

Remember to fill out the Diagnostics Checklist (see "Diagnostics Checklist" on page 190). If possible, turn on your computer before you call Dell for assistance and call from a telephone at or near the computer. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the computer itself. Ensure that the computer documentation is available.

> WARNING: Before working inside your switch, follow the safety instructions in the Safety, Environmental, and Regulatory Information that shipped with your system.

Diagnostics Checklist

Name:

Date:

Address:

Phone number:

Service Tag (bar code on the back or bottom of the device):

Express Service Code:

Return Material Authorization Number (if provided by Dell support technician):

Operating system and version:

Devices:

Expansion cards:

Are you connected to a network? Yes No

Network, version, and network adapter:

Programs and versions:

See your operating system documentation to determine the contents of the system's start-up files. If the switch is connected to a printer, print each file. Otherwise, record the contents of each file before calling Dell.

Error message, beep code, or diagnostic code:

Description of problem and troubleshooting procedures you performed:

Contacting Dell

For customers in the United States, call 800-WWW.DELL (800.999.3355).

> **NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit http://www.support.dell.com.

2. Click your country or region at the bottom of the page. For a full listing of countries and regions, click **All**.

3. In the Support menu, click **All Support**.

4. Choose the method of contacting Dell that is convenient for you.

Locating a J-EX Series Switch Component Serial Number and Agency Labels

Before contacting Dell to request an RMA, you must find the serial number and agency label on the switch or component.

If the switch is operational and you can access the command-line interface (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 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. See "Installing and Removing J-EX8208 Switch Hardware Components" on page 113.

- Locating the Serial Number on a J-EX8200 Switch or Component on page 192
- Locating the Chassis Serial Number and Agency Labels on page 192
- Locating the Serial Number ID Labels on FRUs in a J-EX8200 Switch on page 193

Locating the Serial Number on a J-EX8200 Switch or Component

To list the switch and switch components and their serial numbers, enter the following command-line interface (CLI) command:

user@host> **show chassis hardware**

You see output similar to the following:

```
user@switch> show chassis hardware
Hardware inventory:
Item            Version  Part number  Serial number    Description
Chassis         REV 07                FY0109290449     DELL J-EX8208
Backplane       REV 07   710-022044   BT0909200715     EX8208-BP-S
CB 0            REV 16   710-020635   IBM012307935     EX8208-SRE320
  Routing Engine 0       BUILTIN      BUILTIN          RE-EX8208
CB 1            REV 16   710-020635   BE0109207962     EX8208-SRE320
  Routing Engine 1       BUILTIN      BUILTIN          RE-EX8208
CB 2            REV 12   710-021502   AZ0109208061     EX8208-SF320
PSU 1           REV 01   740-030762   BG0709251744     EX8200-AC2K
PSU 2           REV 01   740-030762   BG0709251791     EX8200-AC2K
PSU 3           REV 01   740-030762   BG0709251775     EX8200-AC2K
PSU 4           REV 01   740-030762   BG0709251727     EX8200-AC2K
PSU 5           REV 01   740-030762   BG0709251785     EX8200-AC2K
Fan Tray
  FTC 0         REV 1    760-030526   BW1209160467     EX8208-FT
  FTC 1         REV 1    760-030526   BW1209160467     EX8208-FT
LCD 0           REV 04   710-025742   CE0109228517     EX8200 LCD
```

> ✏️ NOTE: Most components also have a serial number ID label attached to the component body.

Locating the Chassis Serial Number and Agency Labels

The serial number ID label is located near the bottom on the left side of the chassis on a J-EX8208 switch. See Figure 94 on page 193.

Figure 94: Location of the Serial Number ID Label on J-EX8208 Switch
Chassis
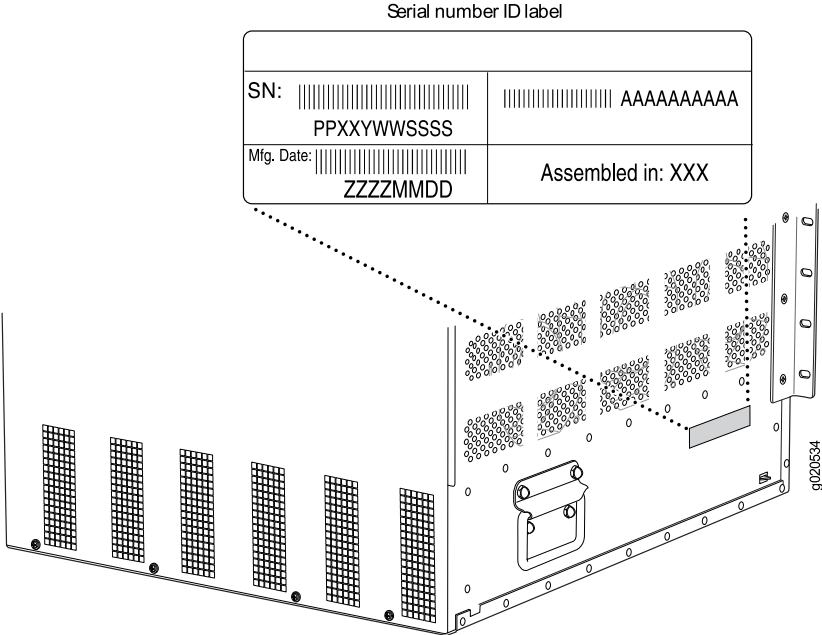
Locating the Serial Number ID Labels on FRUs in a J-EX8200 Switch

The power supplies, fan tray, SRE modules, RE modules, SF module, and line cards
installed in a J-EX8200 switch are field-replaceable units (FRUs). For each of these FRUs,
you must remove the FRU from the switch chassis to see the FRU's serial number ID label.

- 2000 W AC Power supply—The serial number ID label is on the left side of the power supply (see Figure 95 on page 194). See "Removing an AC Power Supply from a J-EX8200 Switch" on page 161.

