Cisco Nexus 9808 NX-OS Mode Switch Hardware Installation Guide

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Cisco Nexus 9808 Switch Overview

Cisco Nexus 9808 Switch Overview

The Cisco 9808 switch includes:

- The Cisco 9808 is a 16-RU switch that supports distributed forwarding across multiple field replaceable units (FRUs).

Cisco 9800 Series Switches

The following table describes the Cisco 9808 switch components, and the supported quantity.

Table 1: Cisco 9808 Switch Components

Component	Quantity
Line cards	8
Supervisor Modules	2
Fabric Modules	8
Fan trays	4
Power trays	3

Component	Quantity
Power supplies	HVAC/HVDC—9 (3 per tray)
	DC60—12 (4 per tray)

Line Card Overview

Cisco Nexus 9800 switches support the following line cards:

Table 2: Supported Line Cards and Transceivers

Line Card PIDs	Transceivers
N9K-X9836DM-A	QSFP-DD / QSFP28 / QSFP+
N9K-X98900CD-A	QSFP-DD / QSFP28 / QSFP+

Note   When unlocking the ejector button and then relocking it without removing the line card, the line card will power down. The line card will not power up and will not show **poweroff module** in command line interface. Preforming OIR is required to power up the line card.

Supervisor Module Overview

Cisco Nexus 9800 Supervisor Modules (N9K-C9800-SUP-A) manage all control plane functions on the Cisco Nexus 9800 Series Switches.

Figure 1: Supervisor Module
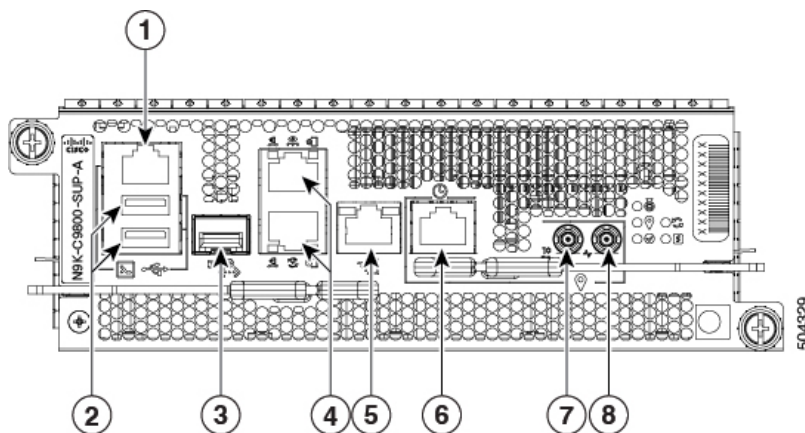
1	Console RS-232 Serial Port RJ45	5	SyncE BITS/DTI/J.211

2	USB Port Type-A (2-ports). Port A gets detected ahead of Port B. Top: Port B Bottom: Port A	6	G.703 Time-of-Day (TOD)
3	Control Plane Expansion SFP/SFP+ port	7	1.0/2.3 50 ohm connector for 10 MHz, input, and output
4	Top: Management Ethernet (10/100/1000-Mbps) RJ-45 (Copper) port LAN. Bottom: IEEE 1588 Precision Time Protocol (PTP)	8	1.0/2.3 50 ohm connector for 1 PPS, input, and output

Fabric Module Overview

Cisco Nexus 9808 switches support the following fabric modules:

- N9K-C9808-FM-A—Cisco Nexus 9808 Fabric Module

Temperature and Physical Specifications

For temperature and physical specifications, refer to the *Physical characteristics* table in the Cisco Nexus 9800 Series Switches Data Sheet.

Weight and Power Consumption

For chassis dimensions and weight, please refer to the following table.

Weight	Unloaded: 162 lbs. (73 kg.) Fully loaded: 658 lbs. (299 kg.)
Dimensions	(H) 28 x (W) 17.45 x (D) 33.73 in. (71.12 x 44.32 x 85.7 cm.)
Number of Rack Units	16 RU

The following table describes the maximum power consumption of supervisors, fabric modules, fan trays and line cards in Nexus 9808 chassis.

Table 3: Power Requirements for the Cisco Nexus 9808 Switch Components

Component	Maximum power / Unit
Supervisor Module (N9K-C9800-SUP-A)	95 W

Component	Maximum power / Unit
Fabric Module (N9K-C9808-FM-A)	575 W
Fan tray (N9K-C9808-FAN-A)	686 W
Line card (N9K-X9836DM-A – 36 port 400G QSFP-DD line card)	2436 W
Line card (N9K-X98900CD-A – 34 port 100G and 14 port 400G QSFP-DD line card)	2436 W

For more information, refer to the Cisco Nexus 9800 Series Switches Data Sheet.

Airflow Direction

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.

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 table lists the amount of power available for Cisco 9800 series switches from all available power trays.

Table 4: Maximum Power Available for a Switch with HVAC/HVDC Power Supplies

Total Power Supply	Combined Mode in Watts (No redundancy)	N+1 Redundancy Mode in Watts (with Single Supply Loss)	Total Power Tray
1	6,300	—	1
2	12,600	6,300	
3	18,900	12,600	
4	25,200	18,900	2
5	31,500	25,200	
6	37,800	31,500	
7	44,100	37,800	3
8	50,400	44,100	
9	56,700	50,400	

Table 5: Maximum Power Available for a Switch with DC60 Power Supplies

Total Power Supply	Combined Mode in Watts (No redundancy)	N+1 Redundancy Mode in Watts (with Single Supply Loss)	N+N Redundancy Mode in Watts (with Feed Loss)	Total Power Tray
1	4,400	—	2,200	1
2	8,800	4,400	4,400	
3	13,200	8,800	6,600	
4	17,600	13,200	8,800	
5	22,000	17,600	11,000	2
6	26,400	22,000	13,200	
7	30,800	26,400	15,400	
8	35,200	30,800	17,600	
9	39,600	35,200	19,800	3
10	44,000	39,600	22,000	
11	48,400	44,000	24,200	
12	52,800	48,400	26,400	

Table 6: Maximum Power Available for a Switch with DC100 Power Supplies

Total Power Supply	Combined Mode in Watts (No redundancy)	N+1 Redundancy Mode in Watts (with Single Supply Loss)	N+N Redundancy Mode in Watts (with Feed Loss)	Total Power Tray
1	4,800	—	2,400	1
2	9,600	4,800	4,800	
3	14,400	9,600	7,200	
4	19,200	14,400	9,600	
5	24,000	19,200	12,000	2
6	28,800	24,000	14,400	
7	33,600	28,800	16,800	
8	38,400	33,600	19,200	

Total Power Supply	Combined Mode in Watts (No redundancy)	N+1 Redundancy Mode in Watts (with Single Supply Loss)	N+N Redundancy Mode in Watts (with Feed Loss)	Total Power Tray
9	43,200	38,400	21,600	3
10	48,000	43,200	24,000	
11	52,800	48,000	26,400	
12	57,600	52,800	28,800	

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

- For QSFP-DD data sheets, refer to the Cisco 400G QSFP-DD Cable and Transceiver Modules Data Sheet.

- For QSFP28 data sheets, refer to the Cisco 100GBASE QSFP-100G Modules Data Sheet.

- For QSFP+ data sheets, refer to the Cisco 40GBASE QSFP Modules Data Sheet.

- For 10G using QSA, refer to the Cisco 10GBASE SFP+ Modules Data Sheet

Prepare for Installation

Prepare for Installation

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

Warning **Statement 1071**—Warning Definition

IMPORTANT SAFETY INSTRUCTIONS

This warning 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. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

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.

- Be sure to power down a fixed configuration PDU or modular configuration power shelf before removing it from the chassis.

- 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.

- The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide out the unit for servicing. Failure to stabilize the rack may cause the rack to tip over.

Compliance and Safety Information

The Cisco Nexus 9800 Series Switches are designed to meet the regulatory compliance and safety approval requirements. For detailed safety information, see Regulatory Compliance and Safety Information.

Warning   **Statement 1005**—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection.

- Ensure that the protective devices are rated not greater than 30A max (North America); 32A max (Europe); 32A max (UK) (AC/HVAC/HVDC) (AHF-2DC-6300W), 100A max (LVDC) (DHF-2DC-4400W).

Laser Safety

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

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

⚠CAUTION
LASER
1/1M

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

Warning   **Statement 1086**—Power Terminals

Hazardous voltage or energy may be present on power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place.

Preventing Electrostatic Discharge Damage

Many 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.

Cautions and Regulatory Compliance Statements for NEBS

The NEBS-GR-1089-CORE regulatory compliance statements and requirements are discussed in this section.

Warning   The intrabuilding port(s) of the equipment or subassembly, which is the management Ethernet port, must use shielded intrabuilding cabling/wiring that is grounded at both ends. Statement 7003

Warning   The intrabuilding port(s) of the equipment or subassembly, which is the management Ethernet port, must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring. Statement 7005

Warning   This equipment shall be connected to AC mains provided with a surge protective device (SPD) at the service equipment complying with NFPA 70, the National Electrical Code (NEC). Statement 7012

Warning   This equipment is suitable for installations utilizing the Common Bonding Network (CBN). Statement 7013

Warning   The battery return conductor of this equipment shall be treated as (DC-I). Statement 7016

Warning   This equipment is suitable for installation in Network Telecommunications Facilities. Statement 8015

Warning   This equipment is suitable for installation in locations where the NEC applies. Statement 8016

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 Nexus 9800 Series Switches 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 9800 Series switches function in operating temperatures of up to 40°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 Nexus 9800 Series Switches Data Sheet.

Procure Tools and Equipment

Obtain these necessary tools and equipment for installing the chassis:
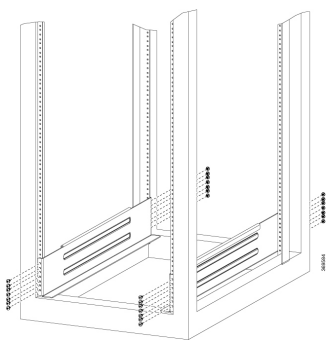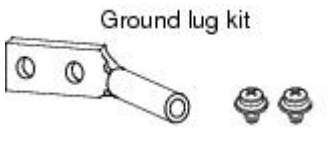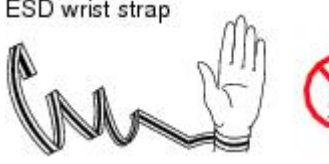
- Number 1 and number 2 Phillips screwdrivers with torque capability to rack-mount the chassis.

- 3/16-inch flat-blade screwdriver.

- Tape measure and level.

- ESD wrist strap or other grounding device.

- Antistatic mat or antistatic foam.

- Two-hole ground lug (1).

- Grounding cable (2 AWG recommended), sized according to local and national installation requirements; the required length depends on the proximity of the switch to proper grounding facilities.

- A crimping tool specified by the lug manufacturer that is large enough to accommodate the girth of the lug.

- Wire-stripping tool.

- A maximum of 70 rack mount screws can be used based on your rack selection.

Rack Mount and Accessory Kits

Accessory Kit

Accessory kit (N9K-C9800-IN-KIT) includes the following:

Table 7: Accessory Kit

Illustration	Description	Quantity
	Rack mount kit (N9K-C9800-AR-KIT): • Support rails are non-adjustable • Set the vertical support rack rails at 32" pitch	1
	Ground lug kit • Two-hole lug (1) • 1/4"-20 Phillips pan-head screws (2)	1
	ESD wrist strap (disposable)	1

More Hardware Components

If you purchased this product through a Cisco reseller, you might receive more contents in your kit, such as documentation, hardware, and power cables.

The shipped cables depend on your specification when placing an order. See the *Power Supply Power Cord Specifications* section for information on the available power cords.

If you notice any discrepancies or damage, send the following information to your customer service representative by email:

- Invoice number of the shipper (see the packing slip)

- Model and serial number of the missing or damaged unit

- Description of the problem and how it affects the installation

- Photos of the damage to external packaging, internal packaging, and product

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 2: Building with Rack Room Connected to Earth Ground

Earth ground
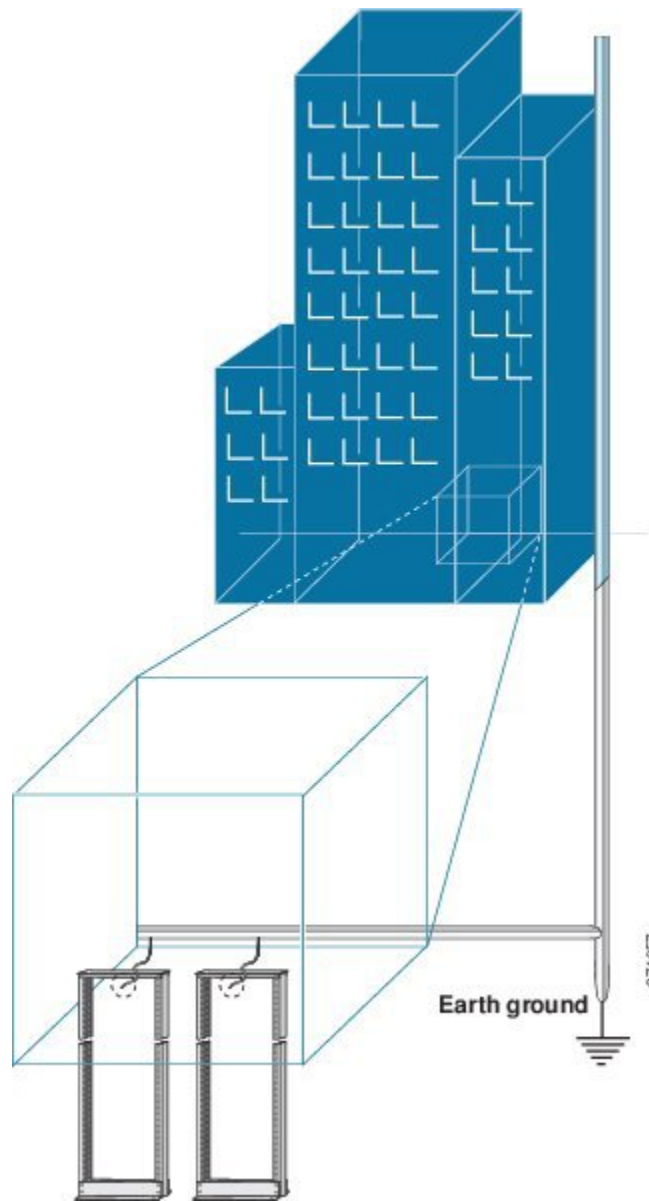
Prepare Yourself

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 3: Wearing the ESD Strap
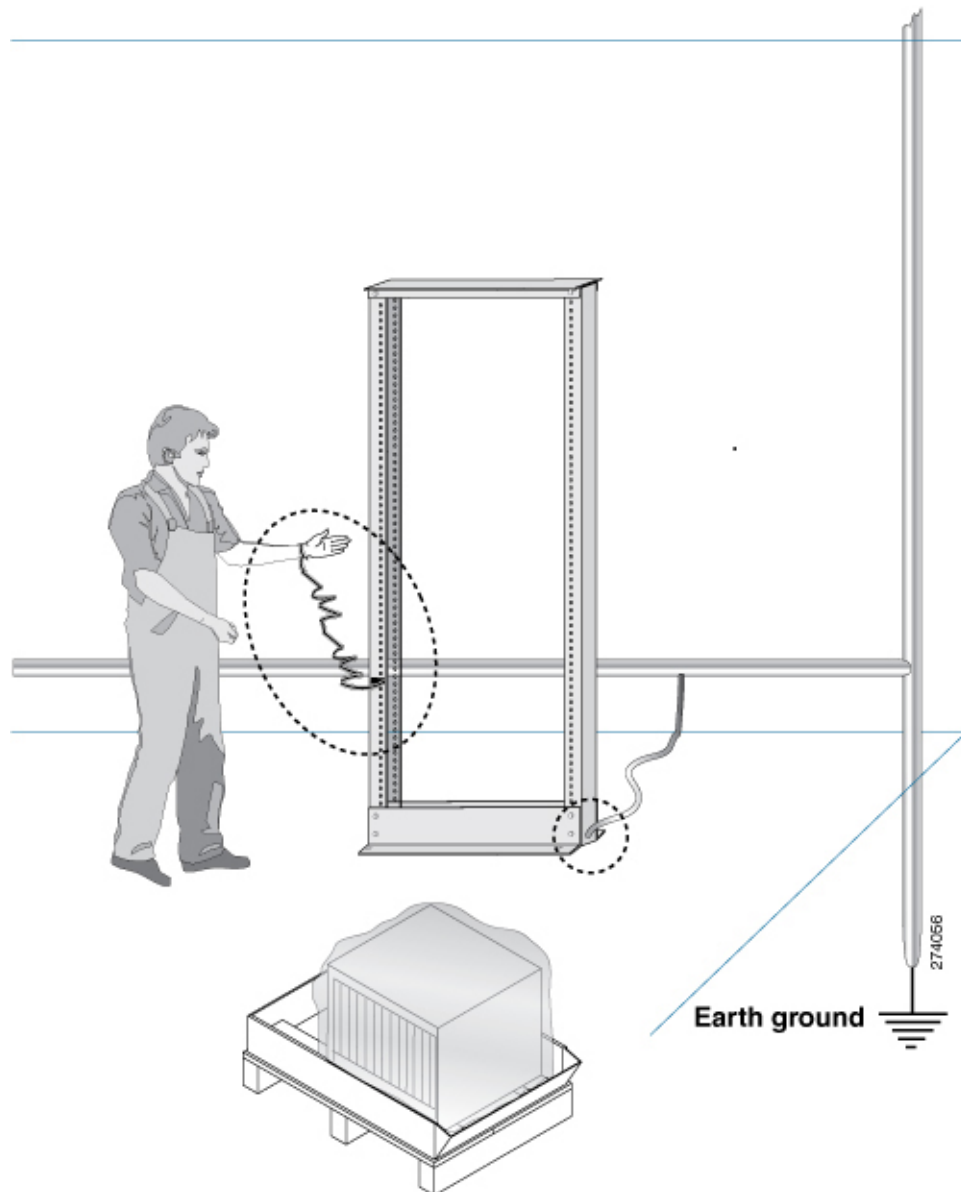
Prepare Rack for Chassis Installation

Install the switch 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.

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 clearance distance always, as mentioned in the following figure.

Following figure shows the clearances required for installation of the switch.

Figure 4: Clearances Required Around the Chassis
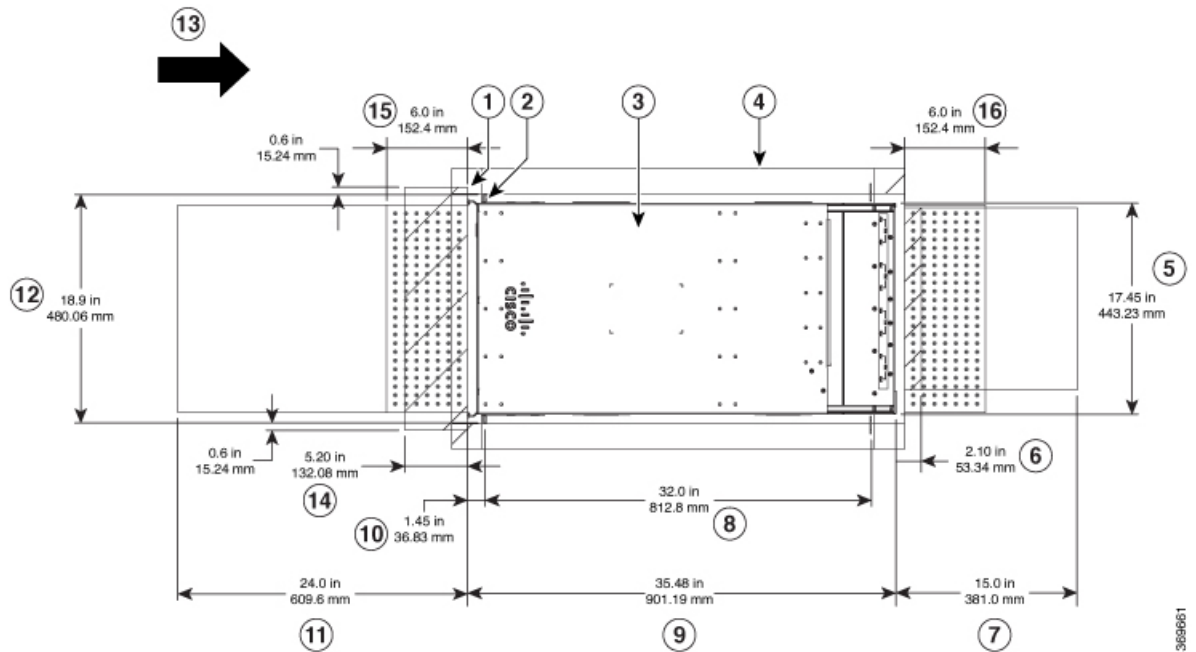
(1) Vertical rack post	(8) Mounting depth of rack vertical rails
(2) Vertical rack rail	(9) Chassis depth
(3) Chassis	(10) Depth from the vertical rack rail to the f...
(4) Outside of the rack (no clearance required)	(11) Front service area for the line card repla...
(5) Rear chassis width	(12) Front chassis width
(6) Clearance required for the fan tray handle at the rear	(13) Airflow direction
(7) Rear service area for the fan tray and fabric card replacement	

Following figure shows the clearances required for the cable management of the switch.

