



## **Cisco Nexus 9804 NX-OS Mode Switch Hardware Installation Guide**

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## CHAPTER

# 1

## Cisco Nexus 9804 Switch Overview

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## Cisco Nexus 9808 Switch Overview

The Cisco 9808 switch includes:

## Cisco 9800 Series Switches

The following table describes the Cisco 9804 switch components, and the supported quantity.

*Table 1: Cisco 9804 Switch Components*

Component	Quantity
Line cards	4
Supervisor Modules	2
Fabric Modules	8
Fan trays	4
Power trays	2
Power supplies	HVAC—6 (3 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+

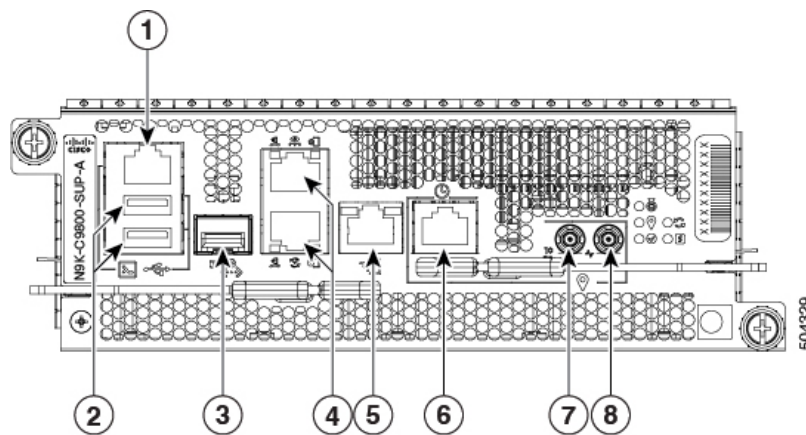


**Note** When unlocking the ejector button and then relocking it without removing the line card, the line card will power down. The line card will not power up and will not show **poweroff module** in command line interface. Performing OIR is required to power up the line card.

# 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

<b>4</b>	Top: Management Ethernet (10/100/1000-Mbps) RJ-45 (Copper) port LAN. Bottom: IEEE 1588 Precision Time Protocol (PTP)	<b>8</b>	1.0/2.3 50 ohm connector for 1 PPS, input, and output
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## Fabric Module Overview

Cisco Nexus 9804 switches support the following fabric modules:

- N9K-C9804-FM-A—Cisco Nexus 9804 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: 124 lbs. (56.36 kg.) Fully loaded: 402 lbs. (183 kg.)
Dimensions	(H) 17.5 x (W) 17.45 x (D) 33 in. (44.45 x 44.32 x 83.82 cm.)
Number of Rack Units	10 RU

The following table describes the maximum power consumption of supervisors, fabric modules, fan trays and line cards in Nexus 9804 chassis.

**Table 3: Power Requirements for the Cisco Nexus 9804 Switch Components**

Component	Maximum power / Unit
Supervisor Module (N9K-C9800-SUP-A)	95 W
Fabric Module (N9K-C9804-FM-A)	230 W
Fan tray (N9K-C9804-FAN-A)	330 W
Line card (N9K-X9836DM-A – 36 port 400G QSFP-DD line card)	2436 W

Component	Maximum power / Unit
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 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	

**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	

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
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	

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	

## 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](#)







## CHAPTER 2

# Prepare for Installation

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## Prepare for Installation



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

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**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](#).



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**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.



**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.

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


## 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): <ul style="list-style-type: none"> <li>• Support rails are non-adjustable</li> <li>• Set the vertical support rack rails at 32" pitch</li> </ul>	1

Illustration	Description	Quantity
	Ground lug kit <ul style="list-style-type: none"> <li>• Two-hole lug (1)</li> <li>• 1/4"-20 Phillips pan-head screws (2)</li> </ul>	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.