Figure 95: Location of the Serial Number ID Label on a 2000 W AC Power Supply

Serial number ID label
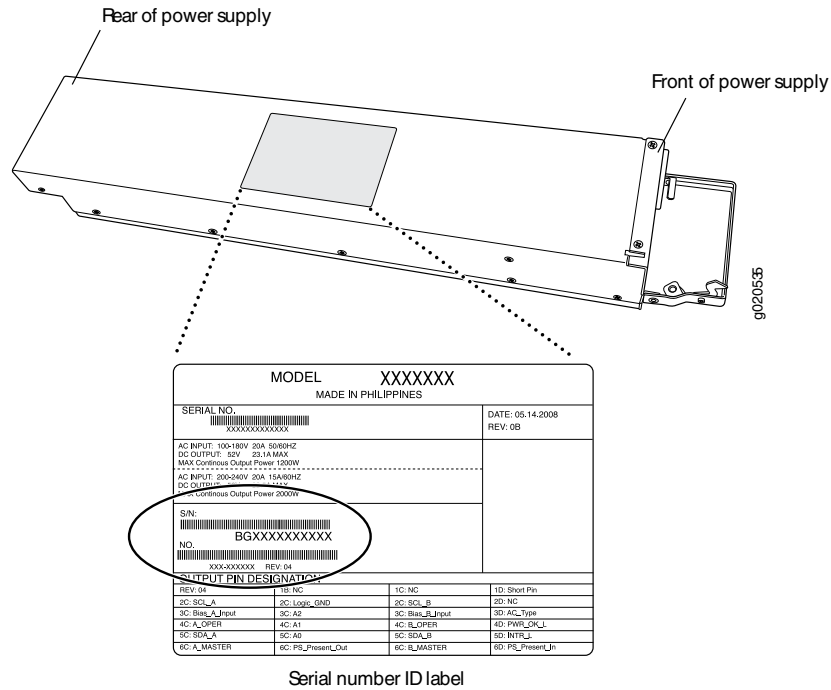
- 3000 W AC Power supply—The serial number ID label is on the right side of the power supply (see Figure 96 on page 194). See "Removing an AC Power Supply from a J-EX8200 Switch" on page 161.

Figure 96: Location of the Serial Number ID Label on a 3000 W AC Power Supply
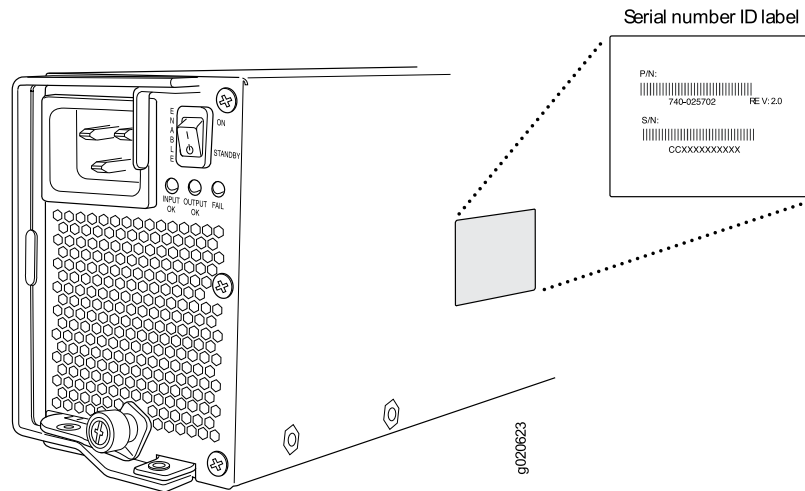
- Fan tray in a J-EX8208 switch—The serial number ID label is on the rear of the fan tray (see Figure 97 on page 195). See "Removing a Fan Tray from a J-EX8208 Switch" on page 163.

Figure 97: Location of the Serial Number ID label on the Fan Tray Used in a J-EX8208 Switch
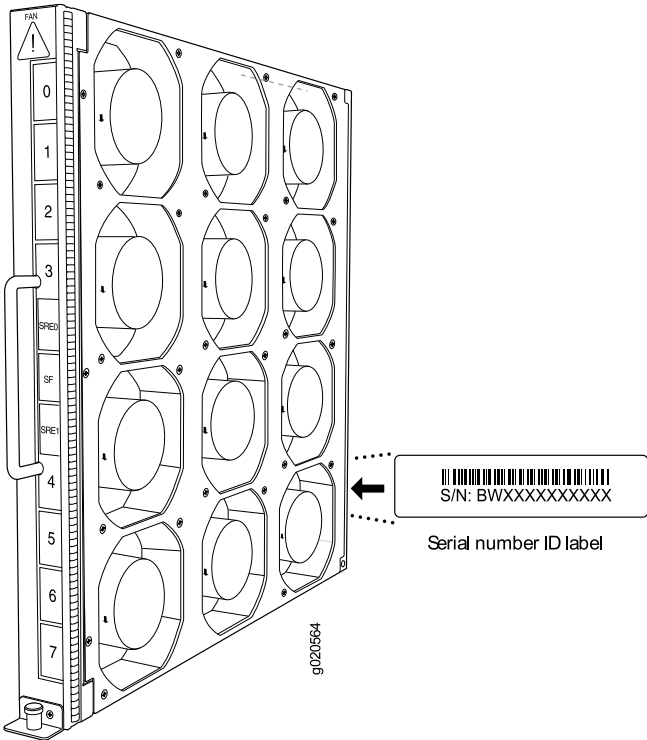
- Switch Fabric and Routing Engine (SRE) module in a J-EX8208 Switch— See Figure 98 on page 195 to see the location of the serial number ID label on the SRE module. See "Removing an SRE Module from a J-EX8208 Switch" on page 167.

