

Hardware Installation Guide for Cisco 8500 Switches

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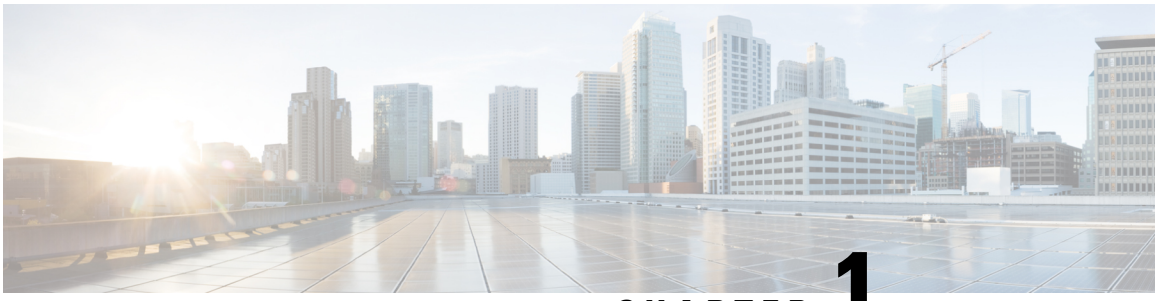
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CHAPTER 1

Cisco 8500 Switch Overview

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Cisco 8500 Switches

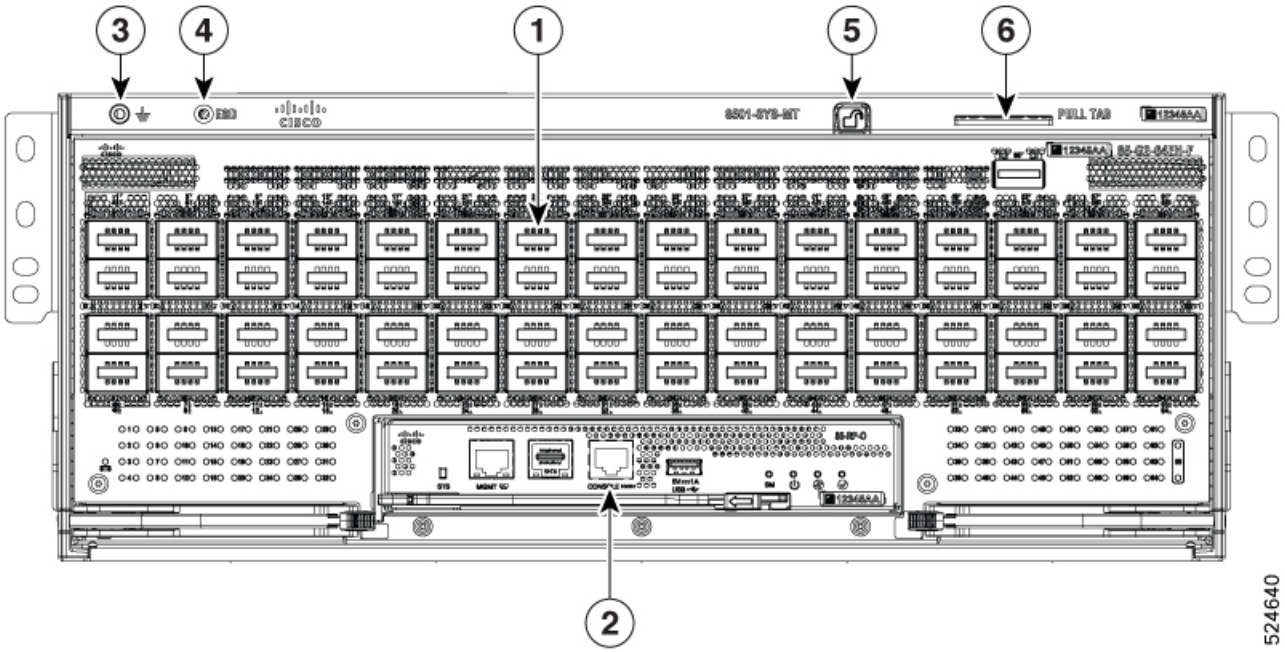
Cisco 8501

The Cisco 8501 is a G200-based, 4-RU switch. It uses a single-slot non-redundant System Control Module (SCM) card in the front which contains the CPU complex for managing the system. .

The Cisco 8501 supports 64x800G OSFP ports with support for 2x400G optics, providing a total of 128x400GbE ports, for 51.2T total switching bandwidth.

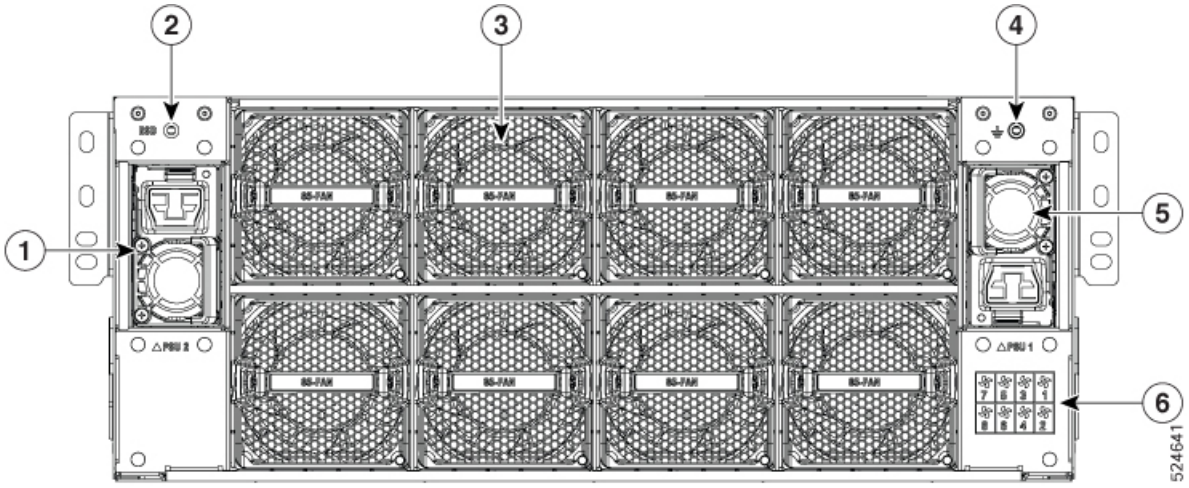
The front of the chassis has the Switch Main Board (SMB) and pluggable System Control Module (SCM).

Figure 1: Cisco 8501-SYS-MT - Front View



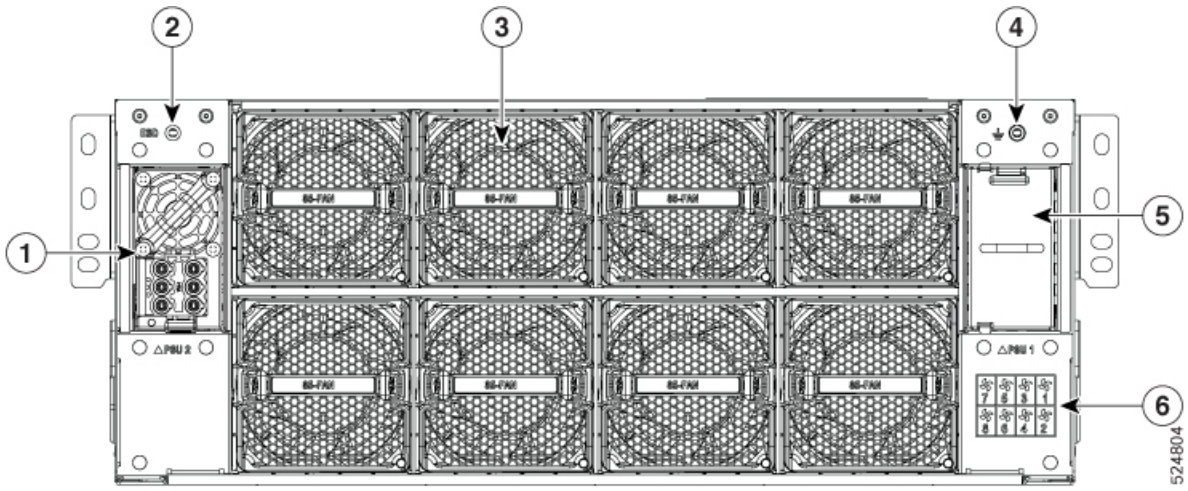
1	Switch Main Board (SBM)
2	System Control Module (SCM)
3	Ground
4	ESD receiver
5	SMB release button
6	Pull out label tab

Figure 2: Cisco 8501-SYS-MT - Rear View with AC PSU



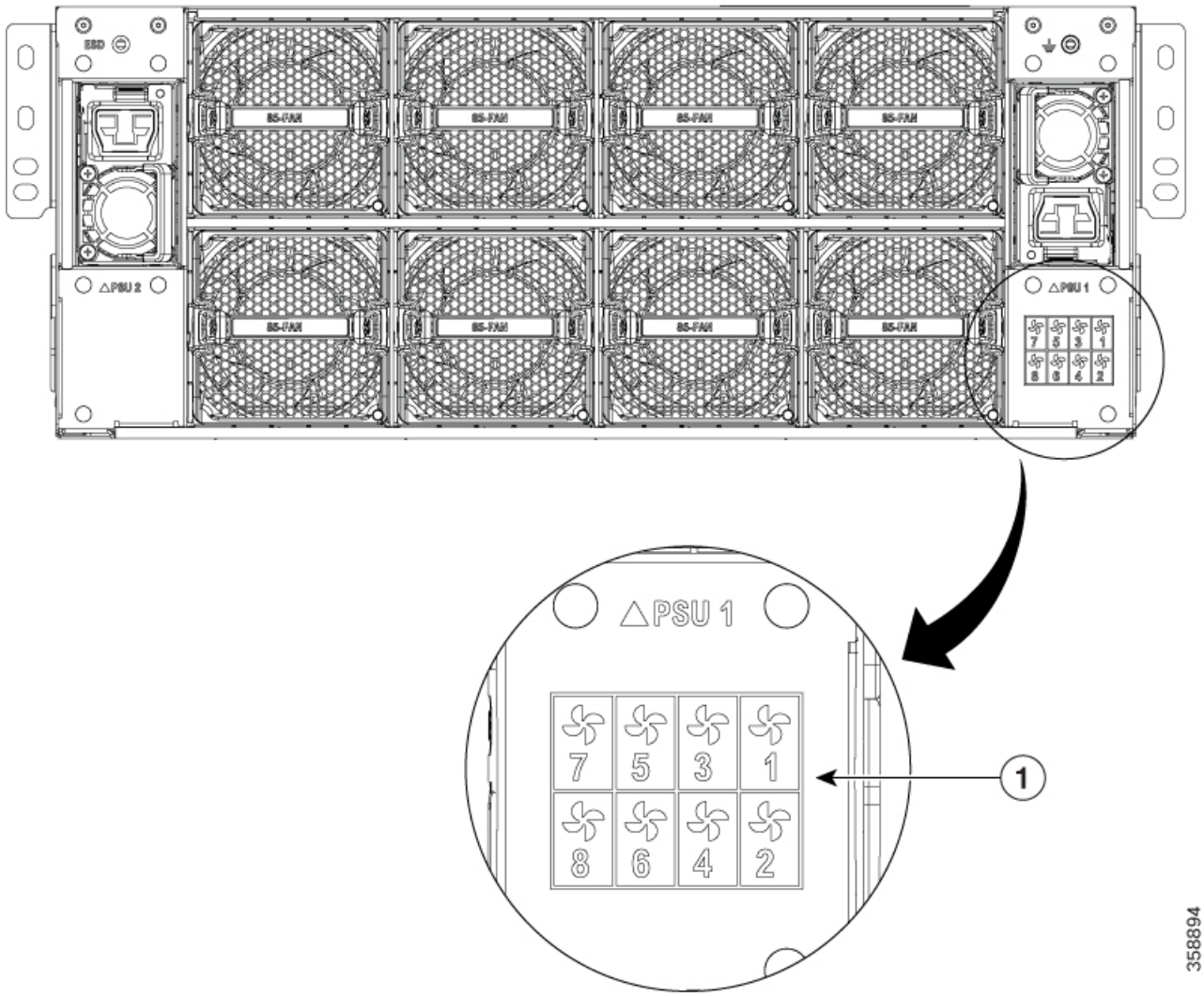
1	Power module (PSU 2) **Note** The Cisco 8501 switch supports an AC power module in the PSU 2 slot in an inverted position. When inserting the AC power module into the PSU 2 slot, align the connector on the PSU accurately with the slot before insertion.
2	ESD receiver
3	Fan modules
4	Ground
5	Power module (PSU 1)
6	Fan module slot legend

Figure 3: Cisco 8501-SYS-MT - Rear View with DC PSU



1	Power module (PSU 2)
2	ESD receiver
3	Fan modules
4	Ground
5	Power module (PSU 1) **Note** The Cisco 8501 switch supports DC power module in PSU 2 slot only and the PSU 1 slot must be covered with PSU blank.
6	Fan module slot legend

Figure 4: Cisco 8501-SYS-MT - Fan Module Slot Legend



The rear of the chassis has the following:

- Two 3KW power modules providing 1+1 power redundancy when using AC power modules. One 3KW power module when using DC power module. The power modules support port-side-intake (PSI) airflow direction and different AC/DC inputs capabilities.

Note The Cisco 8501 switch supports DC power module in PSU 2 slot only and the PSU 1 slot must be covered with PSU blank. When using the DC power module in the 8501-SYS, the entire length of the power interconnect (i.e. power cable(s), busbars, and so on) between the DC power input connector on the power module and the power source must not be longer than 3 meters.

- Eight 80mm counter-rotating double-fan fan trays providing 7+1 redundancy. The fan trays can be removed individually.

The following table describes the Cisco 8501 switch components, and the supported quantity.

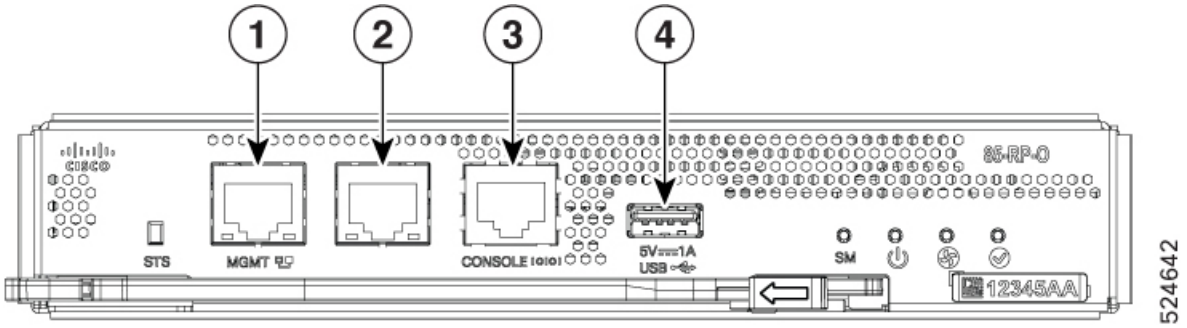
Table 1: Cisco 8501 Switch Components

Component	Quantity
Ports	64
Fan Modules	8
Power Modules	2 (if AC) 1 (if DC)
System Control Module	1
Switch Main Board	1

System Control Module Overview

The System Control Module (85-RP-O) manages all switching operations on the Cisco 8500 Switches.

Figure 5: System Control Module



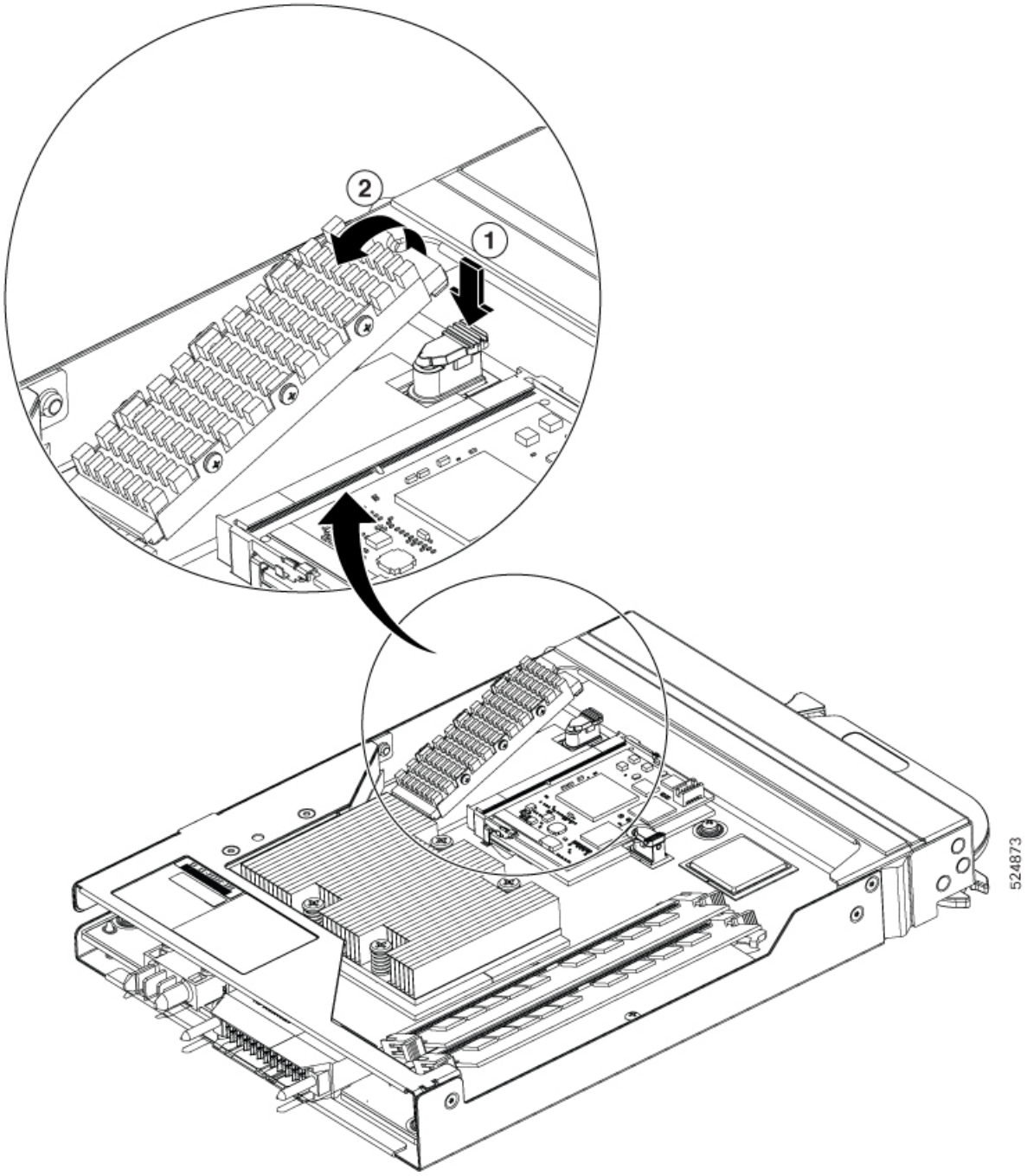
1	Management Ethernet (10/100/1000-Mbps) RJ-45 (Copper) LAN port
2	Debug port (Unused) **Note** The RJ45 port must always be covered with a cap.
3	Console RS232 RJ45 port
4	Type-A USB2.0 port

SSD Card

The switch has a removable Solid State Drive (SSD) card. We recommend to remove the SSD card before shipping the hardware for a Return Merchandise Authorization (RMA) request. Removal of the SSD card enforces customer data security while performing an RMA.

You can access the SSD card in the SCM. To remove the SSD card, do the following:

Figure 6: Remove SSD Card



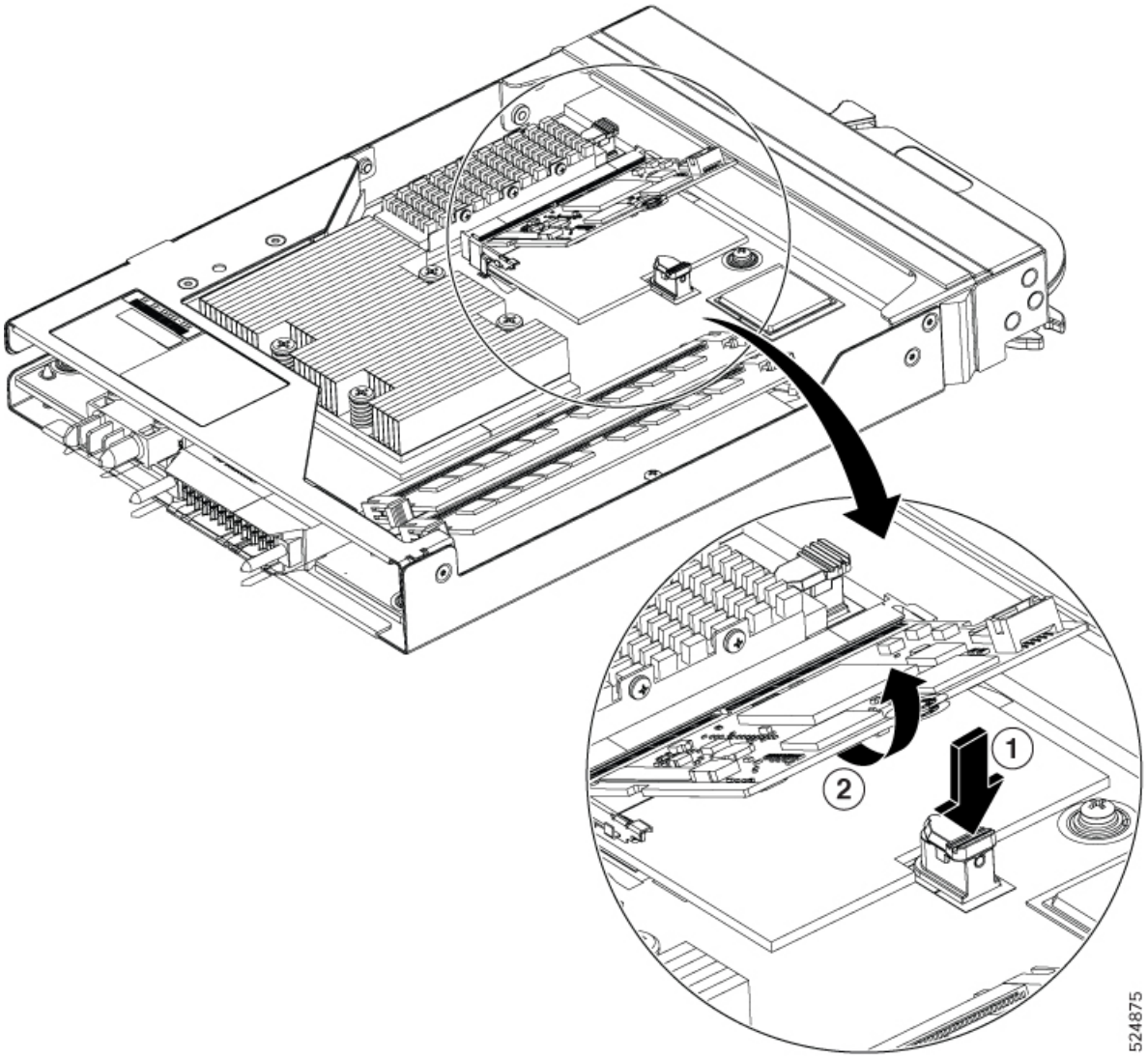
1. Carefully push the SSD removal latch backward.
2. Slowly remove the SSD card from the connector.

BMC Card

The switch has a removable Baseboard Management Controller (BMC) card. We recommend to remove the BMC card before shipping the hardware for a Return Merchandise Authorization (RMA) request. Removal of the BMC card enforces customer data security while performing an RMA.

You can access the BMC card in the SCM. To remove the BMC card, do the following:

Figure 7: Remove BMC Card



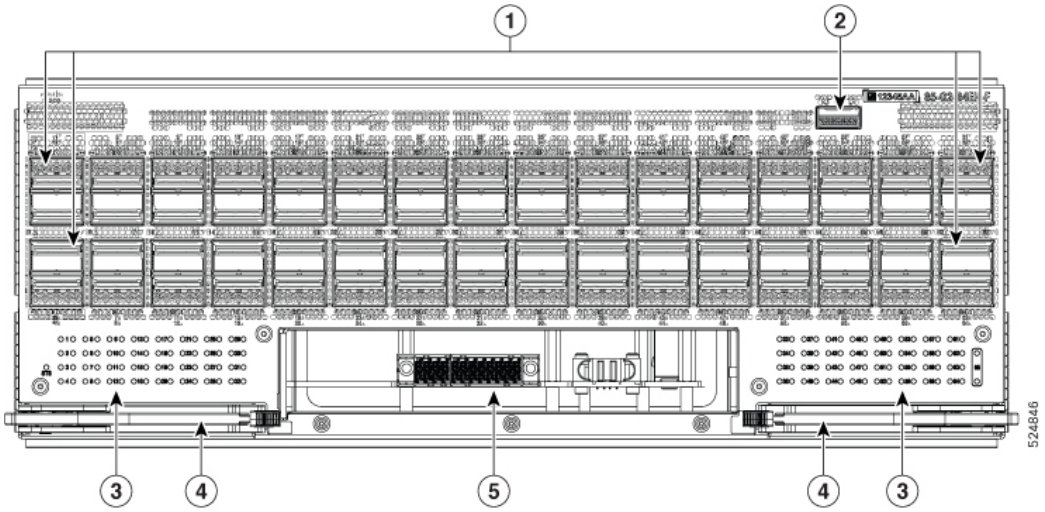
1. Carefully push the BMC removal latch backward and remove the lock on the either side of the card.
2. Slowly remove the BMC card from the connector.

Switch Main Board Overview

The Cisco 8500 switches are powered by the Cisco Silicon One G200 series processors.

Cisco 8501 G200 Silicon-based Switch Main Board (SMB) (85-G2-64EH-F) is a 51.2T switch card that includes 64x800G OSFP ports with support for 2x400G optics providing a total of 128x400GbE ports and a PIE port that supports QSFP28 optics.

Figure 8: Switch Main Board



1	Ports without dust caps The port numbering in SMB row-wise starting from the top (port numbering is from left to right): • Row 1 (Ports 1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, and 61) • Row 2 (Ports 2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42, 46, 50, 54, 58, and 62) • Row 3 (Ports 3, 7, 11, 15, 19, 23, 27, 31, 35, 39, 43, 47, 51, 55, 59, and 63) • Row 4 (Ports 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, and 64)
2	PIE port (Punt inject eject)
3	Port LEDs **Note** Port LED from 1-64 are for the OSFP ports and the port LED 65 is for PIE port.
4	SMB latch
5	SCM Slot

Temperature and Physical Specifications

For temperature and physical specifications, refer to the *Physical characteristics* table in the Cisco 8100 Series Routers Data Sheet.