Figure 5: Clearances Required Around the Chassis Door
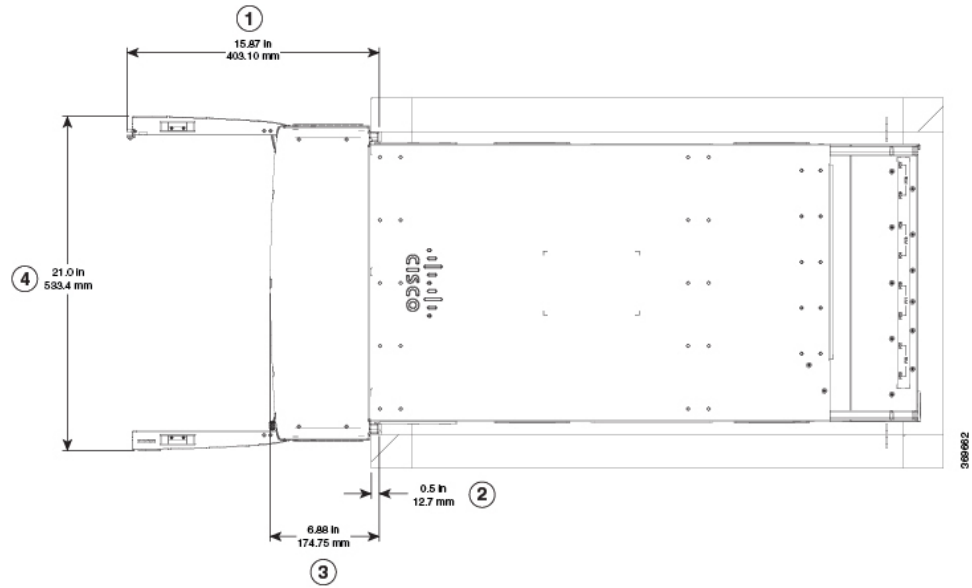
(1) Overall door width on side (in an open position)	(3) Depth of cable management
(2) Maximum vertical rack rail setback, when filters are installed on the chassis	(4) Overall door depth on front (in an open position

Unpack and Install the Chassis

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

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.
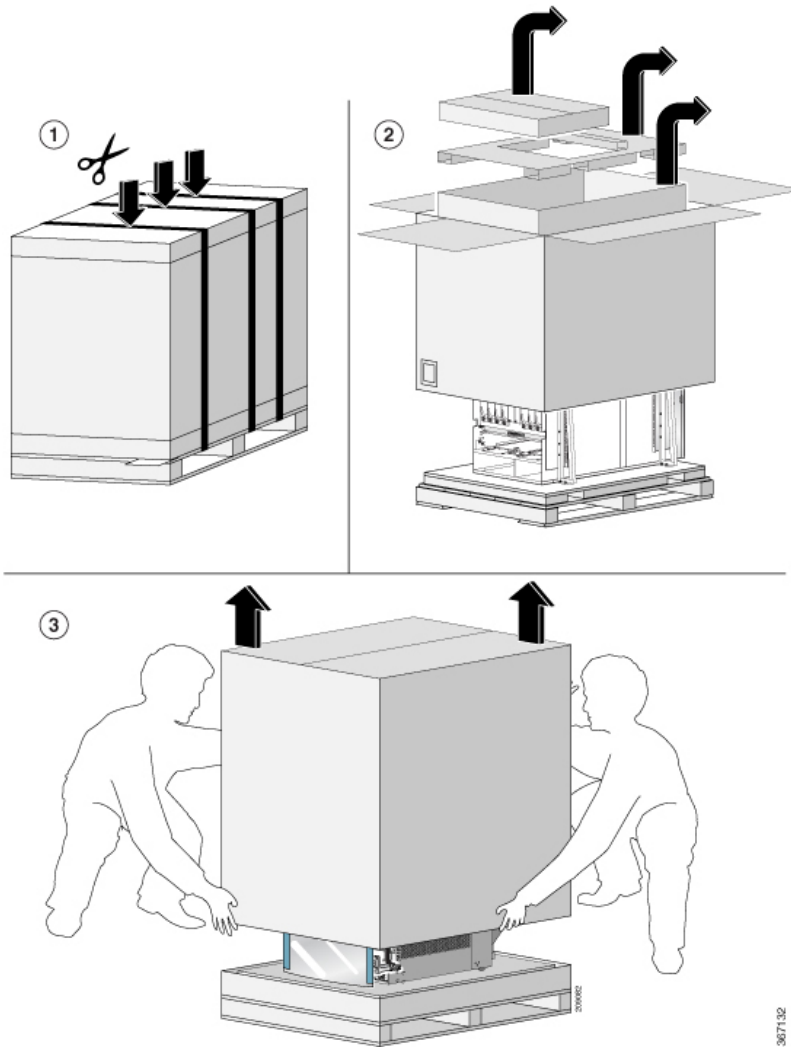
Figure 6: Remove Shipping Brackets from the Chassis
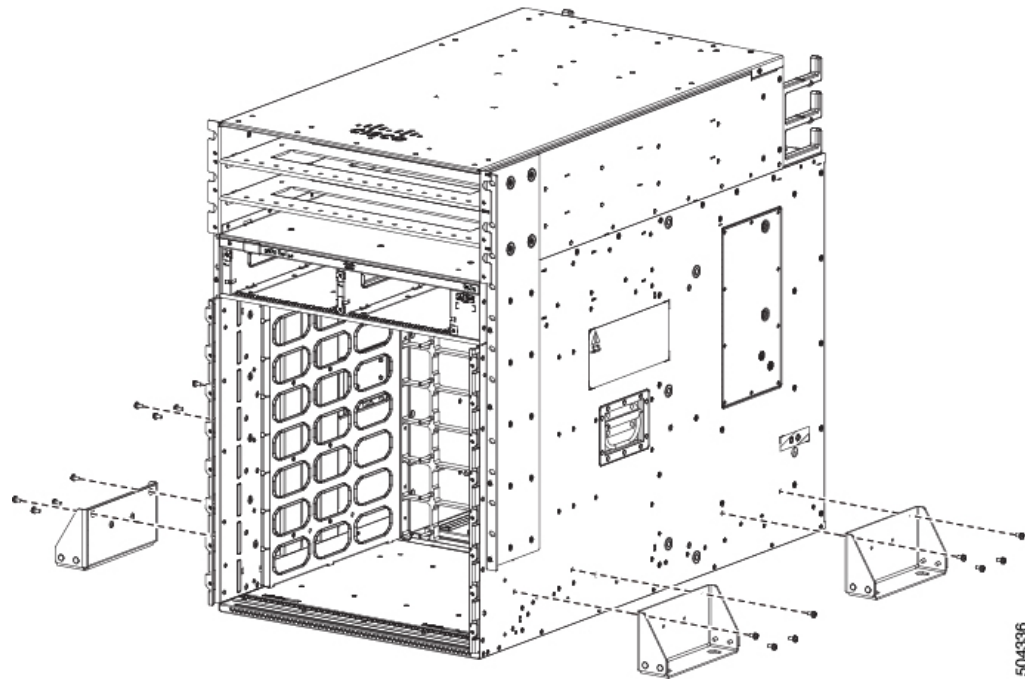
Remove the shipping brackets:

- 16 x M4 screws from the chassis

To make the chassis weigh less for moving, remove the following module and place them where their connectors will not be damaged:

- Fan trays

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

Install Bottom-Support Rails

The bottom-support rails support the weight of the chassis in the rack. To maximize the stability of the rack, you must attach these rails at the lowest possible rack unit (RU).

Procedure

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

- Maintain at least 16 RU (28 inches [71.12 cm]) for 9808 chassis of vertical space above support rails.

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 7: Attach Bottom-Support Rails to a Rack
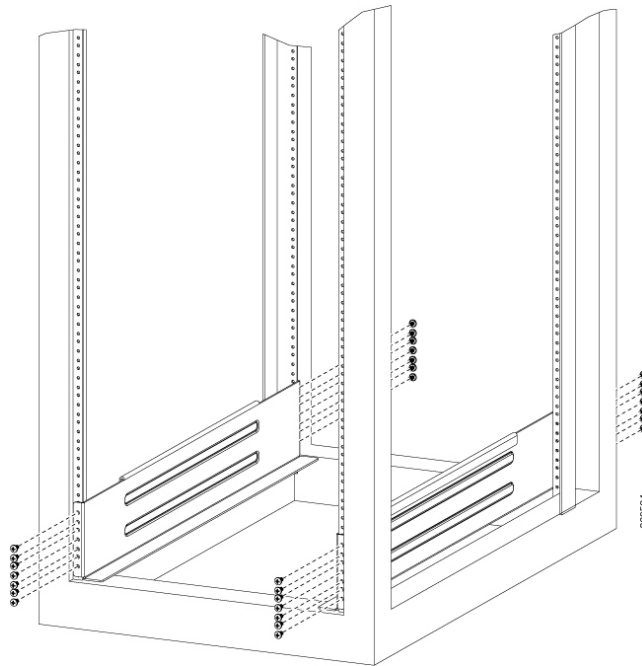
> **Note** Use at least three screws on each end of each bottom-support rail.

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. 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 (or on Line Card side) as shown.

> **Note** Illustrations are for representational purposes only.

Figure 8: 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 from the pallet onto the lifting device as shown.

Figure 9: Move the Chassis on to the Lifting Device
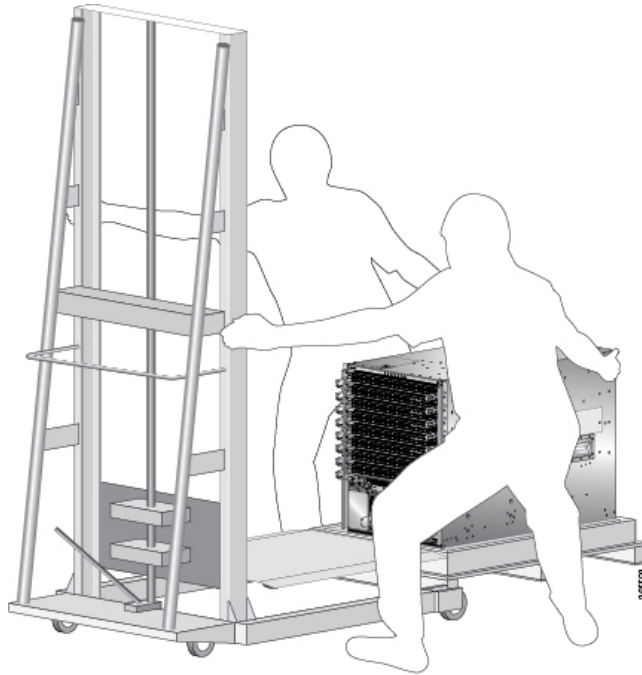
What to do next

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

To accommodate equipment racks with different mounting hole patterns, the chassis mounting brackets have groups of screw holes on either side. The mounting holes in the chassis mounting brackets are spaced so that one mounting hole in each hole group aligns with a corresponding hole in the equipment rack. By using the corresponding mounting hole (in the same hole group) on the opposite side of the chassis, you can level the chassis in the rack.

Note　To lift the chassis, use a mechanical lift. Do not use the handles on the side of the chassis. Use the side handles for only repositioning the chassis after it is already on the mechanical lift or in the rack or cabinet.

Procedure

Step 1　Using your mechanical lift, raise the chassis so that it is in level with or not more than 1/4 inch [0.635cm] above the rails.

Step 2 Push the chassis all the way onto the rack so that the vertical mounting brackets on the front of the chassis come in contact with the vertical mounting rails on the rack.

Step 3 Use screws provided with the rack to secure the chassis with the vertical mounting rails on the rack.

Figure 10: Attach Chassis to Rack - Front

Note You should remove the power shelf to facilitate attaching chassis to the rack.

Step 4 Use the screws provided with the rack to attach the chassis rear rails.

Figure 11: Attach Chassis to Rack - Rear Right View
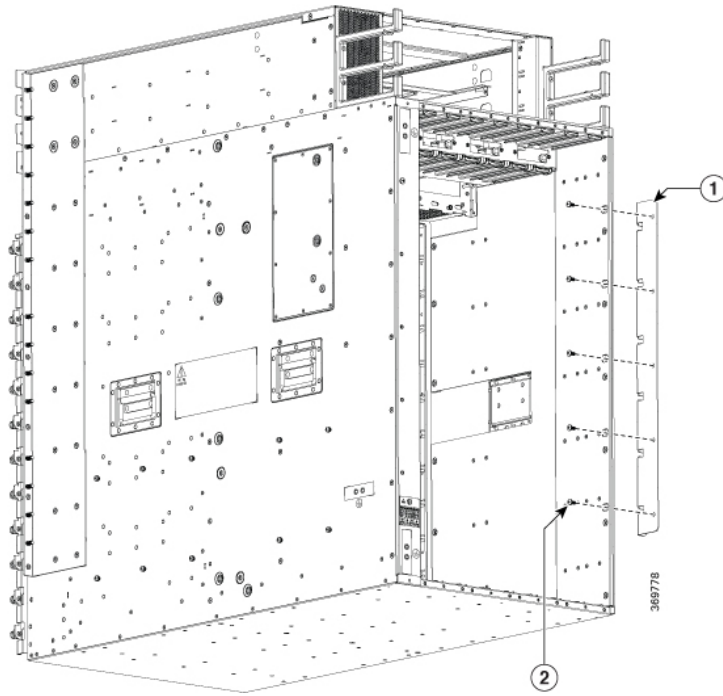
1	Rear right rack mounting bracket.	2	Install screws from inside the chassis to tight 26 in-lbs (2.93 N-m) of torque.

Figure 12: Attach Chassis to Rack - Rear Left View
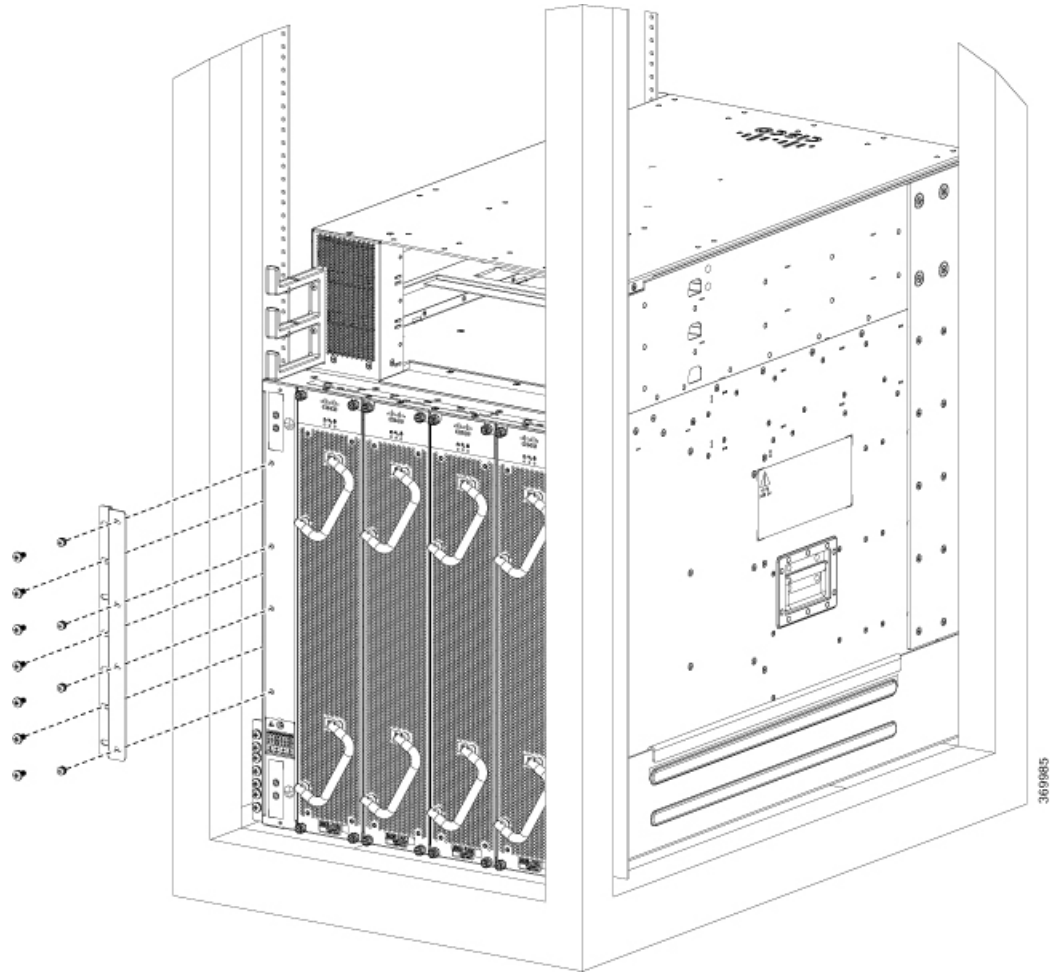
Figure 13: Attach Chassis to Rack - Rear Right View
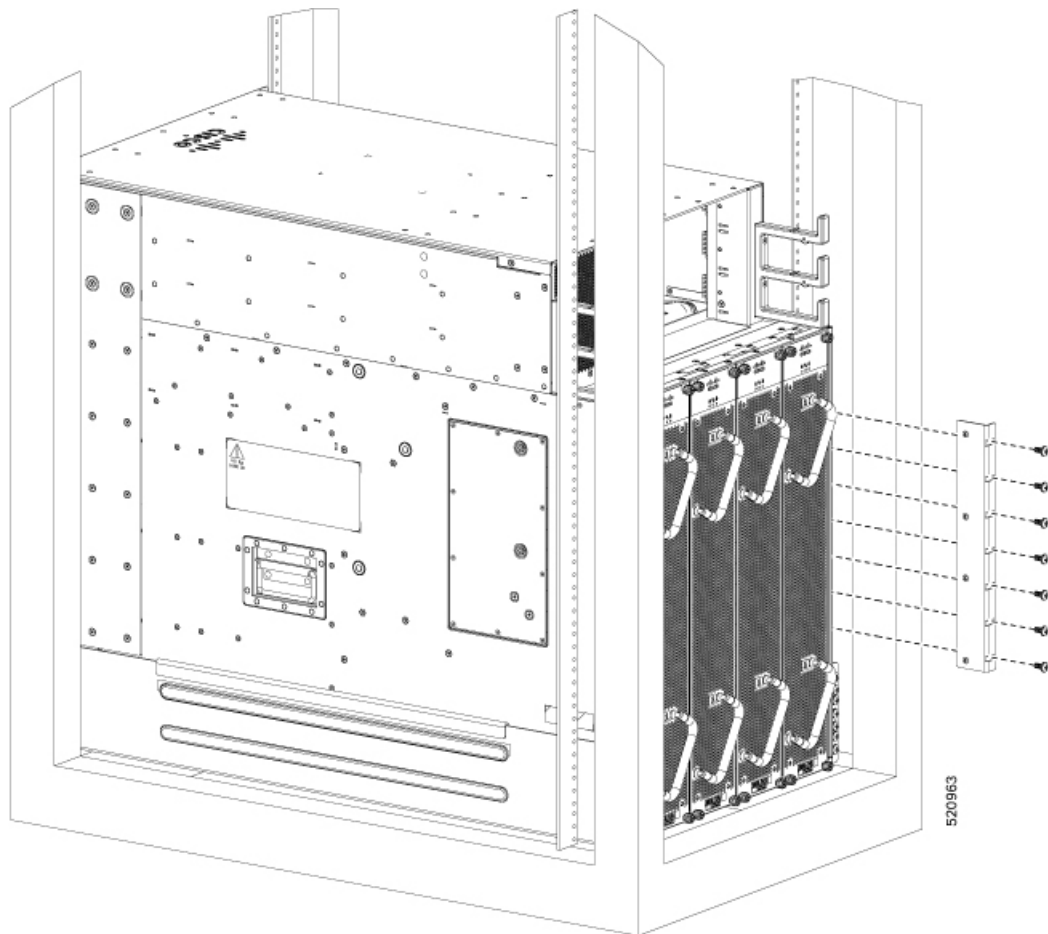
> **Note**   We provide 10-32 screws to secure the left and right bracket. The screws to attach bracket to rack come from rack supplier.

What to do next

Connect the chassis to the ground at your facility.

Ground the Chassis

Procedure

Step 1   Locate the chassis grounding receptacles on your chassis.

You can locate them at the following position:

- At the left side panel, lower section towards the rear

Figure 14: Chassis Ground Receptacles
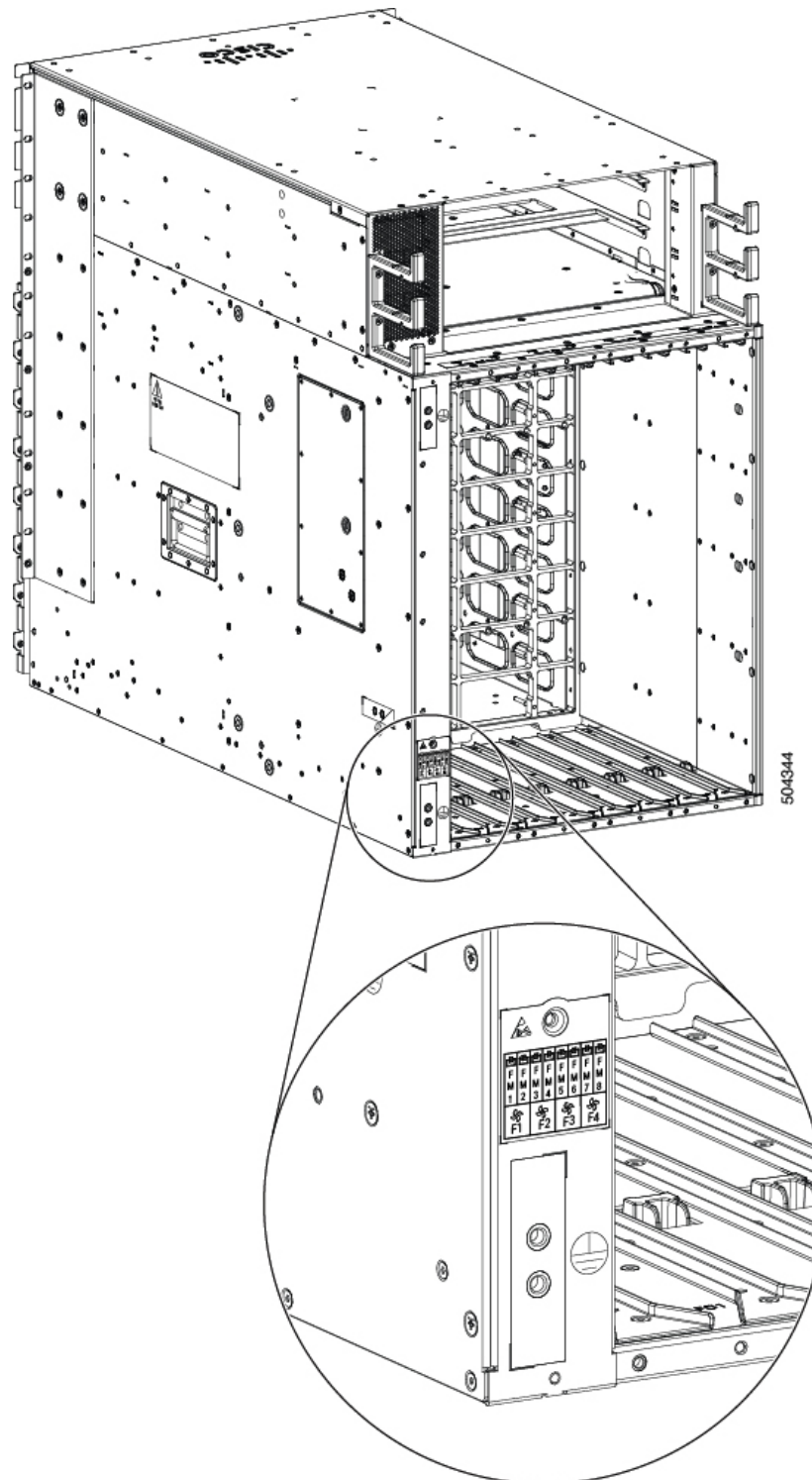
Step 2   Use the wire stripper to strip one end of the 2-AWG wire approximately 0.75 inches (19.05 mm).

Step 3   Insert the 2-AWG wire into the wire receptacle on the grounding lug.

Figure 15: Ground the Chassis
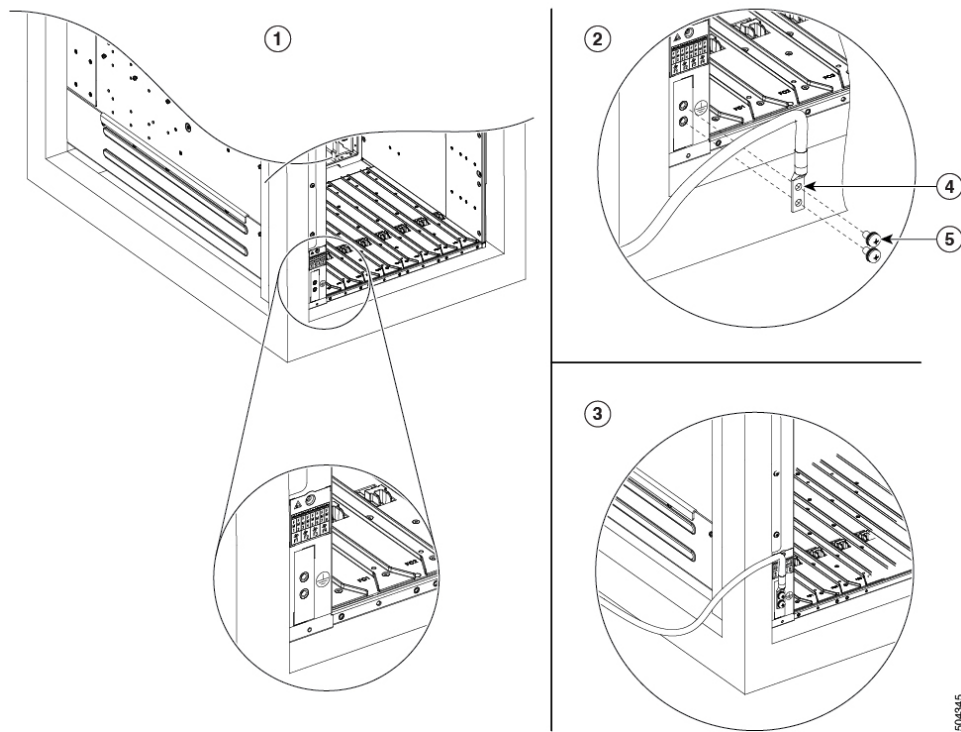
1	Locate ground	4	Align the lug holes
2	Prepare lug	5	Tighten the screws
3	Ground the chassis		

Step 4 Use the crimping tool to carefully crimp the wire receptacle around the wire; this step is required to ensure a proper mechanical connection.

Step 5 Insert the two screws through the holes in the grounding lug. Ensure that the grounding lug does not interfere with other hardware components.

Step 6 Use the Phillips screwdriver to carefully tighten the screws to 60 in-lbs 6.7 (N-m) of torque until the grounding lug is held firmly to the chassis. Do not overtighten the screws.