Figure 98: Location of the Serial Number ID Label on the SRE Module
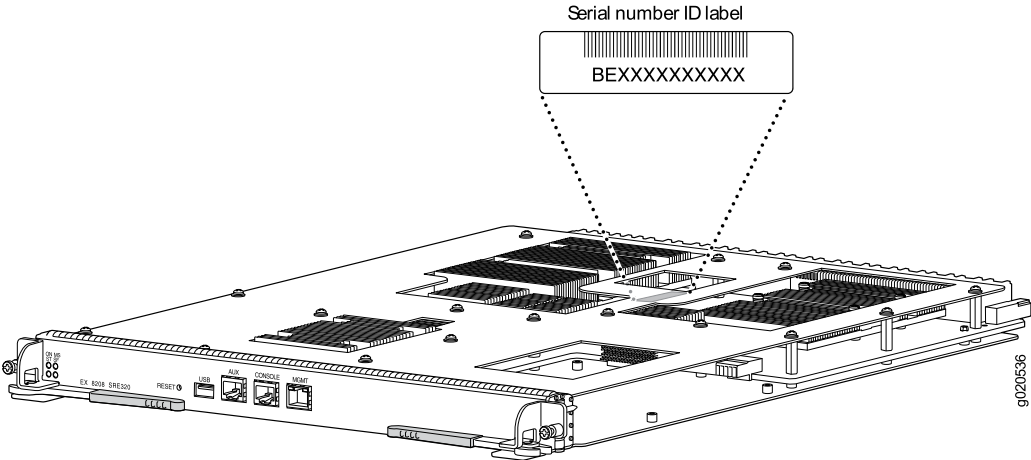
- Switch Fabric (SF) module in a J-EX8208 switch— See Figure 99 on page 196 to see the location of the serial number ID label on the SF module. See "Removing an SF Module from a J-EX8208 Switch" on page 169.

Figure 99: Location of the Serial Number ID Label on the SF Module Used in a J-EX8208 Switch
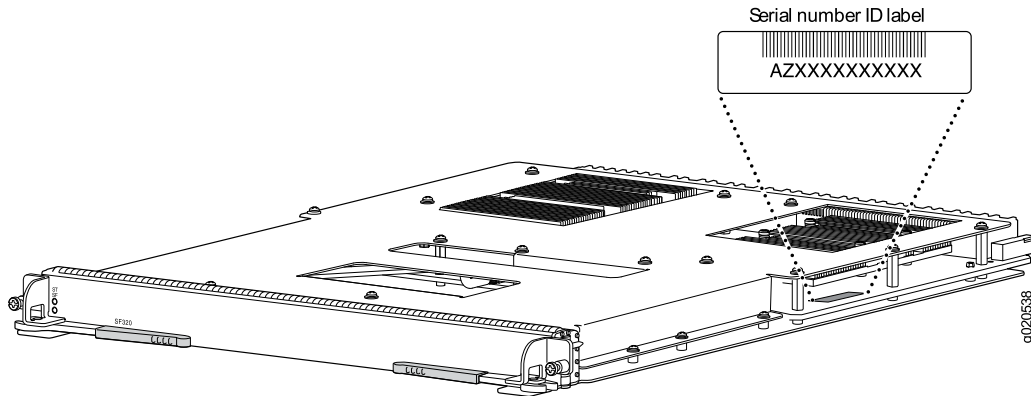
- 8-port SFP+ line card—See Figure 100 on page 196 to see the location of the serial number ID label on this line card. See "Removing a Line Card from a J-EX8200 Switch" on page 170.

Figure 100: Location of the Serial Number ID Label on the 8-Port SFP+ Line Card
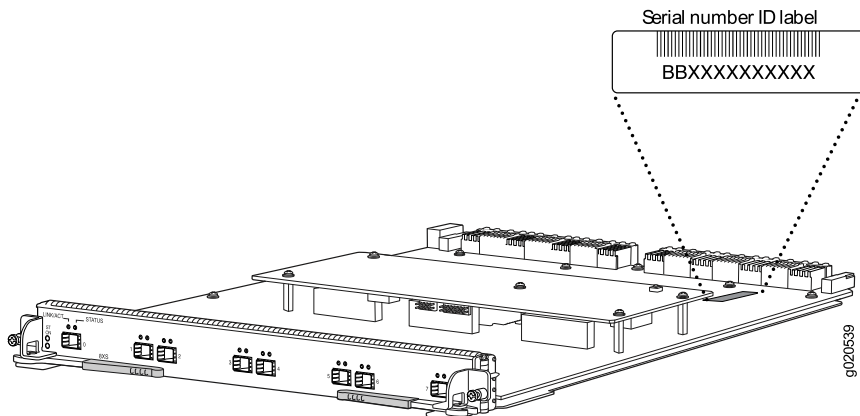
- 48-port SFP line card—See Figure 101 on page 197 to see the location of the serial number ID label on this line card. See "Removing a Line Card from a J-EX8200 Switch" on page 170.

Figure 101: Location of the Serial Number ID Label on the 48-Port SFP
Line Card
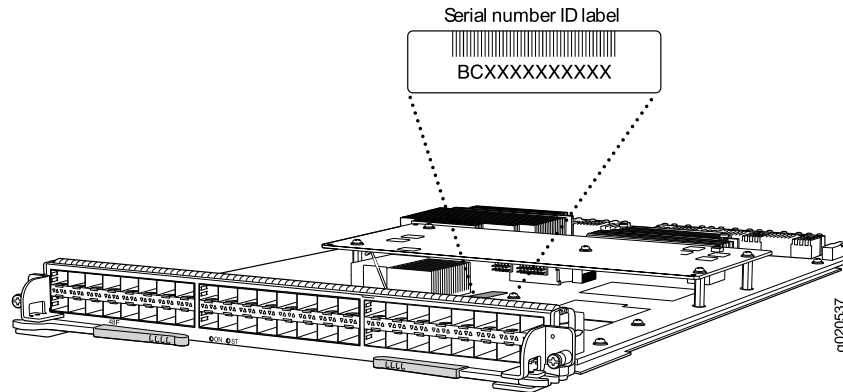
• 48-port RJ-45 line card—See Figure 102 on page 197 to see the location of the serial
number ID label on this line card. See "Removing a Line Card from a J-EX8200 Switch"
on page 170.