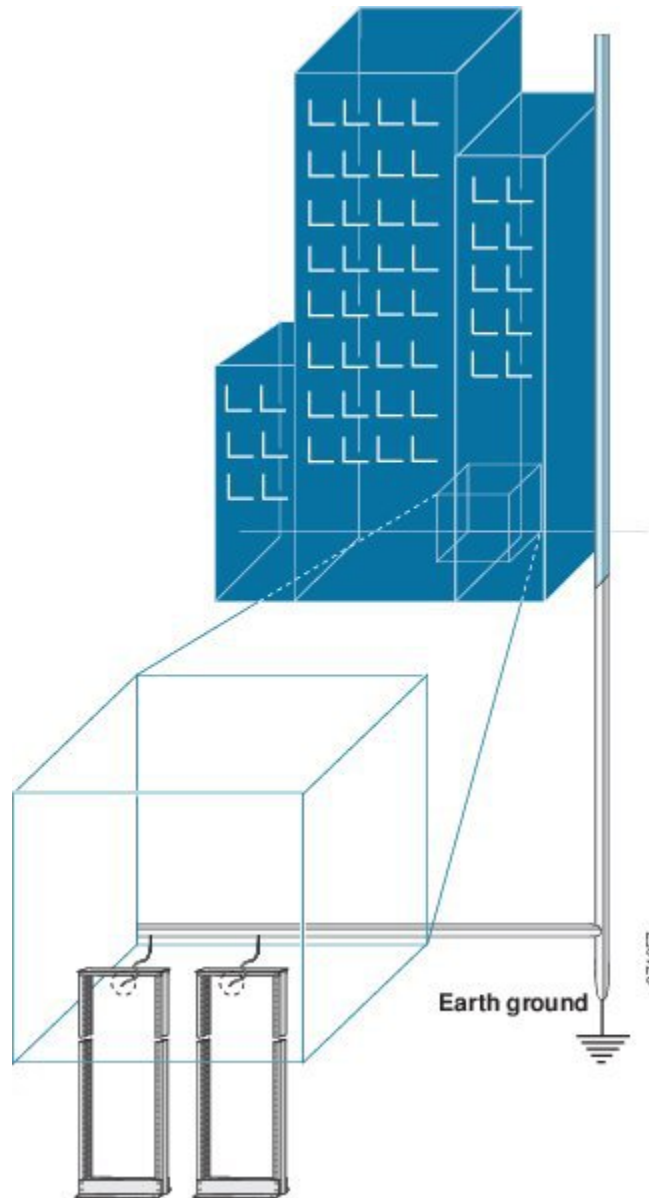


**Note** Unless specified otherwise, the image is only for representational purposes. The rack's actual appearance and size may vary.