Step 7 Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

What to do next

Attach the chassis doors.

Install Cable Management on a Chassis

Before you begin

The chassis must be installed and secured to the rack.

Required tools and equipment:

- Phillips screwdriver with a torque capability (customer supplied)

- Cable management brackets (N9K-C9808-CM-KIT).

Note The cable management assembly is shipped with the chassis.

Procedure

Step 1 Position one of the cable management brackets on the vertical mounting bracket so that the screw holes are aligned.

Figure 16: Cable Management Brackets

Step 2 Secure the left and right cable management brackets to the chassis vertical mounting brackets with M4 x 18-mm screws, flat-head Phillips screws (use all screws provided in the kit). Insert one screw at the top and

one at the bottom, likewise add more screws in this sequence. The number of screws may vary based on the chassis.

Note   Do not fully tighten the screws until the cable management brackets, bottom cover, and top hood are installed.

Step 3   Repeat Steps 1 and 2 to attach the other cable management bracket to the vertical mounting bracket on the opposite side of the chassis.

Step 4   Remove the power shelf bezel from the chassis and proceed with bottom cover and top hood installation.

Step 5   Position the bottom cover, with its brackets pointing up, to the bottom of the two side cable management bracket screw holes.

Figure 17: Bottom Cover
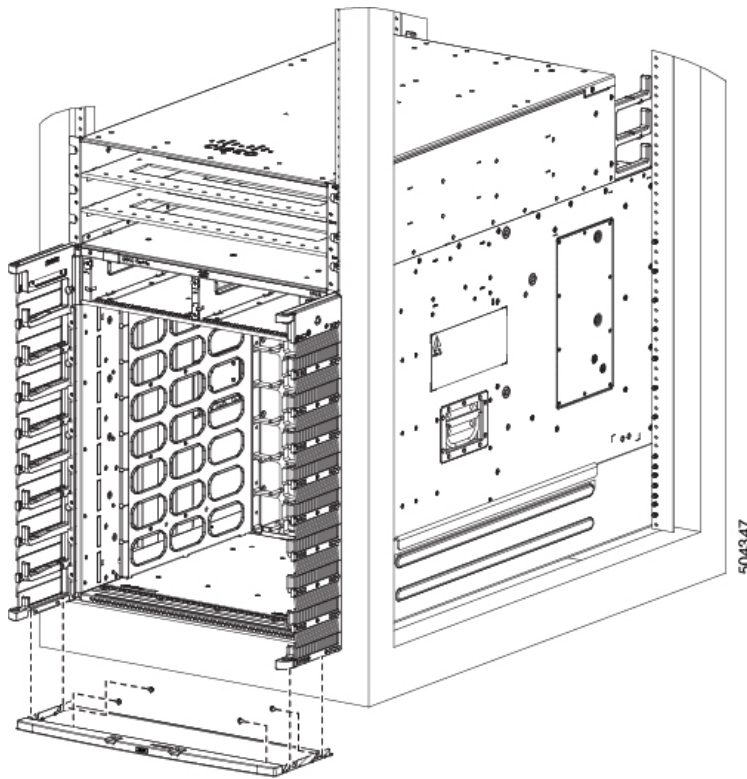
Step 6   Secure the bottom cover to the cable management brackets by using four M4 x 6 mm pan-head Phillips screws. Tighten each screw to 11.5 to 15 in-lb (1.3 to 1.7 N·m) of torque.

Step 7   Before you install the top hood, remove the connector cap from the alarm cable.

Figure 18: Remove Connector Cap
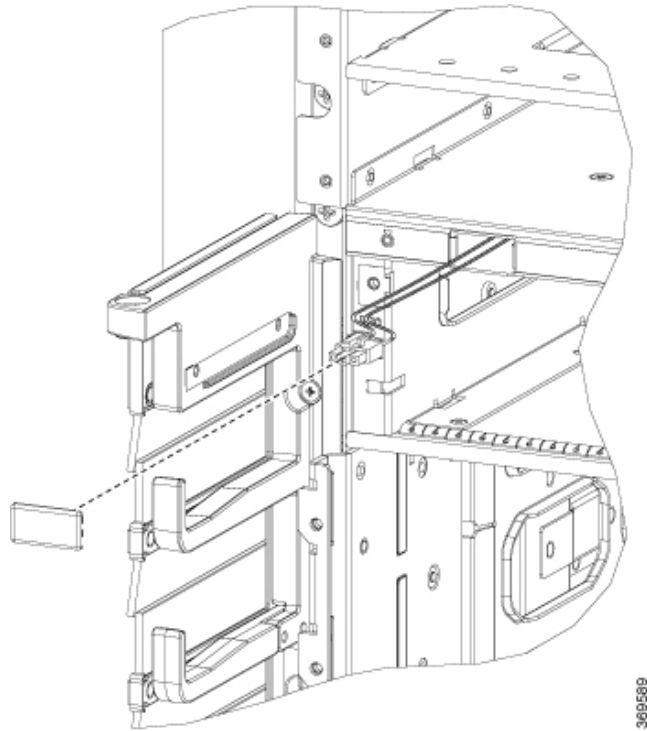
Step 8   Connect the alarm cable to the top hood.

Figure 19: Connect Alarm Cable
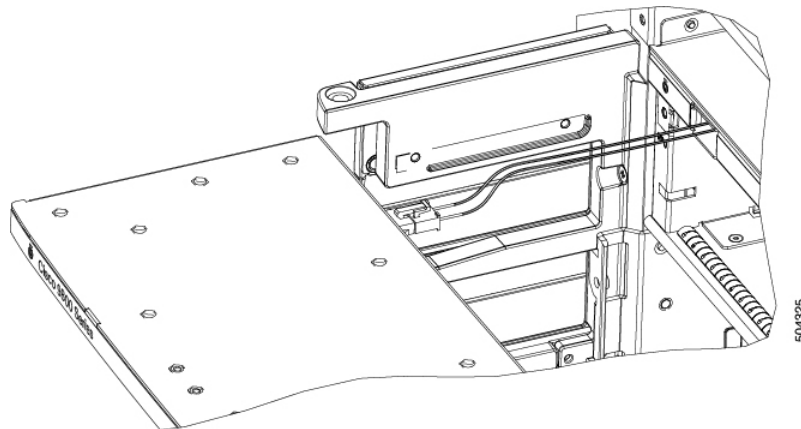
Note   Door open alarm is supported in the chassis.

Step 9   Position the top hood, with its brackets pointing down, above the cable management bracket screw holes.

Figure 20: Top Hood
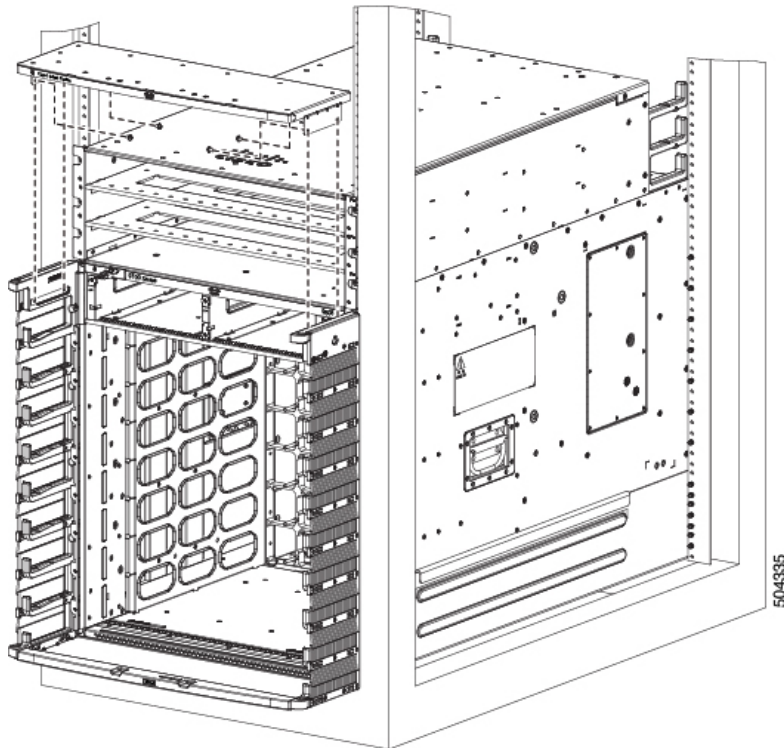
Step 10   Secure the top hood with the cable management brackets by using four M4 x 6 mm pan-head Phillips screws. Tighten each screw to 11.5 to 15 in-lb (1.3 to 1.7 N·m) of torque.

Step 11   Tighten the cable management brackets screws to 11.5 to 15 in-lb (1.3 to 1.7Nm) of torque after completing the bottom cover, and top hood installation.

Attach Front Door to Chassis

Before you begin

Before you can attach the front door to the chassis, you must attach the cable management brackets, bottom plate, and top hood onto the chassis.

Required tools and equipment:

- Phillips screwdriver with a torque capability (customer supplied)

- Door kit (N9K-C9808-DF-KIT)

Note   The door kit is optional.

Procedure

Step 1   Remove the power shelf bezel from the chassis, if already installed.

This is to ease the installation of chassis doors.

Step 2   On the back side (open side) of one door, pull in on two protruding spring pins so that the pins are held inside the door frame.

Figure 21: Front Door Pins
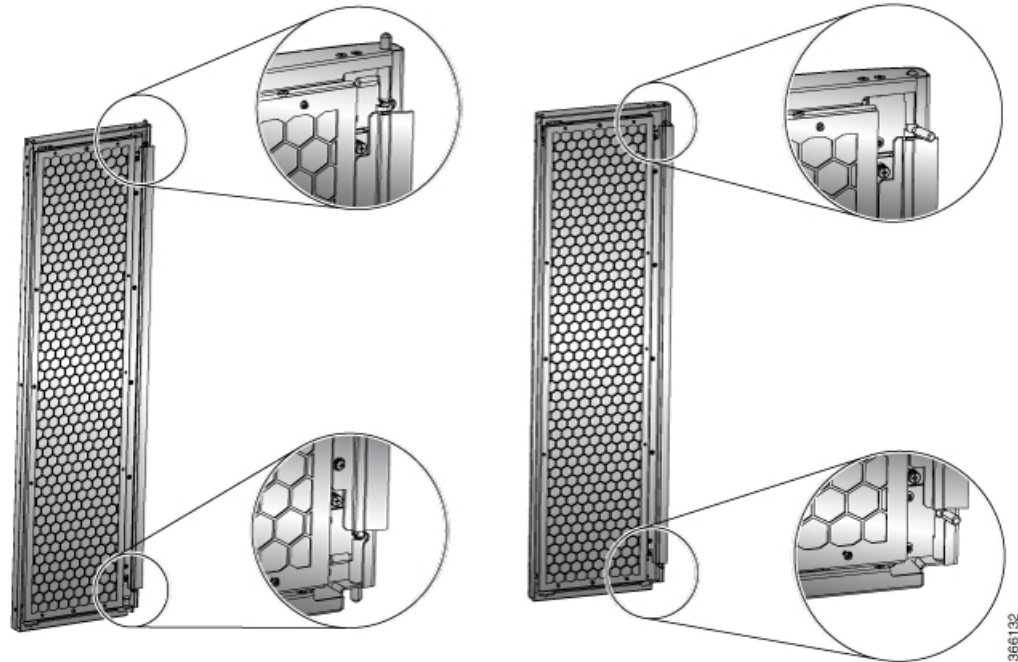
Step 3   Align the spring pin to hole in the bottom plate and release the spring pin, so that they insert into the bottom hole.

Figure 22: Attach Front Door
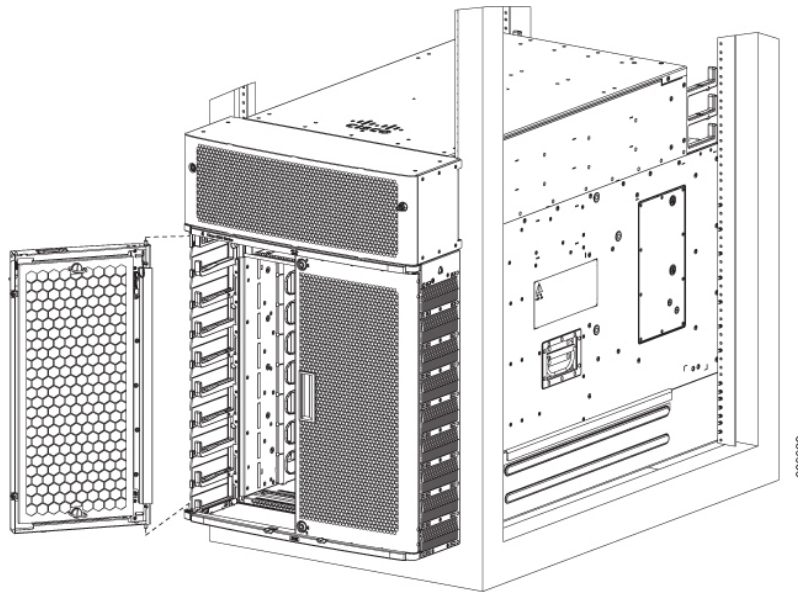
Step 4	Now align the spring pin to hole in the top hood and release the spring pin.
Step 5	Ensure the pins are properly inserted into the holes so that the door can freely swing on the spring pins.
Step 6	Repeat Steps 2–5 to install the other front door.
Step 7	Ground the front door.

For information on grounding the front door, see Ground the Front Door, on page 36.

Step 8	Replace the power supply bezel and secure it with the provided jackscrews.

For information on replacing the power supply bezel, see Install Power Shelf Bezel, on page 95.

Note   Install the following modules, if you had them removed from the chassis while mounting into the rack.

- Fan trays

For more information on replacing components, see Replace a Fan Tray.

Ground the Front Door

Note   To comply with GR-1089, you have to bond the front doors to the ground port on the chassis using the ground braid.

Procedure

Step 1 Install the grounding cable towards the side of the front door.

Step 2 Apply the star ring terminal end of the grounding cable to the front door. Tighten the screw to 11.5 to 15 in-lb (1.3 to 1.7 N-m) of torque to provide proper bonding.

Figure 23: Ground Cable to Chassis
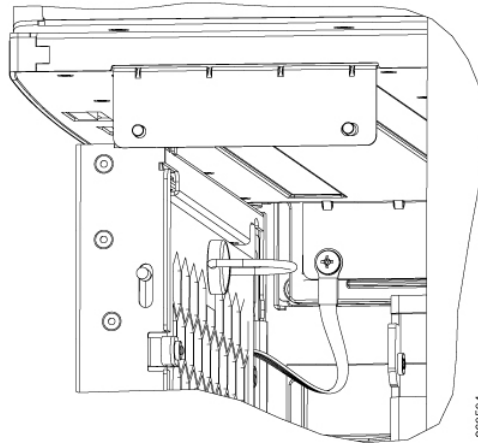
Note Fasten the ground straps on both the doors to the chassis.

Step 3 Connect the other round terminal of the grounding cable to the ground port on the cable management bracket on either left or right side of the chassis. Use the front hole of the bracket that connects the top cover to the cable management bracket. Tighten the M4 screw to 11.5 to 15 in-lb (1.3 to 1.7 N-m) of torque.

Step 4 Repeat Steps 1–3 to install the grounding cable to the other front door.

Step 5 Close and lock the front door.

What to do next

Continue to power on the switch.

Powering on the Switch

Powering on the Switch

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

Power Module Overview

You can install an AC or a DC power module 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.

The chassis has a power assembly shelf that supports the following number of power trays:

• Cisco 9808 chassis supports up to three power trays

Each power tray supports up to three AC power modules or four DC power modules.

Note Use only one kind of power tray and power module in the chassis.

Note Use only the same capacity power module in the chassis. Do not mix different capacity power modules.

High-Voltage AC / DC Power Supplies

HVAC/HVDC power modules operate in the input range of 180 VAC to 305 VAC (nominal input level of 200 to 240 VAC, 277 VAC) and 192 to 400 VDC (nominal 240 VDC, 380 VDC).

• NXK-HV-6.3KW20A-A: Each 6.3 KW, 20A power module can supply up to 6.3 KW to the power tray when it's supplied by two feeds (A and B). It can supply up to 3.15 KW with only one feed.

• NXK-HV-6.3KW30A-A: Each 6.3 KW, 30A power module can supply up to 6.3 KW to the power tray when it's supplied by two feeds (A and B). It can supply up to 4.8 KW with only one feed.

DC Power Supplies

• NXK-DC-4.4KW-A: The 4.4KW power supply that accepts a nominal input voltage of 48V 60A DC, with an operational tolerance range of -40 to -72 VDC.

Figure 24: PWR-4.4KW-DC-V3
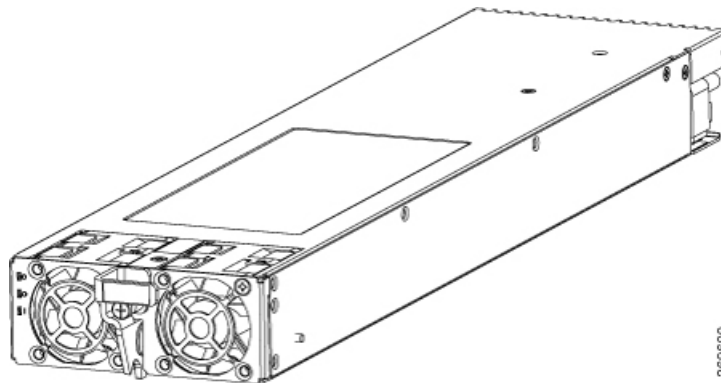
Note The power mode switch must be in the same position for all power trays installed in the chassis, either 60A or 100A mode.

Figure 25: Power Mode Switch on the Power Tray
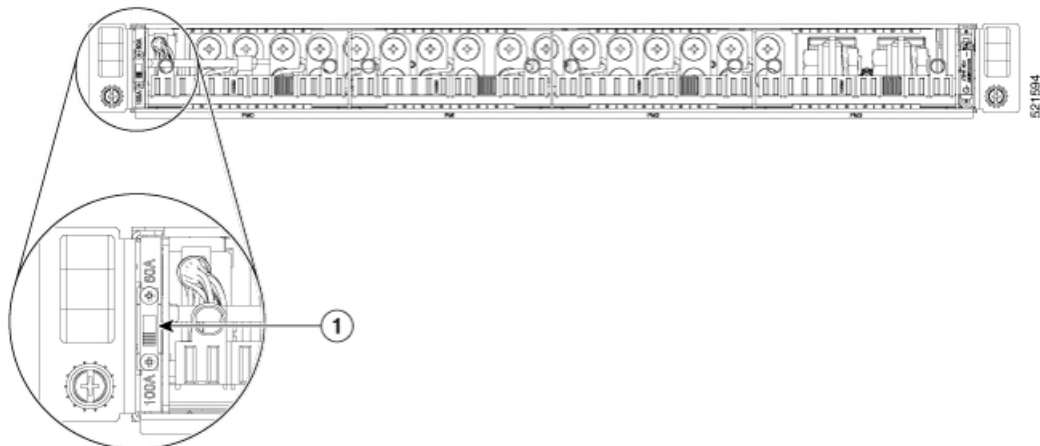
1	Power mode switch.

A plug cover is also provided to block the access to the power mode switch as shown in the below figure:

Figure 26: Power Mode Switch Cover
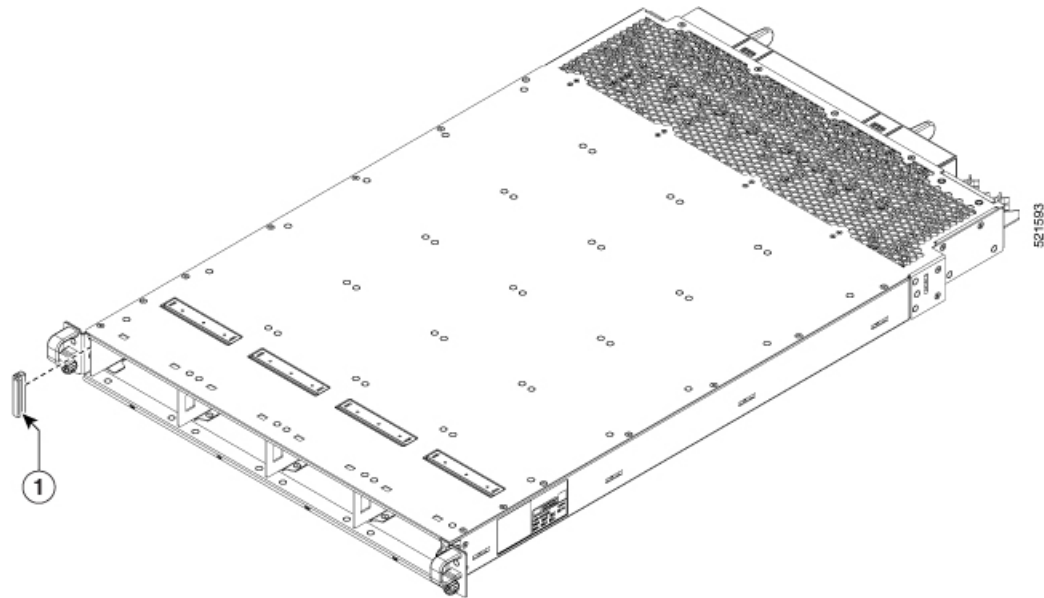
1	Power mode switch cover.

Connect DC Power Supply to Power Source

This section contains the procedures to connect the DC source power cables to a DC-powered switch.

For DC power cables, we recommend that you use 60A-rated, high-strand-count copper wire cables (#6 AWG or #4 AWG), or 100A-rated high-strand-count copper wire cables (#2 AWG) . The length of the cables depends on your switch location from the source power. DC power cables are not available from Cisco, but they are available from any commercial cable vendor.

You must terminate DC power cables using cable lugs at the power tray end. Ensure that the lugs are right-angle dual-hole and that they fit over to allow quarter inch screws at 0.625-inch (15.88-mm) centers. For #4 AWG cable, use Panduit part number LCD4-14AF-L or equivalent; for #6 AWG, use Panduit part number LCD6-14AF-L or equivalent; for #2 AWG cables, use Panduit part number LCD2-14AF-Q or equivalent.

If you are not using power redundancy or are using n+1 power redundancy, you can connect all the power supplies in the chassis to the same power grid on the rear end of each power tray. If you are using n+n power redundancy, connect one redundant grid to one of the power supply inputs and the other redundant grid to the other power supply input on the back of the power tray as shown for each power supply.

The color coding of source DC power cable leads depends on the color coding of the site DC power source. Ensure that power source cables are connected to the power module with the proper positive (+) and negative (−) polarity:

  • After powering on the switch, you should see an LED (for each input) light up green on each power shelf. If LEDs light up red that indicates that the polarity is incorrect.

This figure shows the lug type required for DC input cable connections.