Weight and Power Consumption

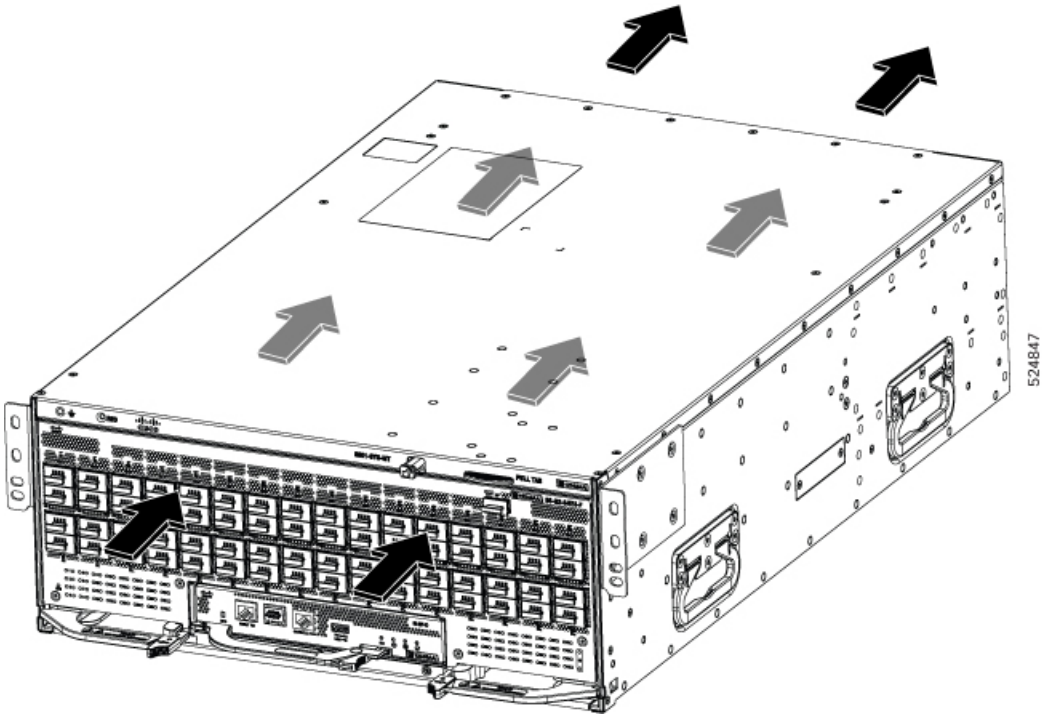
For weight and power consumption, refer to the *Physical characteristics* table in the Cisco 8100 Series Routers Data Sheet.

Airflow Direction

The airflow through the fan trays and power supplies on the Cisco 8500 switches are from front to back (port side intake).

To ensure proper airflow for the switch in your facility, position the switch with its air intake on a cold aisle and the air exhaust on a hot aisle.

Figure 9: Airflow direction in Cisco 8501-SYS-MT



Maximum Power Available to the Switch

The maximum power available for operations depends on the input power from your power source, the number and output capabilities of your power supplies, and the power redundancy mode that you use.

The following tables lists the amount of power available for Cisco 8500 series switches from all available power trays.

Table 2: Maximum Power Available when using DC Power Modules

Total Power Supply	Combined Mode in Watts (No redundancy)	N+1 Redundancy Mode in Watts (with Single Supply Loss)
1	3000	—
2	6000	3000

Table 3: Maximum Power Available when using DC Power Module

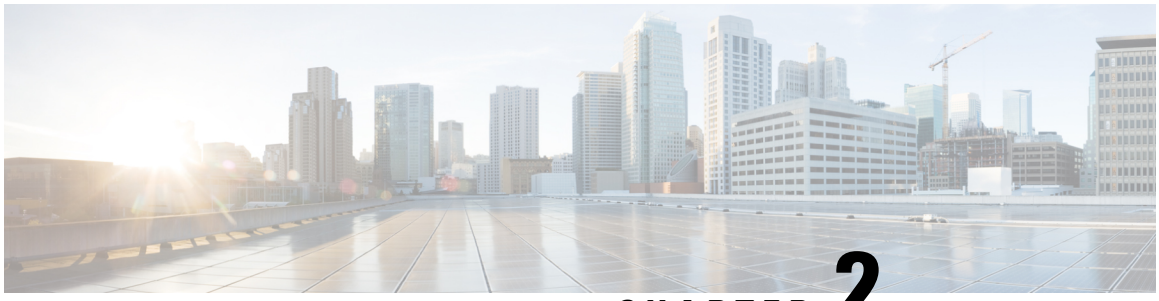
Total Power Supply	Combined Mode in Watts (No redundancy)
1	3000

Note The power supply units (PSUs) deliver the above stated output power (e.g., 3,000W) to the switch However, the wall power or input power to the switch will be high due to conversion efficiencies.

Supported Optics

Note To determine which transceivers and cables are supported by this switch, refer to the Transceiver Module Group (TMG) Compatibility Matrix Tool:

https://tmgmatrix.cisco.com/home



CHAPTER 2

Prepare for Installation

This chapter provides preinstallation information, such as recommendations and requirements that must be met before installing your switch. Before you begin, inspect all items for shipping damage. If anything appears to be damaged or if you encounter problems installing or configuring your switch, contact customer service.

Note The images in this chapter are only for representational purposes, unless specified otherwise. The chassis' actual appearance and size may vary.

- Standard Warning Statements, on page 11
- Safety Guidelines, on page 14
- Compliance and Safety Information, on page 15
- Laser Safety, on page 15
- Energy Hazard, on page 16
- Preventing Electrostatic Discharge Damage, on page 16
- Installation Guidelines, on page 16
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- Prepare Yourself , on page 19
- Prepare Rack for Chassis Installation, on page 20
- Clearance Requirements, on page 21

Standard Warning Statements

This section describes the warning definition and then lists core safety warnings grouped by topic.

General Safety Warnings



Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.



Warning **Statement 9001—**Product Disposal

Ultimate disposal of this product should be handled according to all national laws and regulations.



Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.



Warning **Statement 1074—**Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.



Note **Statement 407—**Japanese Safety Instruction

You are strongly advised to read the safety instruction before using the product.

https://www.cisco.com/web/JP/techdoc/pldoc/pldoc.html

When installing the product, use the provided or designated connection cables/power cables/AC adapters.

〈製品使用における安全上の注意〉

www.cisco.com/web/JP/techdoc/index.html

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Note **Statement 438**—Taiwan RoHS

Restricted Substances Content Disclosure Table web address: http://www.cisco.com/go/taiwanrohs

Warning **Statement 445**—Connect the Chassis to Earth Ground

To reduce the risk of electric shock, connect the chassis of this equipment to permanent earth ground during normal use.

Warning **Statement 1020**—Electrical Power Outlet with Grounding

In accordance with the ABNT NBR 5410 Electrical Installation Standard, this equipment must be connected to an electrical power outlet that has grounding (three pins), which protects the user against electric shocks.

Warning **Statement 1029**—Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, they contain electromagnetic interference (EMI) that might disrupt other equipment, and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Warning **Statement 1057**—Hazardous Radiation Exposure

Use of controls, adjustments, or performance of procedures other than those specified may result in hazardous radiation exposure.

Warning **Statement 1062**—Remove Power Before Disconnecting

Explosion Hazard—Do not connect or disconnect any connector to this equipment unless power has been removed or you have verified that the area is nonhazardous. Secure any external connections that connect to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.

Warning **Statement 1071—**Warning Definition

IMPORTANT SAFETY INSTRUCTIONS

Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source. Use the statement number at the beginning of each warning statement to locate its translation in the translated safety warnings for this device.

SAVE THESE INSTRUCTIONS



Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

Warning **Statement 1093—**Avoid Sharp Edges

Risk of personal injury. Avoid sharp edges when installing or removing replaceable units.



Note **Statement 8006—**CE Mark

Safety Guidelines

Before you perform any procedure in this document, review the safety guidelines in this section to avoid injuring yourself or damaging the equipment. The following guidelines are for your safety and to protect the equipment. Because the guidelines do not include all hazards, be constantly alert.

- Keep the work area clear, smoke and dust-free during and after installation. Do not allow dirt or debris to enter into any laser-based components.
- Do not wear loose clothing, jewelry, or other items that could get caught in the switch or other associated components.

- Cisco equipment operates safely when used in accordance with its specifications and product-usage instructions.
- If potentially hazardous conditions exist, do not work alone.
- Take care when connecting multiple units to the supply circuit so that wiring is not overloaded.
- This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain about whether suitable grounding is available.
- When installing or replacing the unit, the ground connection must always be made first and disconnected last.
- To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.
- Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

Compliance and Safety Information

The Cisco 8000 Series Switches are designed to meet the regulatory compliance and safety approval requirements. For detailed safety information, see Regulatory Compliance and Safety Information—Cisco 8000 Series Routers.

Laser Safety

Warning **Statement 1051—**Laser Radiation

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

Warning **Statement 1055—**Class 1/1M Laser

Invisible laser radiation is present. Do not expose to users of telescopic optics. This applies to Class 1/1M laser products.



Warning **Statement 1255—**Laser Compliance Statement

Pluggable optical modules comply with IEC 60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 with or without exception for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice No. 56, dated May 8, 2019.

Energy Hazard

The switches can be configured for a DC power source. Do not touch terminals while they are live. Observe the following warning to prevent injury.

Preventing Electrostatic Discharge Damage

Many switch components can be damaged by static electricity. Not exercising the proper electrostatic discharge (ESD) precautions can result in intermittent or complete component failures. To minimize the potential for ESD damage, always use an ESD-preventive antistatic wrist strap (or ankle strap) and ensure that it makes adequate skin contact.

Note Check the resistance value of the ESD-preventive strap periodically. The measurement should be 1–10 megohms.

Before you perform any of the procedures in this guide, attach an ESD-preventive strap to your wrist and connect the leash to the chassis.

Installation Guidelines

Before installing the chassis, ensure that the following guidelines are met:

- Site is properly prepared so that there is sufficient room for installation and maintenance.
- Operating environment is within the ranges that are listed in Environment and Physical specifications. For more details on environmental requirements, see Cisco 8100 Router Data Sheet.
- Chassis is mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting the chassis in 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 chassis in the rack.
- Airflow around the chassis and through the vents is unrestricted.
- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.

- Each port must match the wave-length specifications on each end of the cable, and the cable must not exceed the stipulated cable length.

Note Cisco 8000 Switches function in operating temperatures of up to 35°C at sea level. For every 300 meters (1000 ft) elevation upto 1800 meters (6000 ft), the maximum temperature is reduced by 1°C. For more details on environmental requirements, see Cisco 8100 Router Data Sheet.

Procure Tools and Equipment

Obtain these necessary tools and equipment for installing the chassis:

- Number 1 and number 2 Phillips screwdrivers with torque capability to rack-mount the chassis.
- 3/16-inch flat-blade screwdriver.
- Tape measure and level.
- ESD wrist strap or other grounding device.
- Antistatic mat or antistatic foam.
- Single Radsok grounding connector (1).
- Wire-stripping tool.

Switch Accessory Kit

Switch accessory kit for the Cisco 8501 switch includes the following:

Table 4: 85-ACKIT

Description	Quantity
AC power cable	2
AC power module	2

Table 5: 85-DCKIT

Description	Quantity
DC power cable	1
DC power module	1
PSU blank card	1

Table 6: 85-FAN=

Description	Quantity
Fan tray	1

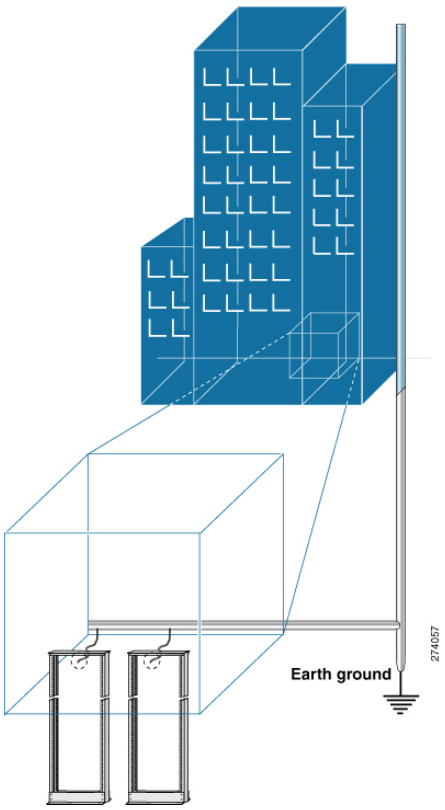
Prepare Your Location

This section illustrates how the building that houses the chassis must be properly grounded to the earth ground.

Note Unless specified otherwise, the image is only for representational purposes. The rack's actual appearance and size may vary.

Note This image is only for representational purposes. Your grounding requirement depends on your building.

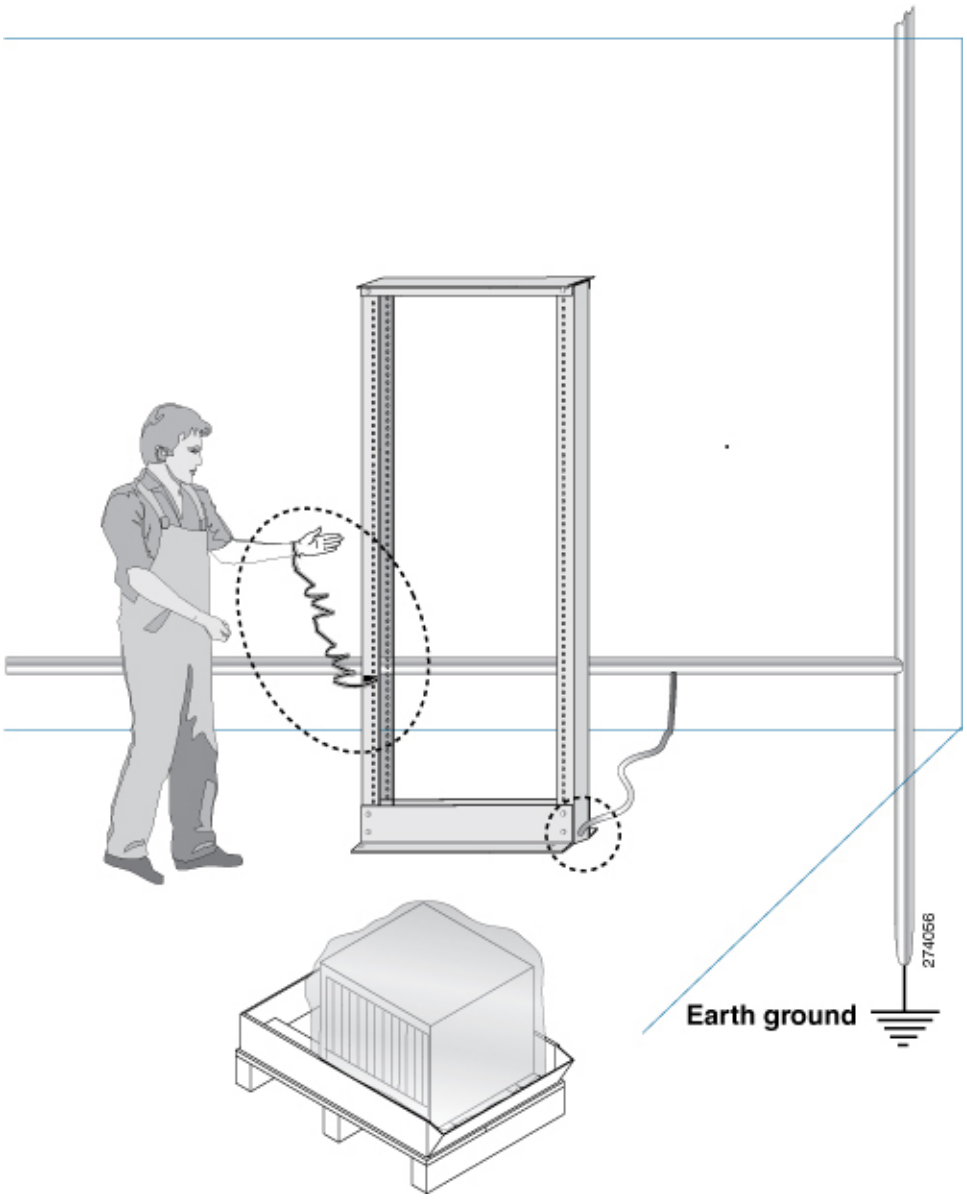
Figure 10: Building with Rack Room Connected to Earth Ground



Prepare Yourself

This section illustrates how to prepare yourself before removing the chassis from the sealed antistatic bag. The figures show how to cuff the ESD strap around the wrist and the ground cord that connects the cuff to the ground. ESD wrist straps are the primary means of controlling static charge on personnel.

Figure 11: Wearing the ESD Strap



Prepare Rack for Chassis Installation

Install the Cisco 8500 Switches on a standard 19 inch, Electronic Industries Alliance (EIA) rack with mounting rails that conform to English universal hole spacing according to Section 1 of the ANSI/EIA-310-D-1992 standard.

The spacing between the posts of the rack must be (EIA-310-D-1992 19-inch rack compatible) wide enough to accommodate the width of the chassis.

Figure 12: Rack Specification EIA (19 inches)

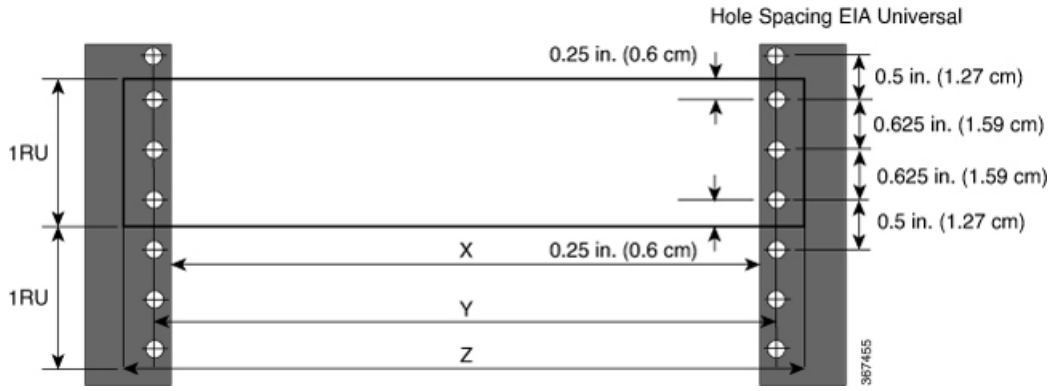


Table 7: Rack Specification EIA (19 inches)

Post Type	Rack Type	Rack Front Opening (X)	Rack Mounting Hole Center-Center (Y)	Mounting Flange Dimension (Z)
4 Post	19 inches (48.3 centimeters)	450.8mm (17.75”)	465mm (18.312”)	482.6mm (19”)
Open Rack version 3 Networking (ORv3N)				

Before you move the chassis or mount the chassis into the rack, we recommend that you do the following:

Procedure

Step 1 Place the rack at the location where you plan to install the chassis.

Step 2 (Optional) Secure the rack to the floor.

To bolt the rack to the floor, a floor bolt kit (also called an anchor embedment kit) is required. For information on bolting the rack to the floor, consult a company that specializes in floor mounting kits (such as Hilti; see Hilti.com for details). Make sure that floor mounting bolts are accessible, especially if annual retorquing of bolts is required.

Note

Ensure that the rack in which the chassis is being installed is grounded to earth ground.

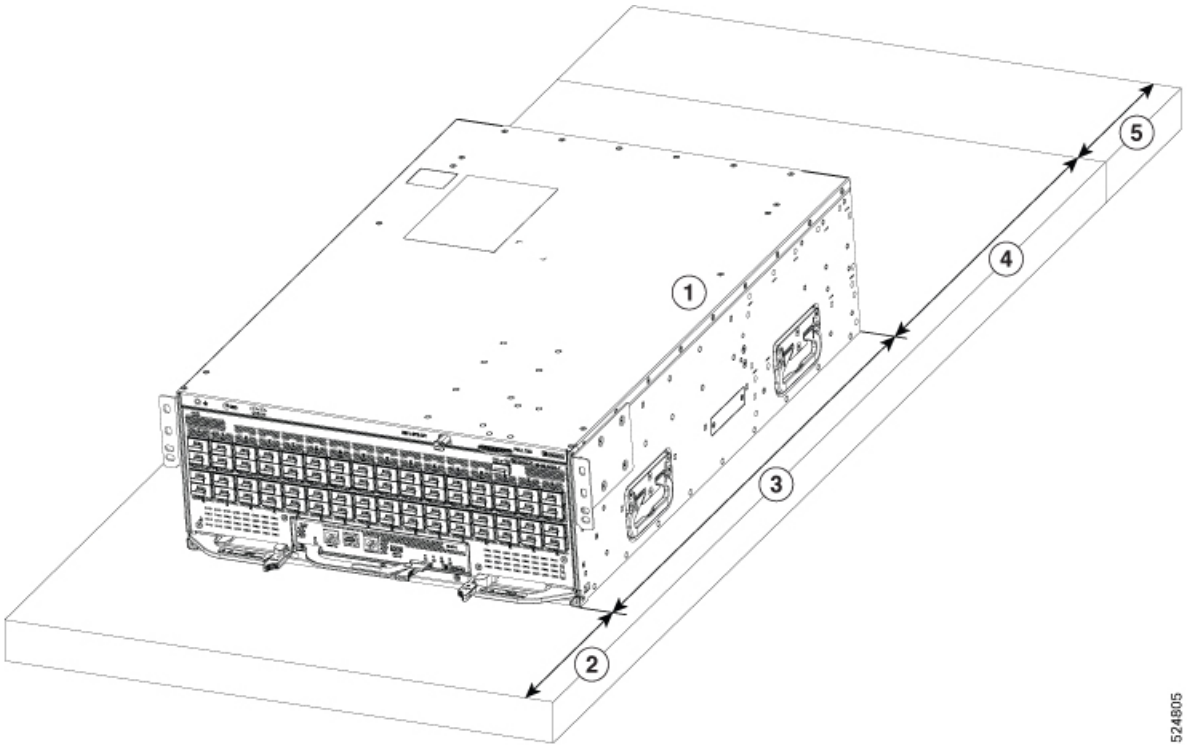
Clearance Requirements

To ensure adequate airflow, we recommended that you maintain a minimum of 6 in. (15.24 cm) front and rear clearance for air intake/exhaust.

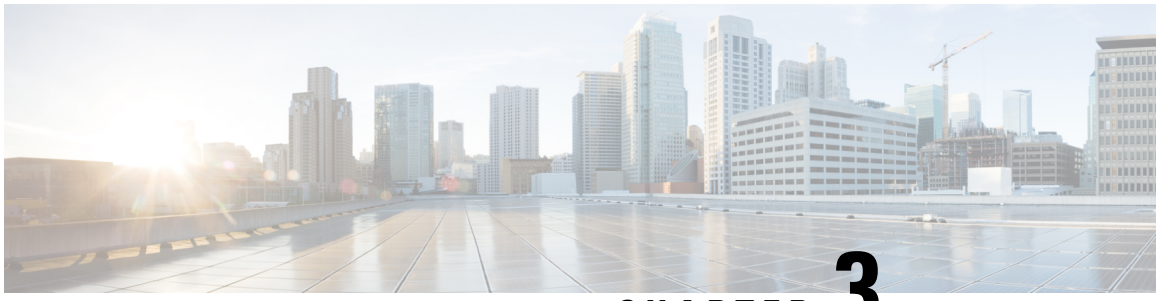
If the switch is installed in a perforated door cabinet, maintain a minimum of 6 in. (15.24 cm) from the inside of the door. The front and rear doors of the cabinet must be perforated with a minimum open area of 70%.

Following figure shows the clearances required for installation of Cisco 8500 Switches.

Figure 13: Clearances Required Around the Chassis



1	Chassis	4	6.0 in. (15.24 cm) rear clearance for air intake/exhaust.
2	6.0 in. (15.24 cm) front clearance for air intake/exhaust.	5	Additional 6.0 in. (15.24 cm) rear clearance for removal and installation of power supplies and fan modules.
3	20.01 in. (50.82 cm) Chassis depth.		



CHAPTER 3

Unpack and Install the Chassis

Note The images in this chapter are only for representation purposes, unless specified otherwise. The chassis' actual appearance and size may vary.

- Unpack the Chassis, on page 23
- Install Bottom-Support Rails, on page 24
- Transfer Chassis to a Mechanical Lifting Device, on page 27
- Mount Chassis Into the Rack, on page 28

Unpack the Chassis

Tip Be sure to save the packaging in case you need to return any of the components products.

Ensure that there is sufficient room around the chassis pallet for unpacking. For information about the chassis dimensions and clearance requirements see, *Clearance Requirements*.

Carefully move the pallet containing the chassis to the staging area where you plan on unpacking it.

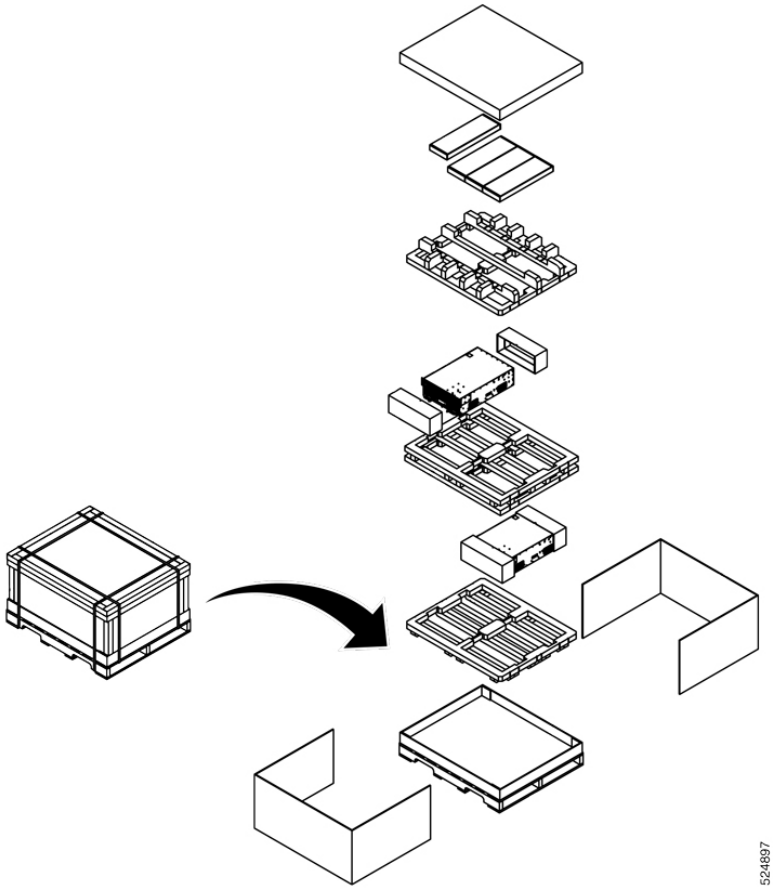


Figure 14: Unpacking the 8501 Chassis

Leave the chassis on the pallet until you are ready to install the chassis in a rack.

Install Bottom-Support Rails

The bottom-support rails support the weight of the switch chassis in the rack. To maximize the stability of the rack, start attaching rails at lowest possible rack unit.