Figure 102: Location of the Serial Number ID Label on the 48-Port RJ-45
Line Card
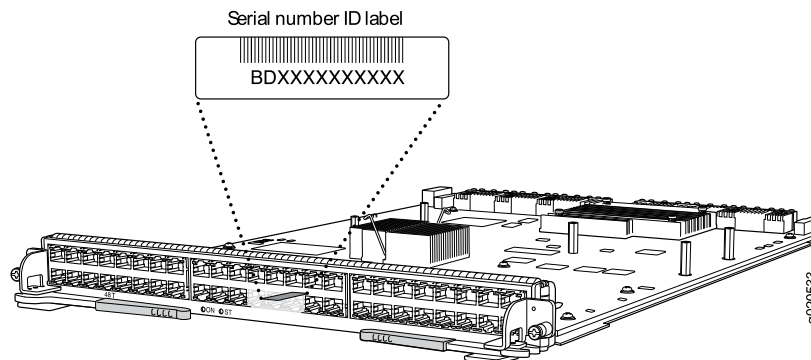
Packing a J-EX8208 Switch or Component for Shipping

If you are returning a J-EX8200 switch or component for repair or replacement, pack the
item as described in this topic.

Before you begin packing the switch or component, ensure that you:

• Have retrieved the original shipping carton and packing materials. If you do not have
these materials, contact Dell to learn about approved packing materials. See "Returning
Items for Warranty Repair or Credit" on page 189.

• Understand how to prevent ESD damage. See "Prevention of Electrostatic Discharge
Damage on J-EX Series Switches" on page 236.

This topic describes:

- Packing a J-EX8208 Switch for Shipping on page 198
- Packing J-EX8208 Switch Components for Shipping on page 201
- Packing a Line Card Used in a J-EX8200 Switch on page 202

Packing a J-EX8208 Switch for Shipping

If you need to transport the switch to another location or return the switch, you need to pack the switch securely in its original packaging to prevent damage during transportation.

Before you pack the switch:

1. Power off the switch. See "Powering Off a J-EX8200 Switch" on page 151.

2. Remove all wires, plugs, and power cords from the switch.

3. Remove all line cards and pack them in their original shipping containers. See "Packing a Line Card Used in a J-EX8200 Switch" on page 202.

4. Install cover panels over blank slots.

Leave components that came installed in the chassis in the chassis.

> NOTE: Any line cards ordered with the switch are shipped separately. Do not pack any line cards with the switch.

Ensure that you have the following parts and tools available to pack the switch:

- A 7/16-in. or 11-mm open-end or socket wrench to install the bracket bolts on the chassis and shipping pallet
- The original switch packing material (wooden pallet, cardboard box, accessory box and its contents, foam padding, and brackets and bracket bolts for attaching the chassis to the pallet)
- Electrostatic discharge (ESD) grounding strap

The J-EX8200 switch is shipped in a cardboard box that has a two-layer wooden pallet base with foam cushioning between the layers. The switch chassis is bolted to the pallet base with 4 pallet fasteners, 2 on each side of the chassis.

> CAUTION: The switch is maximally protected inside the shipping box. Pack the switch only in its original shipping box, securely bolted to the original wooden shipping pallet.
>
> Do not pack the switch in anything except its original container or the switch might be damaged in transit.

To pack the switch (see Figure 104 on page 201):

1. Move the wooden pallet and packing material to a staging area as close to the switch as possible. Make sure there is enough space to move the chassis from the rack or cabinet to the wooden pallet.

2. Remove the switch from the rack or cabinet. For J-EX8208 switches, see "Removing a J-EX8208 Switch from a Rack or Cabinet Using a Mechanical Lift" on page 154 or "Removing a J-EX8208 Switch from a Rack or Cabinet Without Using a Mechanical Lift" on page 156).

   Move the chassis to the shipping pallet (see "Chassis Lifting Guidelines for J-EX8200 Switches" on page 220). Position the switch on the pallet so that the front of the switch is facing the silkscreened "front" mark on the pallet. The pallet also has crop marks to guide you in positioning the chassis.

3. Use the 7/16-in. or 11-mm open-end or socket wrench to install the four sets of brackets and bolts that secure the chassis to the wooden pallet.

4. Slide the plastic cover over the switch chassis. The plastic cover is part of the switch's original packing materials.

5. Replace the foam padding on top of the chassis.

6. Place the power cords in the box.

7. Remove the adjustable mounting brackets from the rack or cabinet and place them and their connecting screws in the accessory box.

8. Place the accessory box in its slot in the foam padding. See "Parts Inventory (Packing List) for a J-EX8208 Switch" on page 92 to verify that you have included all the proper contents of the accessory box.

9. Slide the cardboard box over the chassis, making sure that the arrows on the box point up and the pallet fasteners to secure the cardboard box to the wooden pallet are near the bottom.

10. Attach the cardboard box to the wooden pallet using the four pallet fasteners attached to the pallet. See Figure 103 on page 200. Squeeze together the two ridges ("fins") in the depression in each pallet fastener, then slide each fastener into its corresponding slot in the cardboard box and release the ridges to secure the latch.

Figure 103: Insert Pallet Fasteners in the Cardboard Box
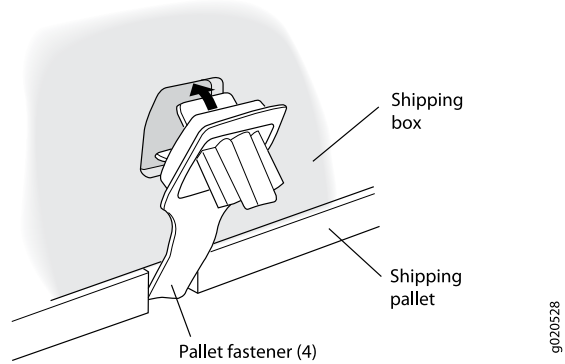
11. Write the RMA number on the exterior of the box to ensure proper tracking.