Figure 27: Typical DC Power Cable Lug

⚠️
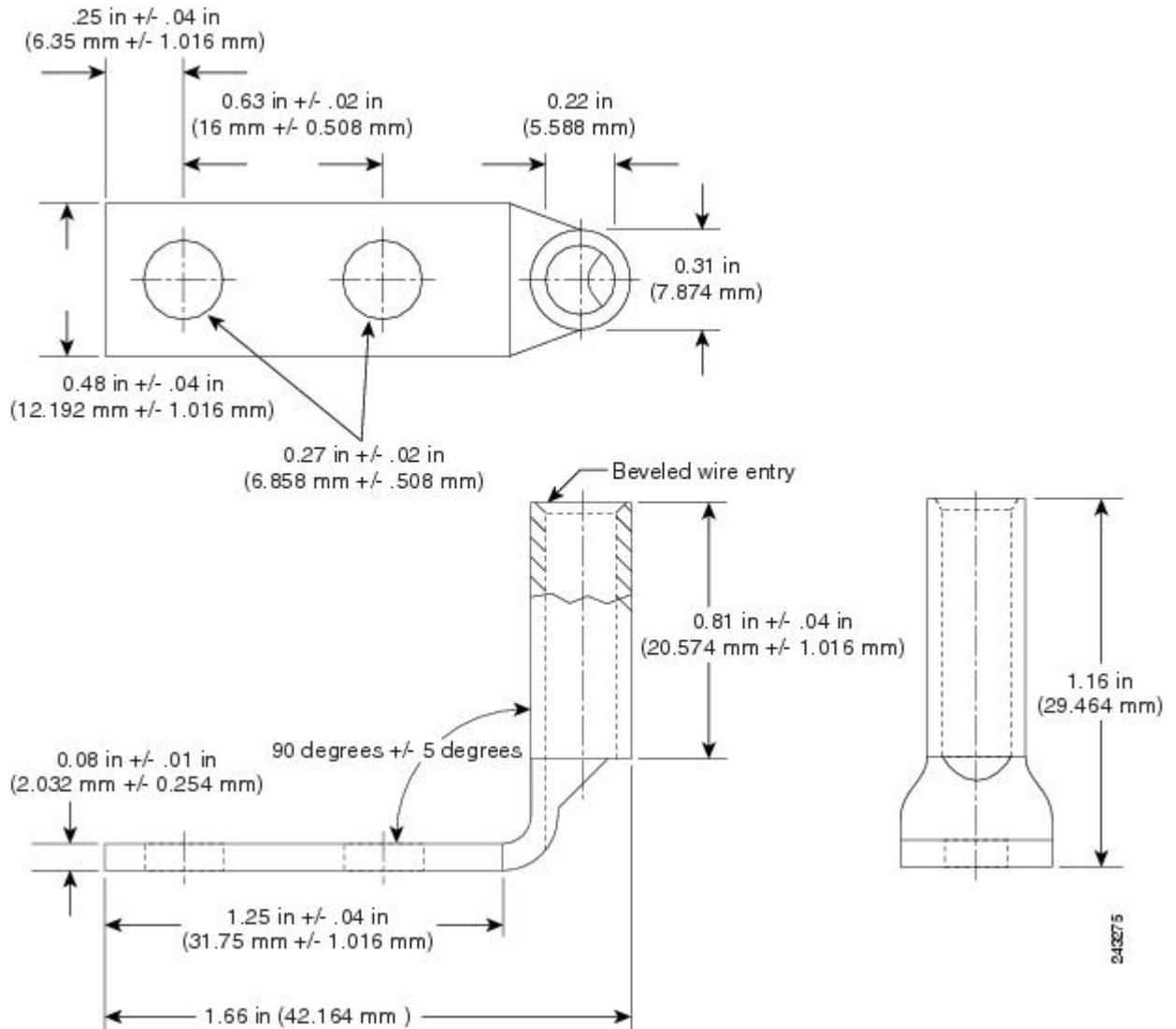
Caution   DC power modules contain circuitry to create a fault condition on the power module if the power module detects a reverse polarity condition. No damage should occur from reverse polarity, but ensure to correct a reverse-polarity condition immediately.

✎

Note   The length of the cables depends on the location of your switch in relation to the source of DC power. These cables and the cable lugs that are used to attach the cables to the switch chassis are not available from Cisco Systems. They are available from any commercial cable vendor.

⚠️

Caution   To ensure that power remains off while you are performing this procedure, lock-out/tag-out the DC circuit breaker switch in the off (0) position until you are ready to turn it on.

Follow these steps to connect the DC source power cables to a DC power tray:

Procedure

Step 1   Verify that the power tray switch is set to the STANDBY (0) position.

Figure 28: DC Power Tray
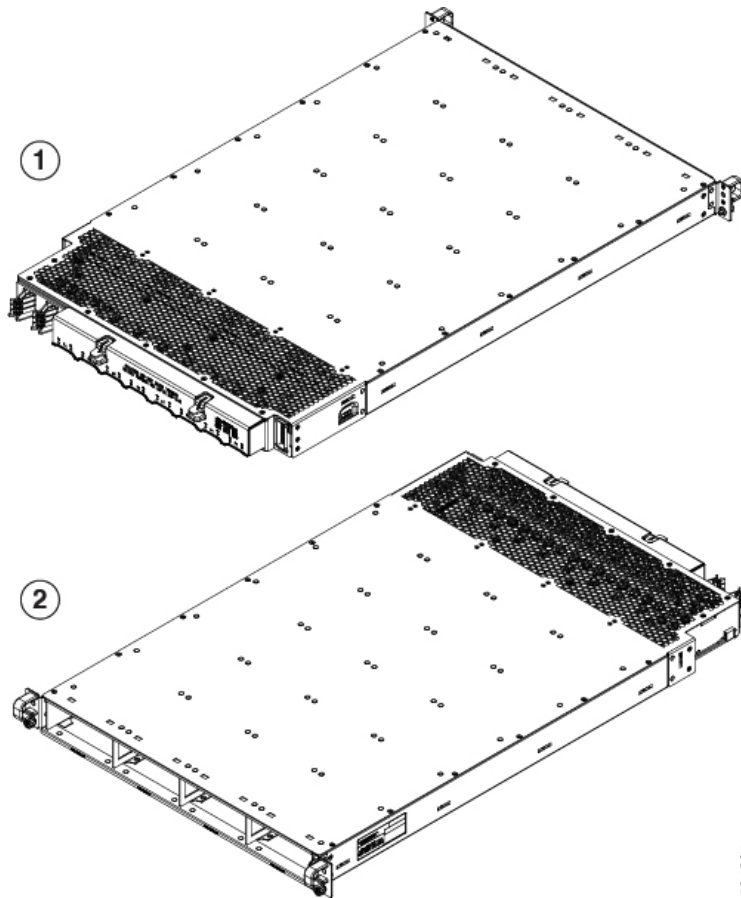
| 1 | Rear | 2 | Front |

Step 2   Remove the clear plastic safety covers that fit over the DC power connection terminal studs.

Figure 29: DC Power Connection
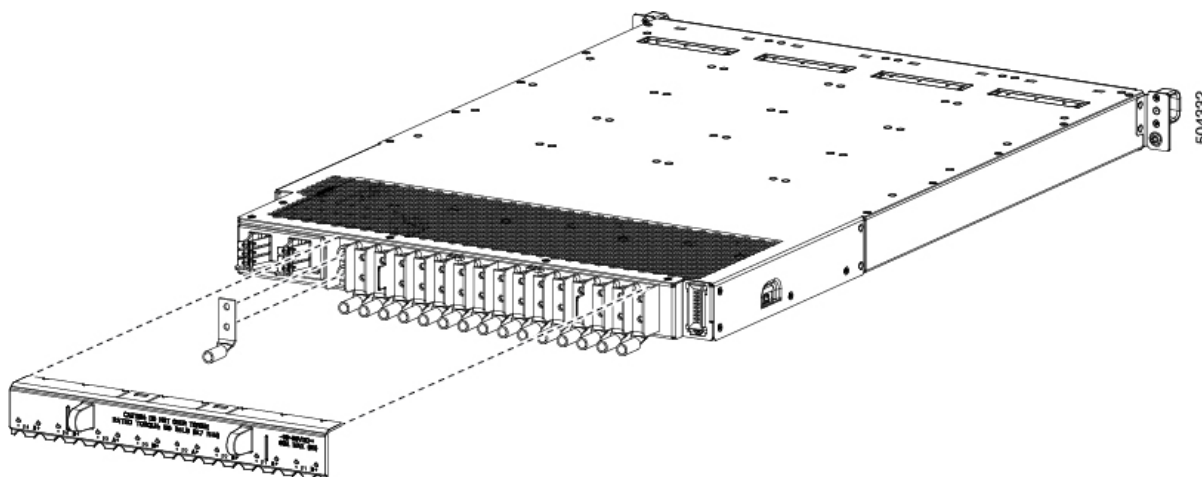
Step 3   Connect the DC power cables in the following order.

    a)   Positive cables first.

    b)   Negative cables last.

Step 4   Repeat Step 3 for the other power modules installed in the tray.

    Caution   To prevent injury and damage to the equipment, always attach the ground and source DC power cable lugs to power tray terminals in the following order: (1) positive (+) to positive (+), (2) negative (–) to negative (–).

    Caution   Do not overtighten the nuts that secure the DC power cables to the power tray terminals. Using the 7/16 hex socket and torque wrench the nuts should be tightened to a torque of 45–50 in-lb.

Step 5   Replace the clear plastic safety covers over the connection terminal studs.

Step 6   Turn on the switch of the power shelf to turn on the system.

Connect HVAC/HVDC Power Supply to Power Source

The HVAC/HVDC power supply has 2 redundant input power lines. It can provide a power output of 6.3 kW from each input power line with 2 inputs operating, or provide 4.8 kW (30A) or 3.15 kW (20A) output from either input with one input operating. The HVAC/HVDC power supply provides $n+n$ or $n+x$ line redundancy mode in a single power supply for the switch.

The HVAC/HVDC power supply accepts a maximum of 305VAC or 400VDC input power.

If you are not using power redundancy or are using $n+1$ power redundancy, you can connect all the power supplies in the chassis to the same power grid on the rear end of each power tray. If you are using $n+n$ power redundancy, connect one redundant grid to one of the power supply inputs and the other redundant grid to the other power supply input on the back of the power tray as shown for each power supply. To enable grid redundancy, you must connect the corresponding inlet of power supplies to the correct power grids. For example, first inlet of all PS slots correspond to Grid-A and second inlet of all PS slots correspond to Grid-B.

Before you begin

- Turn off the power source at its circuit breaker.

- Check that the power switch is set to the STANDBY (0) position on the power tray.

- NXK-HV-6.3KW30A-A: The HVAC or HVDC power sources are rated for 30A maximum input current.

- NXK-HV-6.3KW20A-A: The HVAC or HVDC power sources are rated for 20A maximum input current.

Procedure

Step 1 Choose your power supply (HVAC or HVDC) and use a Saf-D-Grid power cable to connect to the power supply tray.

Step 2 For HVAC input, connect a Saf-D-Grid AC power cable to the Saf-D-Grid receptacle.

Figure 30: HV Power Tray

| 1 | Rear | 2 | Front |
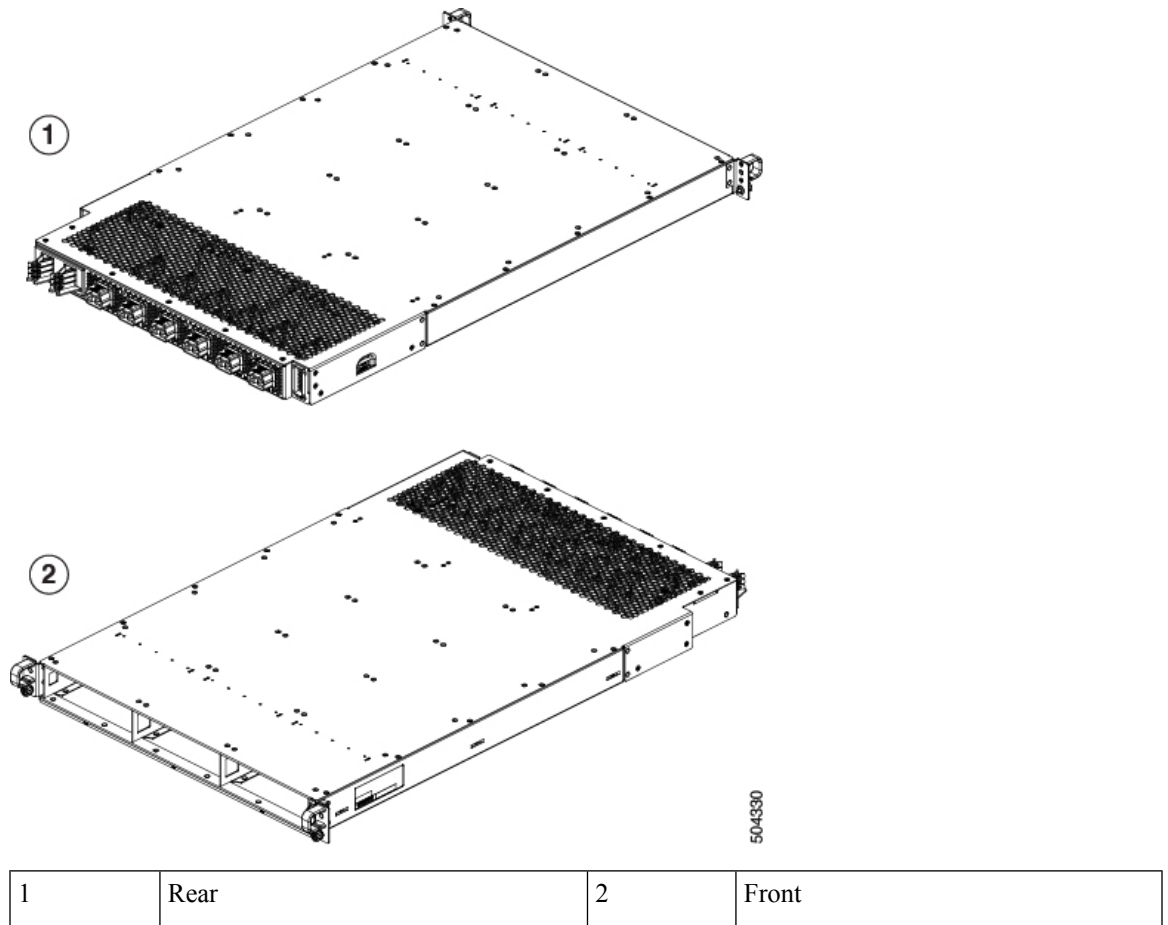
Figure 31: HVAC Power Connection
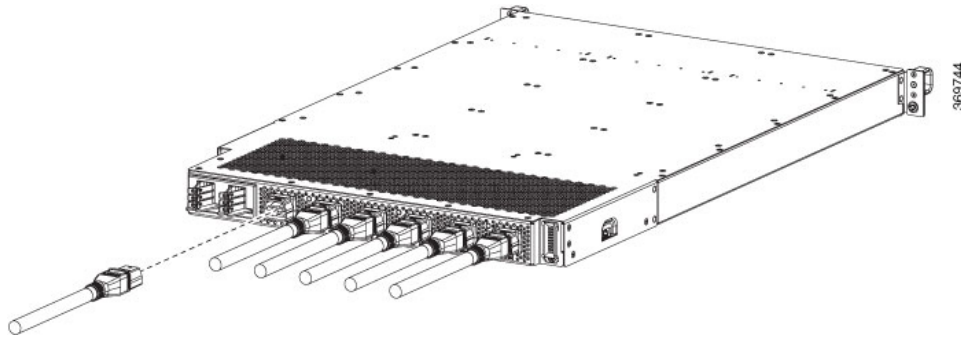
Step 3   For HVDC input, connect a Saf-D-Grid DC cable to a Saf-D-Grid receptacle, otherwise:

a) Connect the ground terminal ring on the power cable to the ground terminal on the DC power source and secure it in place with a nut tightened to the appropriate torque setting for the terminal post.

b) Connect the negative terminal ring on the power cable to the negative (-) terminal on the DC power source and secure it in place with a nut tightened to the appropriate torque setting for the terminal post.

c) Connect the positive terminal ring on the power cable to the negative (+) terminal on the DC power source and secure it in place with a nut tightened to the appropriate torque setting for the terminal post.

Step 4   Verify that the Saf-D-Grid plug is plugged in completely to secure the built-in retaining latch.

Step 5   Turn on the circuit breaker for the HVAC or HVDC power source circuit.

> **Note**   If you use both inputs, the IN LED of the power supply is green. If you use only one input, the IN LED is blinking green.

Step 6   Turn on the switch of the power shelf to turn on the system.

What to do next

Use the **power redundancy-mode** *mode* command to specify one of the following power modes:

   • For combined mode, include the **combined** keyword.

   • For *n*+1 redundancy mode, include the **ps-redundant** keyword.

   • For *n*+*n* redundancy mode, include the **insrc-redundant** keyword.

Example:

```
switch(config)# power redundancy-mode insrc-redundant
switch(config)#
```

Power Supply Power Cord Specifications

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

Table 8: Standard AC and HDVC Power Cords

Locale	Part Number	Cisco Part Number (CPN)	Power Cord Set Rating	Connector Part Number	Power Cord Illustration
North America	CAB-AC-20A-SG-C20	37-1653-01	20A, 250VAC	Saf-D-Grid 3-5958P4 to IEC 60320 C20	Refer the figure in Power Cord Illustrations, on page 48
IEC/EU, US, CANADA, MEXICO, BRAZIL, NETHERLANDS, IRELAND, FRANCE, UK, GERMANY, SWITZERLAND, NORWAY, SPAIN, ITALY, SINGAPORE, CHINA, SOUTH AFRICA	CAB-AC-20A-NA	37-2126-01	20A, 250VAC	Saf-D-Grid 3-5958P2 to IEC 60320 C20	Refer the figure in Power Cord Illustrations, on page 48
IEC/EU, AUSTRALIA/NEW ZEALAND, SWITZERLAND, ITALY, SOUTH AFRICA, ISRAEL, BRAZIL, ARGENTINA, INDIA	CAB-AC-32A-ANZ, CAB-AC-32A-CHE, CAB-AC-32A-ITA, CAB-AC-32A-BRZ, CAB-AC-32A-ZAF, CAB-AC-32A-ISR, CAB-AC-32A-IND, CAB-AC-32A-ARG	37-101007-01	32A, 250VAC	Saf-D-Grid 3-5958P4 to Hubbell C332P6S Plug	Refer the figure in Power Cord Illustrations, on page 48
NORTH AMERICA	CAB-AC-30A-US1, CAB-AC-30A-US2	37-101008-01, 37-101009-01	30A, 250VAC	Saf-D-Grid 3-5958P4 to VOLEX 174606	Refer the figure in Power Cord Illustrations, on page 48
NORTH AMERICA	CAB-DC-30A-US1, CAB-DC-30A-US2	37-101014-01	30A, 400VDC	Saf-D-Grid 3-5958P4 to Saf-D-Grid 3-5958P4	Refer the figure in Power Cord Illustrations, on page 48
NORTH AMERICA	CAB-AC-30A-US3	37-101013-01	30A, 277VAC	Saf-D-Grid 3-5958P4 to HBL2631	Refer the figure in Power Cord Illustrations, on page 48

Locale	Part Number	Cisco Part Number (CPN)	Power Cord Set Rating	Connector Part Number	Power Cord Illustration
NORTH AMERICA	CAB-AC-30A-US4	37-101018-01	30A, 300VAC	Saf-D-Grid 3-5958P4 to Saf-D-Grid 3-6074P30	Refer the figure in Power Cord Illustrations, on page 48
IEC/EU	CAB-AC-32A-EU	37-101019-01	32A, 300VAC	Saf-D-Grid 3-5958P4 to Saf-D-Grid 3-6074P30	Refer the figure in Power Cord Illustrations, on page 48
IEC/EU	CAB-DC-32A-EU1, CAB-DC-32A-EU2	37-101015-01, 37-101017-01	32A, 400VDC	Saf-D-Grid 3-5958P4 to Saf-D-Grid 3-5958P4	Refer the figure in Power Cord Illustrations, on page 48
CHINA	CAB-AC-32A-CHN	37-101010-01	32A, 250VAC	-	Refer the figure in Power Cord Illustrations, on page 48
KOREA	CAB-AC-32A-KOR	37-101012-01	32A, 250VAC	-	Refer the figure in Power Cord Illustrations, on page 48