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

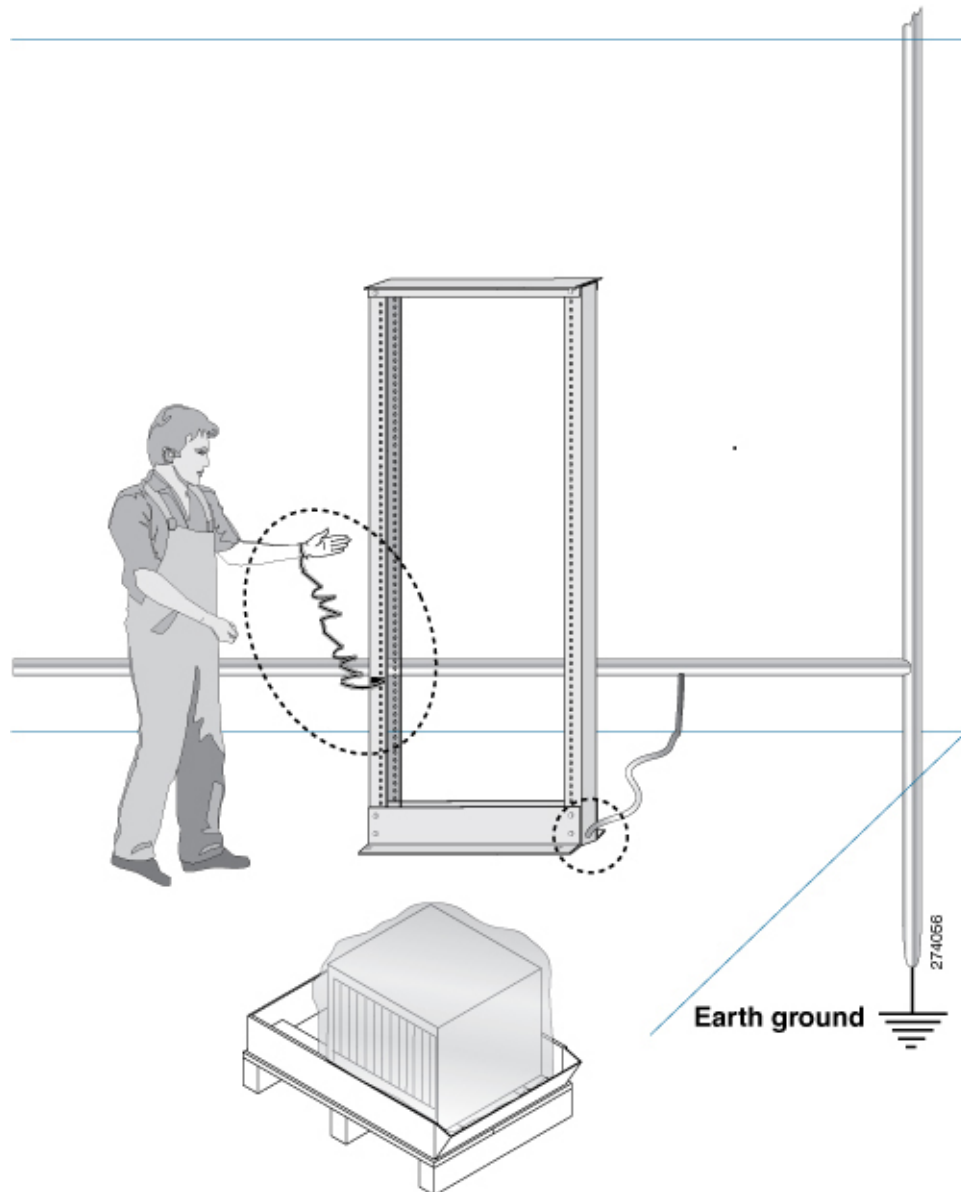
*Figure 2: Building with Rack Room Connected to Earth Ground*



## 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:



**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](http://Hilti.com) for details). Make sure that floor mounting bolts are accessible, especially if annual retorquing of bolts is required.