Procedure

Step 1 Position the vertical rack rails at 32" depth to match with the length of the bottom-support rails. Check spacing considerations.

Step 2 Attach the bottom-support rail to the rack using a Phillips torque screwdriver on M6 x 19 mm or 12–24 x 3/4 inch screws for each end of the rail (as shown in the following figure) and tighten each screw to 40 in-lbs (4.5 N-m) of torque.

Figure 15: Attach Bottom-Support Minipack2 Rails to a 19inch 4 Post Rack

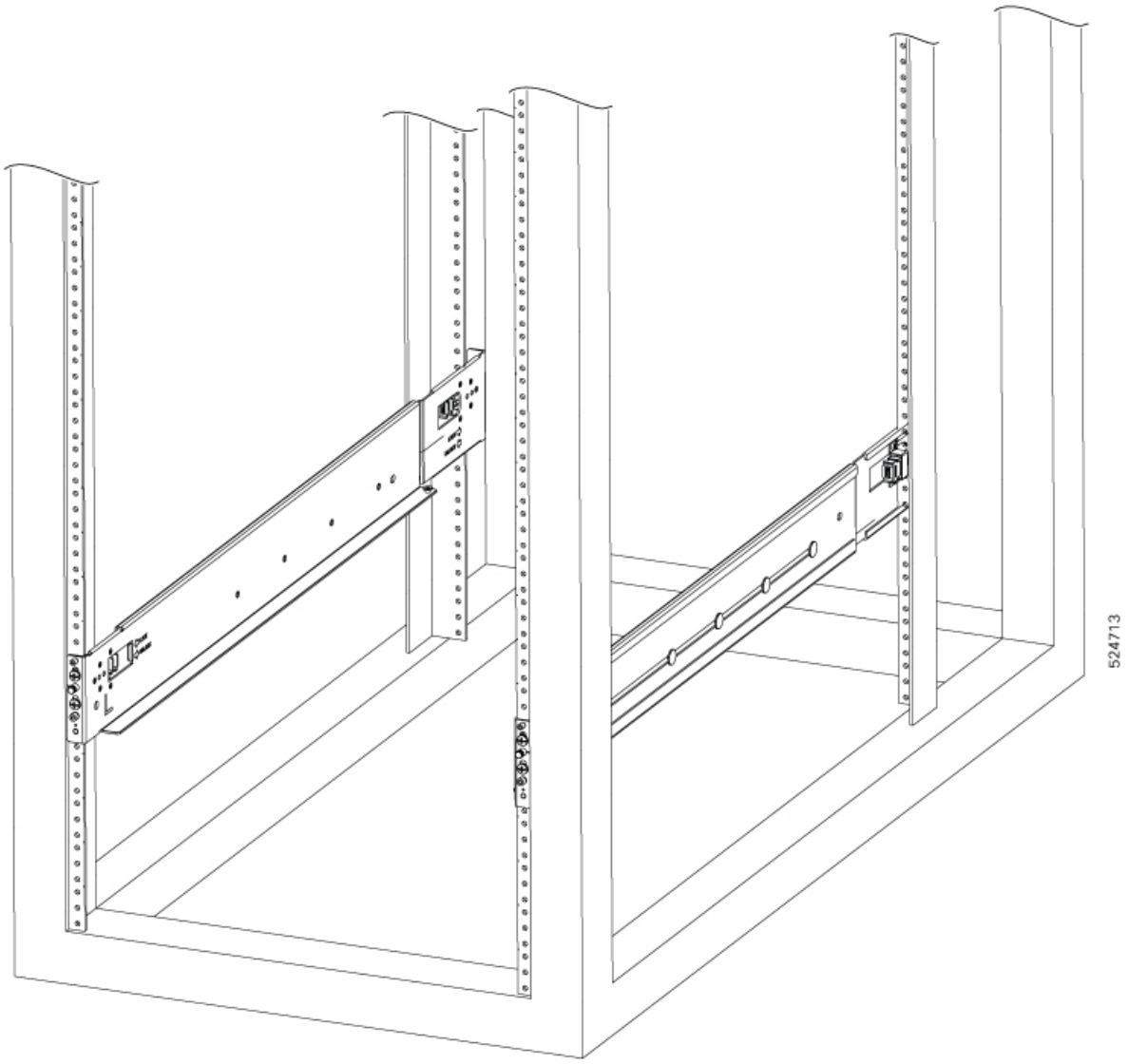
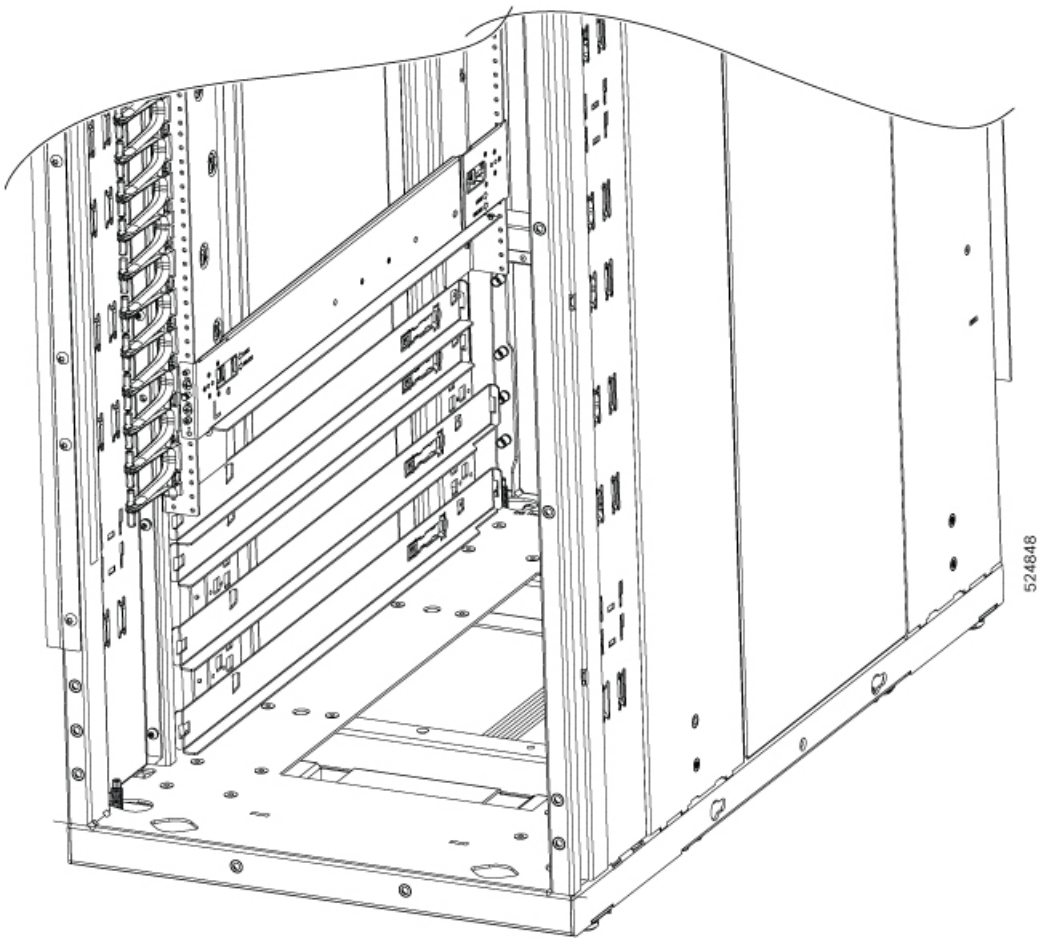


Figure 16: Attach Bottom-Support Minipack3 Rails to a ORv3N Rack



Note
Use at least two screws on each end of each bottom-support rail.

Step 3 Repeat Steps 1 and 2 to attach the other bottom-support rail to the rack.

Note
Make sure that the two bottom-support rails are level with one another using a measuring tape. If they are not level, adjust the higher rail down to the level of the lower rail.

What to do next

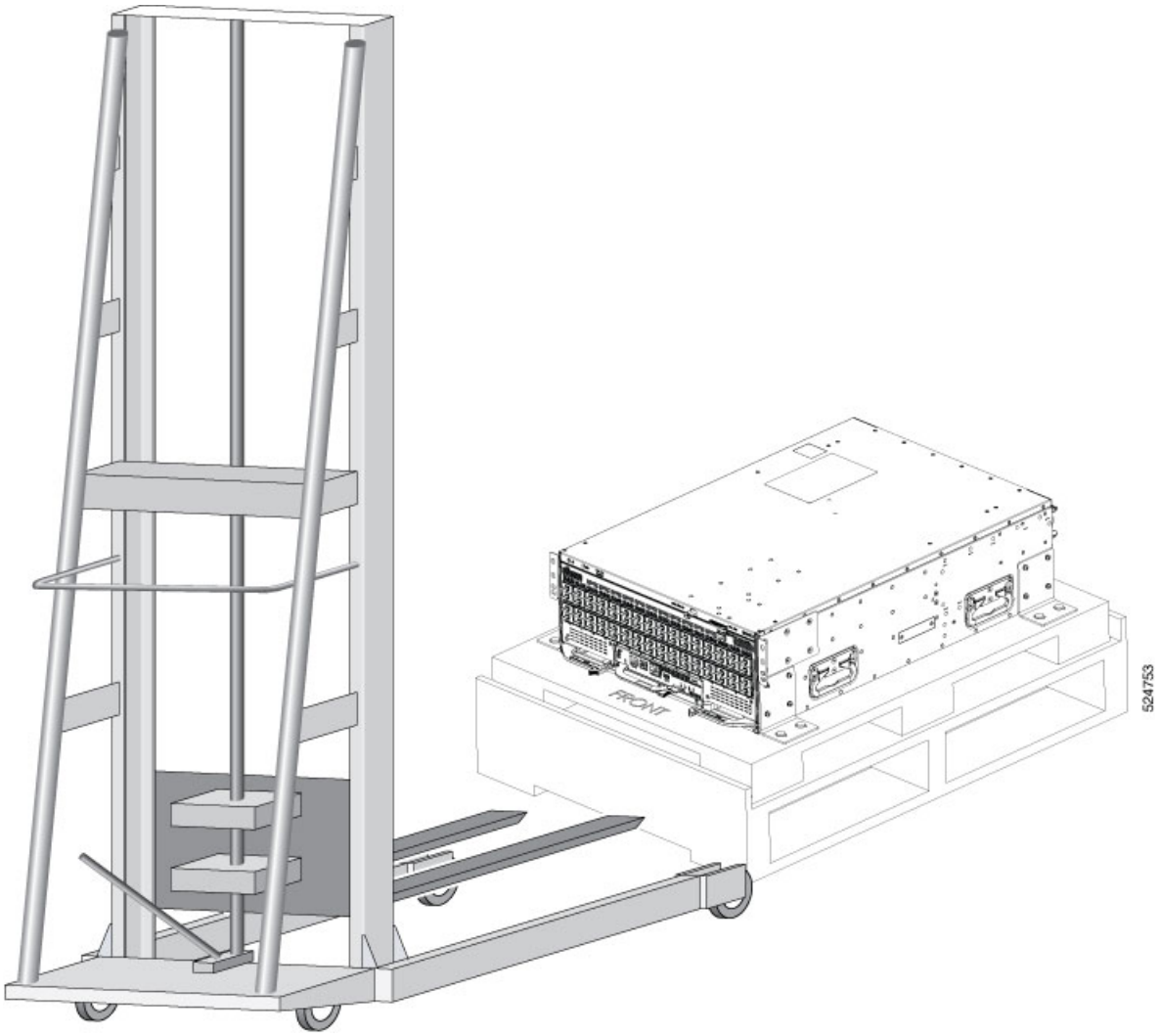
Mount the chassis into the rack.

Transfer Chassis to a Mechanical Lifting Device

Procedure

Step 1 Place the mechanical lifting device in front of the chassis on the pallet as shown.

Figure 17: Align the Lifting Device in Front of the Chassis on the Pallet



Step 2 Prepare to use the mechanical lifting device by placing a piece of cardboard on the surface of the lift (to prevent scratching).

Step 3 With at least two or three people move the chassis carefully with the pallet onto the lifting device as shown.

Figure 18: Move the Chassis on to the Lifting Device



What to do next

After moving the chassis to the room or area where you will install it, begin the procedure to mount the chassis into the rack.

Mount Chassis Into the Rack

This section describes how to install the switch in a 19 inch 4-post or ORv3N rack.

Warning **Statement 1032—**Lifting the Chassis

To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules, such as power supplies, fans, or cards. These types of handles are not designed to support the weight of the unit.

Warning **Statement 164—**Lifting the Chassis

2 people are required to lift the heavy parts of the product. To prevent injury, keep your back straight and lift with your legs, not your back.

Warning **Statement 1006—**Chassis Warning for Rack-Mounting and Servicing

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in 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 unit in the rack.

Warning **Statement 1047—**Overheating Prevention

To reduce the risk of fire or bodily injury, do not operate the unit in an area that exceeds the maximum recommended ambient temperature of: 104°F (40°C)

Procedure

Step 1 Remove the 16 screws, 4 screws in each corners and and lossen the 8 bolts, 2 bolts in each corner attaching the chassis to the pallet.

Step 2 Holding the switch with both hands using the handles, position the back of the switch between the front posts of the rack.

Figure 19: Inserting Chassis to the 19 inch 4 Post Rack

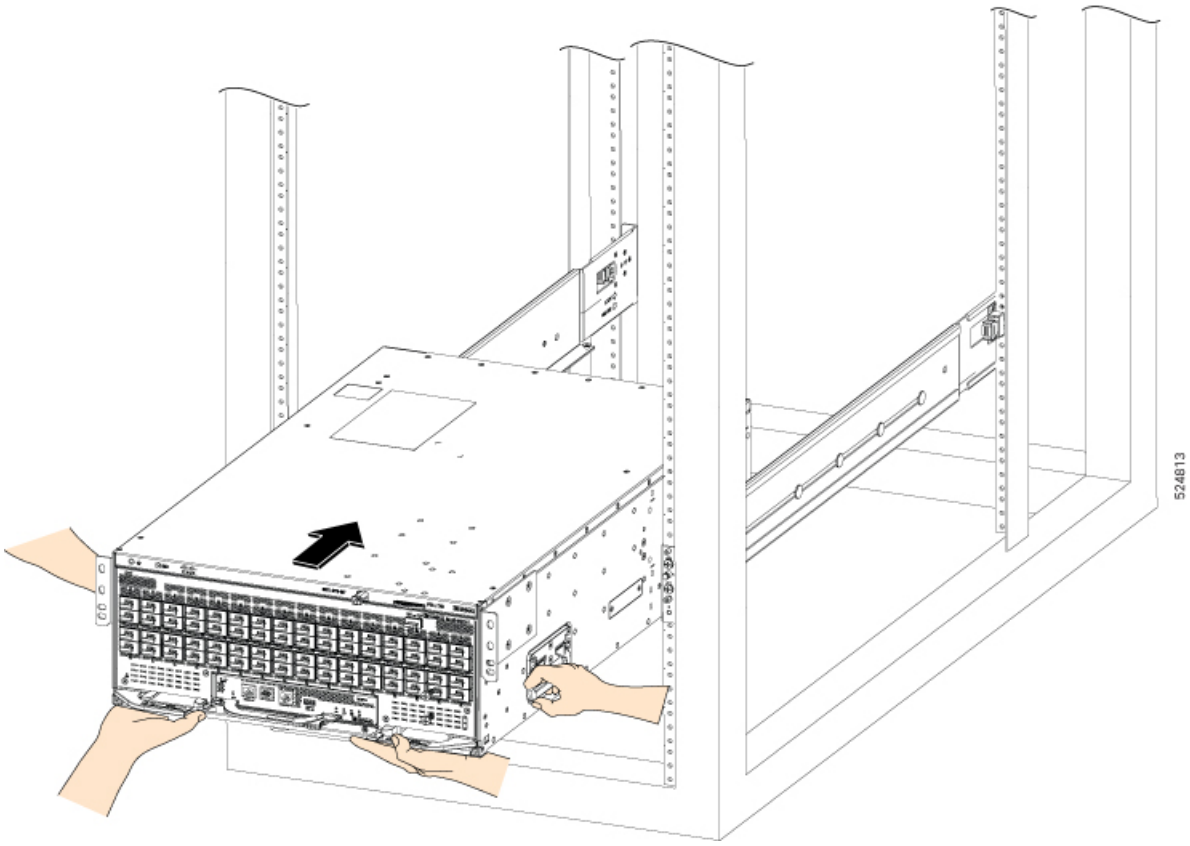
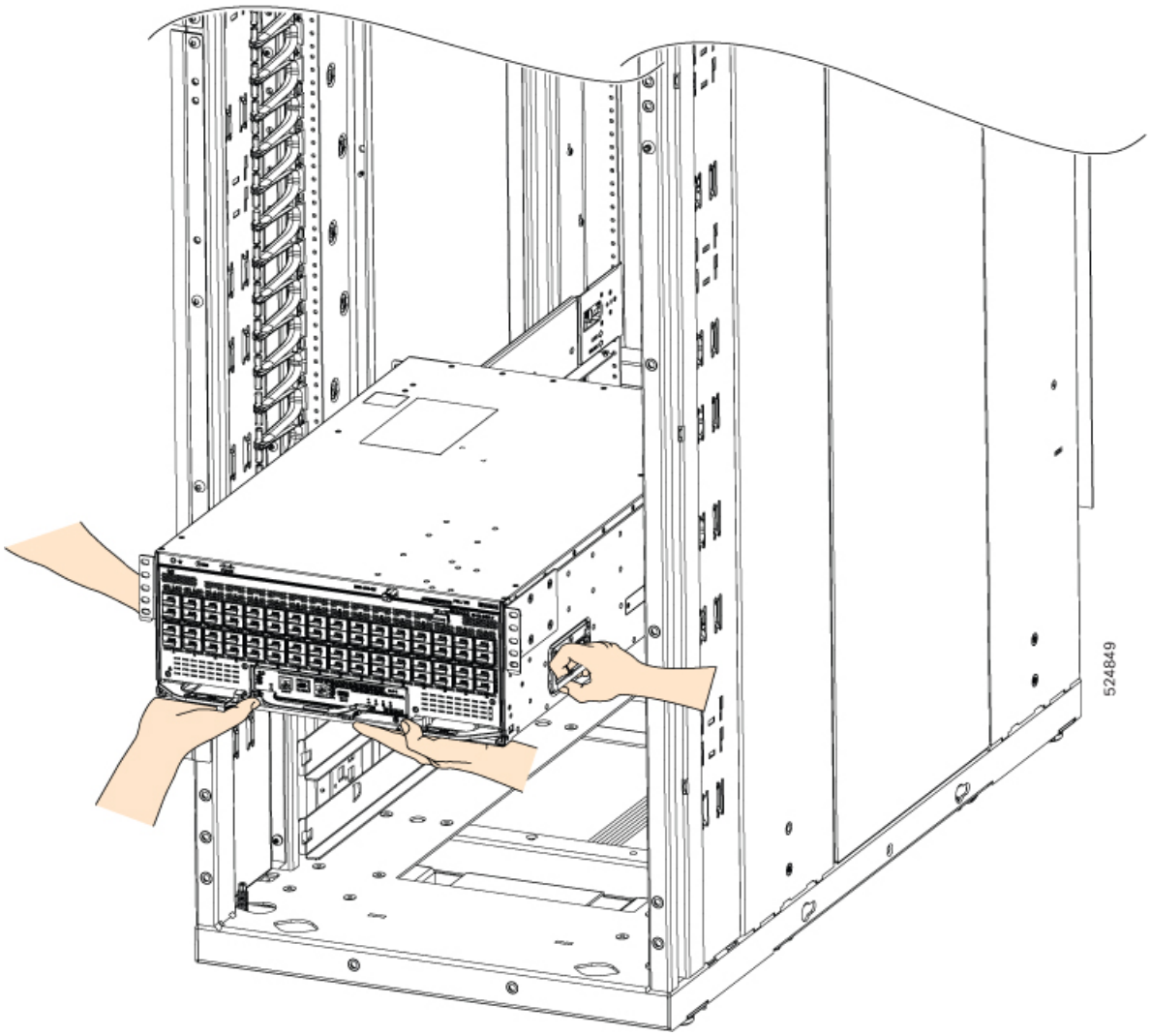


Figure 20: Inserting Chassis to the ORv3N Rack



Step 3 Align the two rack-mount guides on either side of the switch with the guide rails installed in the rack. Slide the rack-mount guides onto the guide rails, and then gently slide the switch all the way into the rack.

Figure 21: Aligning the Chassis in the 19 inch 4 Post Rack

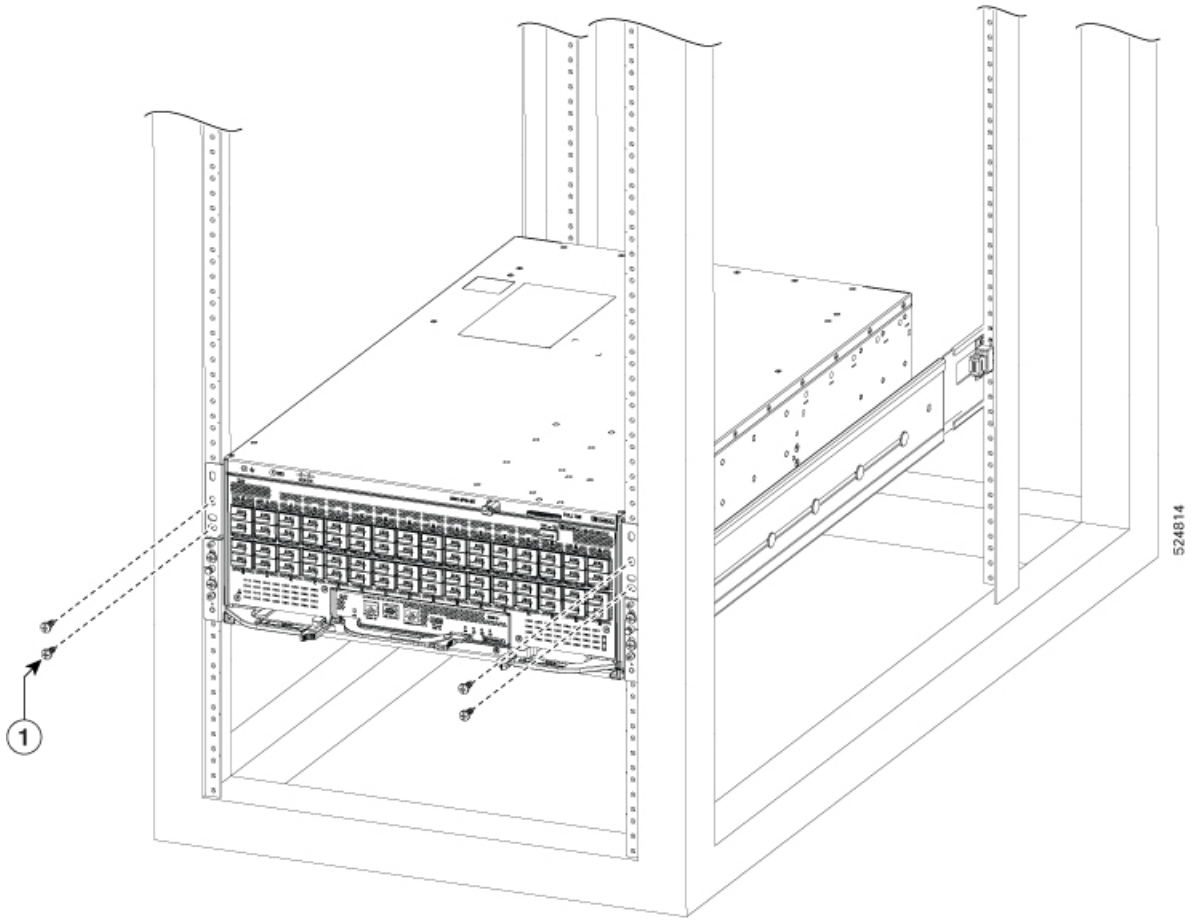
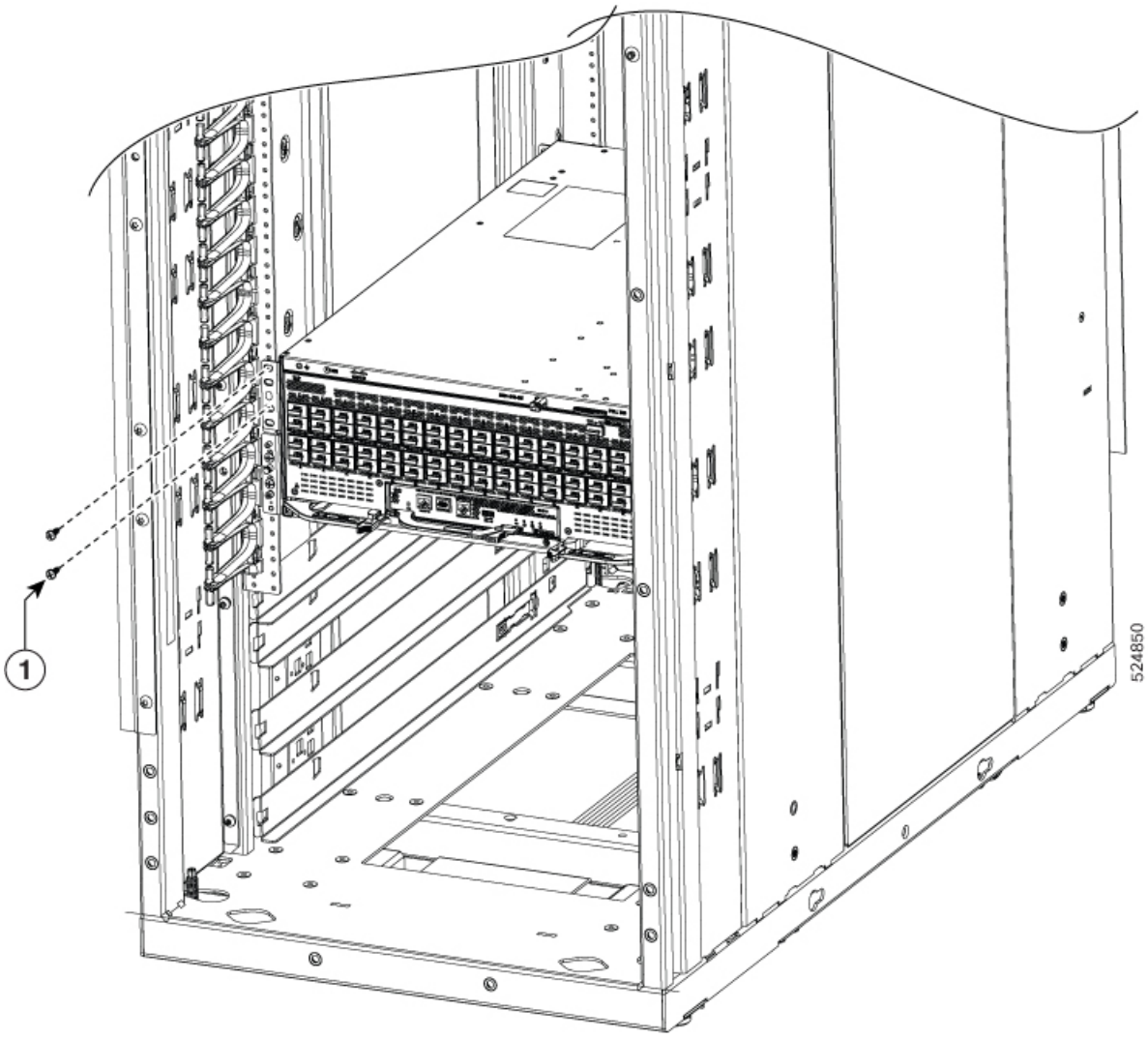


Figure 22: Aligning the Chassis in the ORv3N Rack



Step 4 Tighten the 10-32 screws to 20 in-lb (2.26 N.m) or tighten the 12-24 screws to 30 in-lb (3.39 N.m).