Power Cord Illustrations

Figure 32: CAB-AC-20A-SG-C20 Power Cord and Plugs for Standard AC Power Supply
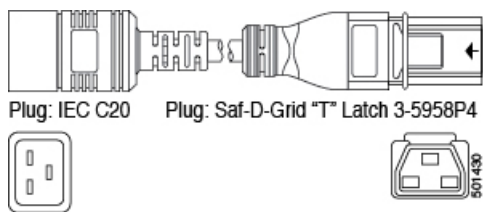
Figure 33: CAB-AC-20A-NA Power Cord and Plugs for Standard AC Power Supply
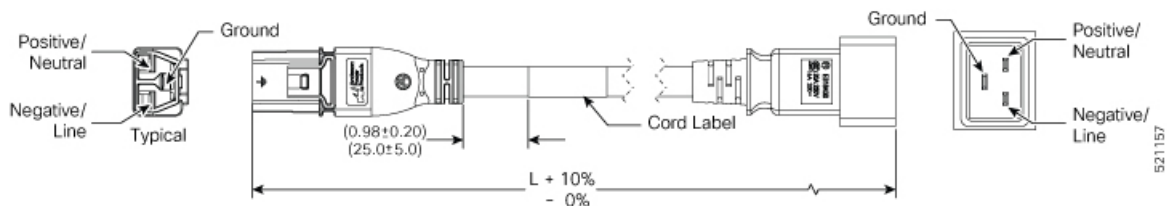
Figure 34: CAB-AC-32A-ANZ, CAB-AC-32A-CHE, CAB-AC-32A-ITA, CAB-AC-32A-BRZ, CAB-AC-32A-ZAF, CAB-AC-32A-ISR, CAB-AC-32A-IND, CAB-AC-32A-ARG Power Cord and Plugs for Standard AC Power Supply
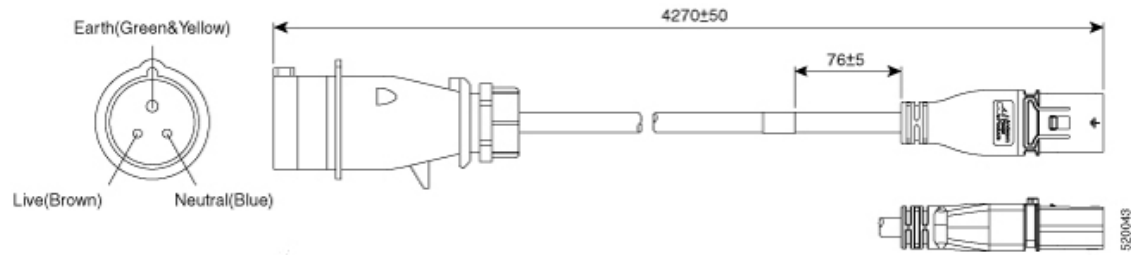
Figure 35: CAB-AC-30A-US1, CAB-AC-30A-US2 Power Cord and Plugs for Standard AC Power Supply
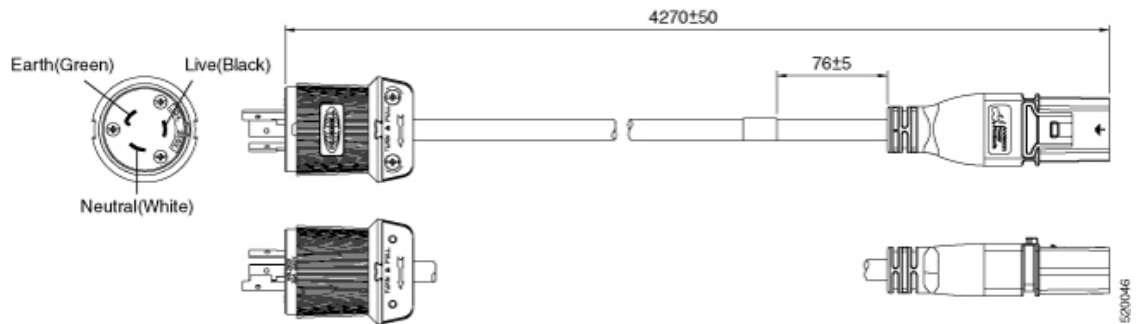
Figure 36: CAB-DC-30A-US1, CAB-DC-30A-US2 Power Cord and Plugs for HVDC Power Supply
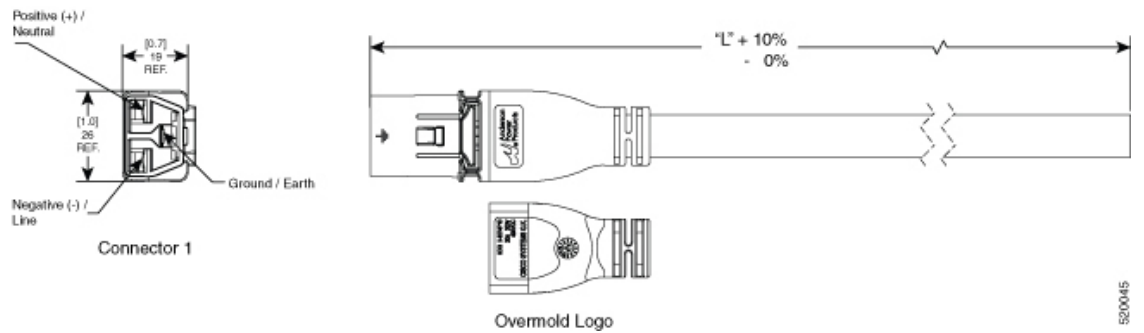
Figure 37: CAB-AC-30A-US3 Power Cord and Plugs for Standard AC Power Supply
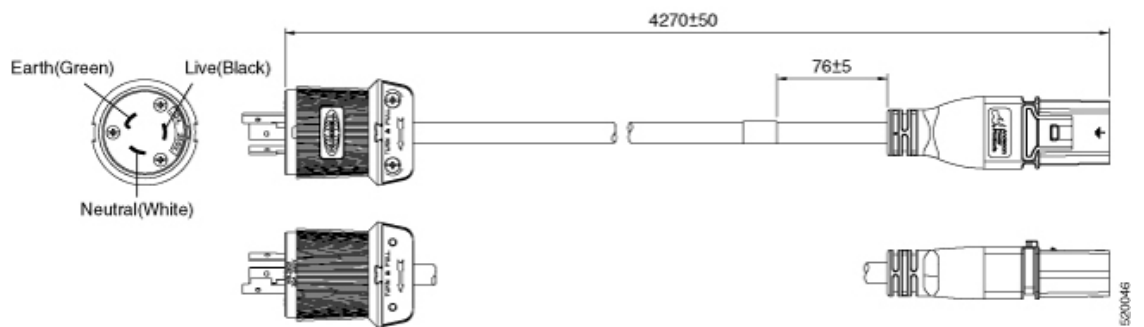
Figure 38: CAB-AC-30A-US4 Power Cord and Plugs for Standard AC Power Supply
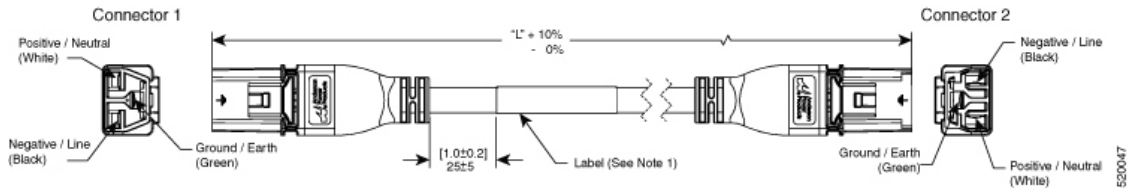
Figure 39: CAB-AC-32A-EU Power Cord and Plugs for Standard AC Power Supply
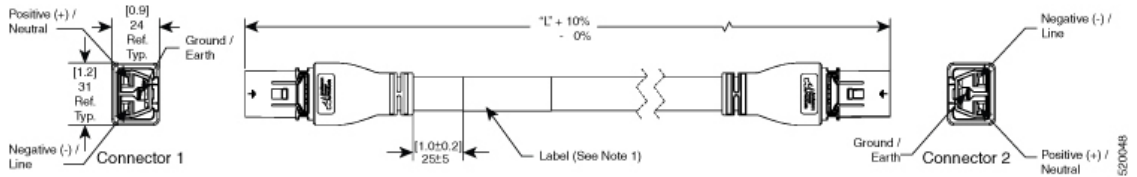
Figure 40: CAB-DC-32A-EU1, CAB-DC-32A-EU2 Power Cord and Plugs for HVDC Power Supply
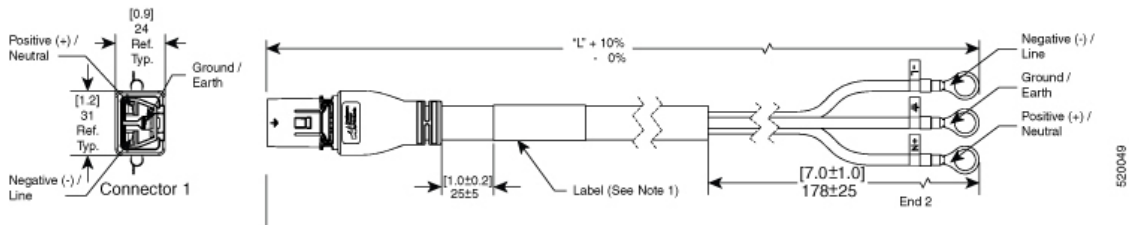
Figure 41: CAB-AC-32A-CHN Power Cord and Plugs for Standard AC Power Supply
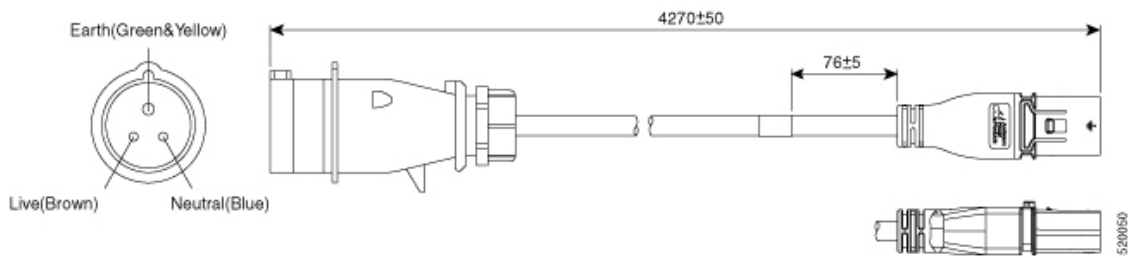
Figure 42: CAB-AC-32A-KOR Power Cord and Plugs for Standard AC Power Supply
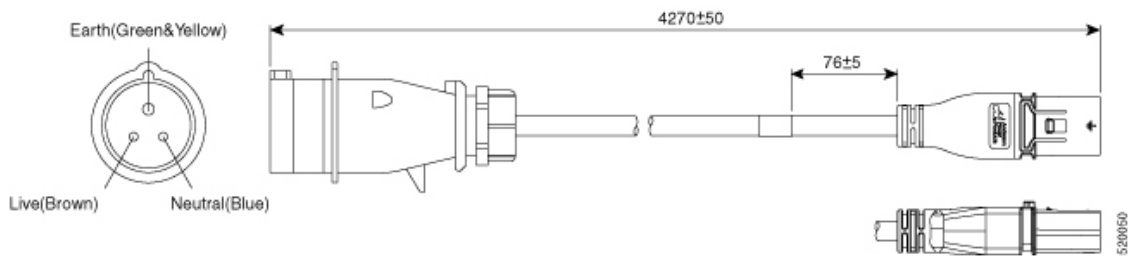
CHAPTER 5

Connect Switch to the Network

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

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 Supervisor module and a console device capable of asynchronous transmission. Typically, you can use a computer terminal as the console device. On the Supervisor module, you use the console serial port.

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:

• 115200 baud

• 8 data bits

• 1 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 Supervisor Module's 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.

Note
In a dual Supervisor Module switch, you can ensure that the active Supervisor Module is always connected to the network by connecting the management interface on both Supervisor Module to the network. That is, you can perform this task for each Supervisor Module. When the Supervisor Module is active, the switch automatically has a management interface that is running and accessible from the network.

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 on the Supervisor Module.
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 on each of the line cards 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 43: RJ-45 Connector
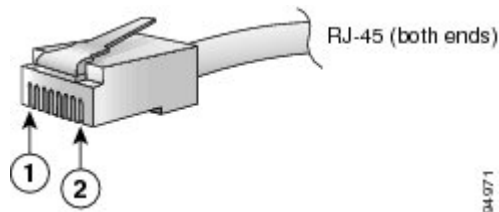
1	Pin 1	2	Pin 8

Install and Remove QSFP 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.

The following figure shows a 400-Gigabit QSFP-DD optical transceiver.

Figure 44: 400-Gigabit QSFP-DD Transceiver Module
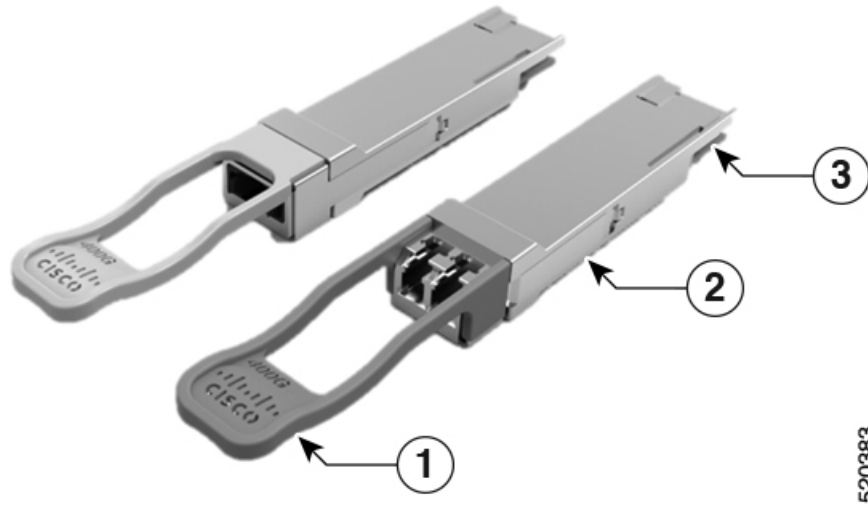
1	Pull-tab	2	QSFP-DD transceiver body
3	Electrical connection to the module circuitry		

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

⚠️
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 (NXA-ACC-QDD-DC) 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.

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 45: Installing the QSFP Transceiver Module
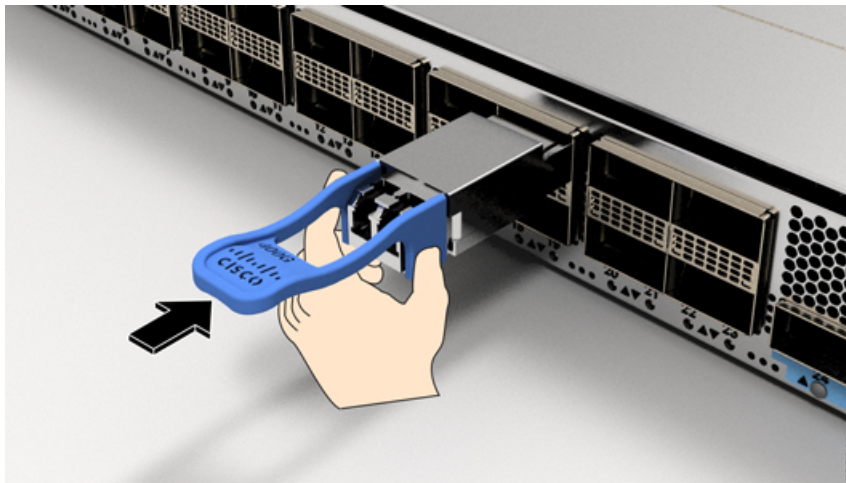
Step 6 Press firmly on the front of the transceiver module with your thumb to fully seat the transceiver in the module's transceiver socket (see the below figure).

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

Figure 46: Seating the QSFP Transceiver Module
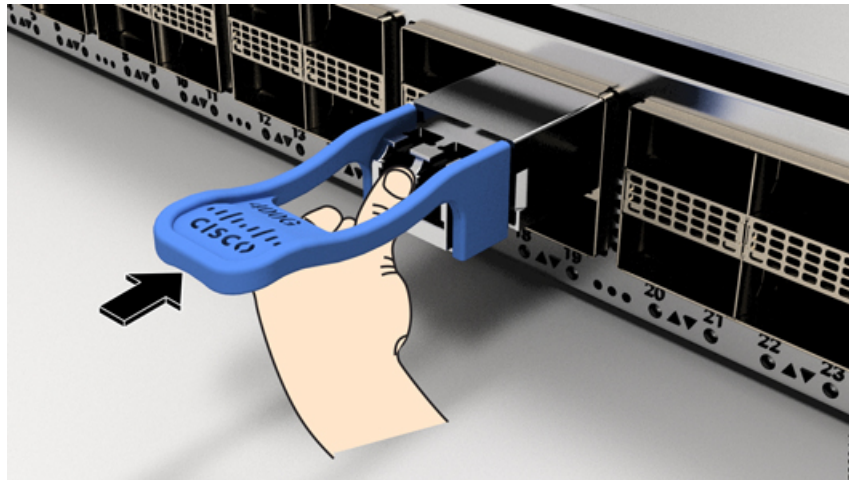
Attach the Optical Network Cable

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 47: Cabling a Transceiver Module
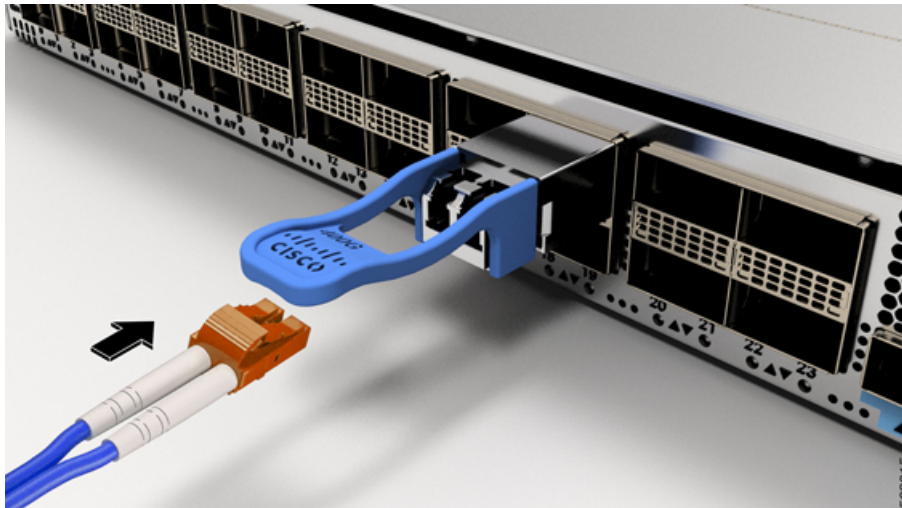
Removing the Transceiver Module

⚠️

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.

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 socket.

Figure 48: Removing the QSFP Transceiver Module
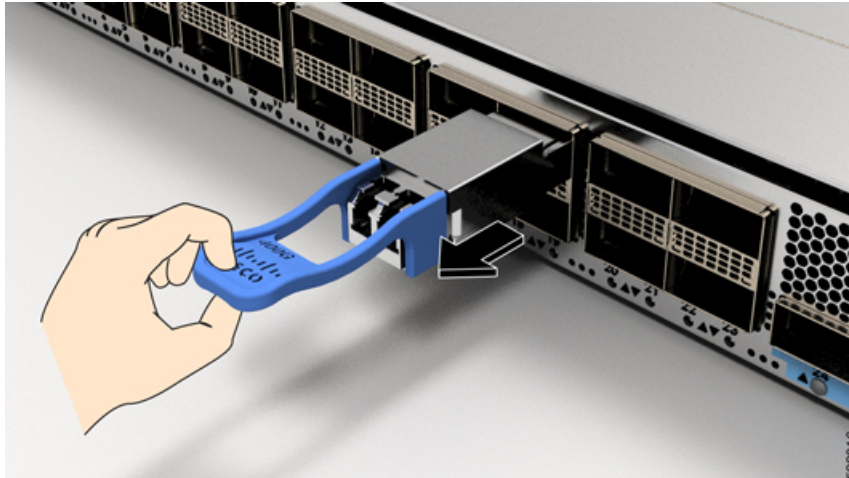
Step 4	Slide the transceiver out of the socket.
Step 5	Place the transceiver module into an antistatic bag.

Connect Interface Ports

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

Connect a Fiber-Optic Port to the Network

Depending on which line card model that you are using, you can use either QSFP-DD, QSFP28, or QSFP+ transceivers. 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.

Create the Initial Switch Configuration

You must assign an IP address to the switch management interface to connect the switch to the network.

When you initially power up the switch, it boots up and asks a series of configuration-related questions. You can use the default choices for each configuration except for the IP address, which you must provide.

When the system is powered on and the console port is connected to the terminal, the RP CPU messages are seen. You can see RP CPU messages by pressing the hot-key sequence Ctrl-O.

Before you begin

- A console device must be connected with the switch.

- The switch must be connected to a power source.

- Determine the IP address and netmask that is needed for the Management interfaces: `MgmtEth0/RP0/CPU0/0` and `MgmtEth0/RP1/CPU0/0`:

Procedure

Step 1   Power up the switch.

The LEDs on each power supply light up (green) when the power supply units are sending power to the switch, and the software asks you to specify a password to use with the switch.

Step 2   When the system is booted up for the first time, a new username and a password is to be created. The following prompt appears:

```
!!!!!!!!!!!!!!!!!!!! NO root-system username is configured. Need to configure root-system
username. !!!!!!!!!!!!!!!!!!!!

--- Administrative User Dialog ---


Enter root-system username:
% Entry must not be null.

Enter root-system username: cisco
Enter secret:
Use the 'configure' command to modify this configuration.
User Access Verification

Username: cisco
Password:
```

```
RP/0/RP0/CPU0:ios#
```

Step 3   Enter a new password to use for this switch.

The software checks the security strength of your password and rejects your password if it is not considered to be a strong password. To increase the security strength of your password, make sure that it adheres to the following guidelines:

- at least eight characters

- minimizes or avoids the use of consecutive characters (such as "abcd")

- minimizes or avoids repeating characters (such as "aaa")

- does not contain recognizable words from the dictionary

- does not contain proper names

- contains both uppercase and lowercase characters

- contains numbers as well as letters

Note   Clear text passwords cannot include the dollar sign ($) special character.

Tip   If a password is trivial (such as a short, easy-to-decipher password), the software rejects that password. Passwords are case sensitive.

When you enter a strong password, the software asks you to confirm the password.

Step 4   Reenter the password.

When you enter the same password, the software accepts the password.

Step 5   Enter the configuration mode.

Step 6   Enter the IP address for the management interface. If using dual RPs, enter the IP address on both management interfaces.

Step 7   Enter a network mask for the management interface.

Step 8   The software asks whether you want to edit the configuration. Enter **'no'** to decline.

Verify Chassis Installation

After installing the chassis, use the following **show** commands to verify the installation and configuration in the EXEC mode. Any issue if detected, take corrective action before making further configurations.

Command	Description
show module	Displays the state information of each card.
show redundancy	Displays the status of supervisor module redundancy.

Command	Description
n9k-184-Man(config)# show locator-led st	Displays LED information for the switch, or for a specific LED location. ``` n9k-184-Man(config)# show locator-led st --- Module Locator LED Status --- Chassis OFF Module 1 ON Module 5 OFF Module 8 OFF Module 19 OFF Module 20 OFF Module 27 OFF FAN Module 1 OFF FAN Module 2 OFF FAN Module 3 OFF FAN Module 4 OFF PSU Module 4 OFF PSU Module 5 OFF PSU Module 6 OFF PSU Module 7 OFF PSU Module 8 OFF PSU Module 9 OFF ```
show inventory	Displays information about the field replaceable units (FRUs), including product IDs, serial numbers, and version IDs.
show environment	Displays all the environment-related information. ``` n9k-184-Man(config)# show environment ? fan Fan information power Power capacity and power distribution information temperature Temperature sensor information ```

Command	Description
show environment temperature	Displays temperature readings for card temperature sensors. Each Supervisor Module, line card, and fabric cards have temperature sensors with two thresholds: • Minor temperature threshold – When a minor threshold is exceeded, minor alarm occurs and the following actions occur for all four sensors: • Displays system messages • Sends SNMP notifications (if configured) • Log environmental alarm event that can be reviewed by running the show alarm command. • Major temperature threshold – When a major threshold is exceeded, a major alarm occurs and the following actions occur: • For sensors 1, 3, and 4 (outlet and on board sensors), the following actions occur: • Displays system messages. • Sends SNMP notifications (if configured). • Logs environmental alarm event that can be reviewed by running the show alarm command. • For sensor 2 (intake sensor), the following actions occur: • If the threshold is exceeded in a switching card, only that card is shut down. • If the threshold exceeds an active Supervisor Module with HA-standby or standby present, only that Supervisor Module is shut down and the standby Supervisor Module takes over. • If you do not have a standby Supervisor Module in your switch, you have up to 2 minutes to decrease the temperature. During this interval, the software monitors the temperature every 5 seconds and continuously sends system messages as configured. **Note** Cisco recommends that you install dual Supervisor Module.
show environment power	Displays the power usage information for the entire switch.
show environment current	Displays the current environment status.
show environment fan	Displays the status of the fan trays.

The following example shows sample output from the **show environment** command for 9800 switches:

```
n9k-184-Man(config)# show environment
Fan:
--------------------------------------------------------------------------
Fan Model Hw Direction Status
--------------------------------------------------------------------------
Fan1(sys_fan1) N9K-C980x-FAN-A 1.0 front-to-back Ok
Fan2(sys_fan2) N9K-C980x-FAN-A 1.0 front-to-back Ok
```

```
Fan3(sys_fan3) N9K-C980x-FAN-A 1.0 front-to-back Ok
Fan4(sys_fan4) N9K-C980x-FAN-A 1.0 front-to-back Ok
Fan_in_PS1 -- front-to-back Absent
Fan_in_PS2 -- front-to-back Absent
Fan_in_PS3 -- front-to-back Absent
Fan_in_PS4 -- front-to-back Shutdown
Fan_in_PS5 -- front-to-back Ok
Fan_in_PS6 -- front-to-back Ok
Fan_in_PS7 -- front-to-back Ok
Fan_in_PS8 -- front-to-back Shutdown
Fan_in_PS9 -- front-to-back Ok
Fan Zone Speed: Zone 1: 0x80
Fan Air Filter : NotSupported


Power Supply:
Voltage: 54 Volts
Power Actual Actual Total
Supply Model Output Input Capacity Status
(Watts ) (Watts ) (Watts )
------- ---------- --------------- ------ ---------- --------------------
1 ------------ 0 W 0 W 0 W Absent
2 ------------ 0 W 0 W 0 W Absent
3 ------------ 0 W 0 W 0 W Absent
4 PSU6.3KW-20A-HV 0 W 0 W 0 W Shutdown
5 PSU6.3KW-20A-HV 992 W 1048 W 3150 W Ok
6 PSU6.3KW-20A-HV 964 W 1024 W 3150 W Ok
7 PSU6.3KW-20A-HV 964 W 1024 W 3150 W Ok
8 PSU6.3KW-20A-HV 0 W 0 W 0 W Shutdown
9 PSU6.3KW-20A-HV 981 W 1045 W 3150 W Ok


Actual Power
Module Model Draw Allocated Status
(Watts ) (Watts )
------- ------------------- ----------- ----------- --------------
1 N9K-X9836DM-A 771.00 W 2435.94 W Powered-Up
5 N9K-X9836DM-A 1046.00 W 2435.94 W Powered-Up
8 N9K-X9836DM-A 776.00 W 2435.94 W Powered-Up
Xb19 N9K-C980x-FM-A 233.00 W 574.56 W Powered-Up
Xb20 N9K-C980x-FM-A 238.00 W 574.56 W Powered-Up
Xb21 xbar N/A 0.00 W Absent
Xb22 xbar N/A 0.00 W Absent
Xb23 xbar N/A 0.00 W Absent
Xb24 xbar N/A 0.00 W Absent
Xb25 xbar N/A 0.00 W Absent
Xb26 xbar N/A 0.00 W Absent
27 N9K-C9800-SUP-A 80.00 W 94.50 W Powered-Up
28 supervisor N/A 94.50 W Absent
fan1 N9K-C980x-FAN-A 170.00 W 686.00 W Powered-Up
fan2 N9K-C980x-FAN-A 187.00 W 686.00 W Powered-Up
fan3 N9K-C980x-FAN-A 176.00 W 686.00 W Powered-Up
fan4 N9K-C980x-FAN-A 175.00 W 686.00 W Powered-Up

N/A - Per module power not available


Power Usage Summary:
--------------------
Power Supply redundancy mode (configured) Non-Redundant(combined)
Power Supply redundancy mode (operational) Non-Redundant(combined)

Total Power Capacity (based on configured mode) 12599.00 W
Total Power of all Inputs (cumulative) 12599.00 W
```

```
Total Power Output (actual draw) 3901.00 W
Total Power Input (actual draw) 4141.00 W
Total Power Allocated (budget) 11393.00 W
Total Power Available for additional modules 1206.28 W



Temperature:
----------------------------------------------------------------------
Module Sensor MajorThresh MinorThres CurTemp Status
(Celsius) (Celsius) (Celsius)
----------------------------------------------------------------------
1 CPU 100 98 65 Ok
1 Sone-1 110 100 46 Ok
1 Sone-2 110 100 48 Ok
1 Sone-3 110 100 50 Ok
5 CPU 100 98 79 Ok
5 Sone-1 110 100 71 Ok
5 Sone-2 110 100 69 Ok
5 Sone-3 110 100 65 Ok
8 CPU 100 98 63 Ok
8 Sone-1 110 100 50 Ok
8 Sone-2 110 100 50 Ok
8 Sone-3 110 100 48 Ok
19 Sone-1 110 100 34 Ok
19 Sone-2 110 100 39 Ok
20 Sone-1 110 100 35 Ok
20 Sone-2 110 100 43 Ok
27 OUTLET 85 80 26 Ok
27 INLET 45 42 22 Ok
27 CPU 97 93 44 Ok
```