See "Returning Items for Warranty Repair or Credit" on page 189.

Figure 104: Packing a J-EX8200 Switch

Shipping box

Packing material, power cords, and accessories

Switch

Shipping pallet

Pallet fasteners (4)
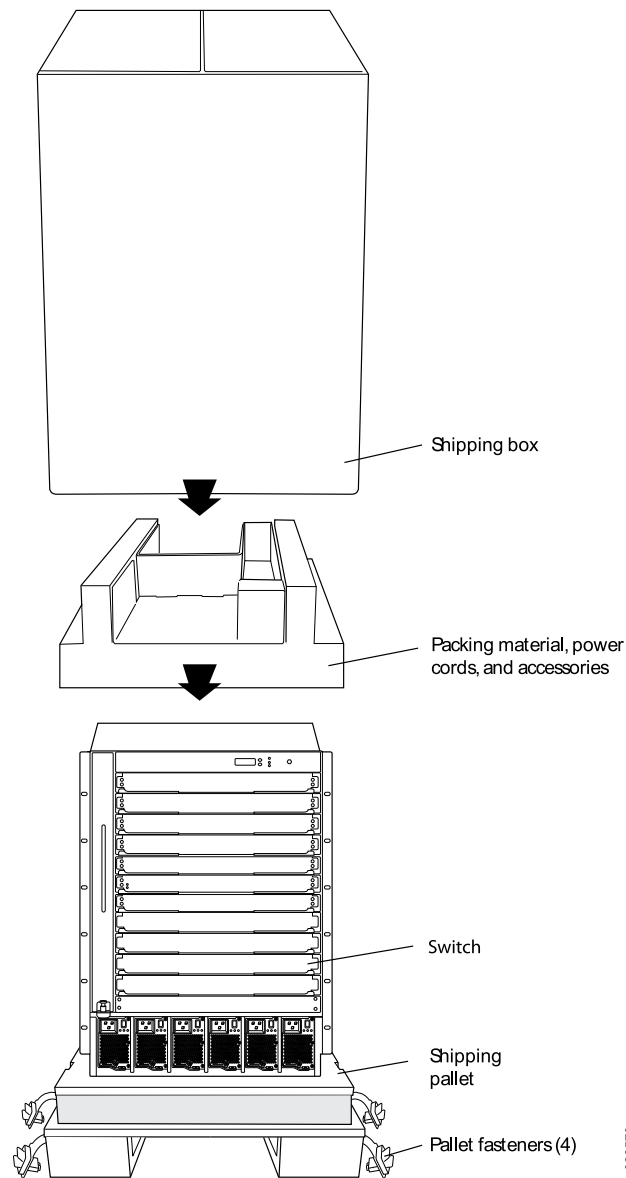
Packing J-EX8208 Switch Components for Shipping

To pack J-EX8200 switch components, follow the instructions here. For instructions to pack line cards, see "Packing a Line Card Used in a J-EX8200 Switch" on page 202.

Before you begin packing a switch component, ensure that you have the following parts and tools available:

- Antistatic bag, one for each component
- Electrostatic discharge (ESD) grounding strap

⚠ CAUTION: Do not stack switch components. Return individual components in separate boxes if they do not fit together on one level in the shipping box.

To pack J-EX8200 switch components:

- Place individual components in antistatic bags.

- Use the original packing materials if they are available. If the original packing materials are not available, ensure the component is adequately packed to prevent damage during transit. The packing material you use must be able to support the weight of the component.

- Ensure that the components are adequately protected by wrapping them well with packing materials. Pack the component in an oversized box (if the original box is not available) with extra packing material around the unit so that the component is prevented from moving around inside the box.

- Securely tape the box closed.

- Write the RMA number on the exterior of the box to ensure proper tracking.

Related Documentation

- Returning Items for Warranty Repair or Credit on page 189

- Parts Inventory (Packing List) for a J-EX8208 Switch on page 92

Packing a Line Card Used in a J-EX8200 Switch

If you are returning a line card to Juniper Networks for repair or replacement, pack it as described in this topic.

Before you begin packing a line card:

- Ensure that you have taken the necessary precautions to prevent ESD damage (see "Prevention of Electrostatic Discharge Damage on J-EX Series Switches" on page 236).

- Ensure that you know how to handle and store the line card (see "Handling and Storing Line Cards in J-EX8200 Switches" on page 179).

- Ensure that you have retrieved the original shipping carton and packing materials. If you do not have these materials, contact Dell to learn about approved packing materials. See "Returning Items for Warranty Repair or Credit" on page 189.

- Obtain an antistatic bag.

⚠ CAUTION: Do not stack line cards on top of one another or on top of any other component. Place each line card separately in an antistatic bag.

To pack a line card:

1. Place the line card in the antistatic bag.

2. Place the line card in the shipping carton.

3. Place the packing foam on top of and around the line card.

4. Close the top of the cardboard shipping box and seal it with packing tape.

5. Write the RMA number on the exterior of the box to ensure proper tracking.

Related Documentation
- Returning Items for Warranty Repair or Credit on page 189
- Removing a Line Card from a J-EX8200 Switch on page 170

Dell Support

If you need assistance while troubleshooting a switch, please go to the Dell Support website at http://www.support.dell.com.

Safety Information

General Safety Information

General Safety Guidelines and Warnings for J-EX Series Switches

The following guidelines help ensure your safety and protect the J-EX Series switch 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 product. Make sure that only authorized service personnel perform other system services.

- Keep the area around the chassis 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 chassis.

- 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 J-EX Series switch only when it is properly grounded.

- Ensure that the separate protective earthing terminal provided on this product 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 product. 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 J-EX Series switch chassis or onto any switch component. Such an action could cause electrical shock or damage the switch.