Figure 23: Chassis installed in the 19 inch 4 Post Rack

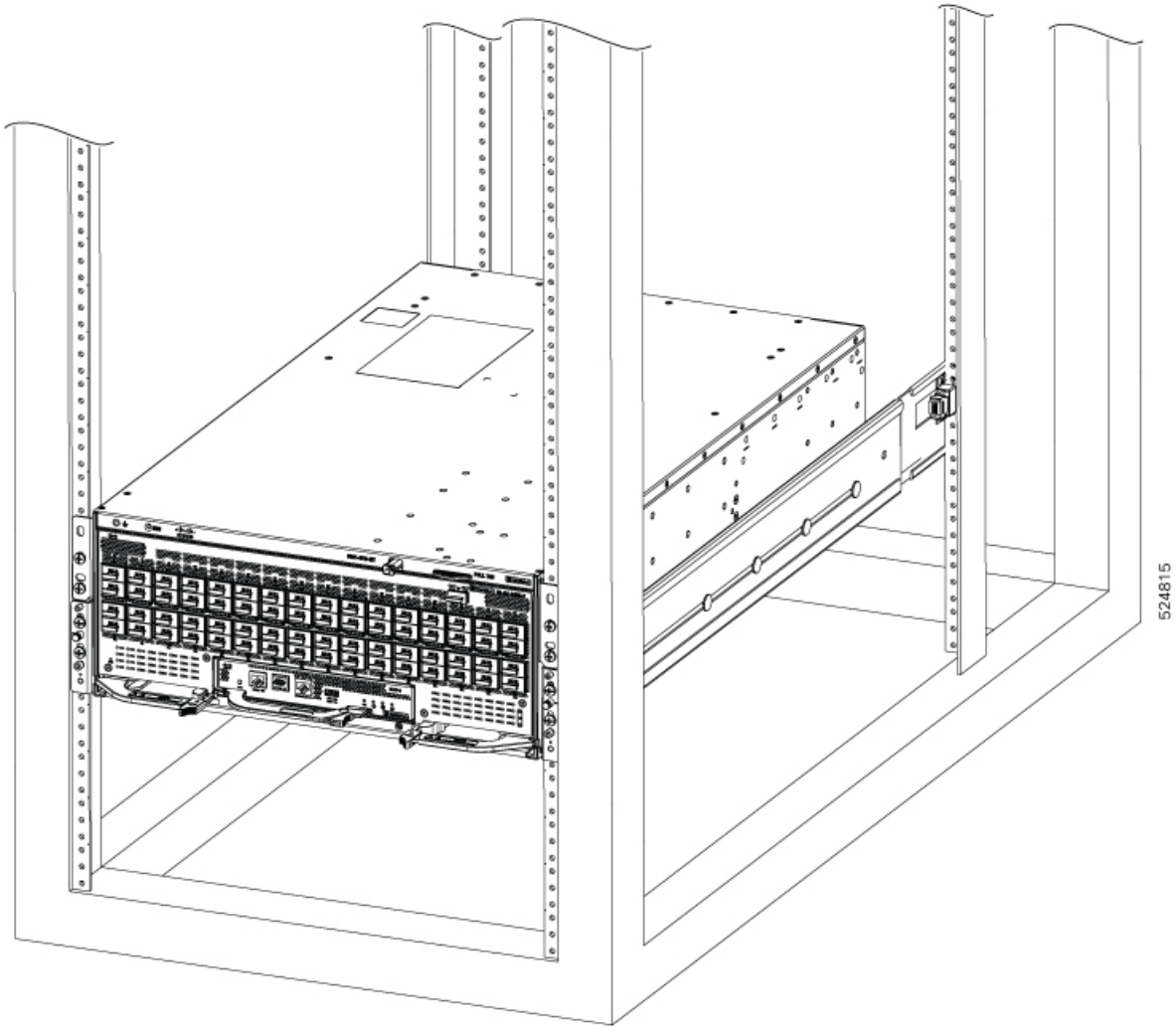
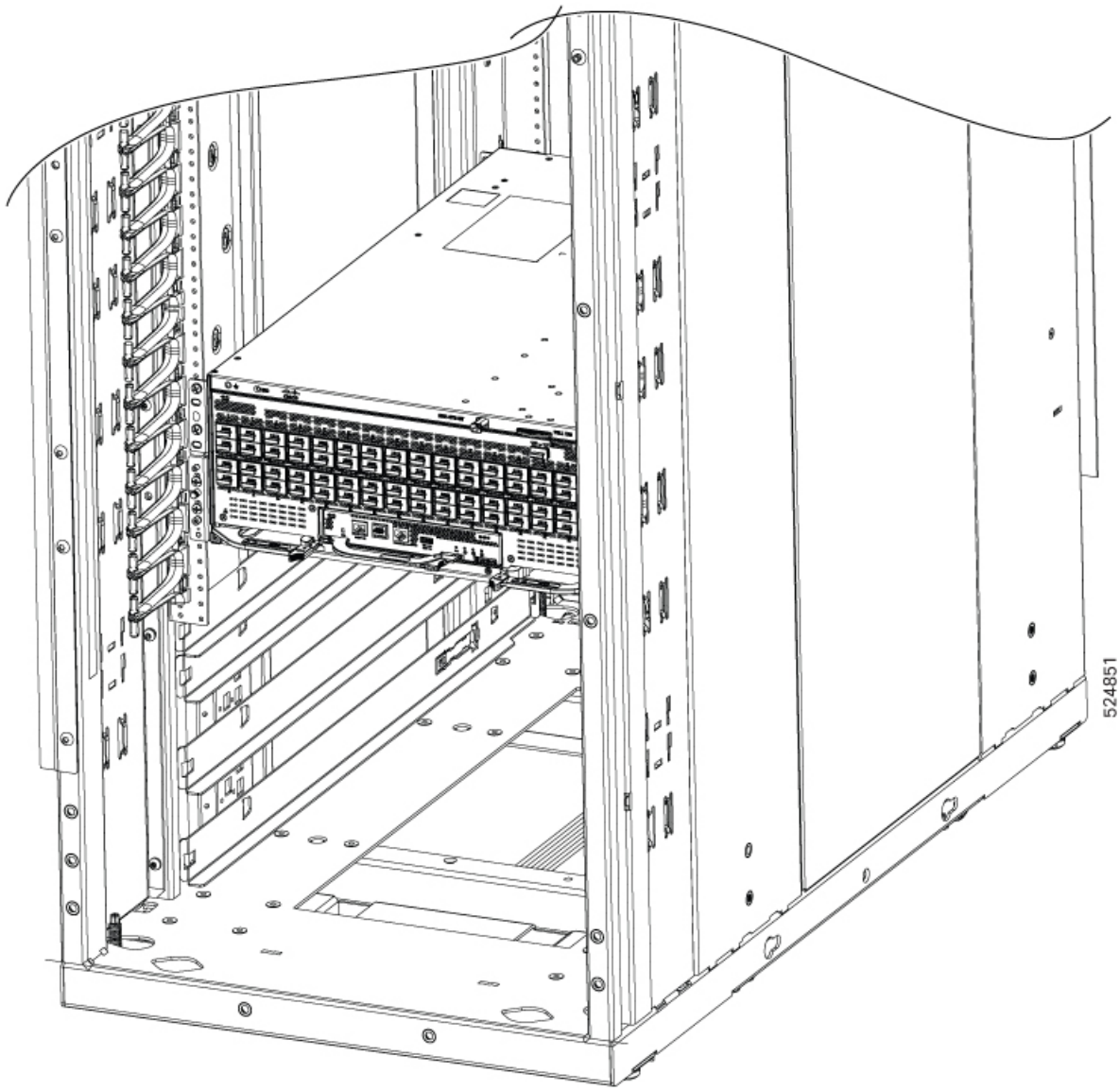


Figure 24: Chassis installed in the ORv3N Rack



What to do next

Connect the chassis to the ground at your facility.

Locate and Ground the Chassis

This task details the procedure to ground the Cisco 8501 Switch installed in a 19 inch 4 post rack.

Note The Cisco 8501 does not rely on chassis ground for safety. The Cisco 8501 switch installed in the ORv3N rack with the provided rack mount kit does not require direct chassis grounding via the chassis ground lug. Instead, the ORv3N rack can be properly grounded, which will adequately ground the switch as well.

Warning **Statement 1024—**Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Warning **Statement 1101—**Connected To Grounded Outlet

In the Scandinavian countries (Denmark, Finland, Iceland, Norway, and Sweden) the appliance must be connected to a grounded outlet.

Procedure

Step 1 Locate the chassis grounding receptacle on the front or rear of the chassis, in rear end upper-right corner adjacent to PSU 1 and in front upper-left corner.

Figure 25: Grounding Receptacle on the front of the Chassis

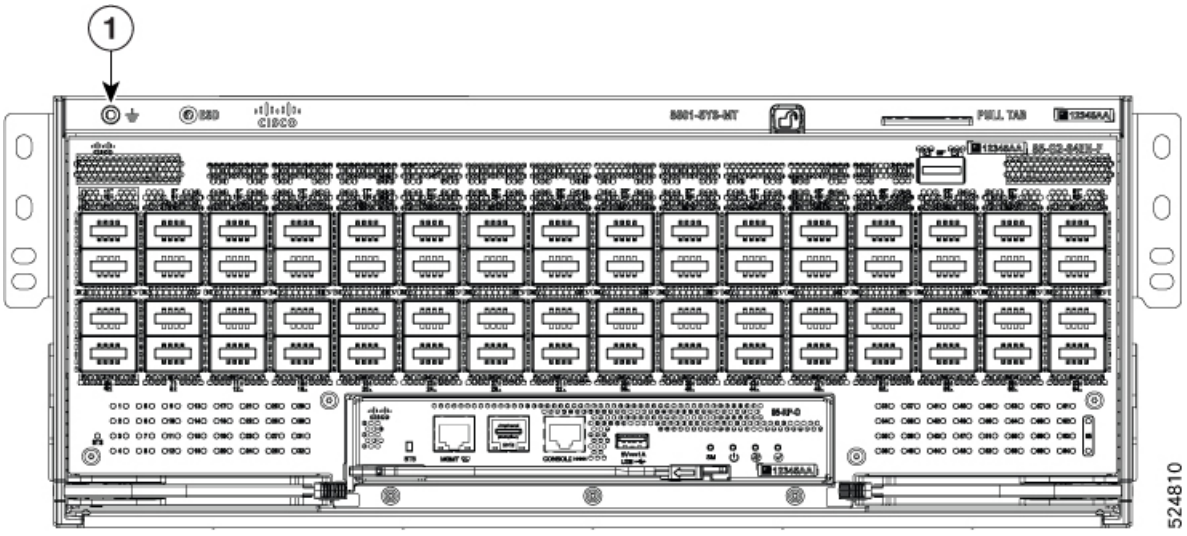
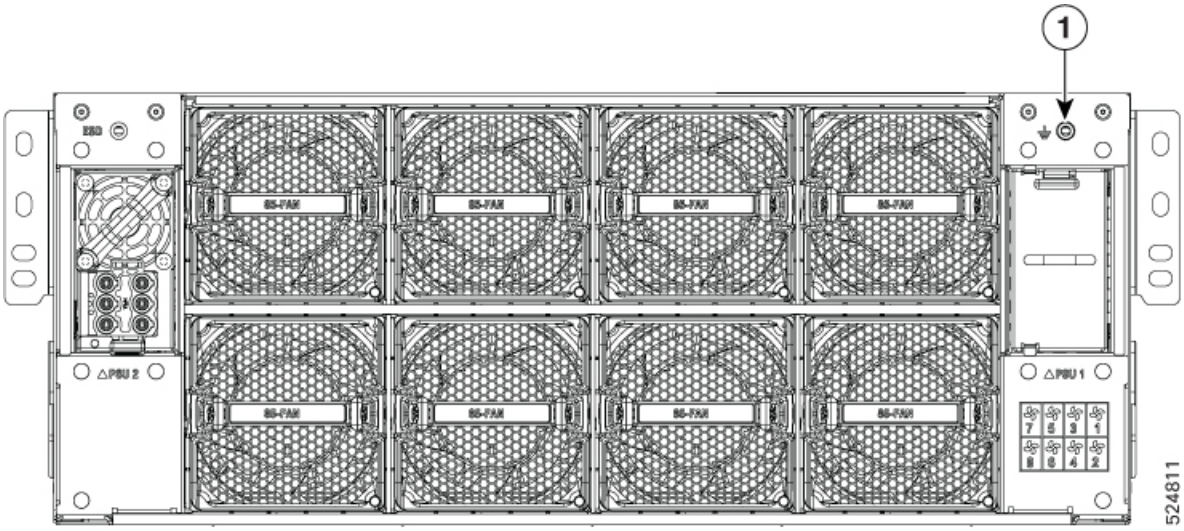


Figure 26: Grounding Receptacle on the rear of the Chassis



Step 2 Plug the one end of the grounding wire to the grounding receptacle on the switch.

Note
You can ground the switch either on the front or rear end of the chassis.

Figure 27: Ground the Chassis using Grounding Receptacle on the front of the Chassis

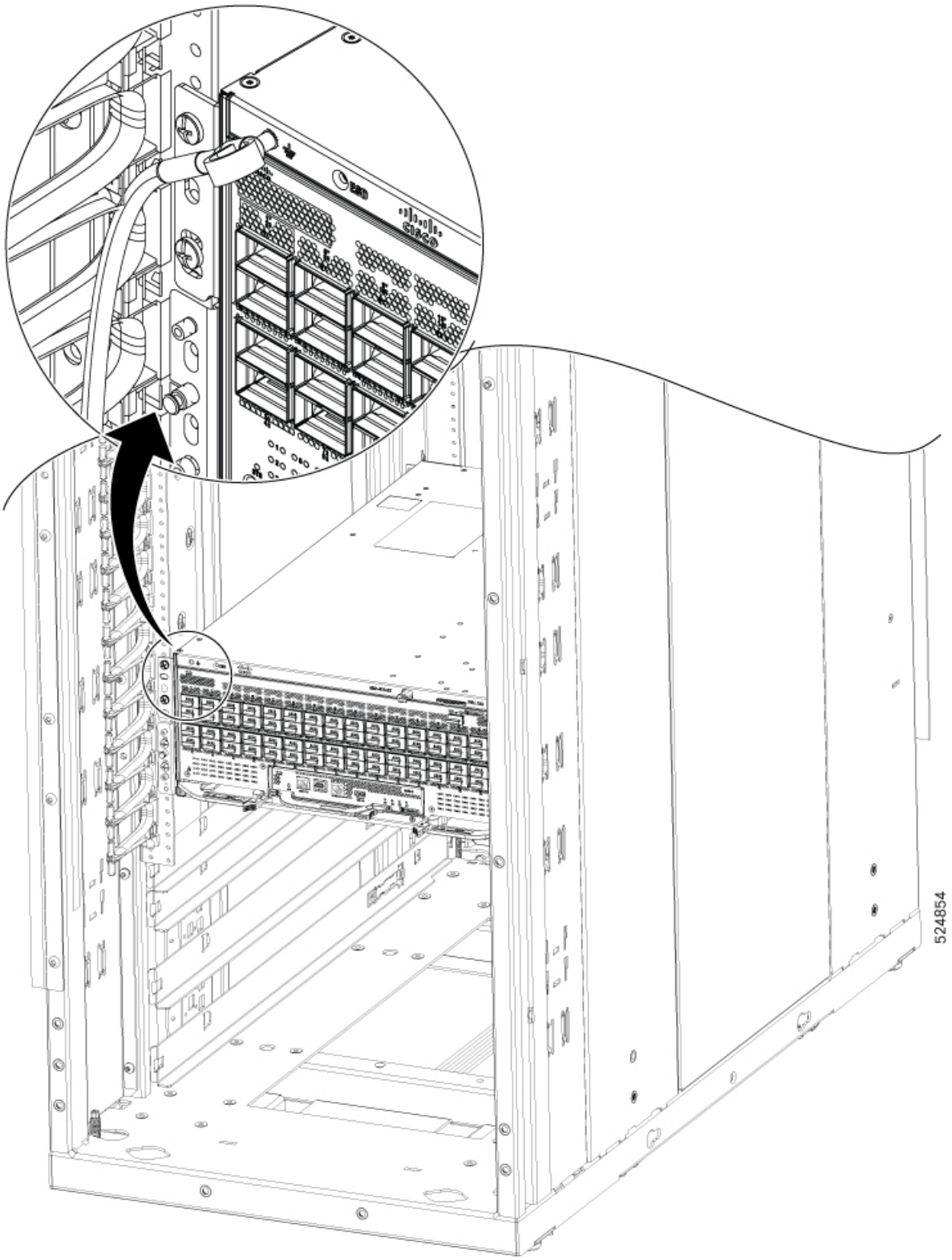
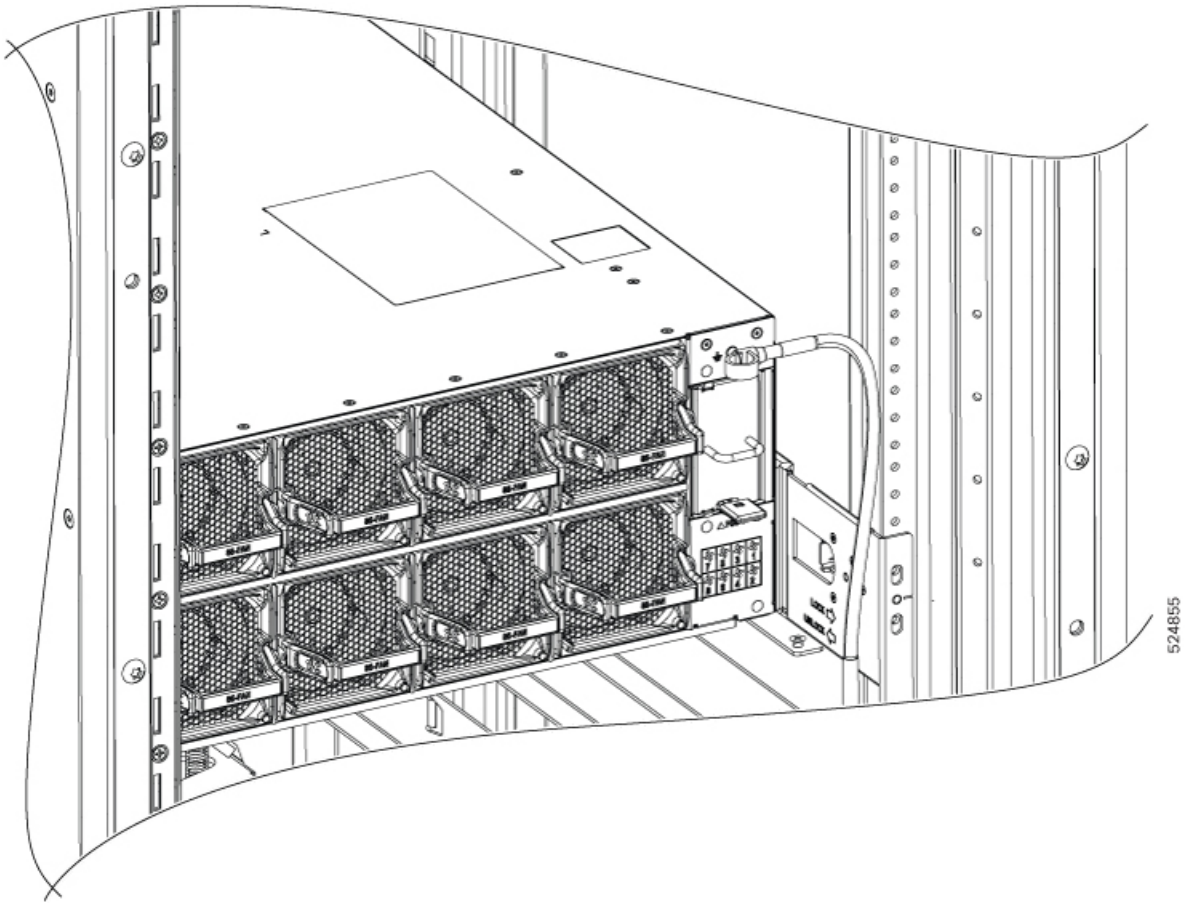
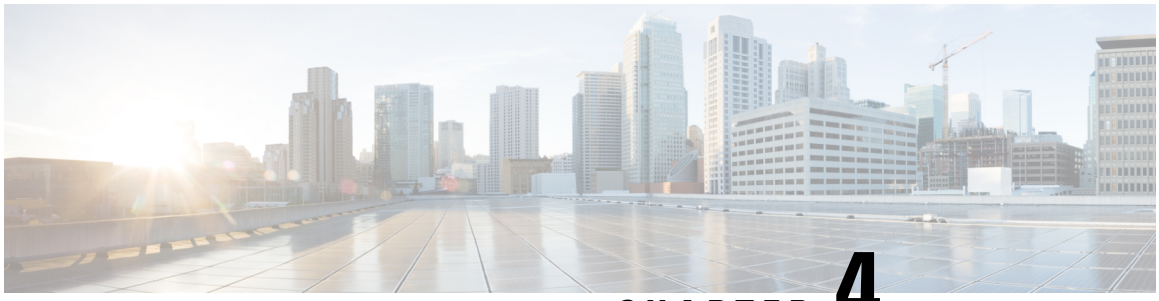


Figure 28: Ground the Chassis using Grounding Receptacle on the rear of the Chassis



Step 3 Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.



CHAPTER 4

Powering on the Switch

This chapter describes how to connect the power modules in the chassis and to power on the switch.

- Power Supply Overview, on page 41
- Power Connection Guidelines for AC-Powered Systems, on page 41
- Power Connection Guidelines for DC-Powered Systems, on page 43
- Connect AC Power to the Chassis, on page 44
- Connect DC Power to the Chassis, on page 47
- Power Supply Power Cord Specifications, on page 50

Power Supply Overview

You can install up to four 3KW AC power supplies in the chassis. Ensure all power connection wiring conforms to the rules and regulations in the National Electrical Code (NEC) as well as local codes.

This table summarizes the list of power supplies' input and output power ranges for different input applications:

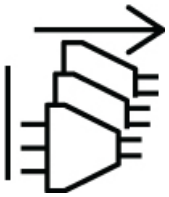
Power Supply Unit PIDs	Input Voltage	Input Current (Max)	Output Power
85-3KW-HVPI	180 – 305VAC	16.5A @ 200VAC	3000W
	192 – 400VDC	17A DC @ 192VDC	
85-3KW-DCPI	41 – 69VDC	80A @ 41VDC	3000W

Power Connection Guidelines for AC-Powered Systems

When connecting AC-input Power Supply Units (PSUs) to the site power source, observe the guidelines described here.

Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



- Ensure that the AC-input power supply module has a detachable power cord.
- Each chassis power supply should have a separate, dedicated branch circuit.
  - North America
    - 85-3KW-HVPI —Power supply modules require a 20 A circuit.
  - International—Circuits should be sized according to local and national codes.
- If you are using a 208 or 240 VAC power source in North America, note that such lines are considered hot and the circuit must be protected by a two-pole circuit breaker.

Warning **Statement 1005—**Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than:

- 20 A (North America) and 16 A (Europe) circuit breaker for an AC-input power supply module.
- 80 A DC-rated circuit breaker for each input of a DC-input power supply module, for safety purposes - irrespective of whether the inputs are power from a single or separate DC sources.

Warning **Statement 1022—**Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.

- The source AC outlet must be within 9.84 to 14 feet (3.0 to 4.293 meters) of the system - depending on the length of the power cord, and should be easily accessible.
- The AC power receptacles used to plug in the chassis must be the grounding type. The grounding conductors that connect to the receptacles should connect to protective earth ground at the service equipment level.

Power Connection Guidelines for DC-Powered Systems

When connecting DC-input Power Supply Units (PSUs) to the site power source, observe the guidelines described here.

Warning **Statement 1003—**DC Power Disconnection

To reduce risk of electric shock or personal injury, disconnect DC power before removing or replacing components or performing upgrades.

Warning **Statement 1046—**Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.

Warning **Statement 1022—**Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.

Warning **Statement 1024—**Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Warning **Statement 1033—**Safety Extra-Low Voltage (SELV)—IEC 60950/ES1–IEC 62368 DC Power Supply

To reduce the risk of electric shock, connect the unit *only* to a DC power source that complies with the SELV requirements in the IEC 60950-based safety standards or the ES1 requirements in the IEC 62368-based safety standards.

- All power connection wiring should conform to the rules and regulations prescribed by the National Electrical Code (NEC), as well as local codes, if any.
- The DC return must remain isolated from the system frame and the chassis (DC-I).

  The color coding of the source DC power cable leads depends on the color coding of the site DC power source. Typically, green or green and yellow stripes indicate that the cable is a ground cable. Since there is no color code standard for source DC wiring, you must ensure that the power cables are connected to the DC-input power supply terminal block in the proper + and - polarity.

In some cases, the source DC cable leads might have a positive (+) or a negative (–) label. This label is a relatively safe indication of polarity, but you must verify the polarity by measuring the voltage between the DC cable leads. When measuring, ensure that the positive lead and the negative lead always match the "+" and "-" labels on the DC-input power supply terminal block, respectively.

- DC power cables use the M-CRPS connector at the power supply end.
- The circuit must be protected by a dedicated two-pole DC-rated circuit breaker.

  The circuit breaker is considered to be the disconnect device and must be easily accessible. For DC-input power supply units with multiple inputs, each DC input must be protected by a dedicated DC-rated circuit breaker or a fuse.

  The circuit breaker or fuse should be sized according to the power supply input rating and local or national code requirements.
- If the DC inputs are powered from separate sources, the cables must be wired straight across to their respective sources and terminals.

  Crossed cables in a setup where the DC source has floating outputs means that no damage will occur, but the LEDs will not light up, and the module will not operate.

  Crossed cables in a setup with a positive ground or a negative ground power system constitute a severe safety hazard that includes causing electric shock and generating excessive EMI and RFI.

Note In the illustration, the red and black cables do not interconnect. The two black cables are connected to the same negative output of the DC source; the two red cables are connected to the same positive output of the DC source.