The following example displays the temperature readings for each of the powered-up cards using the **show environment temperatures** command:

```
9k-184-Man(config)# show environment temperature
Temperature:
----------------------------------------------------------------------
Module Sensor MajorThresh MinorThres CurTemp Status
(Celsius) (Celsius) (Celsius)
----------------------------------------------------------------------
1 CPU 100 98 65 Ok
1 Sone-1 110 100 46 Ok
1 Sone-2 110 100 48 Ok
1 Sone-3 110 100 50 Ok
5 CPU 100 98 80 Ok
5 Sone-1 110 100 71 Ok
5 Sone-2 110 100 68 Ok
5 Sone-3 110 100 65 Ok
8 CPU 100 98 63 Ok
8 Sone-1 110 100 50 Ok
8 Sone-2 110 100 50 Ok
8 Sone-3 110 100 48 Ok
19 Sone-1 110 100 34 Ok
19 Sone-2 110 100 39 Ok
20 Sone-1 110 100 35 Ok
20 Sone-2 110 100 42 Ok
27 OUTLET 85 80 26 Ok
27 INLET 45 42 22 Ok
27 CPU 97 93 43 Ok
n9k-184-Man(config)#
```

The following example shows sample output from the **show environment power** command:

```
n9k-184-Man(config)# show environment power
Power Supply:
Voltage: 54 Volts
Power Actual Actual Total
Supply Model Output Input Capacity Status
(Watts ) (Watts ) (Watts )
------- ---------- --------------- ------ ---------- --------------------
1 ------------ 0 W 0 W 0 W Absent
2 ------------ 0 W 0 W 0 W Absent
3 ------------ 0 W 0 W 0 W Absent
4 PSU6.3KW-20A-HV 0 W 0 W 0 W Shutdown
5 PSU6.3KW-20A-HV 992 W 1048 W 3150 W Ok
6 PSU6.3KW-20A-HV 967 W 1024 W 3150 W Ok
7 PSU6.3KW-20A-HV 964 W 1024 W 3150 W Ok
8 PSU6.3KW-20A-HV 0 W 0 W 0 W Shutdown
9 PSU6.3KW-20A-HV 978 W 1045 W 3150 W Ok


Actual Power
Module Model Draw Allocated Status
(Watts ) (Watts )
------- ------------------- ----------- ----------- --------------
1 N9K-X9836DM-A 771.00 W 2435.94 W Powered-Up
5 N9K-X9836DM-A 1046.00 W 2435.94 W Powered-Up
8 N9K-X9836DM-A 775.00 W 2435.94 W Powered-Up
Xb19 N9K-C980x-FM-A 233.00 W 574.56 W Powered-Up
Xb20 N9K-C980x-FM-A 238.00 W 574.56 W Powered-Up
Xb21 xbar N/A 0.00 W Absent
Xb22 xbar N/A 0.00 W Absent
Xb23 xbar N/A 0.00 W Absent
Xb24 xbar N/A 0.00 W Absent
Xb25 xbar N/A 0.00 W Absent
Xb26 xbar N/A 0.00 W Absent
27 N9K-C9800-SUP-A 87.00 W 94.50 W Powered-Up
28 supervisor N/A 94.50 W Absent
fan1 N9K-C980x-FAN-A 198.00 W 686.00 W Powered-Up
fan2 N9K-C980x-FAN-A 184.00 W 686.00 W Powered-Up
fan3 N9K-C980x-FAN-A 173.00 W 686.00 W Powered-Up
fan4 N9K-C980x-FAN-A 189.00 W 686.00 W Powered-Up


N/A - Per module power not available


Power Usage Summary:
-------------------
Power Supply redundancy mode (configured) Non-Redundant(combined)
Power Supply redundancy mode (operational) Non-Redundant(combined)

Total Power Capacity (based on configured mode) 12599.00 W
Total Power of all Inputs (cumulative) 12599.00 W
Total Power Output (actual draw) 3901.00 W
Total Power Input (actual draw) 4141.00 W
Total Power Allocated (budget) 11393.00 W
Total Power Available for additional modules 1206.28 W
```

C H A P T E R 6

LEDs

- LEDs, on page 67
- Chassis LED, on page 67
- Port Status LEDs, on page 67
- Power Supply LEDs, on page 68
- Fan Tray LEDs, on page 69
- Supervisor Module LEDs, on page 71
- Fabric Module LEDs, on page 73
- Line Card LEDs, on page 74

LEDs

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

Chassis LED

The LEDs indicate whether each type of module (supervisor modules, line cards, fabric modules, fan trays, and power supplies) is fully functional or have a fault condition.

Table 9: Chassis LED Descriptions

LED	Color	Status
ATTN (Attention)	Blue	The operator has activated this LED to identify this chassis.
	Off	The chassis is not functional.

Port Status LEDs

Each port on N9K-X98900CD-A (only) has an LED. The following table describes port status LEDs.

Cisco Nexus 9808 NX-OS Mode Switch Hardware Installation Guide

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Table 10: Port Status LEDs (One Per Port)

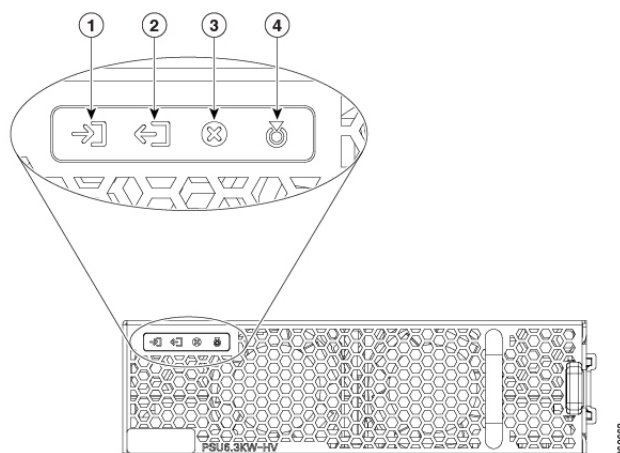| LED Color	Description
Off	Port is administratively shut down.
Green	Port is administratively enabled and the link is up.
Amber	Port is administratively enabled and the link is down.
Flashing Amber	Port is faulty and disabled.

Power Supply LEDs

The power supply LEDs are located on the front portion of the module.

Figure 49: Power Supply LEDs

1	Input OK	3	Fault
2	Output OK	4	ATTN (Attention)

Table 11: Power Supply LED Descriptions

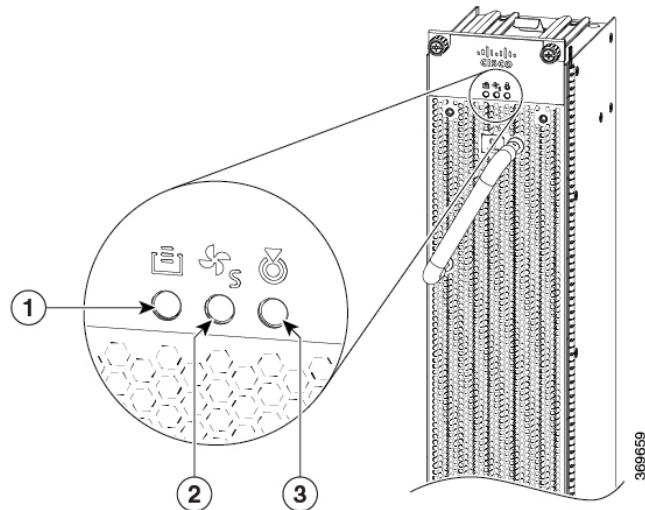| LED	Color	Status
Input OK	Green	Both input voltages are present.
	Flashing Green	Only one input power is present.
	Off	No input power is present.

LED	Color	Status
Output OK	Green	Output power is enabled.
	Flashing Green	Output power in power limit, or in overcurrent condition, or is in the sleep-mode.[1]
	Off	Output disabled, or no inputs present, or firmware upgrade in-progress.
Fault	Red	Output voltage is out of the specified range, or a fan has failed, or internal fault.
	Flashing red	Firmware upgrade in-progress.
ATTN (Attention)	Flashing blue	User configured action *config hw-module attention-led location 0/PTx/PMy*.
	Off	No user configuration is set.

[1] Sleep mode is not applicable for DC-60 power module.

Fan Tray LEDs

The fan tray LEDs are located on the top portion of the module.

Figure 50: Fan Tray LEDs

1	FC STS (Status)	3	ATTN (Attention)
2	FT STS (Status)		

Table 12: Fan Tray LED Descriptions
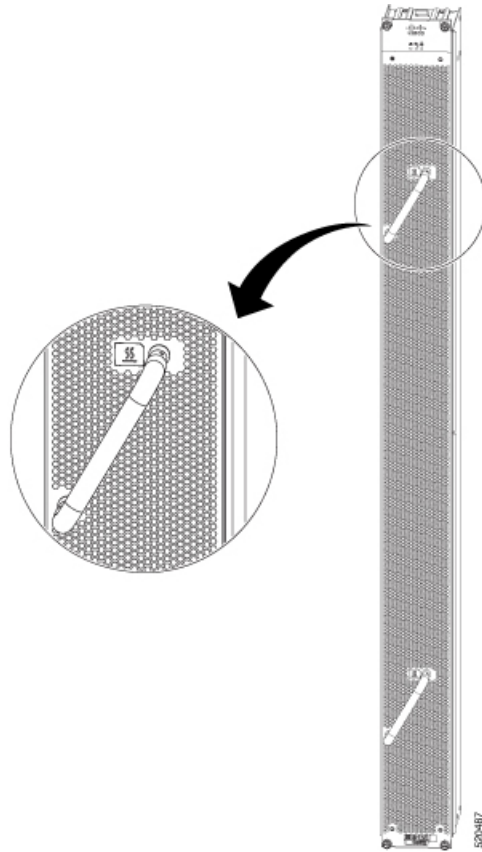
LED	Color	Status
ATTN (Attention)	Flashing Blue	The operator has activated this LED to identify the fan tray in the chassis.
	Off	The operator had not activated the LED to identify the fan tray in the chassis.
FT STS	Amber	The fan tray is powered on.
	Green	The fan tray is operational.
	Flashing amber	The module has minor alarm.
	Flashing red	The module has active major or critical alarms.
	Flashing green	FPD upgrade in-progress.
	Off	No power to the fan tray.
FC STS	Amber	The fabric cards are powered on and is in one of the following states: • Either one or more fabric cards behind this fan tray is not operational. • Either one or more fabric cards behind this fan tray have minor, major or critical alarm.
	Green	• One of the fabric modules is operational and other one not present. • Both fabric cards behind this fan tray are operational.
	Off	If both the fabric modules behind this fan tray are plugged out (or not present).

Temperature Warning Label

Every fan tray has a temperature warning label beside its handle. The temperature warning label is temperature sensitive. At normal operating temperatures (less than 55°C), the warning label has a black background with black edges. At temperatures above 55°C, the background color changes to white and the edges' color changes to red.

Figure 51: Temperature Warning Label

Supervisor Module LEDs

The Supervisor Module LEDs are located on the front of the module.

Figure 52: Supervisor Module LEDs
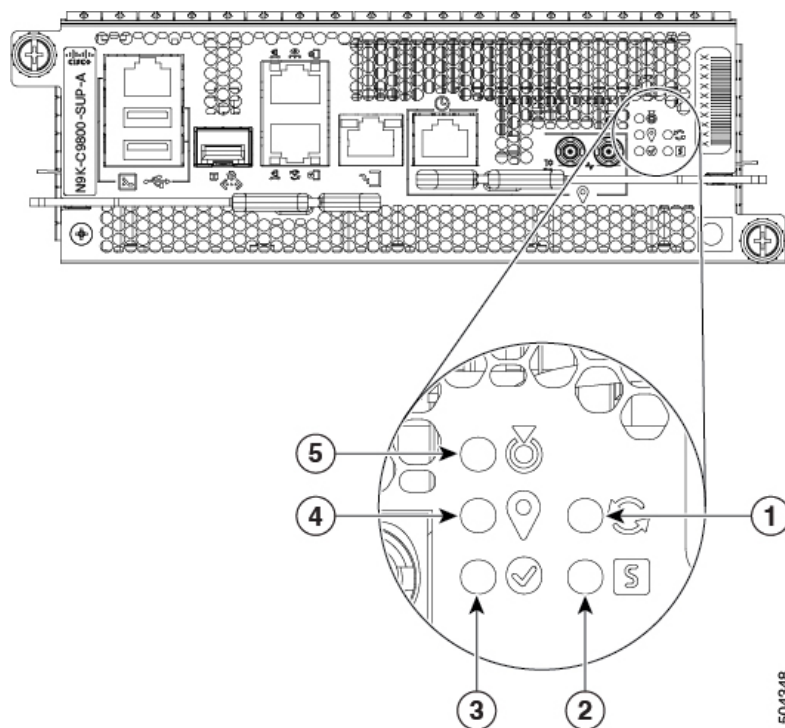
1	SYNC	4	GPS
2	STS (Status)	5	ATTN (Attention)
3	Active		

Table 13: Supervisor Module LED Descriptions

LED	Color	Status
ATTN (Attention)	Flashing blue	The operator has activated this LED to identify this module in the chassis.
	Off	This module is not being identified.

LED	Color	Status
STS (Status)	Green	This module is operational with no issues.
	Flashing green	The auto or manual FPD upgrade in-progress.
	Flashing amber	The module has minor alarm.
	Flashing red	The module has active major or critical alarms.
	Amber	The module is in one of the following states: • Power cycle • Reload or reimage • Shutdown
	Red	BIOS boot failure. Also, the ATTN LED remains blue.
	Off	The module is not enabled.
ACT (Active)	Green	The module is in the Active state.
	Off	The module is in the Standby state.
GPS	Green	The GPS interface is provisioned and frequency, time of day and phase inputs are all operating correctly.
	Off	The GPS interface is not provisioned, or the GPS inputs are not working correctly.
SYNC	Green	The frequency, time, and phase are synchronized to an external interface. The external interface could be: • BITS • GPS • Recovered RX Clock
	Amber	The system is running in holdover or free-run mode and it is not synchronized to an external interface.
	Off	The centralized frequency or time and phase distribution is not enabled.

Fabric Module LEDs

The fabric modules are located behind the fan trays.

Note The fabric modules are located behind the fan tray. Therefore, the fabric module LEDs are seen when the fan tray is removed.

Table 14: Fabric Module LED Descriptions

LED	Color	Status
ATTN (Attention)	Flashing blue	The operator has activated this LED to identify this module in the chassis.
	Off	This module is not being identified.
STS	Green	The fabric module is operational with no issues.
	Flashing green	Auto or manual FPD upgrade in-progress.
	Amber	The module is in one of the following states: • Power cycle • Reload or reimage • Shutdown
	Flashing red	The fabric module has major or critical alarms.
	Flashing amber	The module has minor alarm.
	Off	No power is going to the fabric card.

Line Card LEDs

The line card has LEDs located on the right of the front panel.

Table 15: Line Card LED Descriptions

LED	Color	Status
ATTN (Attention)	Flashing blue	The operator has activated this LED to identify this module in the chassis.
	Off	The line card is not enabled.

LED	Color	Status
STS (Status)	Amber	The module is in one of the following states: • Power cycle • Reload or reimage • Shutdown
	Green	This module is operational with no issues.
	Flashing green	The auto or manual FPD upgrade in-progress.
	Flashing amber	The module has a minor alarm.
	Flashing red	The module has active major or critical alarms.
	Red	BIOS boot failure. Also, the ATTN LED remains blue.
	Off	The module is not enabled.

Line Card LEDs

Replace Chassis Components

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 Chassis Door Foam Air Filters

Note In general, we recommend that you inspect the air filter every 3 months and replace.

The front doors come with pre-installed air filters (N9K-9808-DF-KIT). If air filters need a replacement, follow this procedure.

Procedure

Step 1 Remove the two quarter turn fasteners from the front door as shown.

Figure 53: Replace Air Filter
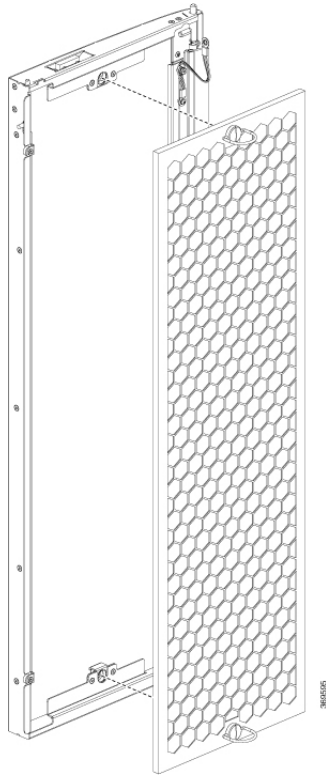
Step 2 Install the new door filters on both the front doors.

Step 3 Tighten the two quarter turn fasteners back on the doors.

Replace a Supervisor Module

The switch supports up to two redundant Supervisor Modules (N9K-C9800-SUP-A). When two Supervisor Modules are installed in the switch, one acts as an active module and the other as the standby module. When the active Supervisor Module is removed, the switch automatically makes the standby Supervisor module active. If the switch has only one Supervisor Module that is installed, a new Supervisor can be installed in the empty Supervisor slot during operation.

Note Dual Sup (SSO) is supported for this switch from Release 10.4(1).

Warning 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.

Illustrations are for representational purposes only.

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

Figure 54: Supervisor Module Components
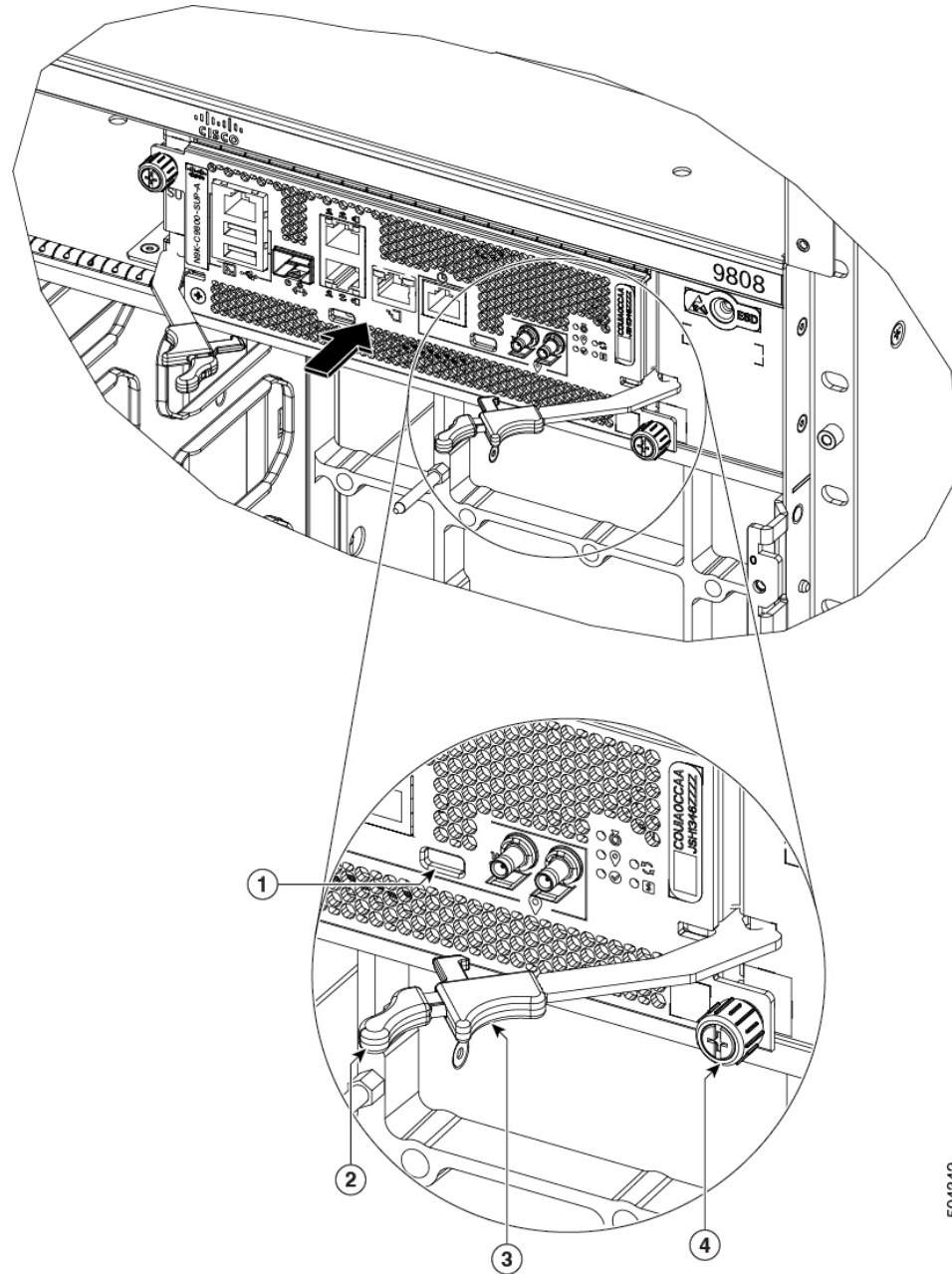
1	Latch Lock	3	Laching Mechanism
2	Ejector Lever Handle	4	Captive Screw

⚠️

Caution Unlatching the right ejector lever, so that it disengages from the latch lock (Callout 1 in above figure) triggers graceful shutdown of the Supervisor if the module is up. If the module shuts down then wait for the Supervisor status LED to turn off before proceeding.

Moving the latch to the side does not disengage the latch from the lock. This is a safeguard mechanism if an operator initiated shutdown of the supervisor has not been performed before opening the levers. The ejector open will be logged.

Procedure

Step 1 Open the packaging for the new Supervisor Module, inspect the module for damage, and verify that the module is the same type as the other Supervisor Module installed in the chassis.

If the module is damaged, alert the Technical Assistance Center (TAC).

Step 2 If you are installing the module in an empty slot, remove the blank that is already in that slot by unscrewing its captive screw and pulling it out of the slot. Go to Step 4.

Step 3 If you are replacing a module that is currently in the chassis, remove the existing module from the chassis by following these steps:

a) Run the **poweroff module (x)**_location_ command, in EXEC mode, which gracefully shuts down Supervisor module to prevent any of the file systems from being corrupted.

b) Verify that the Supervisor Status LED for the slot that you specified turns to Amber. Also, you can use the **show module** command to verify that the status of the module is SHUT DOWN.

c) Disconnect the cables from the module.

d) If there are any external drives attached to the module through its USB ports, detach those drives.

e) Loosen the two captive screws (one on each side of the RP) until the screws are no longer in contact with the chassis.

f) Slide the latch on each of the ejector lever outwards from the lever center (see Callout 1 in the below figure).

This action disengages the ejector levers from the faceplate.