- 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 J-EX Series Switches on page 238

- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235

- Maintenance and Operational Safety Guidelines and Warnings for J-EX Series Switches on page 226

- Laser and LED Safety Guidelines and Warnings for J-EX Series Switches on page 213

- Installation Instructions Warning for J-EX Series Switches on page 219

- Grounded Equipment Warning for J-EX Series Switches on page 225

Definitions of Safety Warning Levels for J-EX Series Switches

The documentation for J-EX Series switches 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 J-EX Series switch.

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

- Warning Statement for Norway and Sweden for J-EX Series Switches on page 212

- General Safety Guidelines and Warnings for J-EX Series Switches on page 207

- Installation Instructions Warning for J-EX Series Switches on page 219

- Maintenance and Operational Safety Guidelines and Warnings for J-EX Series Switches on page 226

- Grounded Equipment Warning for J-EX Series Switches on page 225

- Laser and LED Safety Guidelines and Warnings for J-EX Series Switches on page 213

Fire Safety Requirements for J-EX Series Switches

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 switch running Junos OS. 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 J-EX Series Switches on page 207
- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235
- In Case of Electrical Accident: Action to Take on a J-EX Series Switch on page 241

Qualified Personnel Warning for J-EX Series Switches

> **WARNING:** Only trained and qualified personnel should install or replace the J-EX Series switch.
>
> **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 J-EX Series Switches on page 207
- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235
- AC Power Electrical Safety Guidelines for J-EX Series Switches on page 238

Warning Statement for Norway and Sweden for J-EX Series Switches

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 J-EX Series Switches on page 207

Radiation and Laser Warnings

Laser and LED Safety Guidelines and Warnings for J-EX Series Switches

J-EX Series switches 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 J-EX Series Switches on page 207
- Radiation from Open Port Apertures Warning for J-EX Series Switches on page 216
- Installation Instructions Warning for J-EX Series Switches on page 219
- Grounded Equipment Warning for J-EX Series Switches on page 225
- Optical Interface Support in J-EX8200 Switches on page 45

Radiation from Open Port Apertures Warning for J-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 J-EX Series Switches on page 207
- Laser and LED Safety Guidelines and Warnings for J-EX Series Switches on page 213
- Installation Instructions Warning for J-EX Series Switches on page 219
- Grounded Equipment Warning for J-EX Series Switches on page 225

Installation and Maintenance Safety Information

- Installation Instructions Warning for J-EX Series Switches on page 219
- Chassis Lifting Guidelines for J-EX8200 Switches on page 220
- Ramp Warning for J-EX Series Switches on page 221
- Rack-Mounting and Cabinet-Mounting Warnings for J-EX Series Switches on page 221
- Grounded Equipment Warning for J-EX Series Switches on page 225
- Maintenance and Operational Safety Guidelines and Warnings for J-EX Series Switches on page 226

Installation Instructions Warning for J-EX Series Switches

⚠️ **WARNING:** Read the installation instructions before you connect the switch 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.

<div style="text-align: right">Related Documentation</div>

- General Safety Guidelines and Warnings for J-EX Series Switches on page 207
- Laser and LED Safety Guidelines and Warnings for J-EX Series Switches on page 213
- Grounded Equipment Warning for J-EX Series Switches on page 225
- Connecting AC Power to a J-EX8200 Switch on page 130

Chassis Lifting Guidelines for J-EX8200 Switches

The weight of a fully loaded J-EX8208 switch is approximately 284 lb (130 kg). Observe the following guidelines for lifting and moving the switch:

- Before moving the switch to a site, ensure that the site meets the power, environmental, and clearance requirements specified in the "Site Preparation Checklist for a J-EX8200 Switch" on page 57.

- Do not attempt to lift the J-EX8208 switch by yourself. We recommend using a mechanical lift to install the J-EX8208 switch in a rack or cabinet. If you cannot use a lift, you must remove all components from the chassis before lifting and use a minimum of three people to lift the J-EX8208 switch chassis. For lifting and component removal instructions, see "Mounting a J-EX8208 Switch on a Rack or Cabinet Without Using a Mechanical Lift" on page 107.

  CAUTION: The J-EX8208 switch chassis has two handles, one on each side of the chassis. Do not lift a fully loaded chassis by the handles; make sure the chassis is empty before you lift it. If two of the people lifting the chassis use the handles to lift it, a third person must lift from the rear of the chassis. The rear of the chassis is heavier than the front of the chassis, so when you lift the chassis by the handles the chassis tips toward the heavier back end. The person lifting from the back must be aware of this behavior and be braced to prevent the chassis from tipping over.

- Before lifting or moving the switch, disconnect all external cables and wires.

- Do not grasp the switch by the blue panel at the top front of the chassis. Doing so can cause the panel to detach from the switch.

- If you are lifting the J-EX8208 switch, as when lifting any heavy object, ensure that most of the weight is borne by your legs rather than your back. Keep your knees bent and your back relatively straight. Do not twist your body as you lift. Balance the load evenly among the people lifting the switch and be sure that your footing is firm.