Connect AC Power to the Chassis

Warning **Statement 1017—**Restricted Area

This unit is intended for installation in restricted access areas. Only skilled, instructed, or qualified personnel can access a restricted access area.

Warning **Statement 1005—**Circuit Breaker

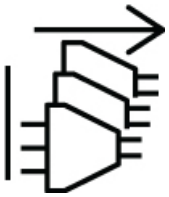
This product relies on the building’s installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than:

AC: 20A, DC: 40A

Warning

Statement 1028—More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Warning

Statement 1003—DC Power Disconnection

To reduce risk of electric shock or personal injury, disconnect DC power before removing or replacing components or performing upgrades.

Warning

Statement 1046—Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.

Warning

Statement 1022—Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.

Warning

Statement 1029—Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, they contain electromagnetic interference (EMI) that might disrupt other equipment, and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Caution

The chassis relies on the protective devices in the building installation to protect against short circuit, overcurrent, and ground faults. Ensure that the protective devices comply with local and national electrical codes.

Note We recommend that you occupy all power supply slots of the switch with power supplies. In case a power module fails, it is recommended to retain the failed power module in its slot until it is replaced with a new power module. This recommendation ensures that the system airflow is not impacted adversely, which may then result in the overheating of the switch and its components.

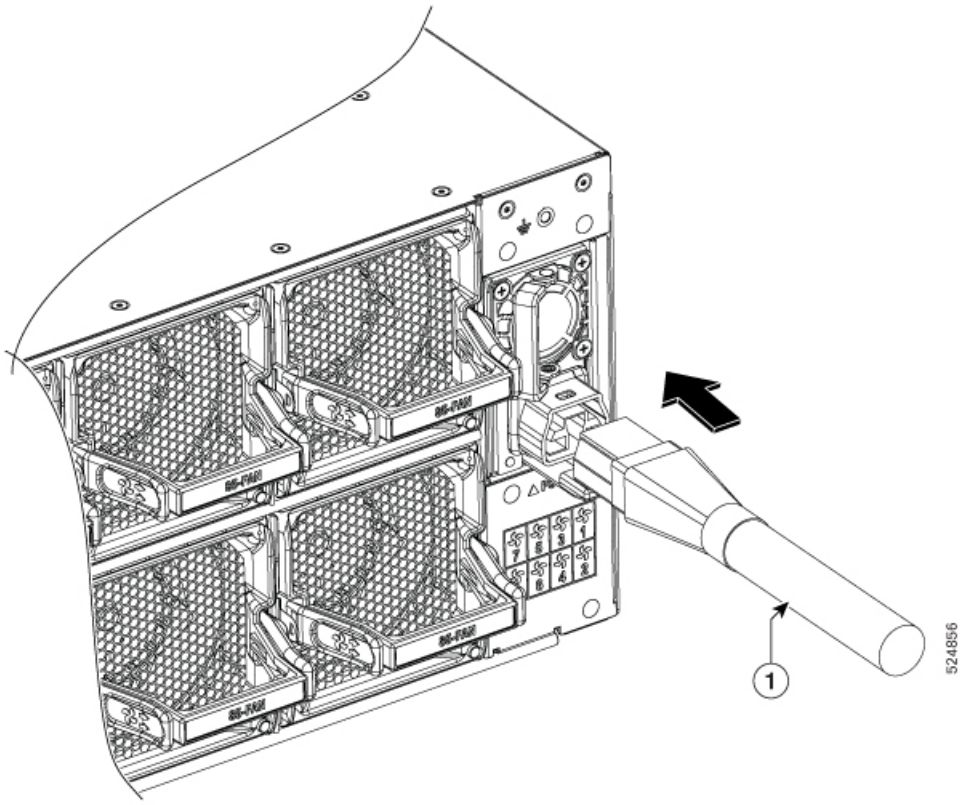
Note A dual pole breaker is needed for installation. For determining the recommended breaker size, please adhere to local and national rules and regulations. The breaker size is based on the specifications of the product for the current drawn and the specified voltage level.

Procedure

Step 1 Verify that the AC cable is installed in the correct AC source and outlet type.

Step 2 Attach the AC power cable to the cable connector in the AC power module.

Figure 29: Connecting AC Power



1	AC power cable

Note
These switches are designed to boot up in less than 30 minutes, provided the neighboring devices are in full operational state.

Connect DC Power to the Chassis

Caution The chassis relies on the protective devices in the building installation to protect against short circuit, overcurrent, and ground faults. Ensure that the protective devices comply with local and national electrical codes.

Note We recommend that you occupy only the left slot of the rear power supply slots of the fixed port switches with power supply. In the right slot you must install the blank power supply. This recommendation ensures that the system airflow is not impacted adversely, which may then result in the overheating of the switch and its components.

Procedure

Step 1 Verify that the correct fuse panel is installed in the top mounting space.

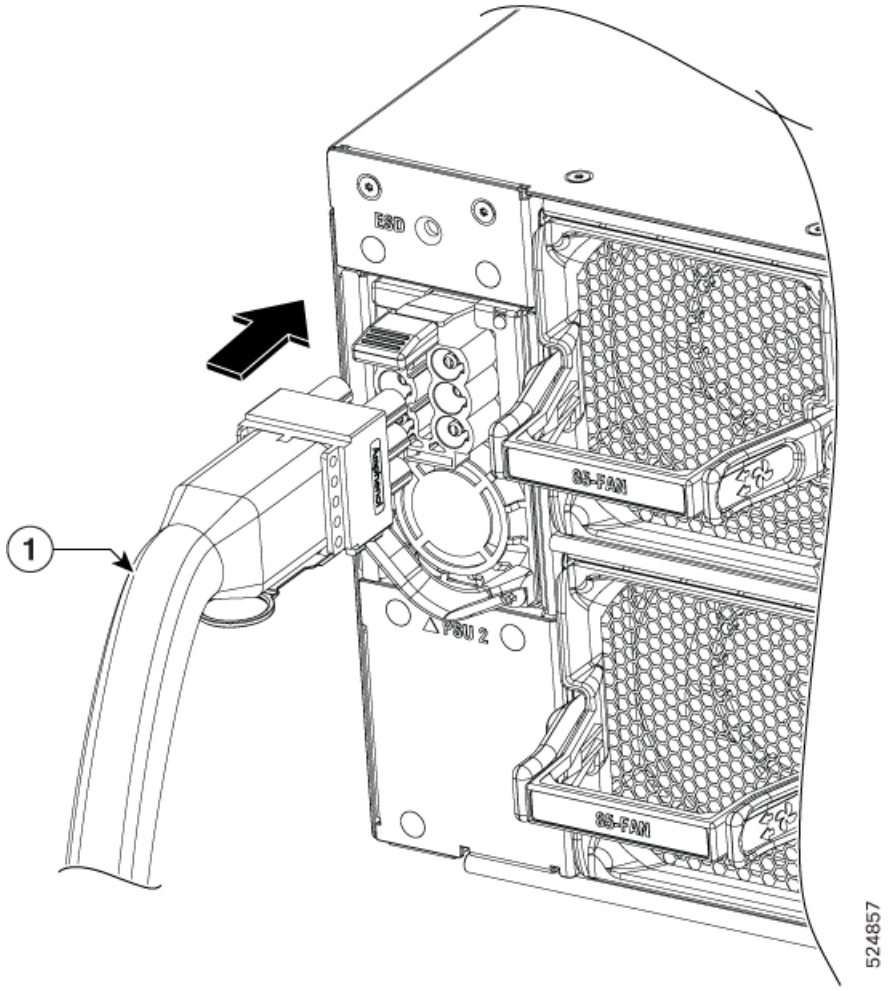
Step 2 Ensure that the DC circuit is powered down (either breaker turned off or fuse pulled) and proper lockout tag out procedures are followed. Use the cable supplied with the power supply. You can purchase power supply cord separately from Cisco.

Step 3 Dress the power according to local practice.

Step 4 Connect the office battery and return cables according to the fuse panel engineering specifications.

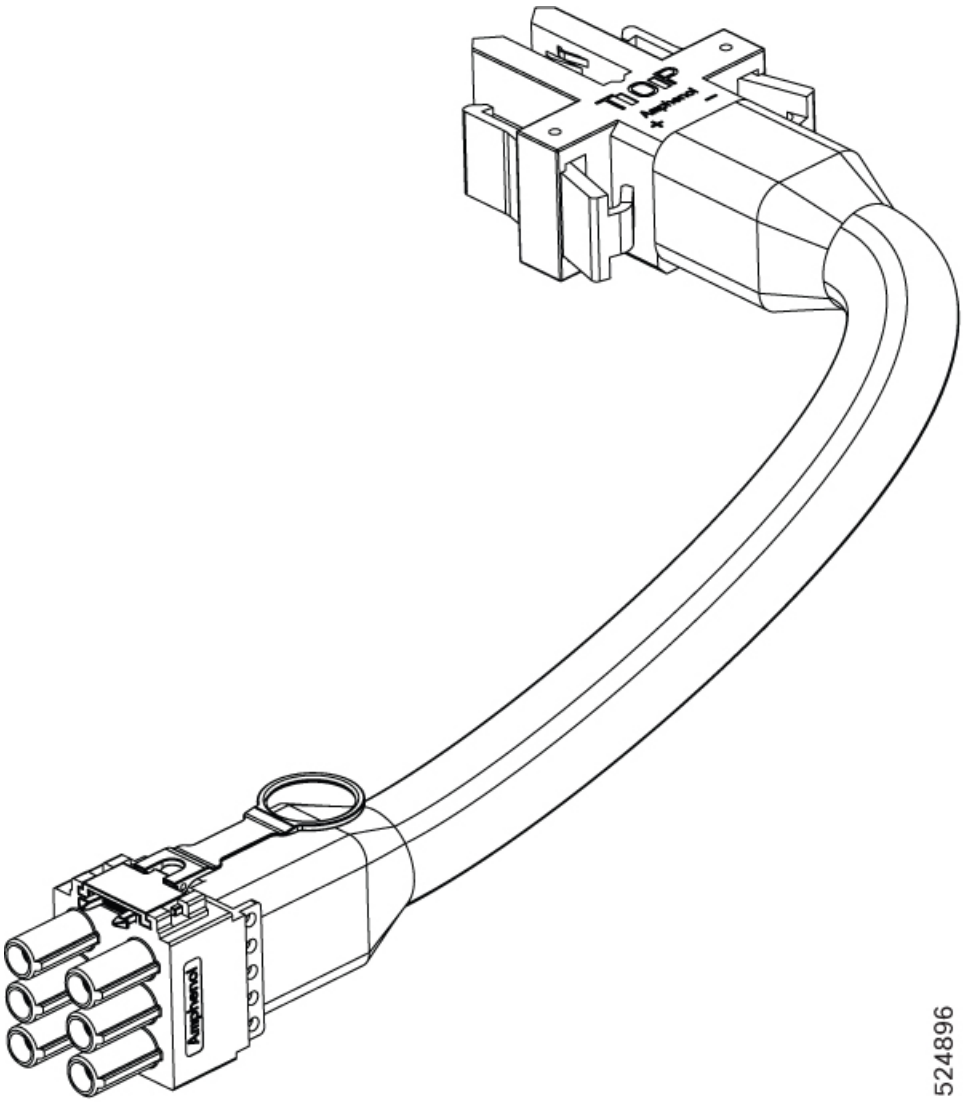
Step 5 Insert the DC connector into the DC receptacle on the power supply.

Figure 30: Connecting DC Power



1	DC power cable

Figure 31: DC Power Cable



Step 6 Ensure that the locking mechanism has engaged to secure the cable.

Note
When removing the DC cable from the power supply unit (PSU), gently engage the tab to unlock the cable from the PSU. Do not use the pull tab to extract the entire PSU, as this may lead to tab breakage.

Step 7 Turn on the circuit breaker at the power source.

Power Supply Power Cord Specifications

Note Always use the Saf-D-Grid connector toward the switch.

Table 8: Standard AC and HVDC Power Cords

Locale	Part Number	Cisco Part Number (CPN)	Power Cord Set Rating	Connector Part Number	Power Cord Illustration
IEC/EU, US, CANADA, MEXICO, BRAZIL, NETHERLANDS, IRELAND, FRANCE, UK, GERMANY, SWITZERLAND, NORWAY, SPAIN, ITALY, SINGAPORE, CHINA, SOUTH AFRICA	CAB-AC-25A-NA	37-101481-01	25A, 250VAC	Saf-D-Grid 3-5958P2 to IEC 60320 C20	Refer the figure in Power Cord Illustrations, on page 50
IEC/EU, US, CANADA, MEXICO, BRAZIL, NETHERLANDS, IRELAND, FRANCE, UK, GERMANY, SWITZERLAND, NORWAY, SPAIN, ITALY, SINGAPORE, CHINA, SOUTH AFRICA	PWR-3KW-DC-CBL	37-101461-01			Refer the figure in Power Cord Illustrations, on page 50

Power Cord Illustrations

Figure 32: CAB-AC-25A-NA Power Cord and Plugs for Standard AC Power Supply

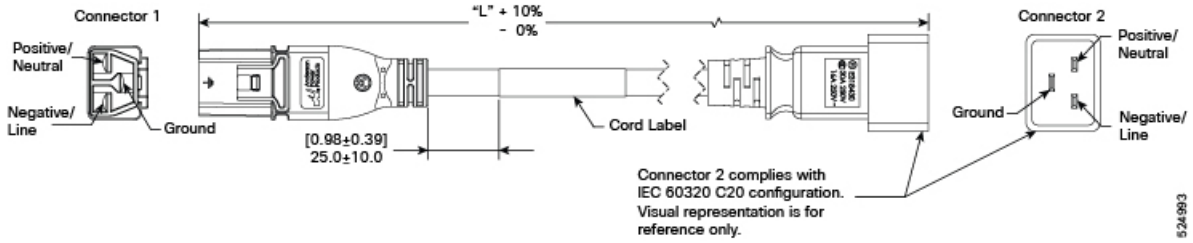
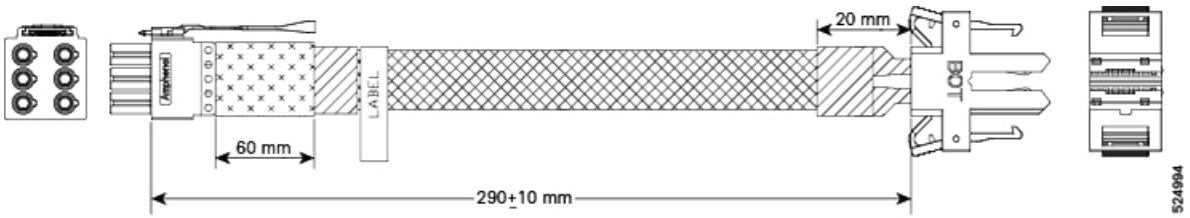
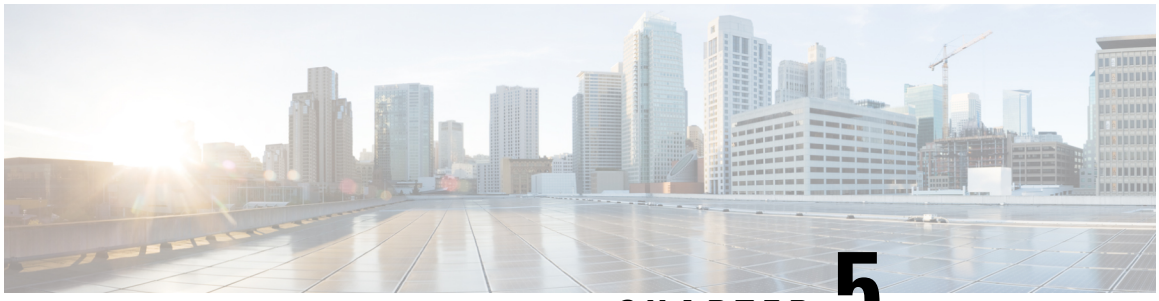


Figure 33: PWR-3KW-DC-CBL Power Cord and Plugs for Standard DC Power





CHAPTER 5

Connect Switch to the Network

Note The images in this chapter are only for representation purposes, unless specified otherwise. The chassis' actual appearance and size may vary.

- Connecting a Console to the Switch, on page 53
- Connect the Management Interface, on page 54
- Transceivers, Connectors, and Cables, on page 55
- Install and Remove Transceiver Modules, on page 56
- Connect Interface Ports, on page 68
- Maintain Transceivers and Optical Cables, on page 69

Connecting a Console to the Switch

Before you create a network management connection for the switch or connect the switch to the network, you must create a local management connection through a console terminal and configure an IP address for the switch. The switch can be accessed using remote management protocols, such as SSH and Telnet. By default, SSH is included in the software image. But telnet is not part of the software image. You must manually install the telnet optional package to use it.

You also can use the console to perform the following functions, each of which can be performed through the management interface after you make that connection:

- configure the switch using the command-line interface (CLI)
- monitor network statistics and errors
- configure Simple Network Management Protocol (SNMP) agent parameters
- initiate software download updates via console

You make this local management connection between the asynchronous serial port on a console device capable of asynchronous transmission. Typically, you can use a computer terminal as the console device.

Note Before you can connect the console port to a computer terminal, make sure that the computer terminal supports VT100 terminal emulation. The terminal emulation software makes communication between the switch and computer possible during setup and configuration.

Before you begin

- The switch must be fully installed in its rack. The switch must be connected to a power source and grounded.
- The necessary cabling for the console, management, and network connections must be available.
  - An RJ45 rollover cable and a DB9F/RJ45 adapter.
  - Network cabling should already be routed to the location of the installed switch.

Procedure

Step 1 Configure the console device to match the following default port characteristics:

- 9600 baud
- 8 data bits
- 2 stop bit
- No parity

Step 2 Connect and RJ45 rollover cable to a terminal, PC terminal emulator, or terminal server.

The RJ45 rollover cable is not part of the accessory kit.

Step 3 Route the RJ45 rollover cable as appropriate and connect the cable to the console port on the chassis.

If the console or modem cannot use an RJ45 connection, use the DB9F/RJ45F PC terminal adapter. Alternatively, you can use an RJ45/DSUB F/F or RJ45/DSUB R/P adapter, but you must provide those adapters.

What to do next

You are ready to create the initial switch configuration.

Connect the Management Interface

The management port (MGMT ETH) provides out-of-band management, which lets you to use the command-line interface (CLI) to manage the switch by its IP address. This port uses a 10/100/1000 Ethernet connection with an RJ-45 interface.

Caution To prevent an IP address conflict, do not connect the MGMT 100/1000 Ethernet port until the initial configuration is complete.

Before you begin

You must have completed the initial switch configuration.

Procedure

Step 1 Connect a modular, RJ-45, UTP cable to the MGMT ETH port.

Step 2 Route the cable through the central slot in the cable management system.

Step 3 Connect the other end of the cable to a 100/1000 Ethernet port on a network device.

What to do next

You are ready to connect the interface ports to the network.

Transceivers, Connectors, and Cables

Transceiver and Cable Specifications

To determine which transceivers and cables are supported by this switch, see Cisco Transceiver Modules Compatibility Information.

To see the transceiver specifications and installation information, see Cisco Transceiver Modules Install and Upgrade Guides.

RJ-45 Connectors

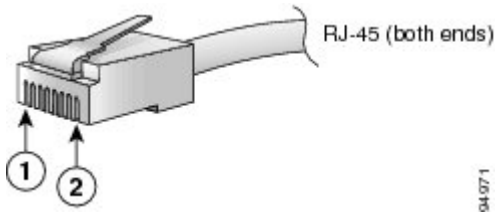
The RJ-45 connector connects Category 3, Category 5, Category 5e, Category 6, or Category 6A foil twisted-pair or unshielded twisted-pair cable from the external network to the following module interface connectors:

- Switch chassis
  - CONSOLE port
  - MGMT ETH port

Caution To comply with GR-1089 intrabuilding, lightning immunity requirements, you must use a foil twisted-pair (FTP) cable that is properly grounded at both ends.

The following figure shows the RJ-45 connector.

Figure 34: RJ-45 Connector



1	Pin 1	2	Pin 8

Install and Remove Transceiver Modules

This section provides the installation, cabling, and removal instructions for the Quad Small Form-Factor Pluggable transceiver modules. Refer to the *Cisco Optical Transceiver Handling Guide* for additional details on optical transceivers.

Note You must visually inspect the transceiver latch to ensure the transceiver module is not damaged so that when it is inserted into the switch port, it will not damage the ports.

Figure 35: 400-Gigabit QSFP-DD Transceiver Module

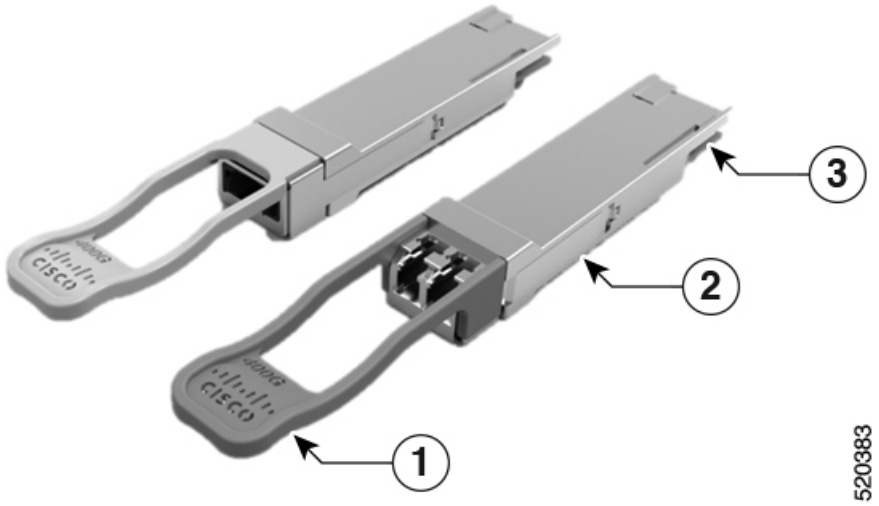


Figure 36: OSFP Transceiver Module

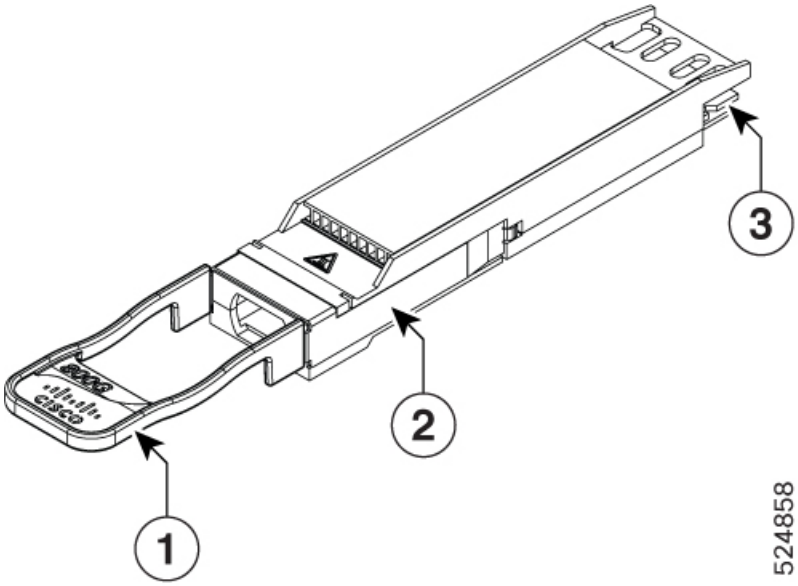
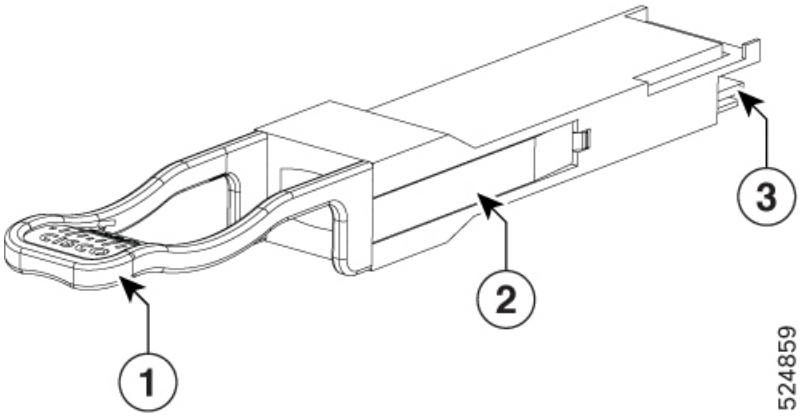


Figure 37: QSFP Transceiver Module



1	Pull-tab	2	Transceiver body
3	Electrical connection to the module circuitry		

Warning

Statement 1079—Hot Surface

This icon is a hot surface warning. To avoid personal injury, do not touch without proper protection.



Required Tools and Equipment

You need these tools to install the transceiver modules:

- Wrist strap or other personal grounding device to prevent ESD occurrences.
- Antistatic mat or antistatic foam to set the transceiver on.
- Fiber-optic end-face cleaning tools and inspection equipment.

Installing the Transceiver Module

Warning **Statement 1055—**Class 1/1M Laser

Invisible laser radiation is present. Do not expose to users of telescopic optics. This applies to Class 1/1M laser products.



Warning **Statement 1051—**Laser Radiation

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

Warning **Statement 1079—**Hot Surface

This icon is a hot surface warning. To avoid personal injury, do not touch without proper protection.



Caution The transceiver module is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling transceiver modules or coming into contact with system modules.

Caution Protect the transceiver ports by inserting clean dust caps (8000-QSFP-DCAP) into any ports not in use. Be sure to clean the optic surfaces of the fiber cables before you plug them back into the optical ports of another module. Use dust caps for all the open ports on the chassis.

The switch ships with dust caps plugged in. We highly recommend you to keep the dust caps plugged in until you are ready to plug an optic.

The dust caps protect the ports from possible EMI interference and also avoid contamination due to dust collection. To meet the EMI interference requirements, you must use the metal dust caps when the ports are not in use by optical modules.

The QSFP transceiver module has a pull-tab latch. To install a transceiver module, follow these steps:

Procedure

Step 1 Attach an ESD wrist strap to yourself and a properly grounded point on the chassis or the rack.

Step 2 Remove the transceiver module from its protective packaging.

Step 3 Check the label on the transceiver module body to verify that you have the correct model for your network. Do not remove the dust plug until you're ready to attach the network interface cable. Dust plug is not shown in the images.

Note
You must visually inspect the transceiver latch to ensure the transceiver module is not damaged so that when it is inserted into the switch port, it will not damage the ports.

Step 4 Hold the transceiver by the pull-tab so that the identifier label is on the top.

Step 5 Align the transceiver module in front of the module's transceiver socket opening and carefully slide the transceiver into the socket until the transceiver contact with the socket electrical connector.