Figure 55: Remove Supervisor Module from Chassis
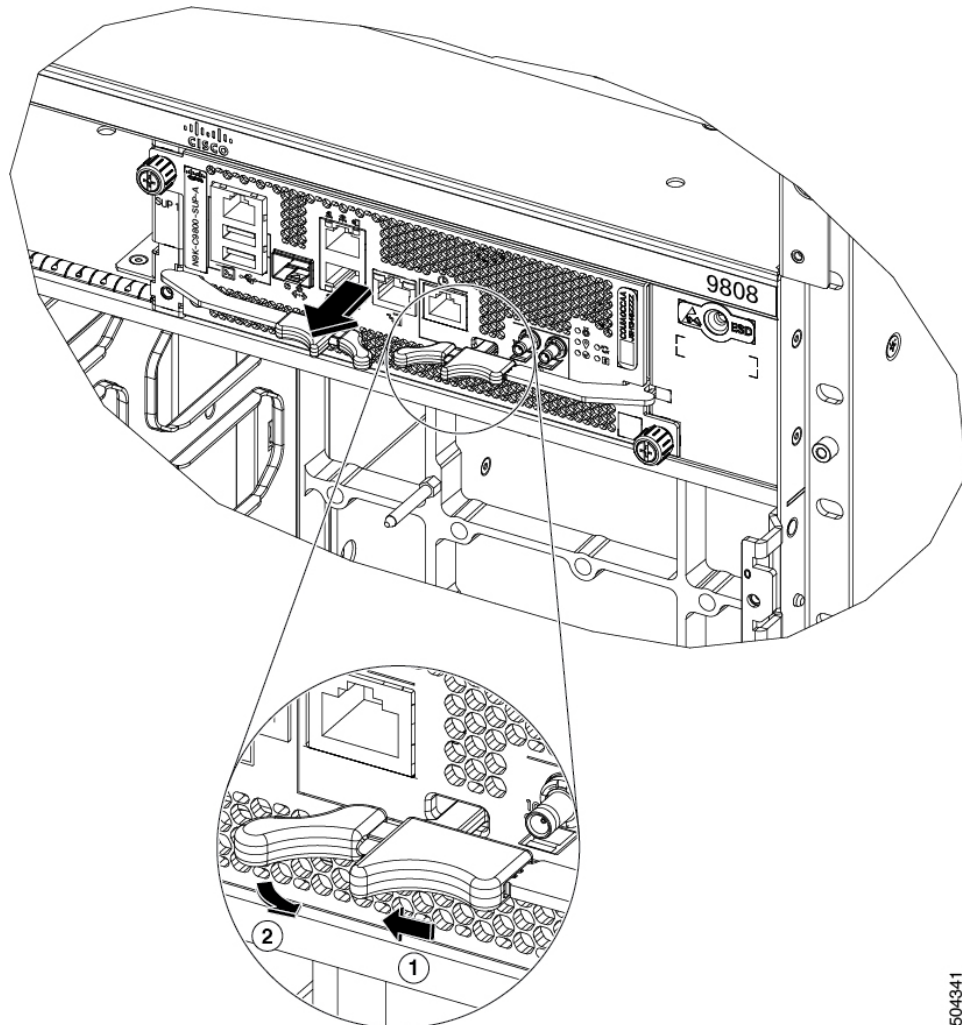
g) Pull to rotate the levers away from the front of the module (see Callout 2 in the above figure)

   The module unseats its connectors from the midplane and moves slightly out of the chassis.

h) Use one hand to hold the front of the module, place your other hand under the module to support its weight, pull the module out of the chassis, and set it on an antistatic surface or inside an antistatic bag.

   Note   While performing OIR of the module, wait for 30 seconds before inserting the same or new module in the same slot. This will allow the module to boot properly and reach operational state.

Step 4   To install a new module, follow these steps:

a) If any of the ejector levers are in closed position slide the latch on the ejector lever outwards from the lever center and pull to rotate the lever away from the front of the module.

   This action opens the lever so that the module can be fully inserted into the slot.

b) Hold the front of the module with one hand and place your other hand under the module to support its weight.

c) Align the back of the module to the guides in the open Supervisor slot and slide the module all the way into the slot.

The module stops when its front is about 0.25 inches (0.6 cm) outside the front of the chassis.

d) Rotate the levers firmly all the way to the front of the chassis. Then firmly push the tip of the levers towards the faceplate till the latch hook locks in place behind the faceplate. You may hear a click or see the latch engage. (See Callout 1 in the below figure.)

Make sure that the other end of both levers engages behind the latching slot on the faceplate so that the module fully seats onto the connectors on the midplane.

Note	To confirm that the module is installed properly, pull the black tip of each ejector lever lightly, and make sure the lever does not pop out.

Figure 56: Install Supervisor module into Chassis
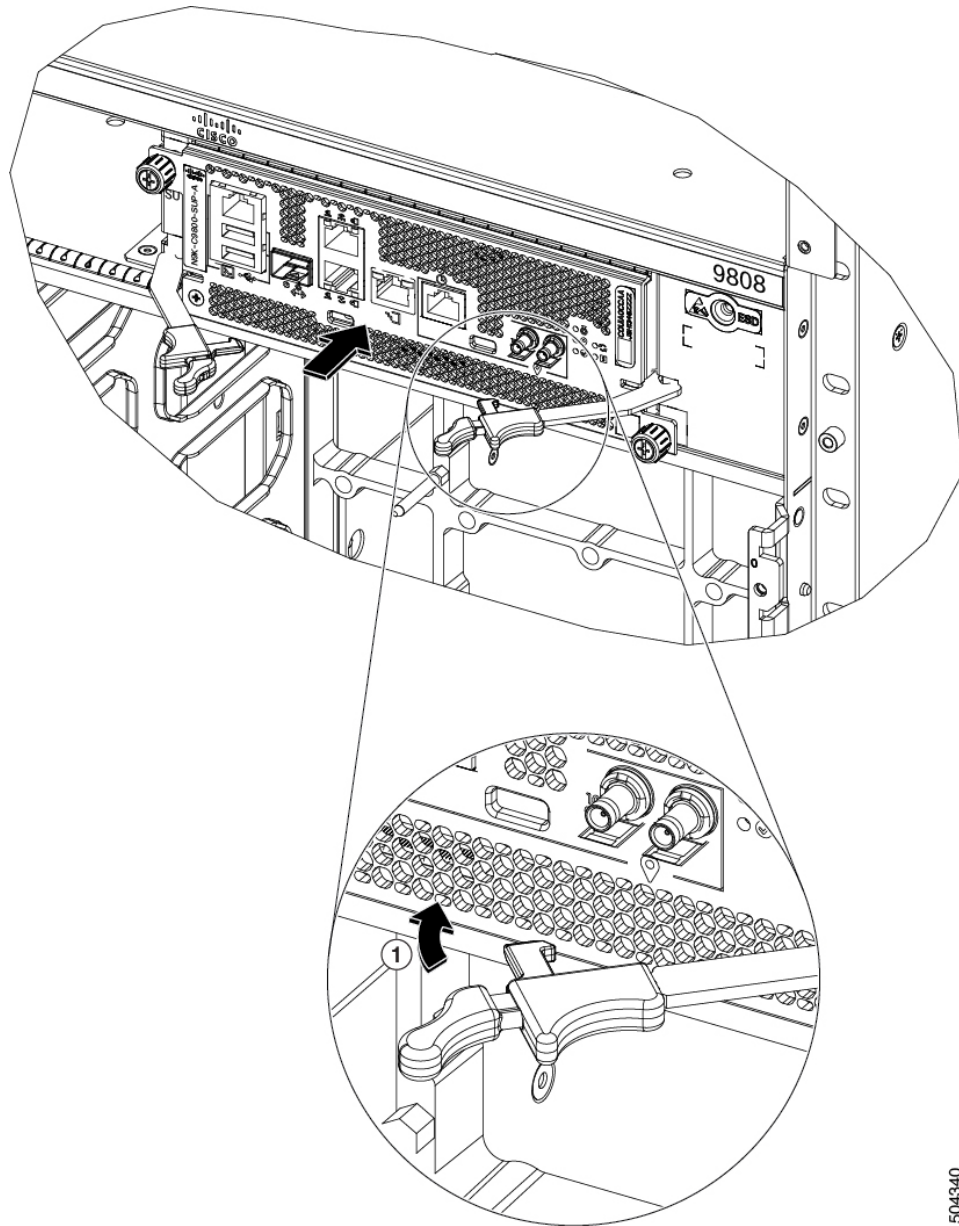
e) Screw in the two captive screws to secure the module to the chassis. Tighten the screws to 8 in-lb (0.9 N·m) of torque.

f) Attach the cables to the module.

g) Verify that the Supervisor module status LEDs turn on and appear green.

Replace a Line Card

The switch can operate with one or more line cards that are installed in the chassis. If there is at least one line card that is installed and operating in the chassis, you can replace another line card or install a new line card in an empty line card slot.

The Cisco Nexus 9800 series switches support OIR of line cards.

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

Procedure

Step 1   Open the packaging for the new line card and inspect the module for damage.

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

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

a) Run the **poweroff module (x)** *location* command, which gracefully shuts down the line card.
b) Verify that the Line Card LED for the slot that you specified turns off. Also, you can use the **show module** command to verify that the status of the card is SHUT DOWN.
c) Disconnect and label each of the interface cables from the module.
d) Loosen the two captive screws.
e) Press the ejector buttons and use the levers to pull the module a couple of inches (about 5 cm) from the chassis. Rotate each of the two ejector levers away from the center of the chassis. The levers unlock themselves from the brackets on the side of the chassis.
f) Close the ejector levers.
g) Use one hand to hold the front of the module, place your other hand under the module to support its weight, pull it out of the chassis, and set it on an antistatic surface or inside an antistatic bag.

Step 3   To install the new module, follow these steps:

a) Hold the front of the module with one hand and place your other hand under the module to support its weight.
b) Align the back of the module to the guides in the open line card slot and slide the module all the way into the slot (see the following figure).
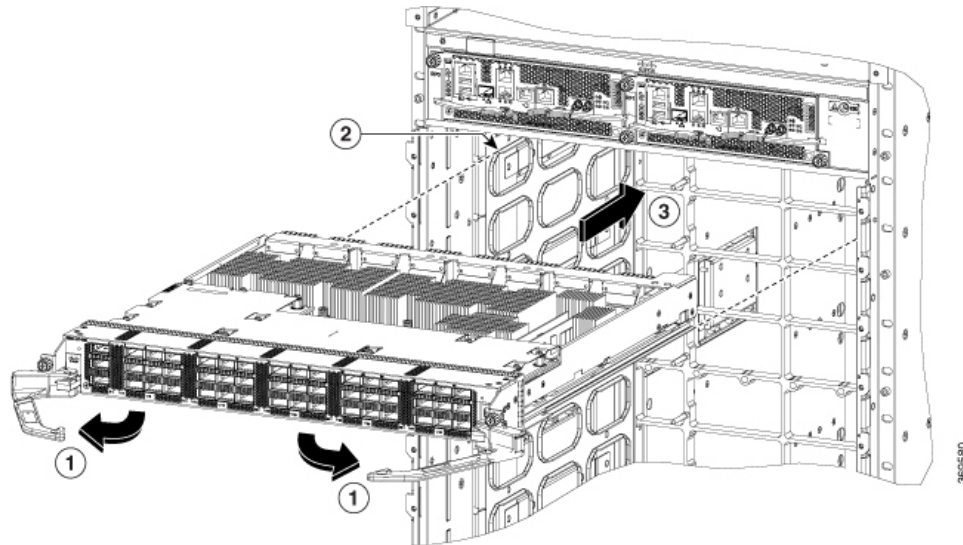
   The module stops when its front is about 0.25 inches (0.6 cm) outside the front of the chassis. Press the ejector buttons and the two levers move part way to the front of the chassis.

Figure 57: Insert a Line Card into the Chassis

1	Rotate the ejector handle on each end of the module away from the center of the chassis.	3	Slide the module all the way into the slot.
2	Align the bottom of the back of the module with tracks on either side of the slot.		

c) Rotate the ends of the two levers toward the center of the chassis.

When the levers point straight out from the chassis, their other ends should be locked onto the brackets on the side of the chassis.

As you rotate the levers, the front of the module moves all the way to the front of the chassis and the module fully seats on the chassis.

d) Tighten the two captive screws to 8 in-lb (0.9 Nm) torque.

e) Attach each interface cable to the appropriate port on the line card. Use the label on each cable to determine which port each cable attaches to.

f) Verify that the line card LEDs turn on and appear green.

Replace a Fan Tray

You can remove a fan tray, to either replace it with another fan tray, or to replace a fabric card located behind it.

The switch uses four fan trays but it can operate with three fan trays while you replace one or remove one, to replace one of the fabric cards behind the fan tray. When you remove one fan tray, the other fan trays speed up their fans to maintain the designed airflow.

Note If you cannot replace a fan tray within three minutes, we recommend that you leave it in the chassis until you are ready to replace it.

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

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

1. Remove the fan tray.
2. Install a fan tray.

Remove Fan Tray

Remove only one fan tray at a time during switch operations. If you remove more than one fan tray at a time, the switch shuts down within two minutes unless you replace the extra fan trays that you removed within that time.

Procedure

Step 1 Unscrew the four captive screws on the front of the fan tray until each screw is free of the chassis.
Step 2 Hold both handles on the front of the fan tray with both of your hands and pull the fan tray out of the slot.
Step 3 Set the fan tray on antistatic material or inside an antistatic bag.

Install Fan Tray

Before you begin

- Fan tray slot is open in the chassis.
- If you are replacing a fabric card behind the open fan tray slot, ensure that the fabric card replacement operation is completed.
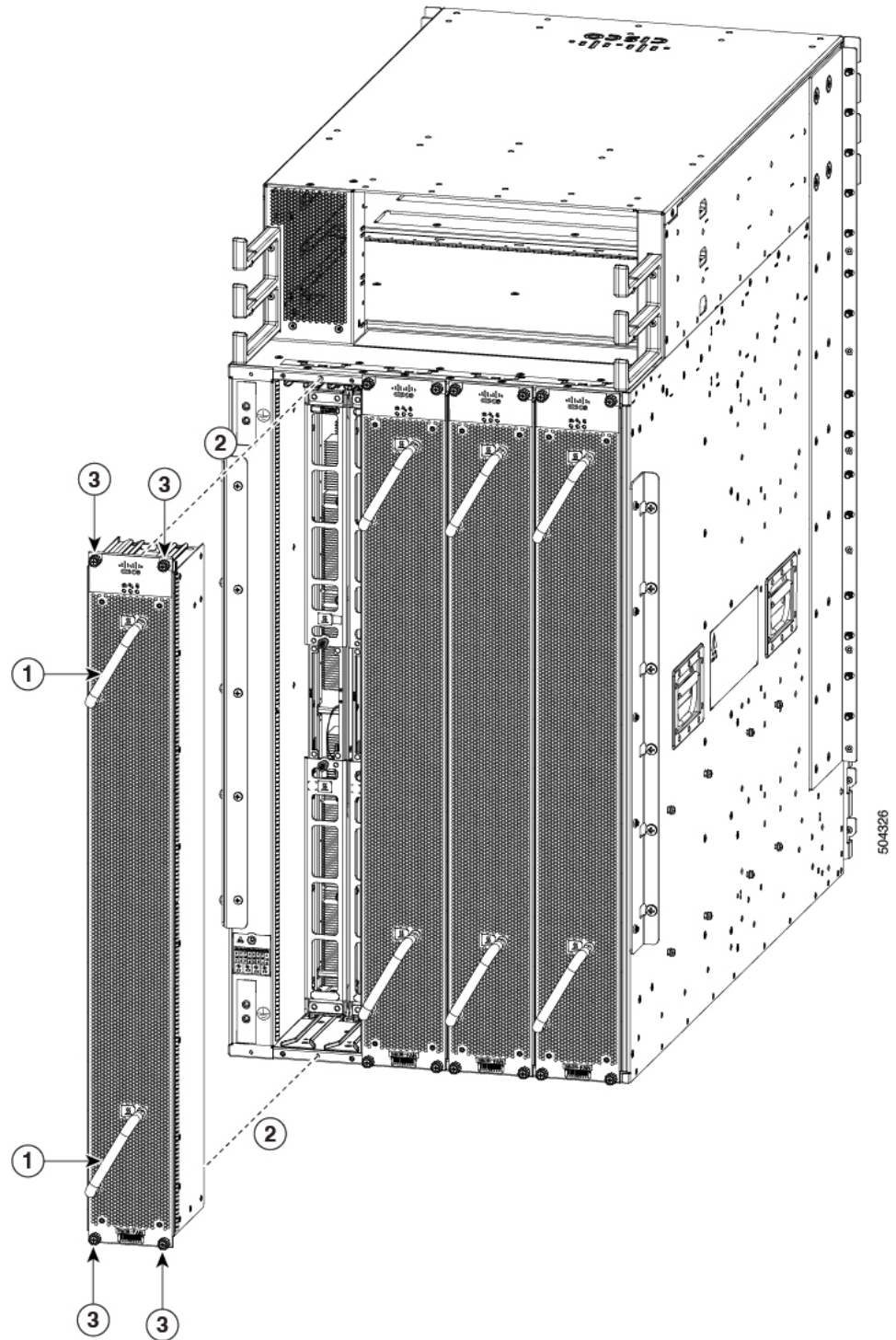
Procedure

Step 1 Use both of your hands to hold the two handles on the front of the fan tray that you are installing.

Figure 58: Remove Fan Tray from the Chassis

1	Handle	3	Captive screws
2	Align fan tray in position		

Step 2   Position the fan tray with its rear (the side with the electrical connectors) at the opening for the fan tray slot in the chassis.

Step 3   Align the two tracks on the top of the fan tray with the two sets of rails at the top of the open fan tray slot in the chassis.

Step 4   Slide the fan tray all the way into the slot until the front of the fan tray touches the chassis.

Make sure that the four captive screws on the front of the fan tray align with the four screw holes in the chassis.

Step 5   Screw in the four captive screws to secure the fan tray to the chassis. Tighten the screws to 8 in-lb (0.9 N·m) of torque.

Step 6   Verify that the fan tray STATUS LED turns on and becomes green, approximately within 20 seconds.

Replace Fabric Module

The switch supports replacement of a fabric module while others are operating. To replace a fabric module, you must do each of the following:

- Shut down the fabric module being replaced.

- Remove the fan tray covering the fabric module in the chassis.

- Remove the fabric module.

- Install the new fabric module.

Note   We recommend that you insert the fabric modules in the sequence starting with FM1, FM2, and so on (from left to right). Use the adjacent module as a guide to retain the modules in vertical position.

- Reinstall the fan tray over the fabric module.

- Activate the fabric module.

The Cisco 9800 series switches support OIR of fabric module.

To maintain the designed airflow while you remove the fan tray, the fans in the other fan trays increase their speed. During operations, it is required that you remove only one fan tray at a time and reinstall that fan tray within three minutes to avoid the possibility of having the switch overheat and shut down. If you remove more than one fan tray at a time, the switch shuts down if you do not reinstall the extra missing fan trays within two minutes (the shutdown can occur earlier if the switch over heats).

Remove a Fabric Module

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 a fabric module, open the packaging for the new module and inspect it for damage.

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

Step 2   Run the **no poweroff module (x)***location* command.

a)   Verify that the fabric LED for the slot that you specified turns off. Also, you can use the **show module** command to verify that the status of the module is SHUT DOWN.

Step 3   Remove the fan tray covering the fabric module in the chassis.

Refer the fan tray removal procedure:

Step 4   Remove the fabric module that you are replacing by following these steps:

a)   Unscrew the two captive screws on the center of each of the two handles on the fabric module (see Callout 1 in the following figure).
b)   Rotate the handles outwards until they stop (see Callout 2 in the following figure).
c)   With each of the two handles in your two hands, pull the module a couple of inches (about 5 cm) out of the slot (see the following figure).

Figure 59: Removing a Fabric Module from the Chassis
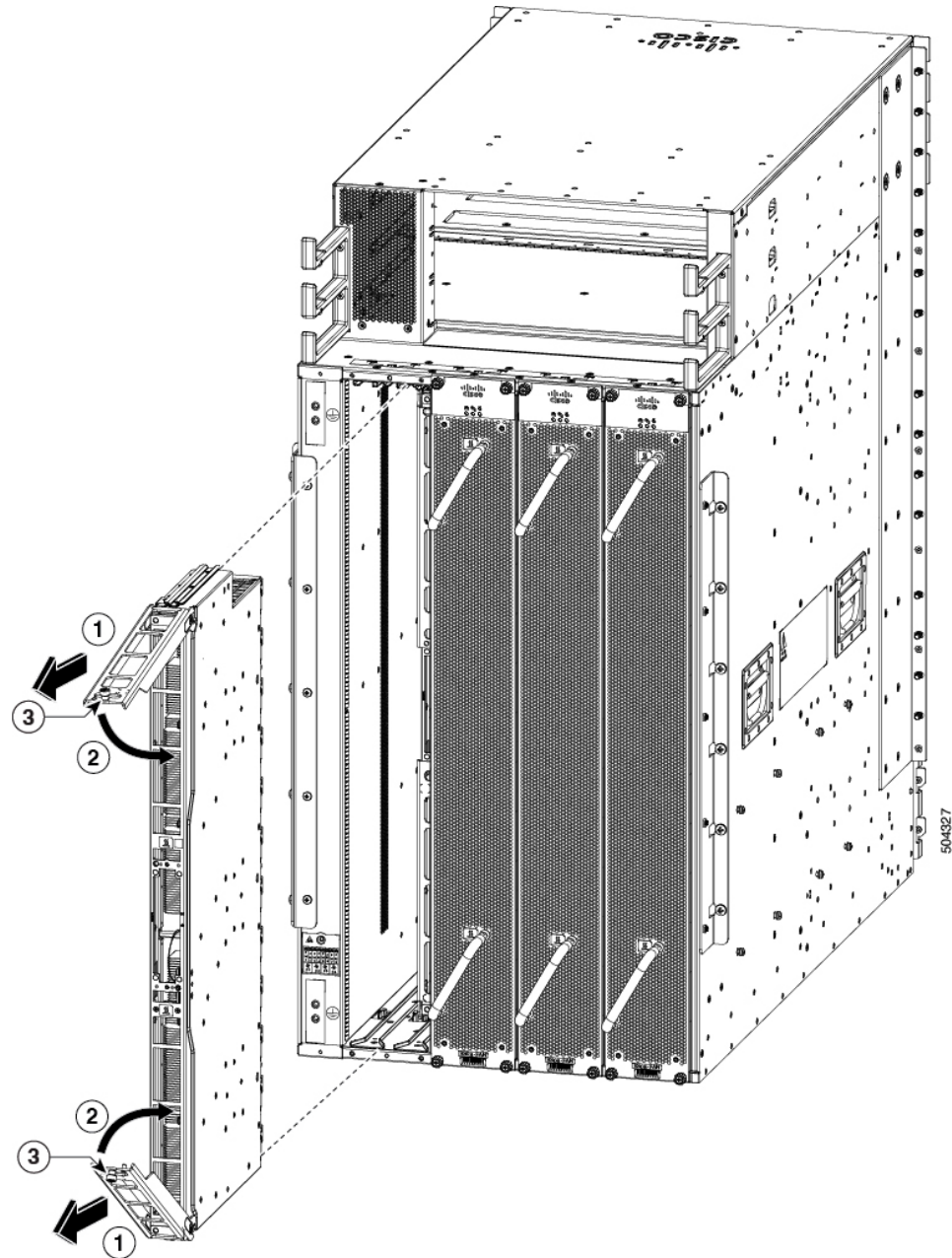
1	Pull on both handles to partially remove the fabric module from the chassis	3	Two captive screws (one on each handle)
2	Rotate both ejector handles to the front of the module		

d) Place one hand under the Fabric Module to support its weight, place your other hand on the front of the module, and slide the module out of the slot.

e) Rotate both handles back to the front of the module until they are in place. Fasten each handle to the module using the captive screw on the back of the handle. Tighten the screw to 8 in-lb (0.9 N·m) of torque.

f) Rotate the module 90 degrees and lay it flat on an antistatic surface or in an antistatic bag.
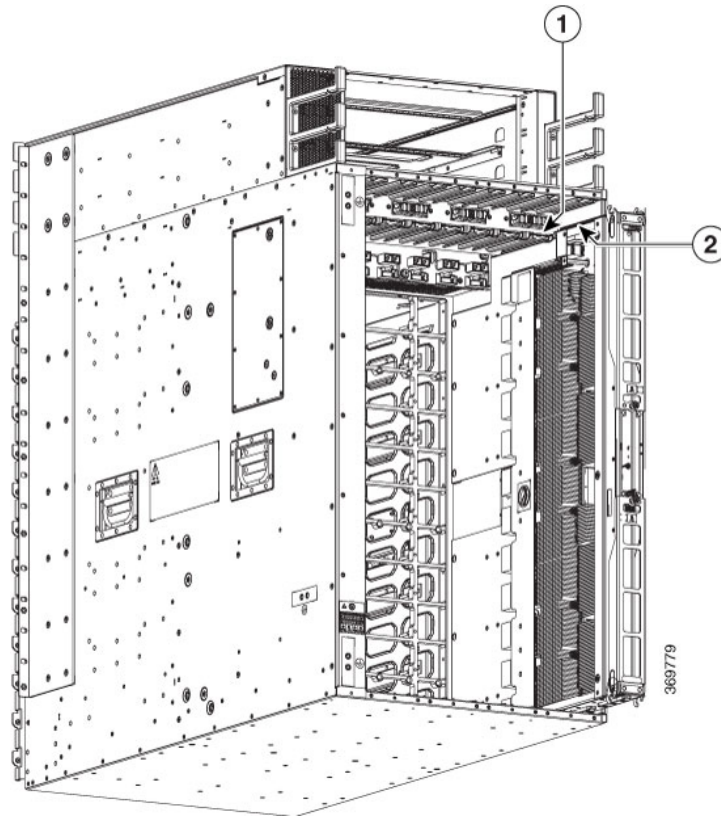
Install a Fabric Module

Procedure

Step 1   Unscrew the two captive screws (one on each ejector handle) and rotate the ejector handles at least 30 degrees. Ensure that the locking posts on the top and bottom of the chassis rotate into the module so that the module can slide fully into the slot.