<div style="text-align: right">Related Documentation</div>

- General Safety Guidelines and Warnings for J-EX Series Switches on page 207
- Installation Instructions Warning for J-EX Series Switches on page 219

- Mounting a J-EX8208 Switch on a Rack or Cabinet on page 101

Ramp Warning for J-EX Series Switches

⚠ WARNING: When installing the switch, 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 J-EX Series Switches on page 207
- Laser and LED Safety Guidelines and Warnings for J-EX Series Switches on page 213
- Installation Instructions Warning for J-EX Series Switches on page 219
- Grounded Equipment Warning for J-EX Series Switches on page 225

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

Ensure that the rack or cabinet in which the J-EX Series switch 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 switch in a rack, take the following precautions to ensure that the system remains stable. The following directives help maintain your safety:

- The switch must be installed in a rack that is secured to the building structure.
- The switch should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting the switch 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 devices, install the stabilizers before mounting or servicing the switch 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 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:

- 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 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 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 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:

- 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 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 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:

- 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 J-EX Series Switches on page 207
- Installation Instructions Warning for J-EX Series Switches on page 219
- Grounded Equipment Warning for J-EX Series Switches on page 225
- Mounting a J-EX8208 Switch on a Rack or Cabinet on page 101

Grounded Equipment Warning for J-EX Series Switches

⚠ WARNING: The switch is intended to be grounded. During normal use, ensure that you have connected earth ground to the switch 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 J-EX Series Switches on page 207
- Connecting Earth Ground to a J-EX Series Switch on page 129

Maintenance and Operational Safety Guidelines and Warnings for J-EX Series Switches

While performing the maintenance activities for J-EX Series switches, observe the following guidelines and warnings:

- Battery Handling Warning on page 226
- Jewelry Removal Warning on page 228
- Lightning Activity Warning on page 229
- Operating Temperature Warning on page 230
- Product Disposal Warning on page 232

Battery Handling Warning

WARNING: Replacing a battery incorrectly might result in an explosion. Replace a battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

WARNING: Waarschuwing Er is ontploffingsgevaar als de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type dat door de fabrikant aanbevolen is. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften weggeworpen te worden.

WARNING: **Varoitus** Räjähdyksen vaara, jos akku on vaihdettu väärään akkuun. Käytä vaihtamiseen ainoastaan saman- tai vastaavantyyppistä akkua, joka on valmistajan suosittelema. Hävitä käytetyt akut valmistajan ohjeiden mukaan.

WARNING: **Attention** Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

WARNING: **Warnung** Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

WARNING: **Advarsel** Det kan være fare for eksplosjon hvis batteriet skiftes på feil måte. Skift kun med samme eller tilsvarende type som er anbefalt av produsenten. Kasser brukte batterier i henhold til produsentens instruksjoner.

WARNING: **Avvertenza** Pericolo di esplosione se la batteria non è installata correttamente. Sostituire solo con una di tipo uguale o equivalente, consigliata dal produttore. Eliminare le batterie usate secondo le istruzioni del produttore.

WARNING: **Aviso** Existe perigo de explosão se a bateria for substituída incorrectamente. Substitua a bateria por uma bateria igual ou de um tipo equivalente recomendado pelo fabricante. Destrua as baterias usadas conforme as instruções do fabricante.

WARNING: **¡Atención!** Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

WARNING: **Varning!** Explosionsfara vid felaktigt batteribyte. Ersätt endast batteriet med samma batterityp som rekommenderas av tillverkaren eller motsvarande. Följ tillverkarens anvisningar vid kassering av använda batterier.

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 switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 104º F (40º C). 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 switch dan ook oververhit raakt, dient u deze niet te bedienen op een plaats waar de maximale aanbevolen omgevingstemperatuur van 40º 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 switch-sarjan reititin ylikuumentuisi, sitä ei saa käyttää tilassa, jonka lämpötila ylittää korkeimman suositellun ympäristölämpötilan 40º C. Ettei ilmanvaihto estyisi, tuuletusaukkojen ympärille on jätettävä ainakin 15,2 cm tilaa.

⚠ WARNING: **Attention** Pour éviter toute surchauffe des routeurs de la gamme 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 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 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 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 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 product 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 J-EX Series Switches on page 207
- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235
- AC Power Electrical Safety Guidelines for J-EX Series Switches on page 238
- Laser and LED Safety Guidelines and Warnings for J-EX Series Switches on page 213
- Installation Instructions Warning for J-EX Series Switches on page 219
- Grounded Equipment Warning for J-EX Series Switches on page 225

Power and Electrical Safety Information

General Electrical Safety Guidelines and Warnings for J-EX Series Switches

WARNING: Certain ports on the switch 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 switch 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 switch, 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 J-EX Series switch 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 J-EX Series switch within marked electrical ratings and product usage instructions.

- To ensure that the J-EX Series switch 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 switch components without powering off or disconnecting power to the switch, as detailed elsewhere in the hardware documentation for this product. Never install equipment if it appears damaged.

Related Documentation
- General Safety Guidelines and Warnings for J-EX Series Switches on page 207
- AC Power Electrical Safety Guidelines for J-EX Series Switches on page 238

Prevention of Electrostatic Discharge Damage on J-EX Series Switches

Switch 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 105 on page 237) in one hand and touch the exposed, bare metal of the switch with the other hand immediately before inserting the component into the switch.

  ⚠ 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 chassis, 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 switch 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 105 on page 237). If you are returning a component, place it in an antistatic bag before packing it.

Figure 105: Place a Component into an Antistatic Bag
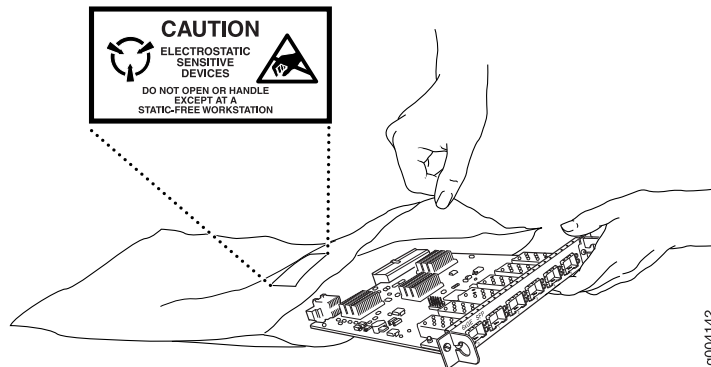
△ CAUTION: ANSI/TIA/EIA-568 cables such as category 5e and category 6 can get electrostatically charged. In order to dissipate this charge, always ground the cables to a suitable and safe earth ground before connecting them to the system.

Related Documentation

- General Safety Guidelines and Warnings for J-EX Series Switches on page 207

- See Chassis Physical Specifications of a J-EX8208 Switch on page 7 for the ESD point location.