Figure 38: Installing the QSFP Transceiver Module

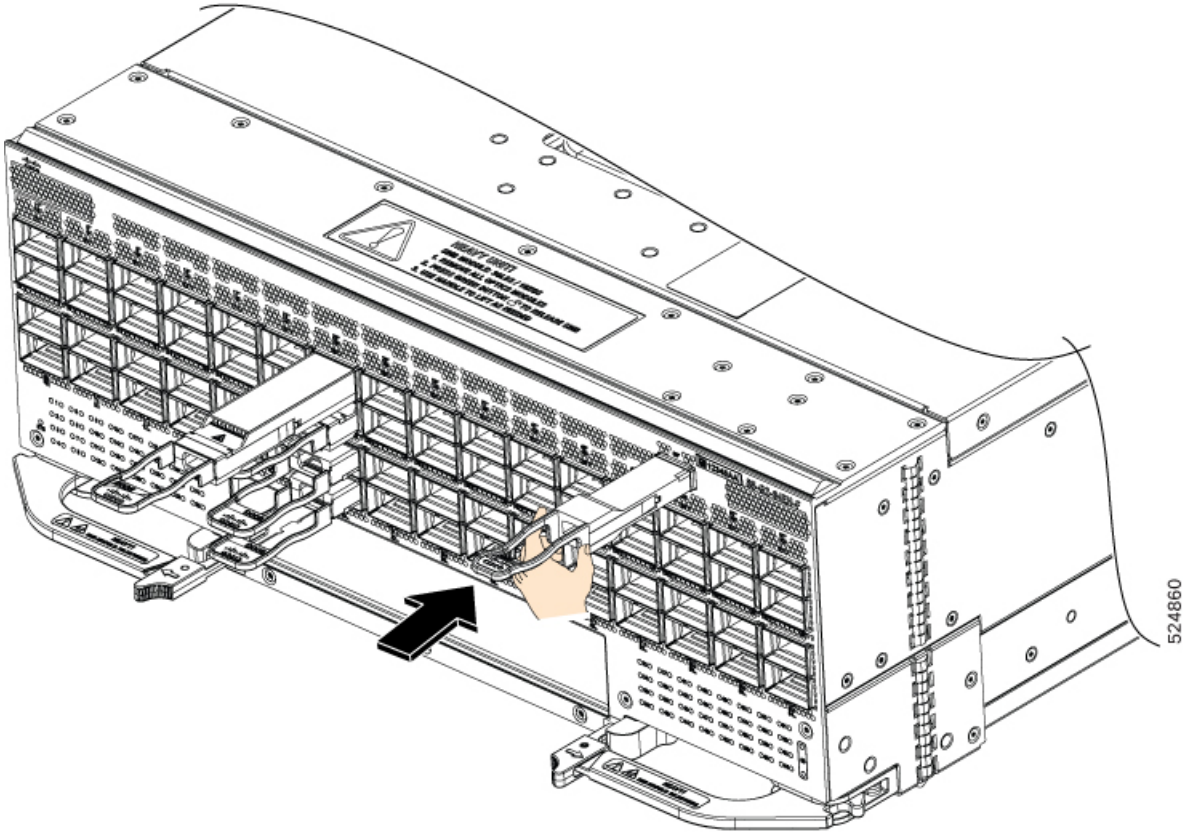
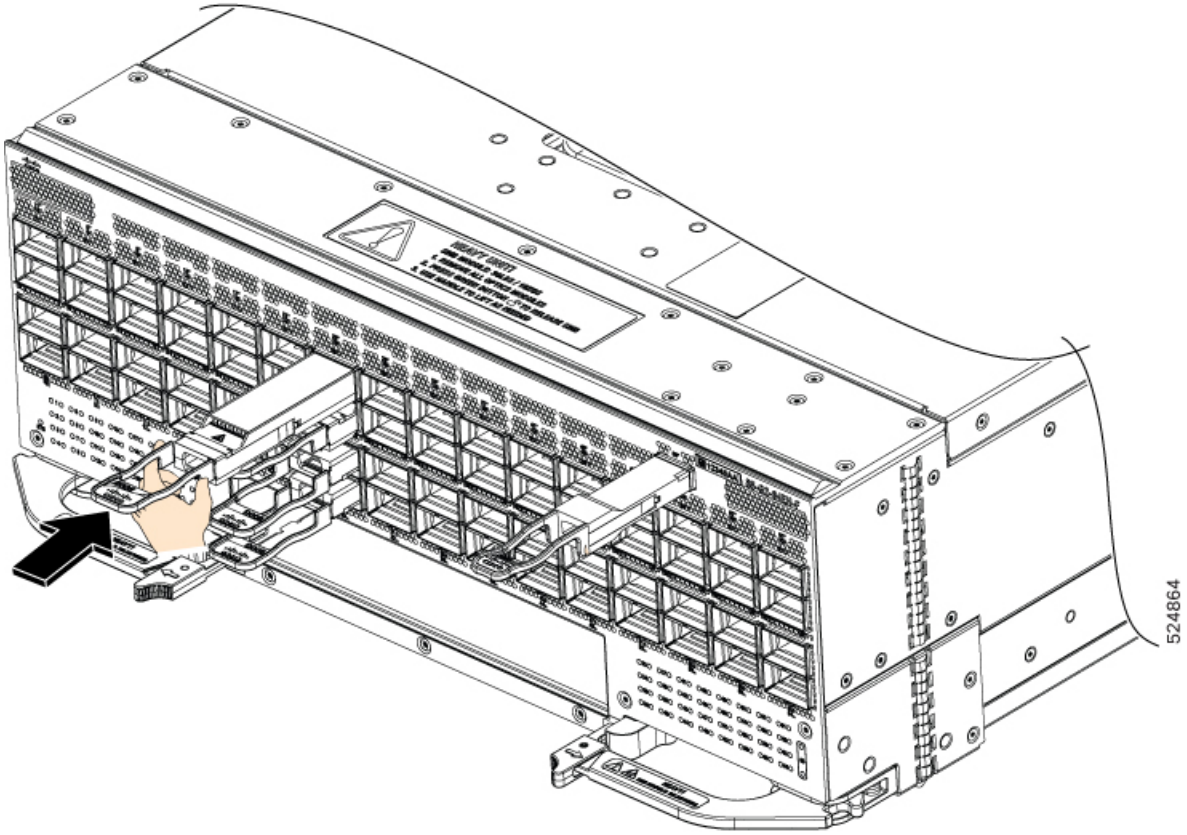


Figure 39: Installing the OSFP Transceiver Module



Step 6 Press firmly on the front of the transceiver module with your thumb to fully seat the transceiver into the cage port (see the below figure).

Figure 40: Seating the QSFP Transceiver Module

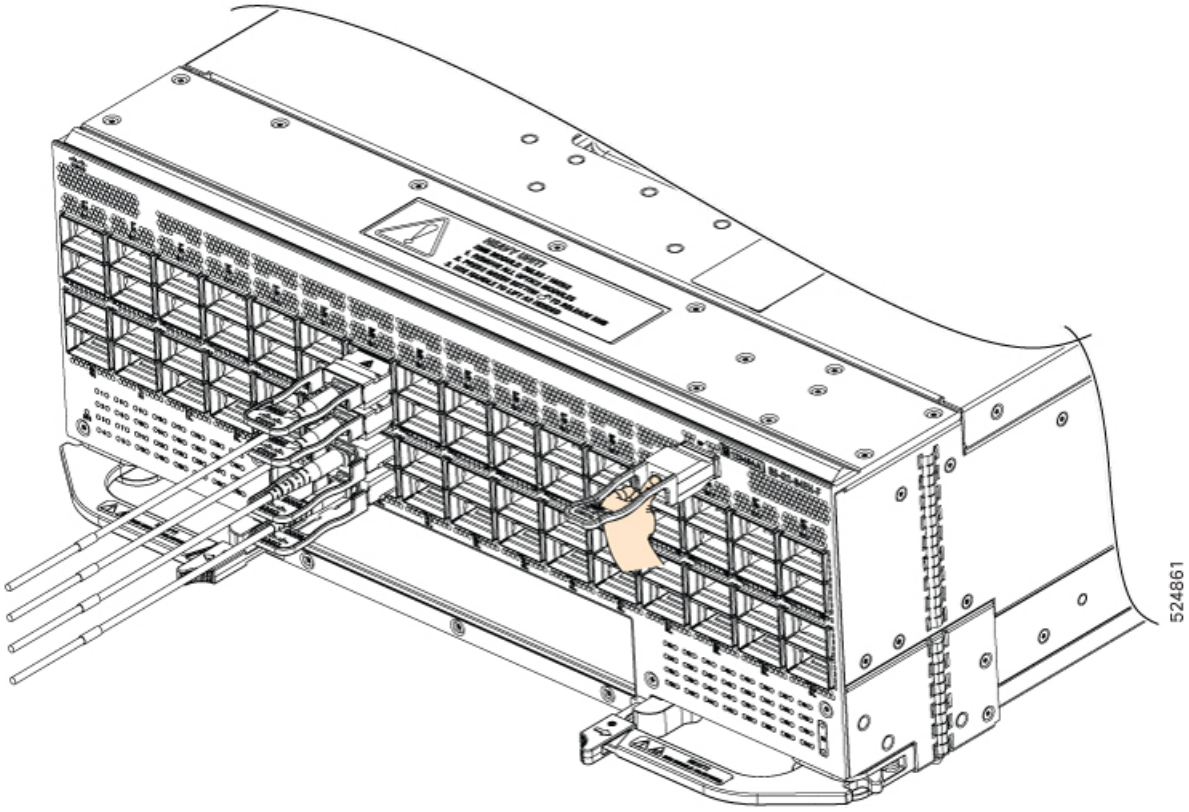
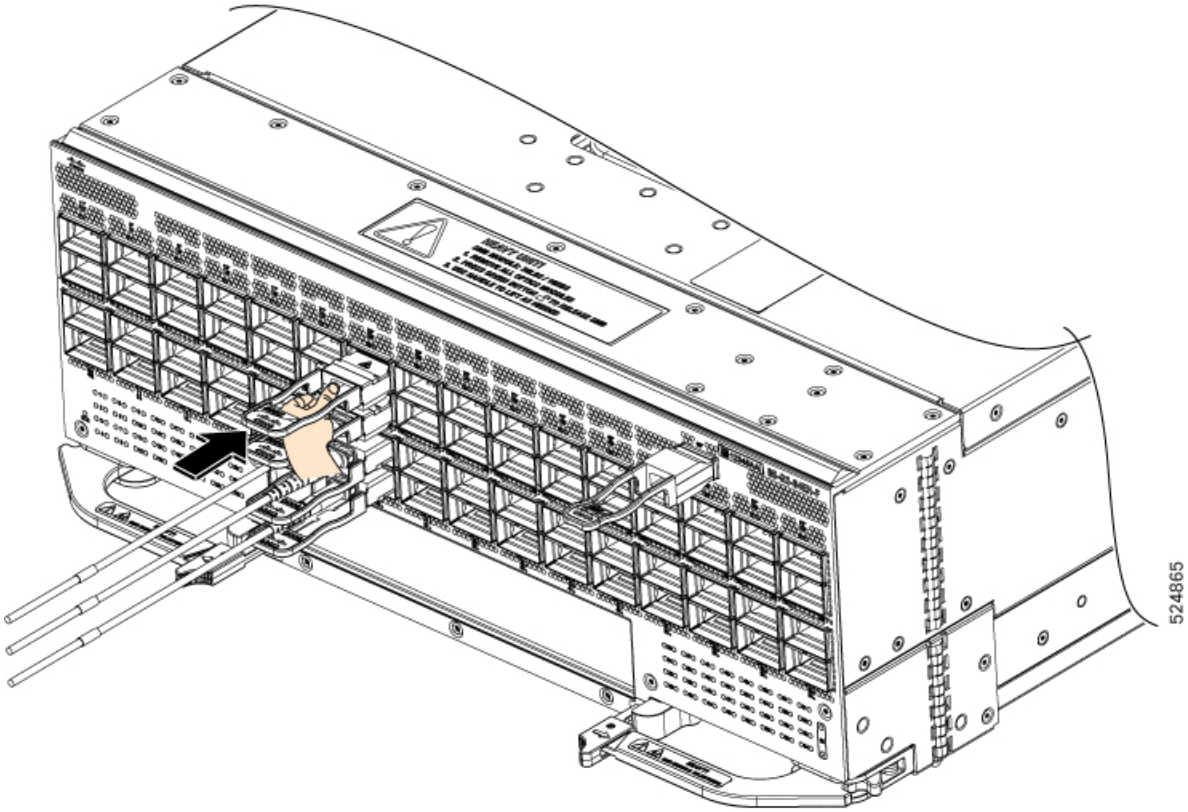


Figure 41: Seating the OSFP Transceiver Module



Caution
If the latch isn't fully engaged, you might accidentally disconnect the transceiver module.

Attach the Optical Network Cable

Before you begin

Before you remove the dust plugs and make any optical connections, follow these guidelines:

- Keep the protective dust plugs installed in the unplugged fiber-optic cable connectors and in the transceiver optical bores until you are ready to make a connection.
- Inspect and clean the optical connector end faces just before you make any connections.
- Grasp the optical connector only by the housing to plug or unplug a fiber-optic cable.

Note The transceiver modules and fiber connectors are keyed to prevent incorrect insertion.

Note The multiple-fiber push-on (MPO) connectors on the optical transceivers support network interface cables with either physical contact (PC) or ultra-physical contact (UPC) flat polished face types. The MPO connectors on the optical transceivers do not support network interface cables with an angle-polished contact (APC) face type.

Note Inspect the MPO connector for the correct cable type, cleanliness, and any damage. For complete information on inspecting and cleaning fiber-optic connections, see the *Inspection and Cleaning Procedures for Fiber-Optic Connections* document.

Procedure

Step 1 Remove the dust plugs from the optical network interface cable MPO connectors and from the transceiver module optical bores. Save the dust plugs for future use.

Step 2 Attach the network interface cable MPO connectors immediately to the transceiver module.

Figure 42: Cabling a QSFP Transceiver Module

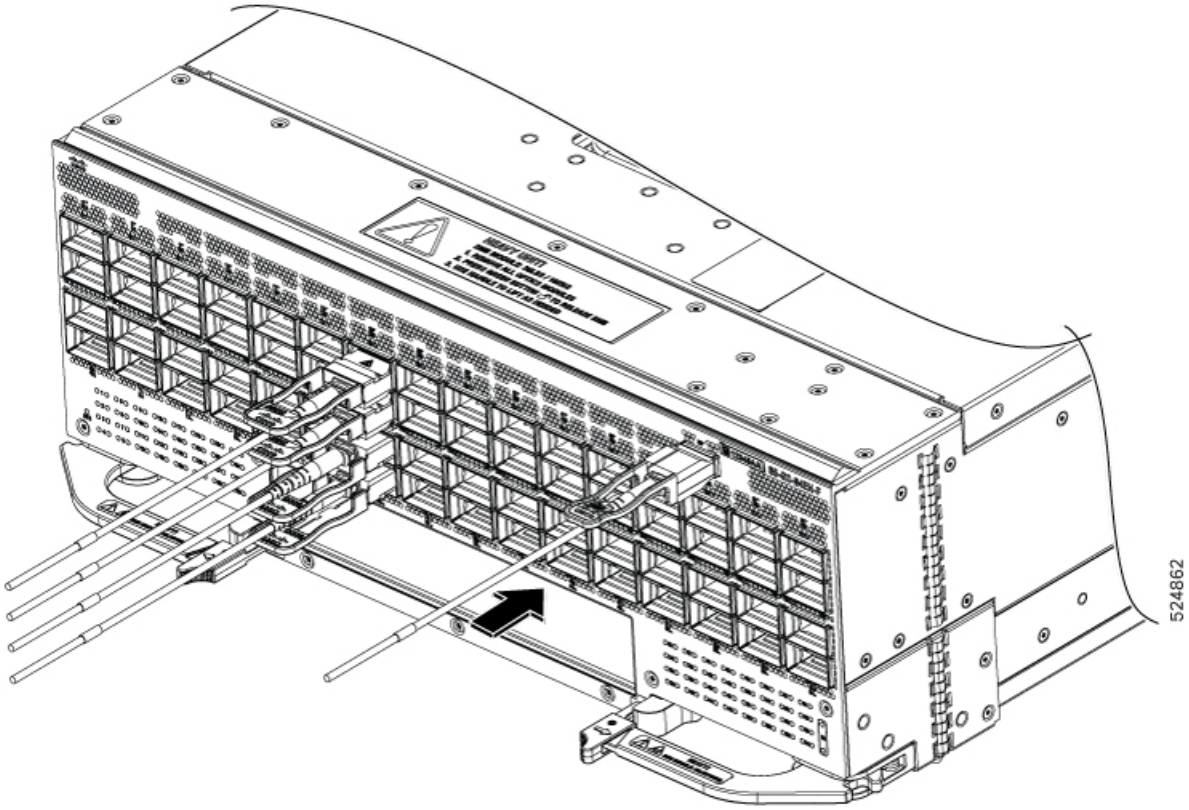
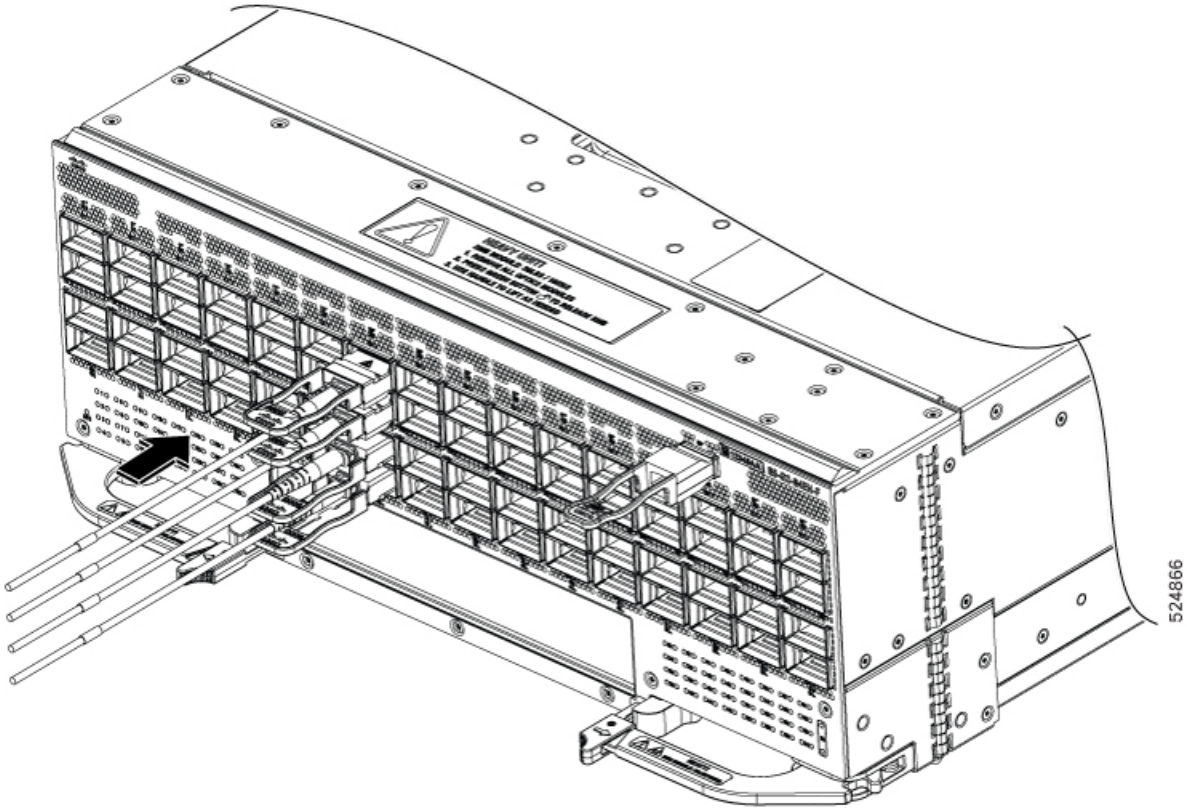


Figure 43: Cabling an OSFP Transceiver Module



Removing the Transceiver Module

Warning **Statement 1055—**Class 1/1M Laser

Invisible laser radiation is present. Do not expose to users of telescopic optics. This applies to Class 1/1M laser products.



Warning **Statement 1051—**Laser Radiation

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

Warning **Statement 1079—**Hot Surface

This icon is a hot surface warning. To avoid personal injury, do not touch without proper protection.



Caution The transceiver module is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling transceiver modules or coming into contact with modules.

Caution Protect the transceiver ports by inserting clean dust caps (8000-QSFP-DCAP) into any ports not in use. Be sure to clean the optic surfaces of the fiber cables before you plug them back into the optical ports of another module. Use dust caps for all the open ports on the chassis.

The switch ships with dust caps plugged in. We highly recommend you to keep the dust caps plugged in until you are ready to plug an optic.

The dust caps protect the ports from possible EMI interference and also avoid contamination due to dust collection. To meet the EMI interference requirements, you must use the metal dust caps when the ports are not in use by optical modules.

To remove a transceiver module, follow these steps:

Procedure

Step 1 Disconnect the network interface cable from the transceiver connector.

Step 2 Install the dust plug immediately into the transceiver's optical bore.

Step 3 Grasp the pull-tab and gently pull to release the transceiver from the cage port or socket.

Figure 44: Removing the QSFP Transceiver Module

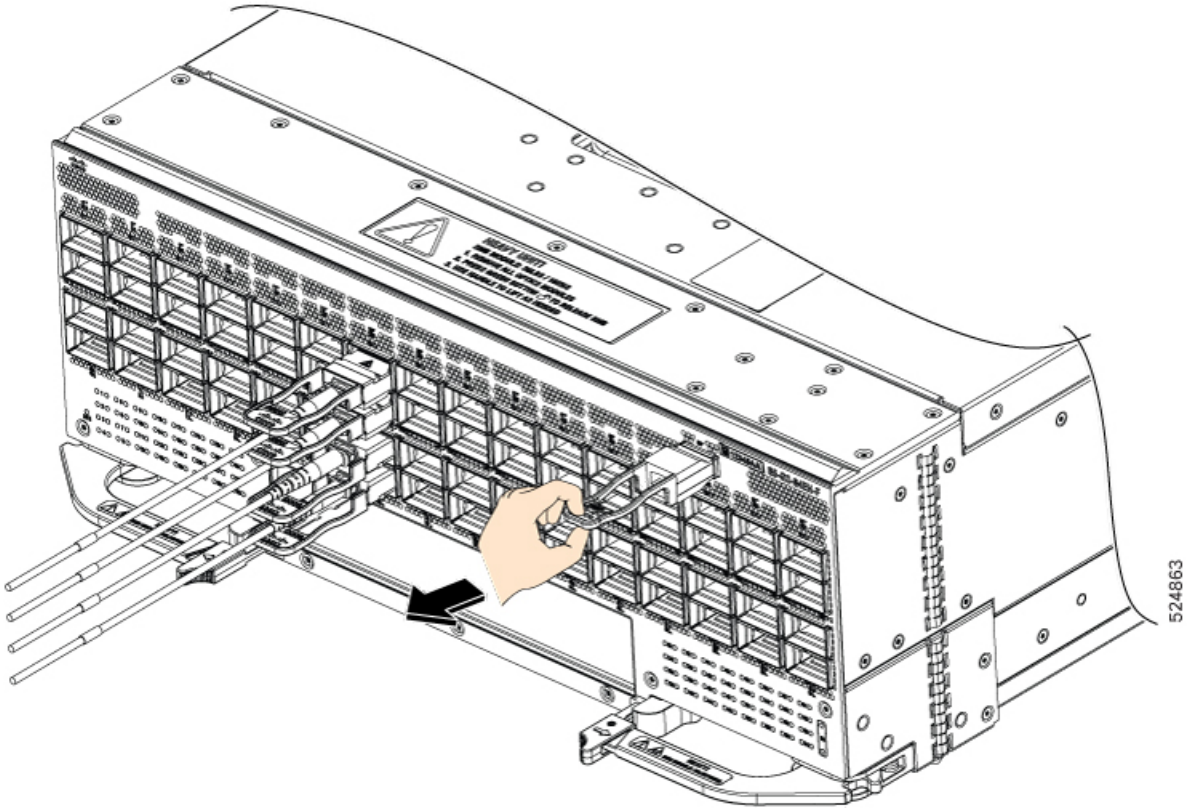
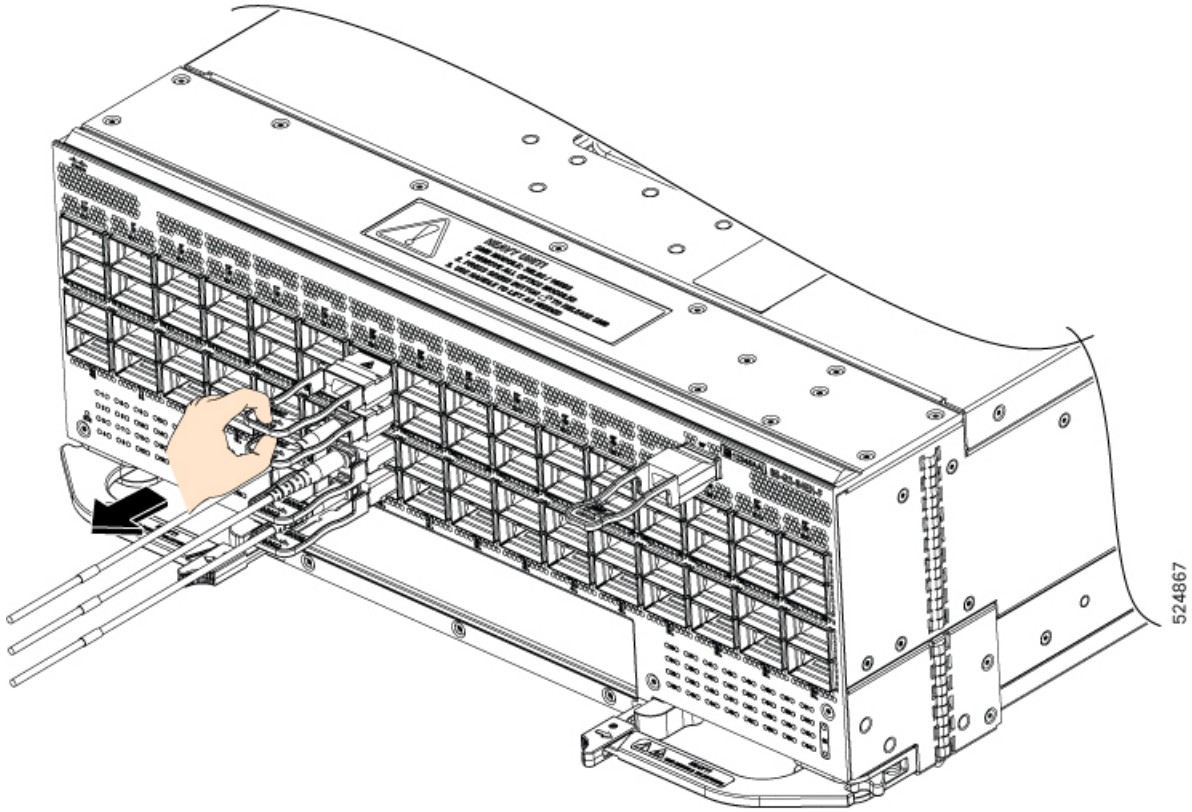


Figure 45: Removing the OSFP Transceiver Module



Step 4 Slide the transceiver out of the cage port or socket.