Step 2   Place one hand on the front of the module and turn the module 90 degrees so that the electrical connectors are on the bottom.

Step 3   Align the guide bar on the bottom of the fabric module into the guide slot at the bottom of the fabric module slot, and make sure that the guide rails on the top of the fabric module align with the track on the top of the slot.

> **Note**   The lower guide rail extends to the back of the chassis. The upper guide rail does not connect until the module is halfway into the chassis.

Figure 60: Install Fabric Module
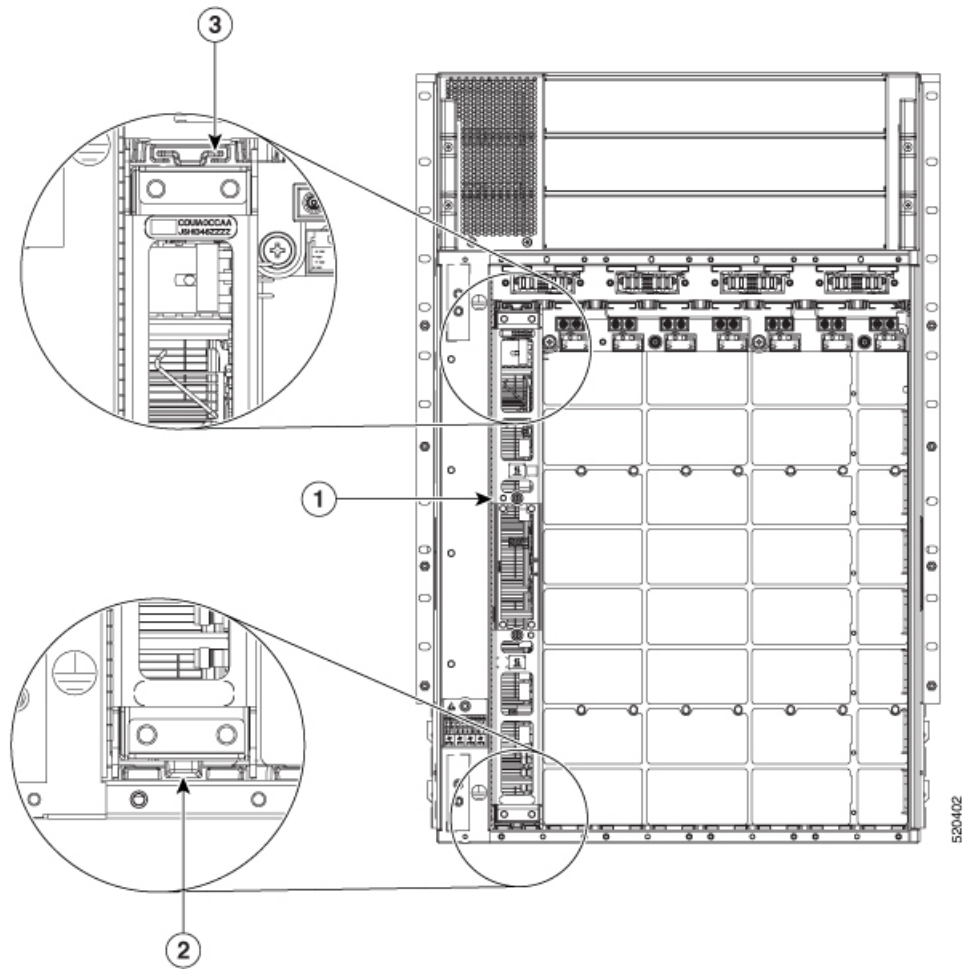
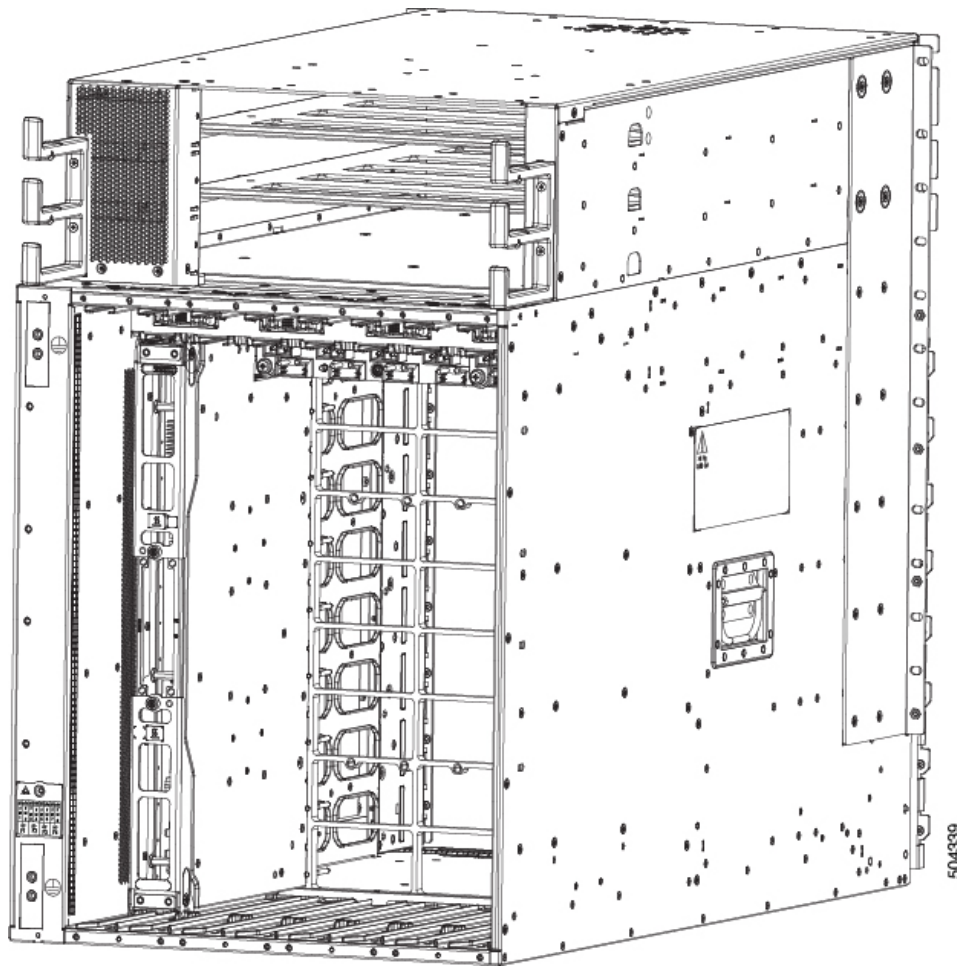| 1	Always install the fabric module in a vertical position
2	Guide bar and guide slot
3	Guide rail and track

Figure 61: Installing a Fabric Module

1	Chassis top fabric module guide rail.	2	Insert fabric module top guide rail into ch module guide rail.

Figure 62: Fabric Module installed in a Chassis

Step 4   Slide the module all the way into the slot.

Step 5   Rotate both ejector levers to 90 degrees to the front of the chassis and be sure that the module is locked to the top and bottom of the slot.

Step 6   Tighten the captive screw on each of the two levers to 8 in-lb (0.9 N-m) of torque, so that each lever is locked in place on the module.

Step 7   Verify the fabric module LEDs become green.

Step 8   Reinstall the fan tray over the fabric module.

Refer the installing the fan tray procedure: Install Fan Tray, on page 86

Step 9   Run the **reload module** *location* command.

Step 10   Wait for the fabric module to become operational. Use the **show module** command to verify the status.

Note   The fabric module must be operational before resetting the fabric plane.

Step 11   Reset the fabric control plane using the **no controller fabric plane** *<plane-id>* **shutdown** command

Step 12   Verify that the Fabric LED for the slot that you specified turns on. Also, you can verify that the module is in power on state by running the **show module** command to verify the status of the module to be POWERED_ON.

Since the Fan trays are blocking the view, fabric module LEDs might not be visible. Therefore, you can verify the fabric module LEDs status using **show module** command.

Replace Power Supply Components

The Cisco Nexus 9800 series switches support OIR of power modules. If you are replacing a redundant power module, you can replace the power module while the system remains powered on without any electrical hazard or damage to the system. This feature enables you to replace a power module while the system maintains all routing information and ensures session preservation.

However, to maintain operational redundancy and proper cooling, and to meet EMI compliance standards, you must have at least one working redundant power module that is installed. When you remove a failed power module with the switch in operation, perform the replacement as quickly as possible. Make sure you have the replacement power module ready before beginning the removal and installation procedure.

Note For the RP to communicate properly to a power module in a power tray, input power to at least one of the power modules in the power tray should be present.

This section contains procedures on how to replace the power modules.

Caution Do not turn off the switch on the power tray to remove individual power modules. Power modules support OIR, so they can be removed and replaced with the power on and the system operating.

Install Power Shelf Bezel

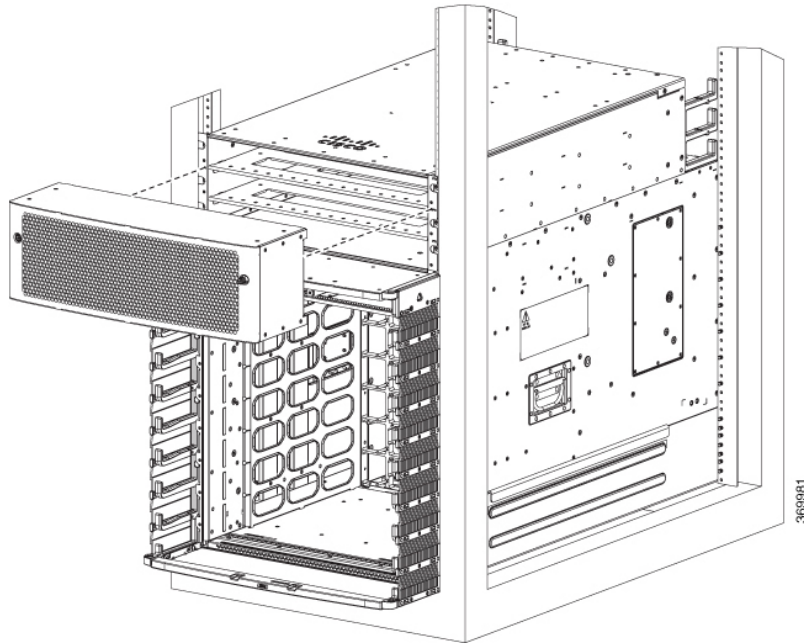Follow these steps to install a power shelf bezel on a chassis:

Procedure

Place the power supply bezel as shown in the below figure and secure it with the provided jackscrews.
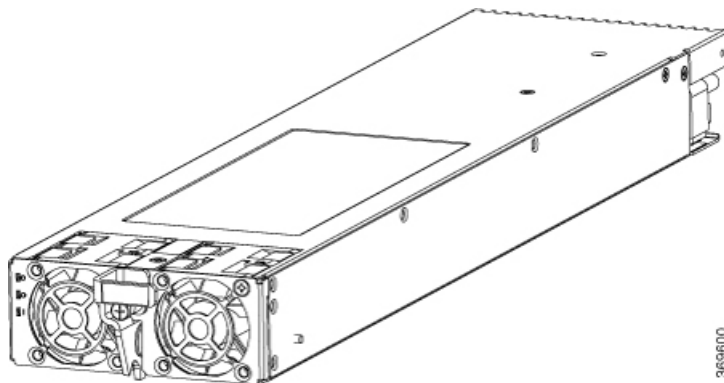
Figure 63: Power Supply Bezel

Replace DC Power Module

Follow these steps to remove a DC power module from the chassis.

Procedure

Step 1   Pull the handle down.

Step 2   Unscrew the screw that secures the power module using a Phillips screw driver.

Step 3   Slide the power module out of its bay while supporting it with your other hand to remove it.

Figure 64: DC Power Module

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

Step 5   Move the handle up.

Step 6   Tighten the screw that secures the power module using a Phillips screw driver.

> **Caution**   To prevent damage to the power tray backplane connector, do not use excessive force when inserting the power module into the power tray.

Step 7   Verify that the (green) Power Input indicator on the front of the power module goes on.

Disconnect DC Power

Procedure

Step 1   Power off the circuit breaker assigned to the DC power source you are disconnecting.

> **Caution**   To ensure that power remains off while you are performing this procedure, lock-out/tag-out the circuit breaker switch in the STANDBY (0) position until you are ready to turn it on.

Step 2   Remove the clear plastic safety covers that fit over the DC power connection terminal studs.

> **Caution**   To prevent injury and damage to the equipment, always remove the source DC power cables and ground from the power tray terminals *in the following order* : (1) negative (−), (2) positive (+).

Step 3   Disconnect the DC power cables from their terminals in the following order and note the color of each cable.

    a) Negative (PWR) cables first.

    b) Positive (RTN) cables last.

Step 4   Repeat Step 1 through Step 3 for the other power tray, if installed.

> **Caution**   It is not necessary to disconnect all power from the switch to replace components, including power modules.

Reconnect DC Power

Follow these steps to reconnect DC power to a DC power tray:

Procedure

Step 1   Set the power switch to the OFF (0) position.

Step 2   Check that the circuit breaker assigned to the DC power source you are reconnecting is powered OFF (0).

Step 3   Reconnect the DC power cables in the following order.

    a) Positive (RTN) cables first.

    b) Negative (PWR) cable last.

c) Repeat Step 1 through Step 3 for the other power trays.

Caution	To prevent injury and damage to the equipment, always attach the ground and source DC power cable lugs to the power tray terminals in the following order: (1) positive (+) to positive (+), (2) negative (–) to negative (–).

Caution	Do not overtighten the nuts that secure the DC power cables to the power tray terminals. The nuts should be tightened using the 7/16 hex socket and torque wrench to a torque of 45–50 in-lb.

Step 4 Replace the clear plastic safety covers over the DC power connection terminal studs and tighten the screws.

Step 5 Set the DC power source circuit breaker to ON (1).

Step 6 Set the power tray switch to ON (1).

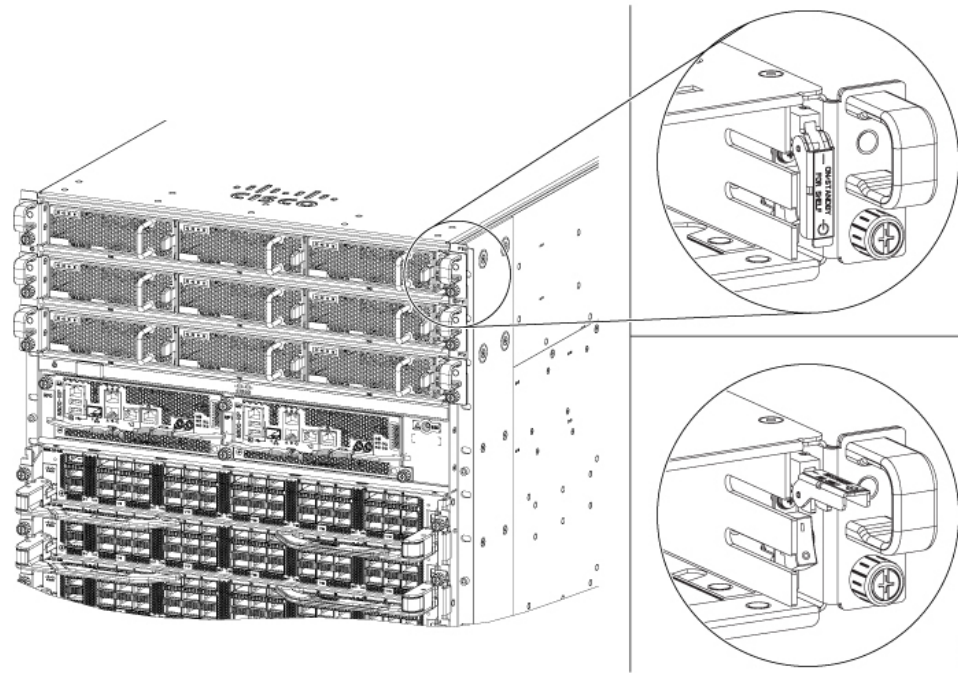|	
Caution	Use this procedure only when reconnecting power to all power modules in a system that is powered down completely.

Replace HVAC and HVDC Power Module

Follow these steps to remove HVAC and HVDC power modules from the chassis.
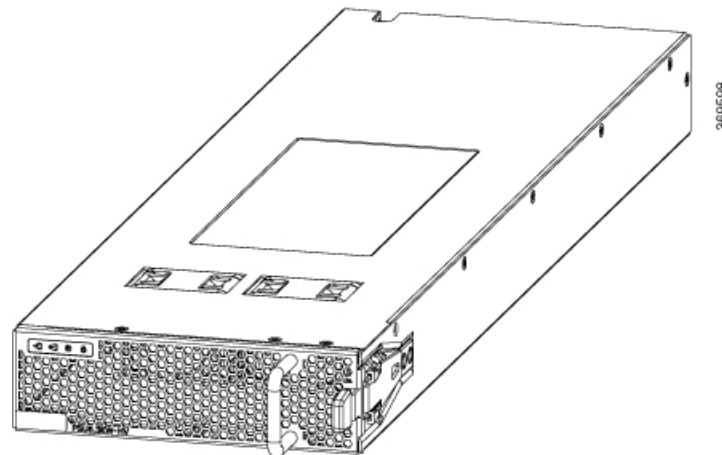
Procedure

Step 1 Do not Power OFF (0) the standby mode switch.

Figure 65: HV Power Tray Standby Mode Switch

Step 2   Slide the power module out of its bay while supporting it with your other hand to remove it.

Figure 66: HV Power Supply

Step 3   Slide the new power module into the bay until it mates with its connector.
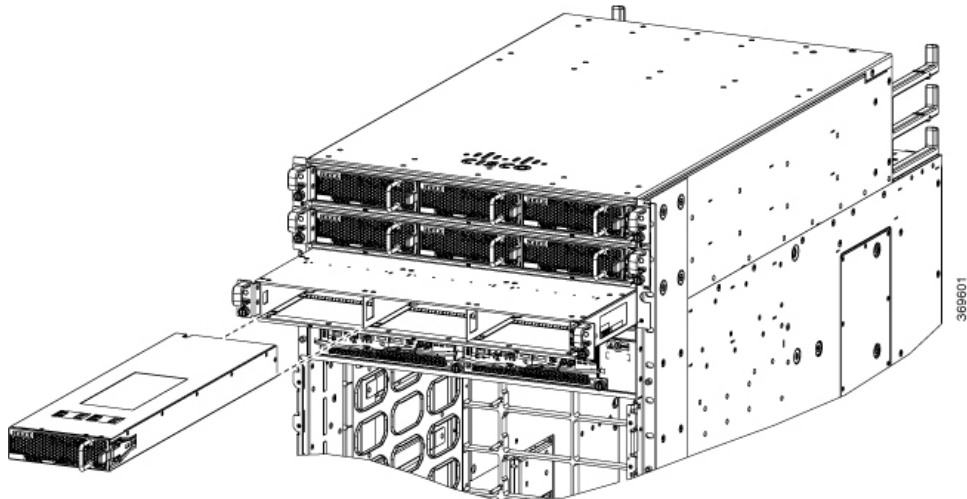
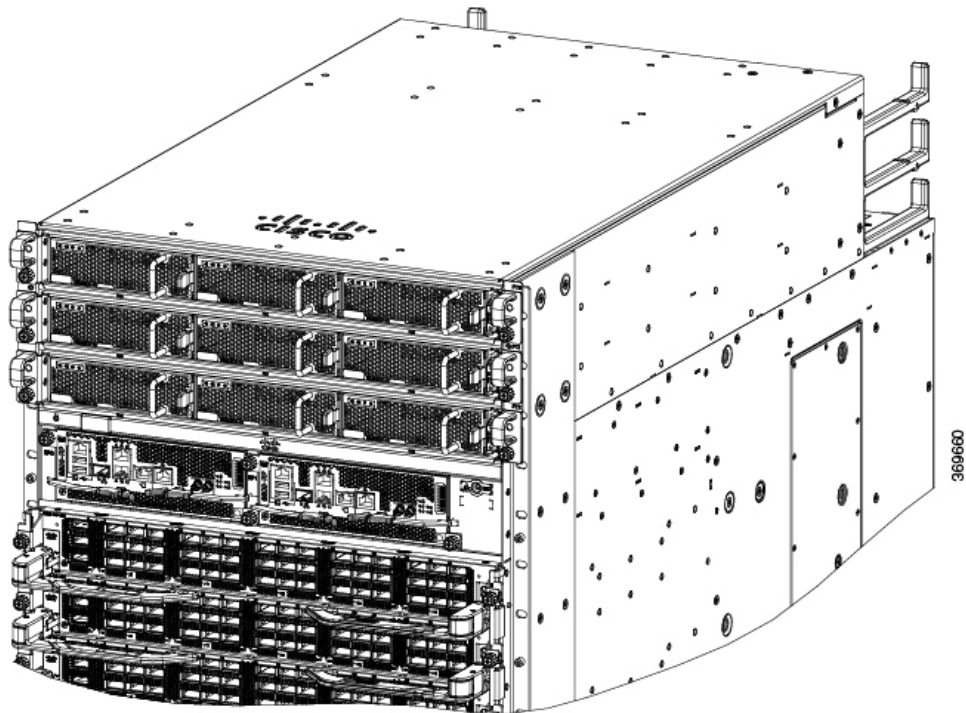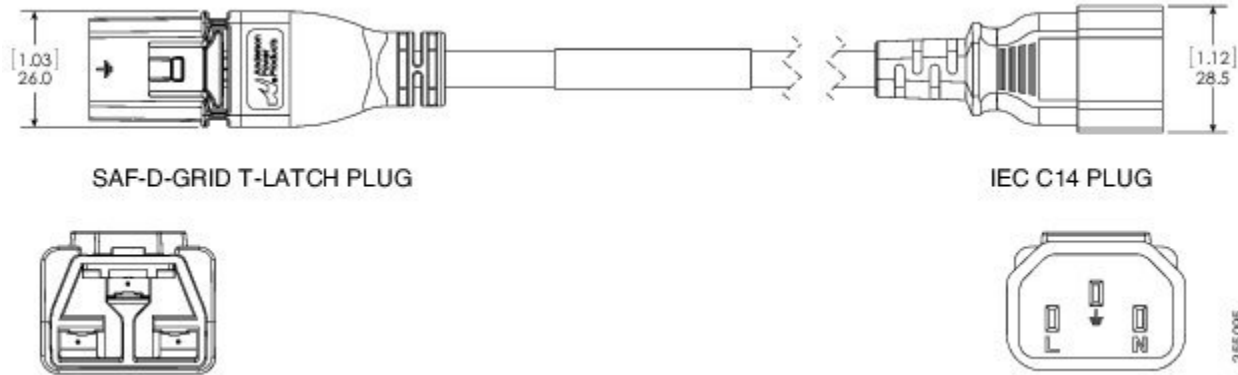*Figure 67: HV Power Supply on Tray*

Figure 68: HV Power Supply Trays

Step 4   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 69: SAF-D-Grid Plug

SAF-D-GRID T-LATCH PLUG

IEC C14 PLUG

Step 5   Verify that the (green) power indicator on the front of the power module goes on.