AC Power Electrical Safety Guidelines for J-EX Series Switches

⚠️ CAUTION: For switches 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 switches:

- Note the following warnings printed on the chassis:

  "**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 switches 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 switch. The socket outlet must be near the switch and be easily accessible.

- For J-EX Series switches that have more than one power supply connection, you must ensure that all power connections are fully disconnected so that power to the switch 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。

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Related Documentation
- General Safety Guidelines and Warnings for J-EX Series Switches on page 207
- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235
- Multiple Power Supplies Disconnection Warning for J-EX Series Switches on page 240
- Connecting AC Power to a J-EX8200 Switch on page 130

AC Power Disconnection Warning for J-EX Series Switches

⚠️ 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.

Multiple Power Supplies Disconnection Warning for J-EX Series Switches

⚠️ WARNING: For J-EX Series switches that have more than one power supply connection, you must ensure that all power connections are fully disconnected so that power to the switch is completely removed.

Related Documentation
- General Safety Guidelines and Warnings for J-EX Series Switches on page 207
- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235
- AC Power Electrical Safety Guidelines for J-EX Series Switches on page 238

TN Power Warning for J-EX Series Switches

⚠️ WARNING: The switch 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 J-EX Series Switches on page 207
- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235
- Grounded Equipment Warning for J-EX Series Switches on page 225
- Multiple Power Supplies Disconnection Warning for J-EX Series Switches on page 240

In Case of Electrical Accident: Action to Take on a J-EX Series Switch

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 switch.

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 J-EX Series Switches on page 207
- General Electrical Safety Guidelines and Warnings for J-EX Series Switches on page 235
- AC Power Electrical Safety Guidelines for J-EX Series Switches on page 238

PART 8

Compliance Information

CHAPTER 20

Compliance Information

- Agency Approvals for J-EX Series Switches on page 245
- Compliance Statements for EMC Requirements for J-EX Series Switches on page 246
- Compliance Statements for Acoustic Noise for J-EX Series Switches on page 248
- Declarations of Conformity for J-EX8208 Switches on page 249

Agency Approvals for J-EX Series Switches

J-EX Series switches 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 J-EX Series Switches on page 246
- Compliance Statements for Acoustic Noise for J-EX Series Switches on page 248

Compliance Statements for EMC Requirements for J-EX Series Switches

This topic describes the EMC requirements for J-EX Series switches for:

- Canada on page 246
- European Community on page 247
- Japan on page 247
- United States on page 247
- FCC Part 15 Statement on page 247
- Non-Regulatory Environmental Standards on page 248

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

VCCI-A

United States

The J-EX Series switch 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 J-EX Series switch models are Network Equipment Building System (NEBS) compliant:

- All J-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 J-EX Series Switches on page 245

- Compliance Statements for Acoustic Noise for J-EX Series Switches on page 248

Compliance Statements for Acoustic Noise for J-EX Series Switches

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 J-EX Series Switches on page 245

- Compliance Statements for EMC Requirements for J-EX Series Switches on page 246

Declarations of Conformity for J-EX8208 Switches

JUNIPER
NETWORKS®

Declaration of Conformity
Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC
according to EN 45014

CE

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

declares under our sole responsibility that the products:
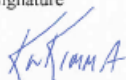
EX4200-24T, EX4200-24F, EX4200-48T, EX8208, EX8216
Dell PowerConnect J- EX4200-24T, J-EX4200-24F, J-EX4200-48T, J-EX8208, J-EX8216

are in conformity with the provisions of the Low Voltage Directive 2006/95/EC and
EMC Directive 2004/108/EC.

The following harmonized standards were applied:

EMC	EN 300 386 v1.3.3: 2005	Immunity	EN 61000-4-2:1995+A1+A2
	EN 55022 Class A: 2006		EN 61000-4-3: 2002+A1+A2
	EN 55024 +A1+A2: 1998		EN 61000-4-4: 2004
	EN 61000–3-2:2006,		EN 61000-4-5: 2006,
	EN 61000-3-3: 1995+A1+A2+A3		EN 61000-4-6: 2007
Safety	EN 60950-1: 2001 1st Edition		EN 61000-4-11: 2004
	EN 60825-1 +A1+A2: 1994		

This product carries the CE Mark, which was first affixed in 2008.

Place	Signature	Date
Sunnyvale, CA		**03/24/2010**

Kevin Kimma

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

DoC: EXDellJ_1

JUNIPER
NETWORKS

SUPPLIERS DECLARATION OF CONFORMITY

- section 182 of the Australian Radiocommunications Act 1992
- section 134 of the New Zealand Radiocommunications Act 1989

i/We
Juniper Australia Pty Ltd.
Level 1, 181 Miller Street North Sydney NSW 2060

Australian Business number ABN: ABN: 36 091 016 312
Supplier code number: N10070

Declare that the following customer equipment

Ethernet Switch, Models: EX4200-24F, EX4200-24T, EX4200-48T, EX8208, EX8216

Dell PowerConnect J-EX4200-24F
Dell PowerConnect J-EX4200-24T
Dell PowerConnect J-EX4200-48T
Dell PowerConnect J-EX8208
Dell PowerConnect J-EX8216

to which this declaration relates complies with all applicable standards as listed below

AS / NZS 60950-1: 2001   Telecommunications Technical Standard Safety of Information Technology
Equipment

AS / NZS CISPR22: 2006   Information technology equipment – Radio disturbance characteristics –
Limits and methods of measurement

(details of applicable standards, including number, title and date of publication)

_____
(signature of declarant)

Matt Miller
(full name of declarant)

Director, Systems Engineering A/NZ
(position held in the manufacturing or importing organization)

29 April 2010
(date of declaration)

Related Documentation
- Agency Approvals for J-EX Series Switches on page 245
- Compliance Statements for EMC Requirements for J-EX Series Switches on page 246
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PART 9

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