Step 5 Place the transceiver module into an antistatic bag.

Connect Interface Ports

You can connect optical interface ports with other devices for network connectivity.

Connect a Fiber-Optic Port to the Network

Some transceivers work with fiber-optic cables that you attach to the transceivers and other transceivers work with pre-attached copper cables. You must install a transceiver in the port before installing the fiber-optic cable in the transceiver.

⚠

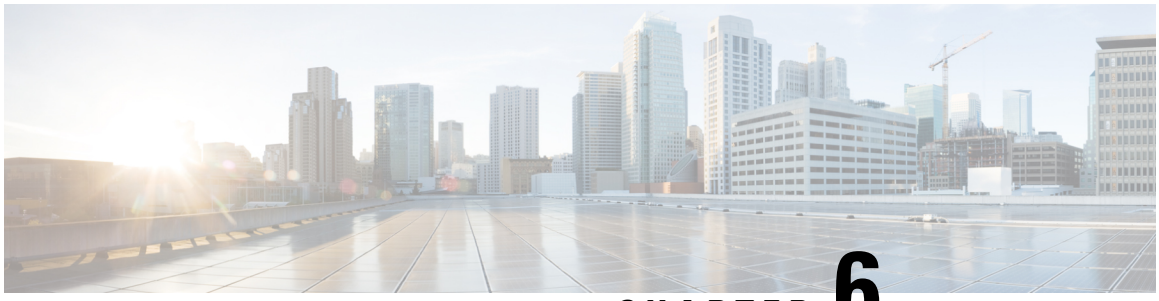
Caution Removing and installing a transceiver can shorten its useful life. Do not remove and insert transceivers any more than is absolutely necessary. We recommend that you disconnect cables before installing or removing transceivers to prevent damage to the cable or transceiver.

Disconnect Optical Ports from the Network

When you need to remove fiber-optic transceivers, you must first remove the fiber-optic cables from the transceiver before you remove the transceiver from the port.

Maintain Transceivers and Optical Cables

Refer to Inspection and Cleaning Procedures for Fiber-Optic Connections document for inspection and cleaning processes for fiber optic connections.



CHAPTER 6

Replace Chassis Components

Note The images in this chapter are only for representation purposes, unless specified otherwise. The chassis' actual appearance and size may vary.

Caution Whenever you replace any card, you must always ensure to secure the ejector thumbscrews properly.

- Replace a System Control Module, on page 71
- Replace the Switch Main Board, on page 75
- Replace a Fan Module, on page 80
- Replace Power Module, on page 85

Replace a System Control Module

The Cisco 8501 switch supports a single System Control Module (SCM) (85-RP-O).

Warning **Statement 1090**—Installation by Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091**—Installation by an Instructed Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed or skilled person.

Warning **Statement 1073**—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Warning **Statement 1029—**Blank Faceplates and Cover Panels

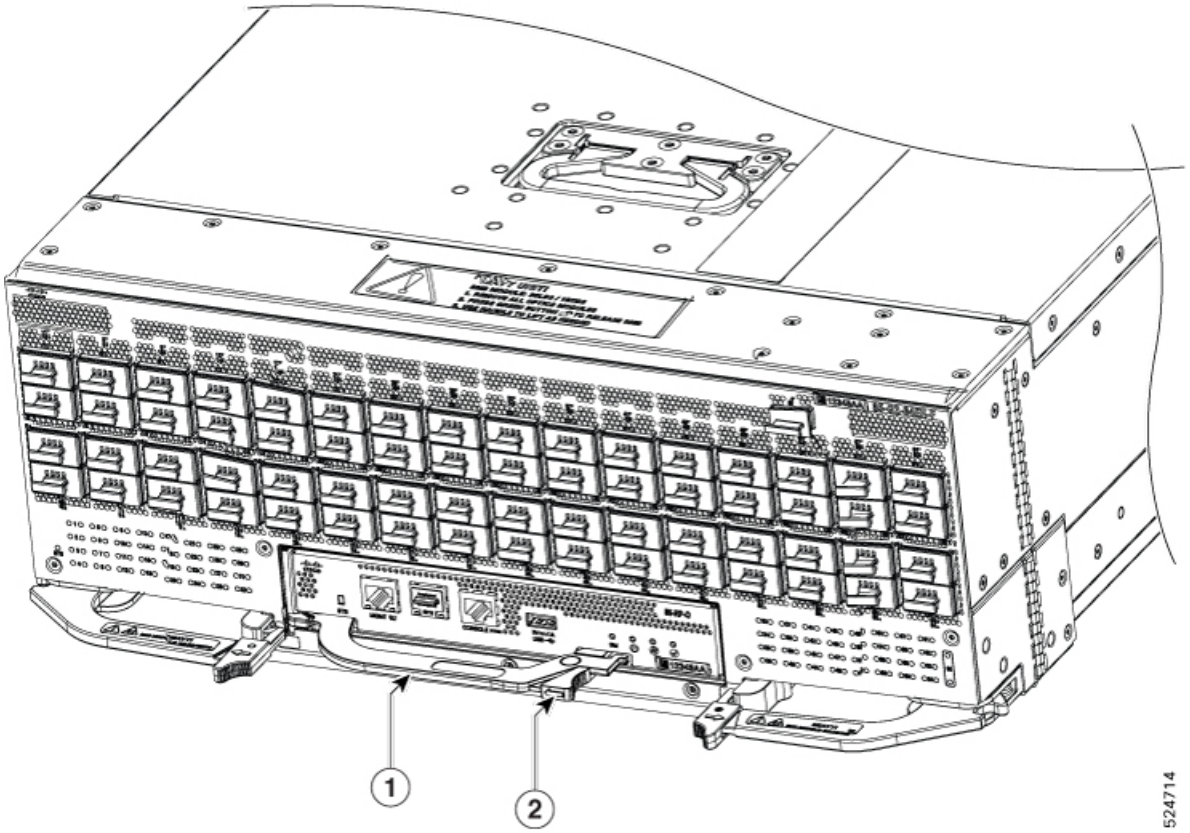
Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Warning **Statement 1034—**Backplane Voltage

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing

The below figure describes the components used in the SCM installation procedure.

Figure 46: SCM Components



1	Ejector lever handle
2	Ejector lever latch

Procedure

Step 1 Open the packaging for the new SCM and inspect it for damage.

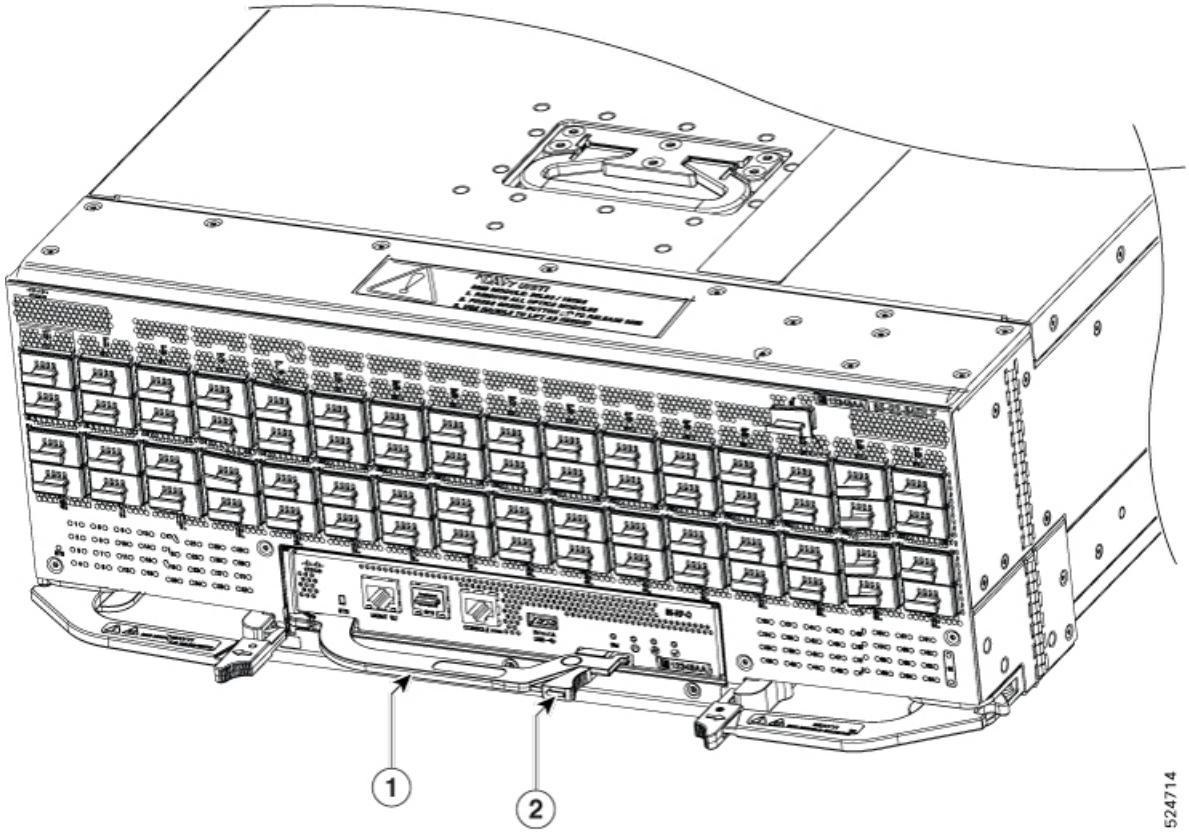
If the SCM is damaged, contact the Technical Assistance Center (TAC).

Step 2 If you are replacing a SCM that is currently in the chassis, remove the existing SCM from the chassis by following these steps:

a) Disconnect and label each of the interface cables from the SCM.

b) Simultaneously press the latch on the ejector lever and pull the ejector lever.

Figure 47: SCM Components

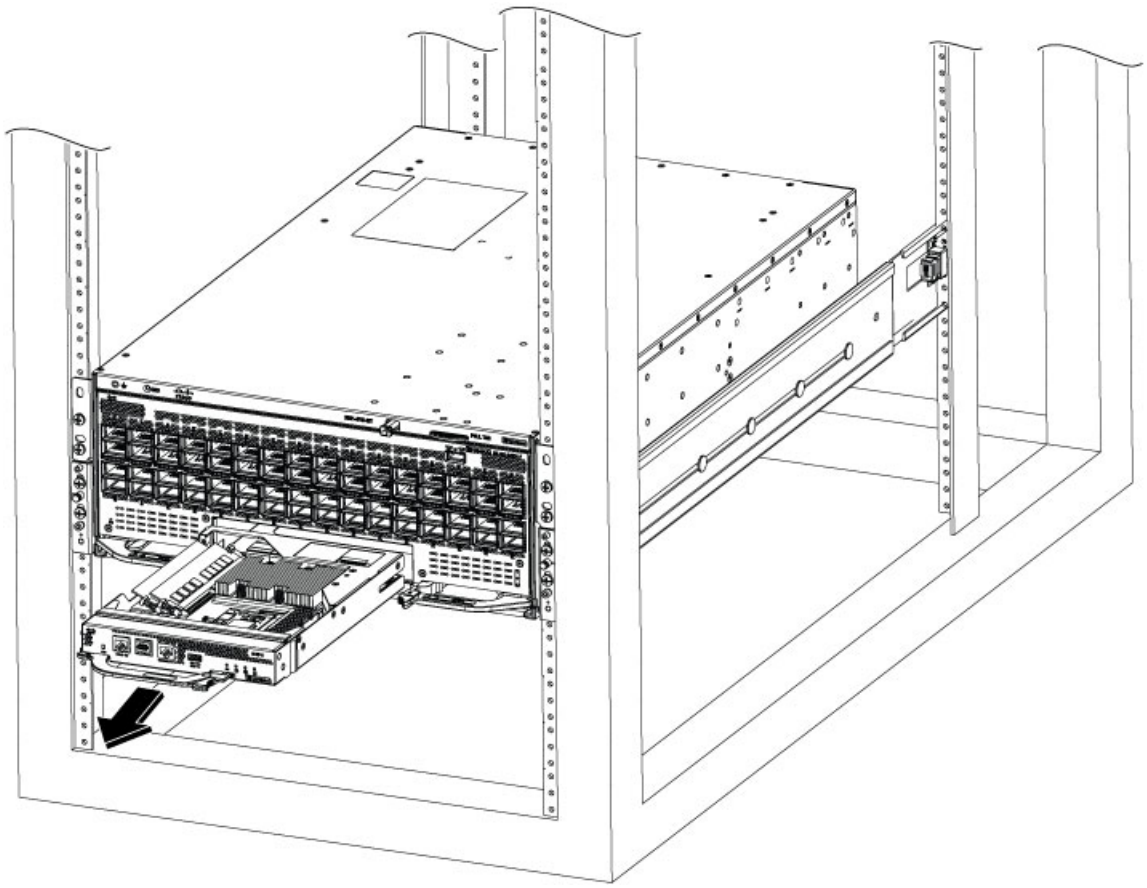


1	Ejector lever handle
2	Ejector lever latch

c) Use the ejector lever to pull the SCM a couple of inches (about 5 cm) from the chassis.

d) Close the ejector lever until the ejector lever latch clicks into place.

Figure 48: Remove the SCM from the chassis

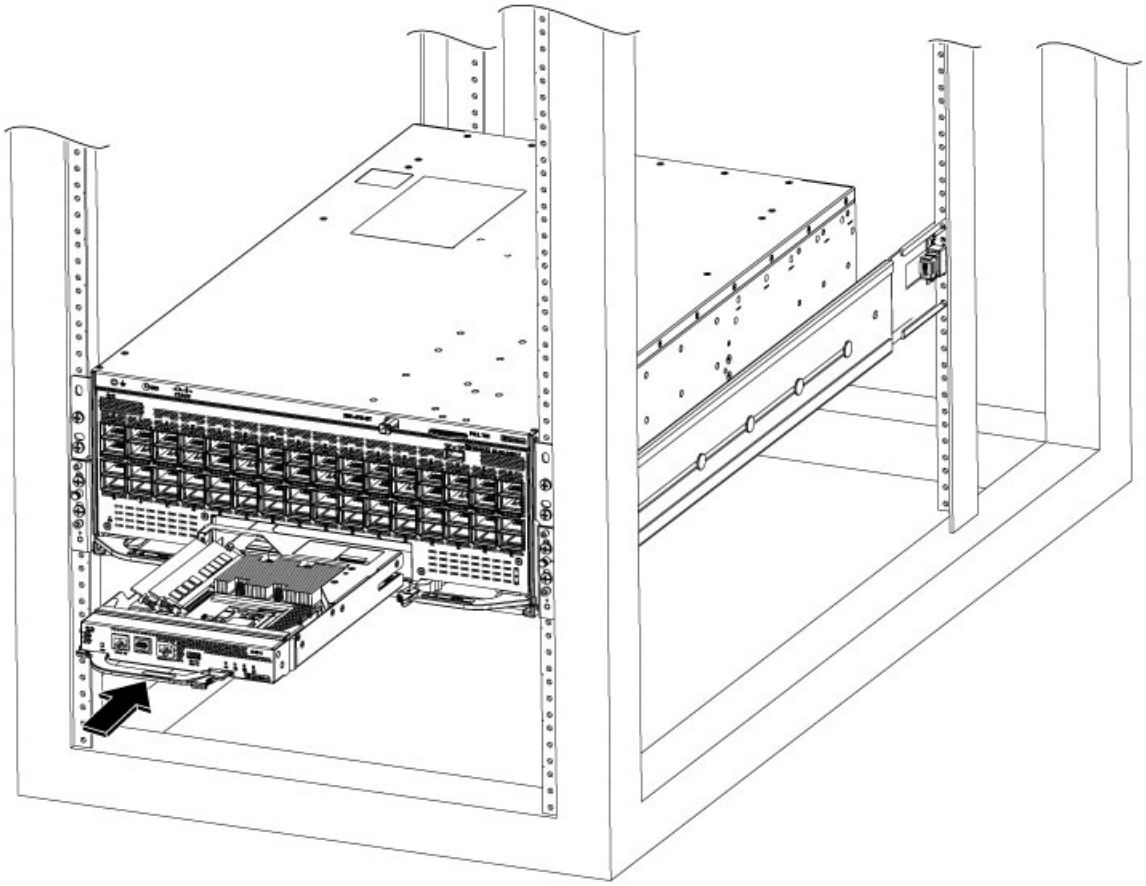


e) Pull the SCM out of the chassis, and set it on an antistatic surface or inside an antistatic bag.

Step 3 To install the SCM, follow these steps:

a) Insert the SCM in the open slot and slide it into the slot until it stops.

Figure 49: Insert a SCM into the Chassis



b) Slide the SCM into the slot until the ejector lever engages with the chassis.
c) Close the ejector lever until the ejector lever latch clicks into place. Slightly push on the ejector lever to verify that the latch is engaged and that the SCM is seated in the chassis.
d) Attach each interface cable to the appropriate port on the SCM.
e) Verify that the status LED turn on and appears amber.

Replace the Switch Main Board

Warning **Statement 1090—**Installation by Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091—**Installation by an Instructed Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed or skilled person.

Warning **Statement 1073—**No User-Serviceable Parts

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Warning **Statement 1029—**Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Warning **Statement 1034—**Backplane Voltage

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing

Warning **Statement 1051—**Laser Radiation

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

To replace the SMB, you must do the following:

- Shut down the SMB being replaced.
- Remove the SMB.
- Install the new SMB.
- Activate the SMB.

Remove the Switch Main Board

Before you begin

- You must wear an electrostatic discharge (ESD) wrist strap or other ESD protective device while handling modules.
- Prepare an antistatic surface or packing materials for each module that you remove from the chassis.

Procedure

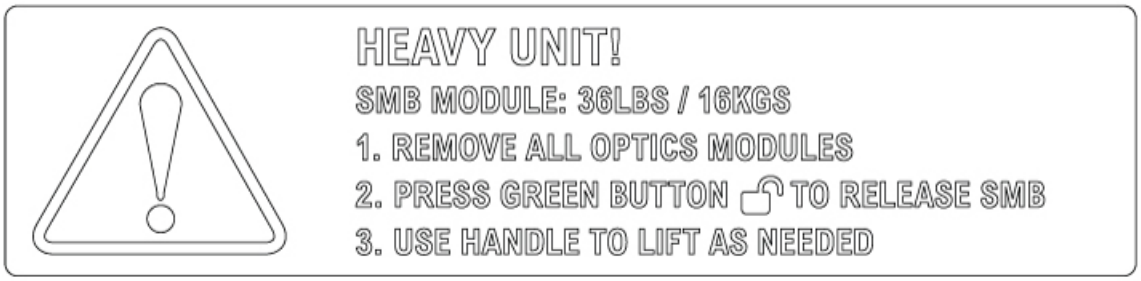
Step 1 If you are replacing the SMB, open the packaging for the new module and inspect it for damage.

If the SMB is damaged, alert the Technical Assistance Center (TAC) and stop this replacement process until you have an undamaged SMB to install.

Step 2 Remove the SMB that you are replacing by following these steps:

a) Open the ejector levers by pulling away from the chassis.

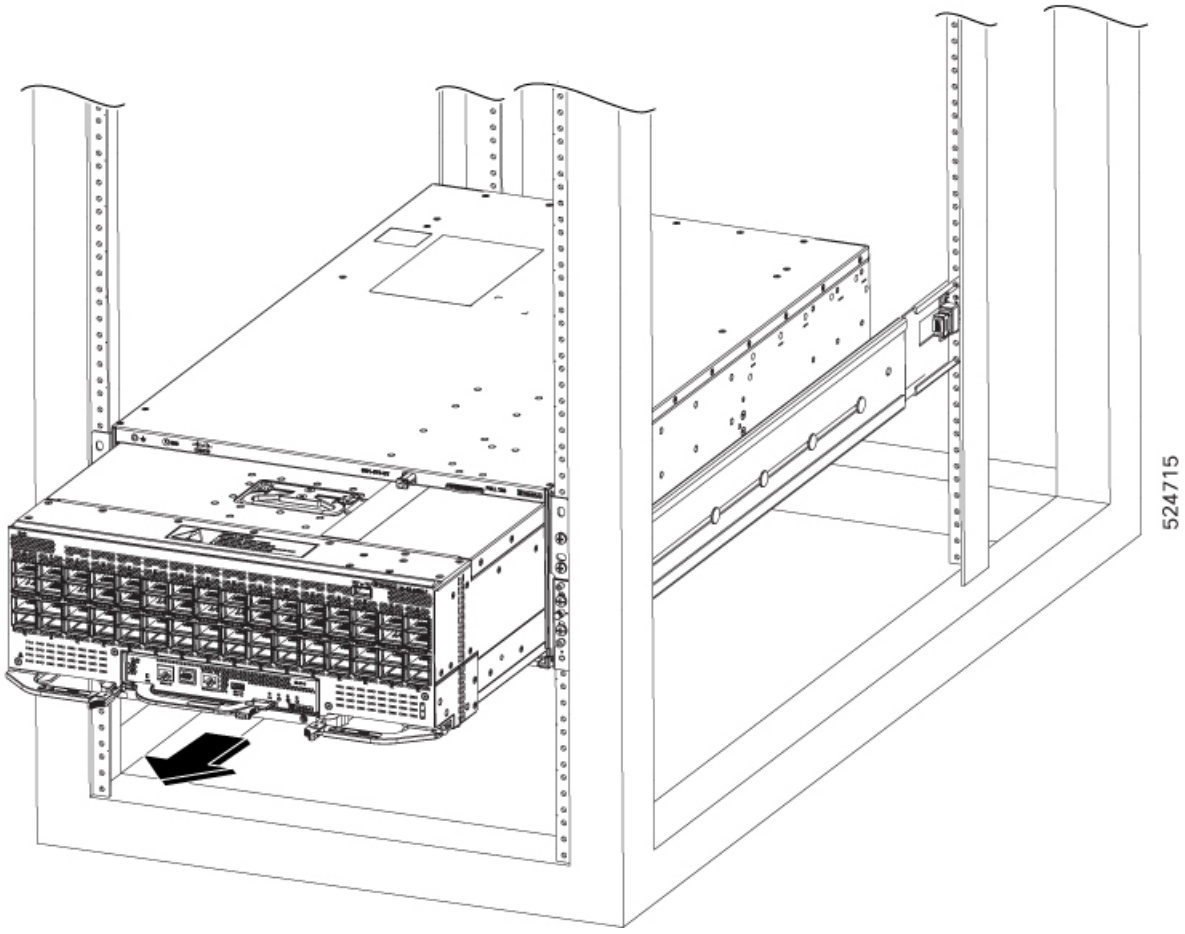
Note
The SMB module is a heavy unit, please proceed with caution.



b) Pull SMB out of chassis and as it gets stopped with latch lock ~ 8.5 inch out of chassis. Press the LOCK button to unlock the SMB. At the same time, the SMB handles will be visible to access.

c) Use the handle and pull the SMB out of the chassis.

Figure 50: Removing a SMB from the Chassis



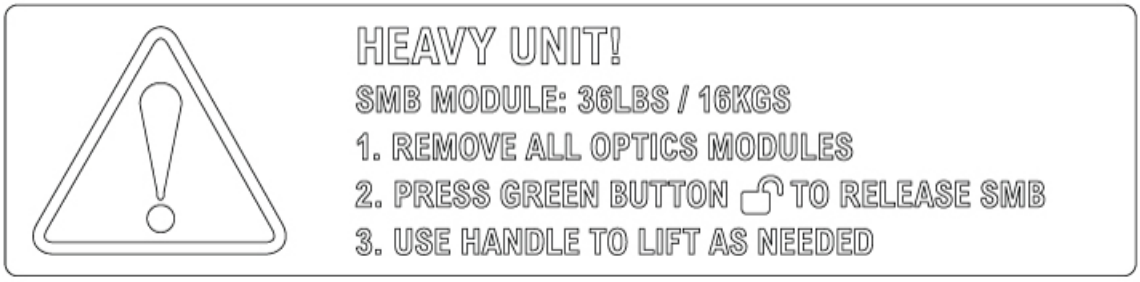
d) Close the ejector levers.
e) Place the SMB on an antistatic surface or in an antistatic bag.

Install the Switch Main Board

Before you begin

- You must wear an electrostatic discharge (ESD) wrist strap or other ESD protective device while handling modules.

Note The SMB module is a heavy unit, please proceed with caution.



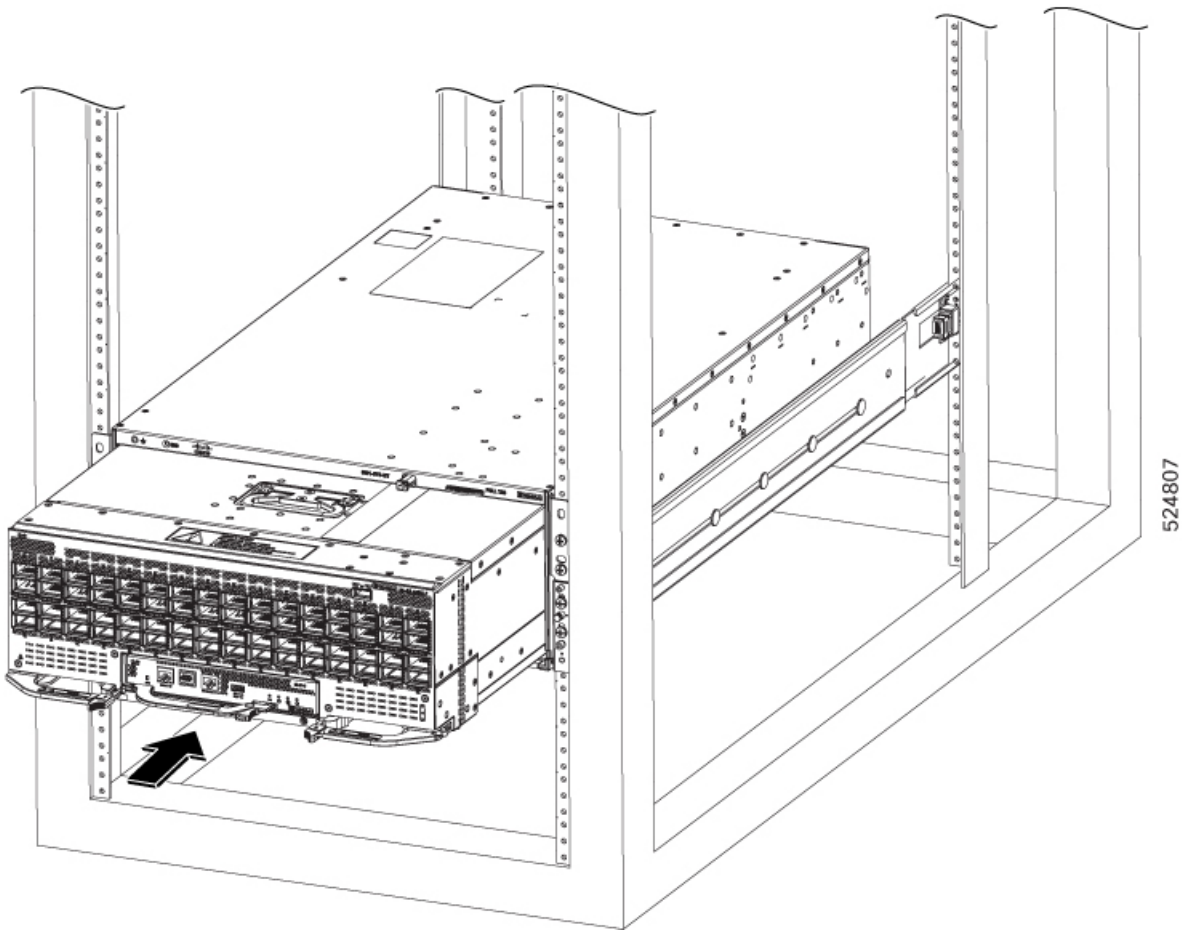
Procedure

Step 1 Using the handle on the top of the chassis, align the SMB and chassis slot.

Step 2 Slide the SMB into the slot until it stops.

Step 3 Simultaneously press the latch release button on the SMB ejector and pull the ejector lever away from the chassis.

Figure 51: Installing a SMB from the Chassis



Step 4 Slide the SMB further into the slot.

Step 5 Close the ejector levers.

Replace a Fan Module

The Cisco 8501 switch uses eight fan modules but it can operate with seven fan modules while you replace one. When you remove one fan module, the other fan modules speed up their fans to maintain the designed airflow.

The fan module is designed to be removed and replaced while the system is operating without presenting an electrical hazard or damage to the system. Please keep the replacement fan modules ready prior to attempting this task.

Note To ensure adequate airflow and prevent overheating, do not operate the switch with four fan modules for more than 10 minutes.



Caution Never remove two fan modules at a time during operation. The switch allows up to two minutes of operations before shutting down unless you replace the missing fan module within that time. If the switch senses an over temperature condition when multiple fan modules are removed, the shutdown can occur in fewer than two minutes.



Warning **Statement 1090—**Installation by Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.



Warning **Statement 1091—**Installation by an Instructed Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed or skilled person.



Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.



Warning **Statement 1029—**Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.



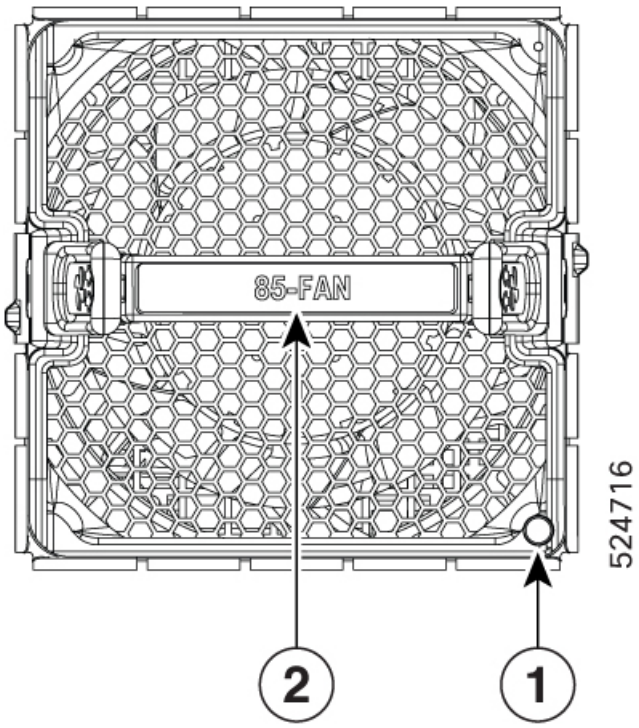
Warning **Statement 1034—**Backplane Voltage

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing



Warning **Statement 1051—**Laser Radiation

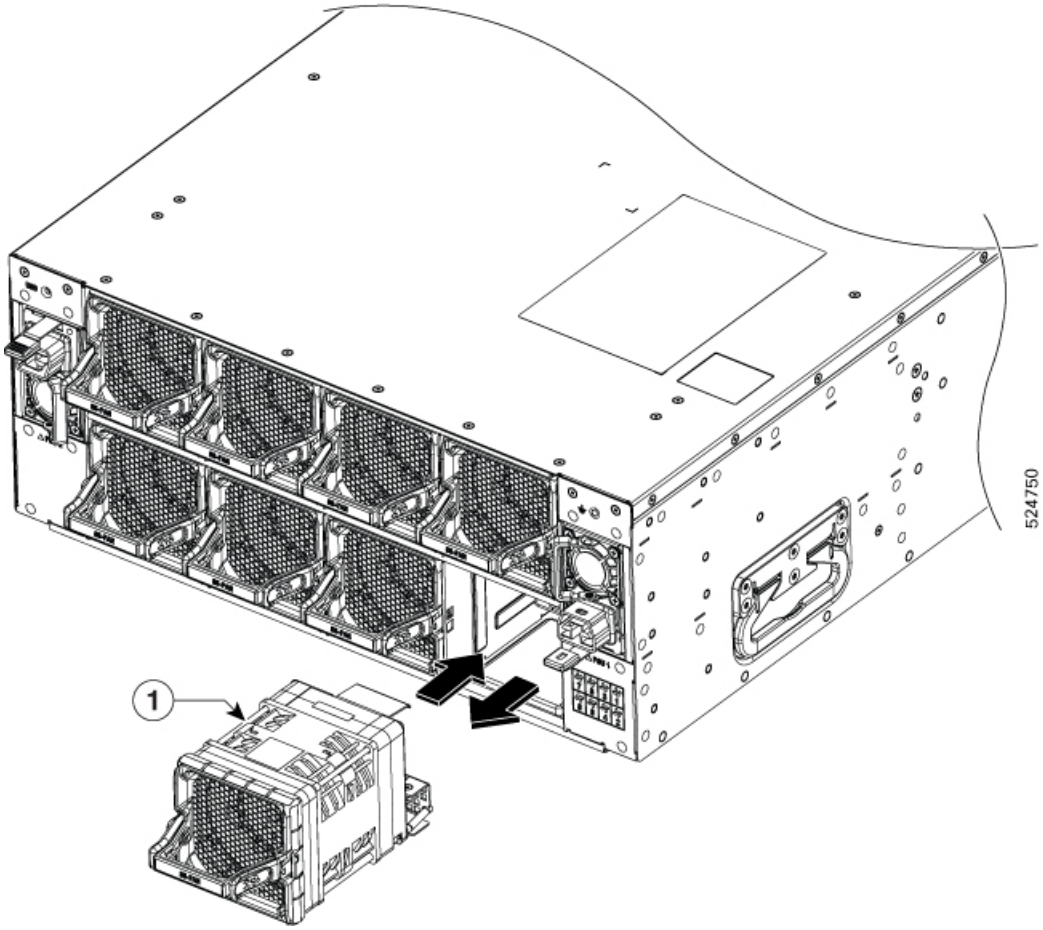
Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.



1	LED
2	Handle

To replace a fan tray, you must perform the following functions:

1. To remove a fan module, follow these steps:
   a. Press down the fan latch.

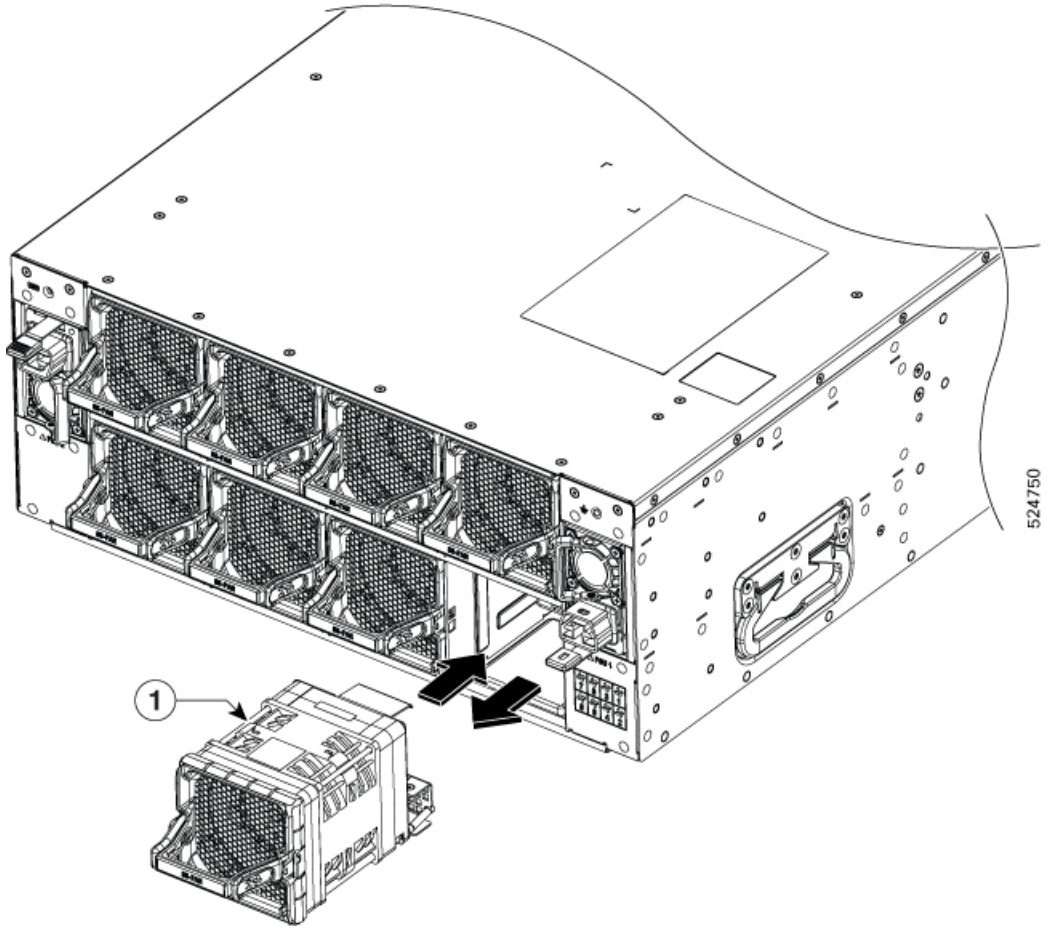


1	Power module

b. As you simultaneously press the latch, gently pull the fan module fully out of the chassis.

2. To install a fan module, follow these steps:

a. Hold the fan module with the LED at the bottom right.



1	Power module

b. Align the fan module to the open fan tray slot in the chassis, and press the module all the way into the slot until the left and right latches click and are locked on the chassis.

c. If the chassis is powered on, listen for the sound of the fans in operation. You should immediately hear them in operation. If you do not hear them, ensure that the fan module is inserted completely in the chassis.

Note During the fan module replacement, the other fans adjust their speed to allow for proper initialization of the new module. When you insert a new fan module, the fans may run at lower or higher speeds for a few minutes.

d. Verify that the fan module LED turns amber. If the LED is not green, one or more fans are faulty. If this situation occurs, contact your customer service representative for replacement parts.

Replace Power Module

Warning **Statement 1090—**Installation by Skilled Person

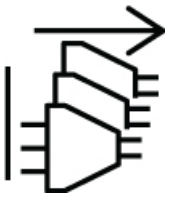
Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091—**Installation by an Instructed Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed or skilled person.

Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

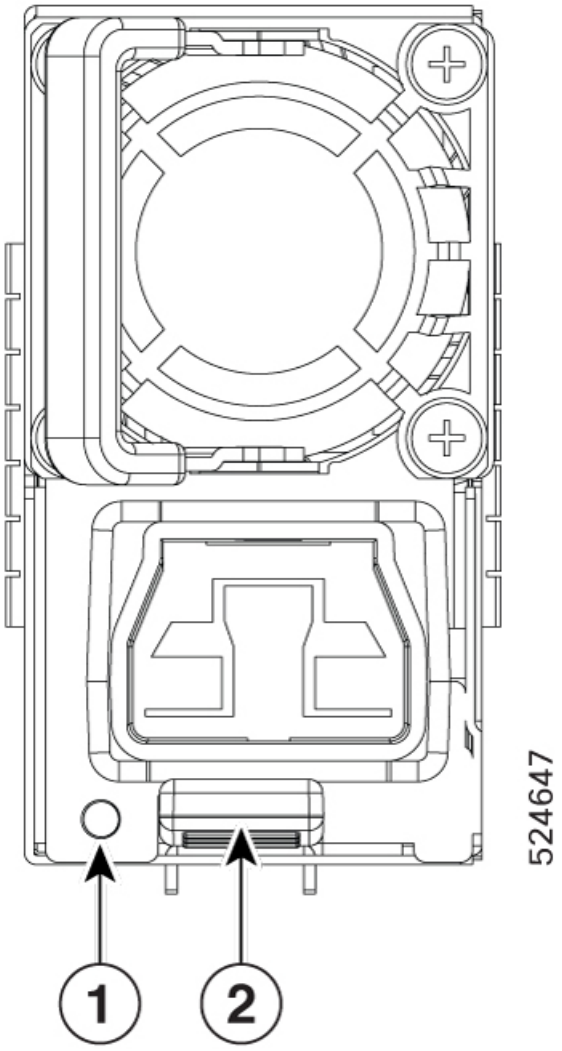
Warning **Statement 1029—**Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Warning **Statement 1034—**Backplane Voltage

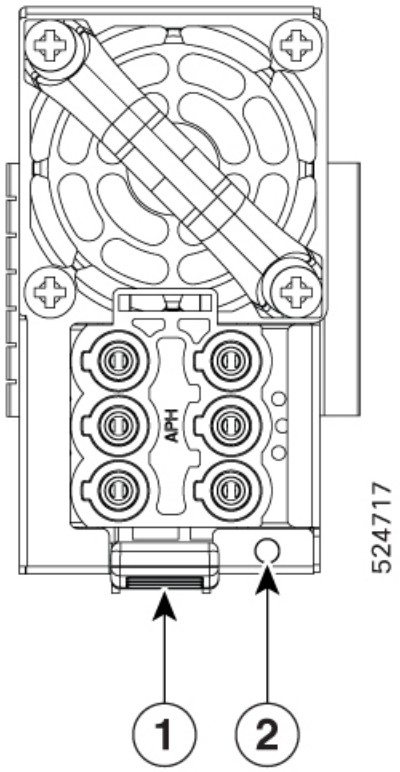
Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing

Figure 52: AC PSU



1	LED
2	Tab

Figure 53: DC PSU



1	Tab
2	LED

Follow these steps to replace the power module.

Procedure

Step 1 If the power supply is connected to a AC or DC circuit, shut off the circuit at the circuit breaker.

Step 2 Disconnect the power module cable.

Step 3 Press the tab inward to unlatch the power module, and pull the handle to remove the power module.

Note
Do not use the pull tab to extract the entire PSU, as this may lead to tab breakage.

Step 4 Slide the new power module into the bay until it mates with its connector.

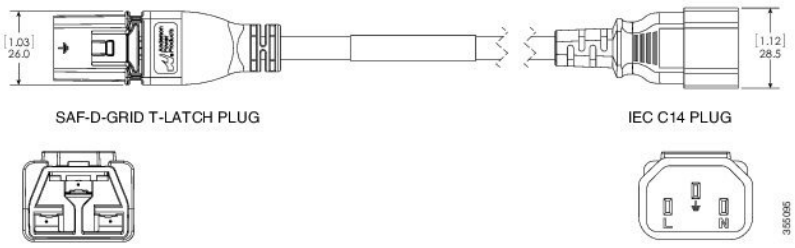
Note
If the power module does not go all the way into the slot, do not force it. Remove the power module and verify that it is the correct type for your switch and in the correct orientation.

Step 5 Connect the power module cable.

Step 6 Verify that the Saf-D-Grid plug is plugged in completely to secure the built-in retaining latch.

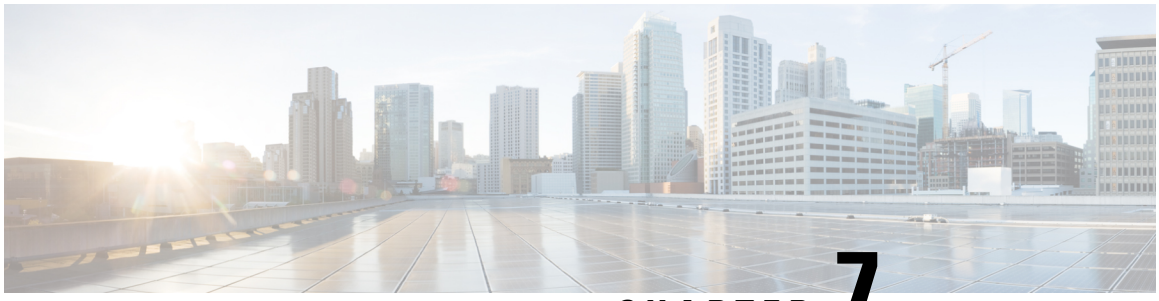
Note
Saf-D-Grid plug has a retaining latch that must be depressed and gently pulled to release the plug from the receptacle.

Figure 54: SAF-D-Grid Plug



Step 7 If the power supply is connected to a AC or DC circuit, turn on the circuit breaker for the AC or DC power source. After replacing the PSU, verify the power using the **show environment power** command.

Step 8 Verify that the power indicator LED on the front of the power module goes on.



CHAPTER 7

LEDs

You can perform the following check on LEDs that assist you with the troubleshooting process:

- System Control Module LEDs, on page 89
- Switch Main Board LED, on page 89
- Port Status LEDs, on page 90
- Power Module LED, on page 91
- Fan Tray LED, on page 92

System Control Module LEDs

The System Control Module (SCM) LEDs are located on the front of the module.

Figure 55: SCM LEDs

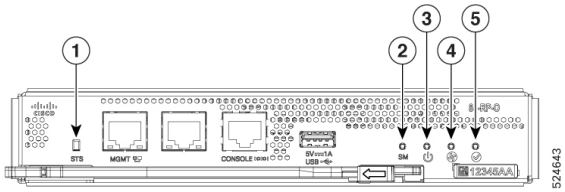


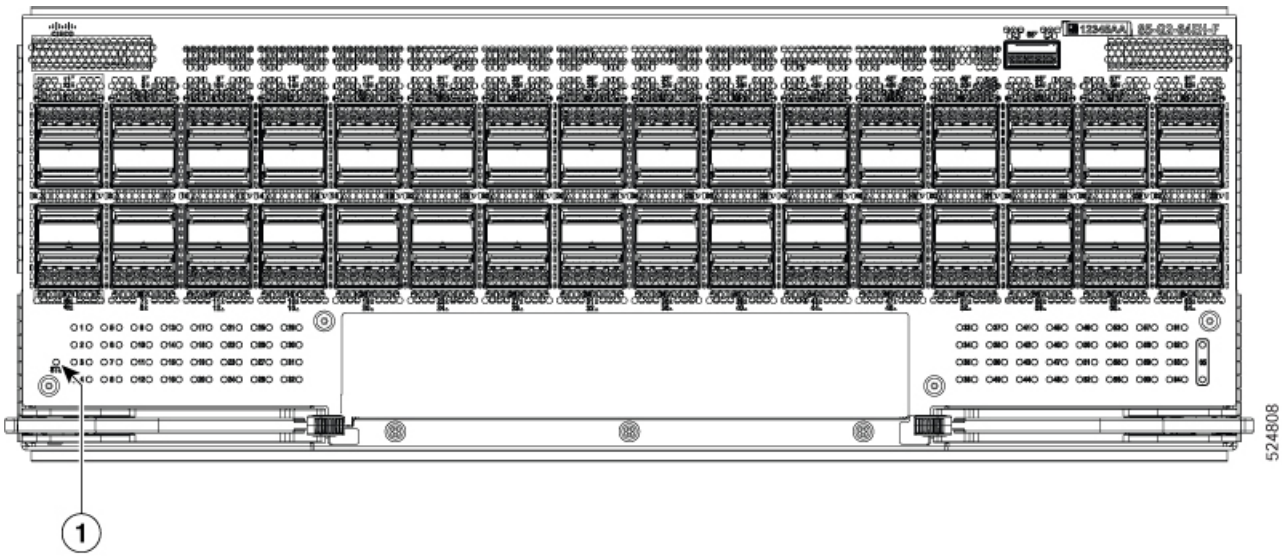
Table 9: SCM LEDs

1	SCM Status
2	SMB Status
3	PSU Status
4	Fan Status
5	System Status

Switch Main Board LED

The Switch Main Board (SMB) card is in front of the chassis.

Figure 56: SMB LEDs

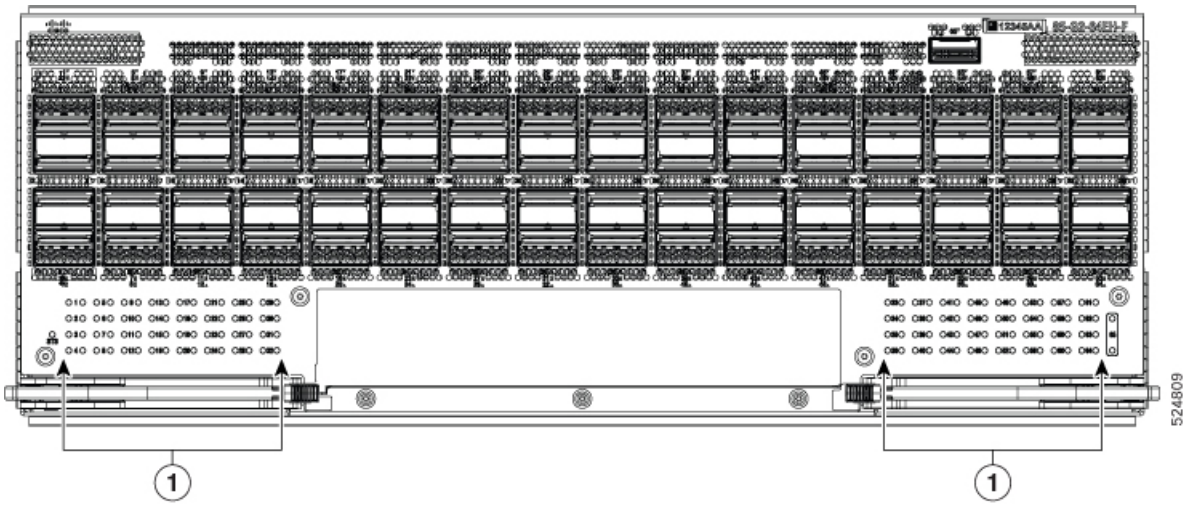


1	Status

Port Status LEDs

Each port on the 8501-SYS-MT has two LEDs. The following table describes port status LEDs.

Figure 57: Port LEDs



1	Port LEDs

Note The Port LEDs from 1 to 64 are for the OSFP ports and the port LED 65 is for PIE port.

Power Module LED

The power module LED is located on the lower right portion of the module.

Figure 58: AC Power Supply LED

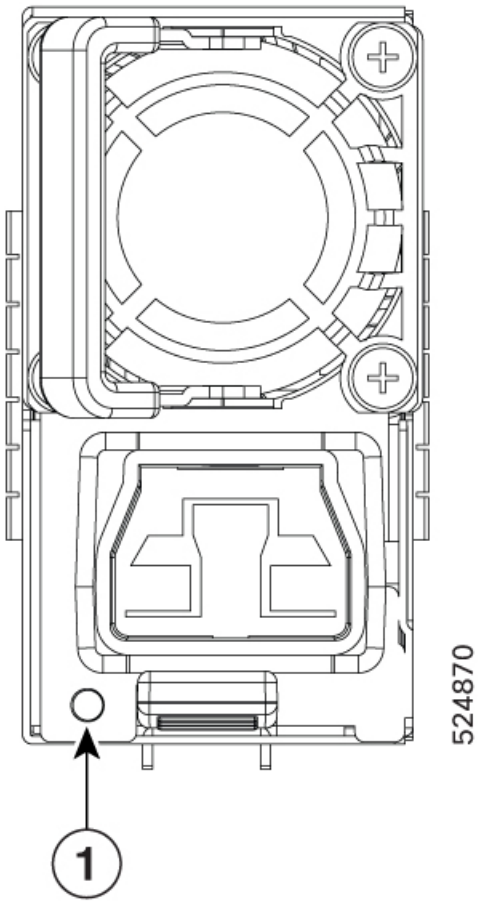
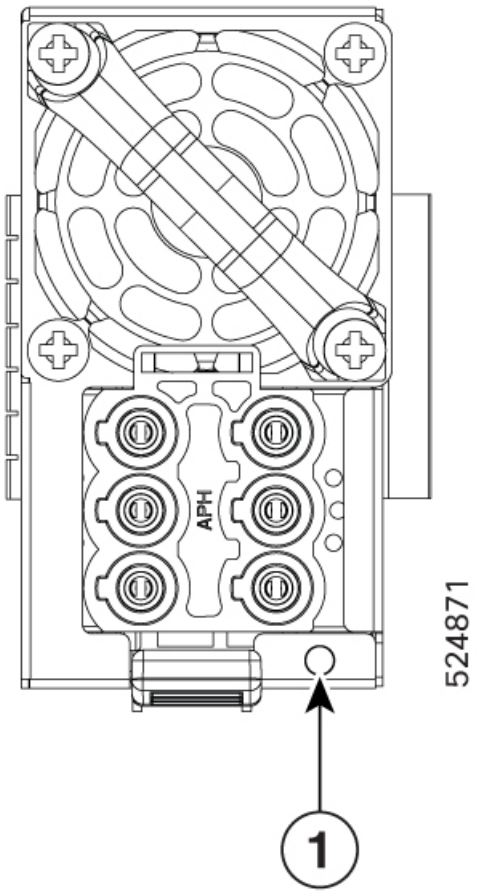


Figure 59: DC Power Supply LED

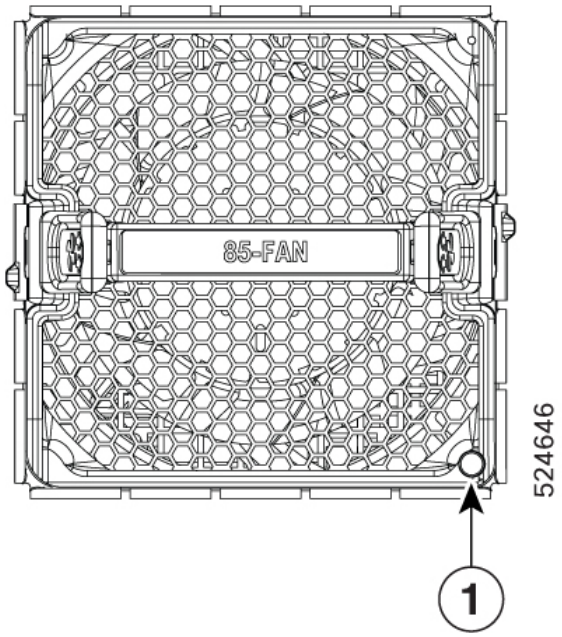


1	Status

Fan Tray LED

The fan tray LED is located on the bottom rightportion of the fan tray.

Figure 60: Fan Tray LED



1	Status