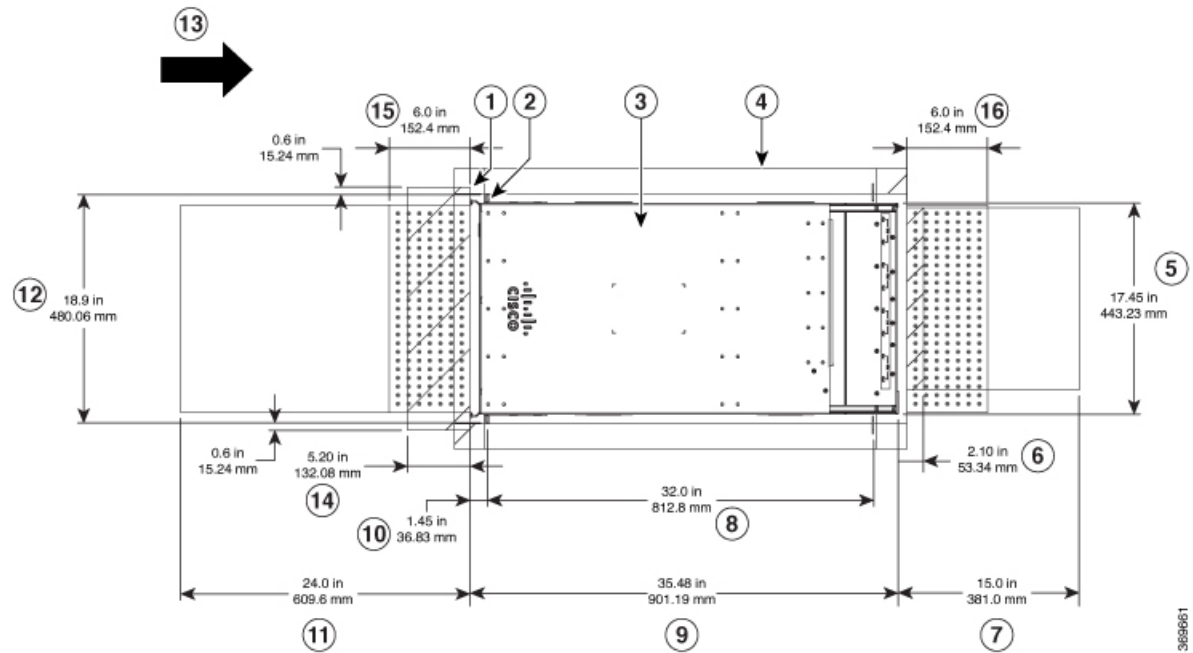
**Note** Ensure that the rack in which the chassis is being installed is grounded to earth ground.

## 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**

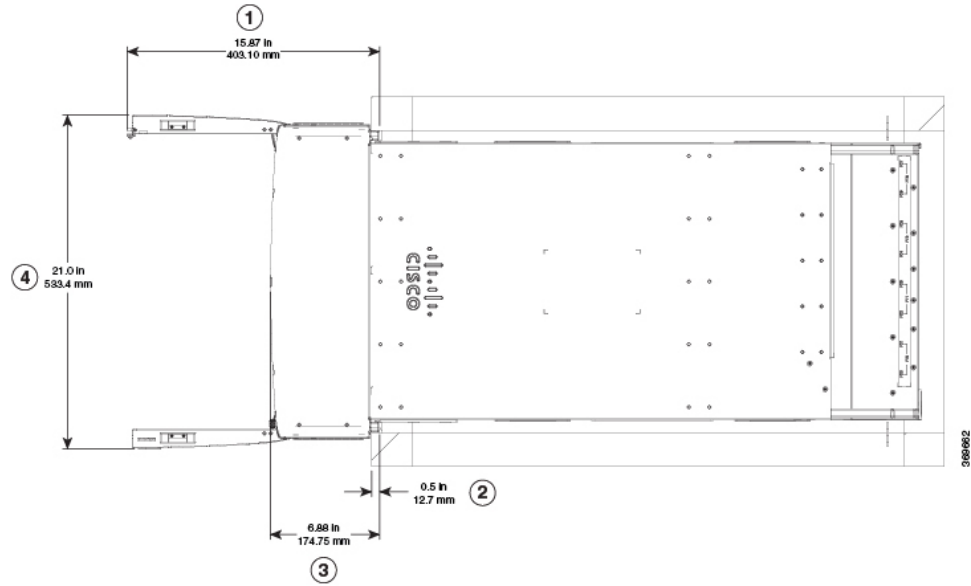


(1) Vertical rack post	(8) Mounting depth of rack vertical rails
(2) Vertical rack rail	(9) Chassis depth
(3) Chassis	(10) Depth from the vertical rack rail to the front
(4) Outside of the rack (no clearance required)	(11) Front service area for the line card rack
(5) Rear chassis width	(12) Front chassis 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)



## CHAPTER 3

# Unpack and Install the Chassis

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- [Unpack the Chassis, on page 17](#)
- [Install Bottom-Support Rails, on page 18](#)
- [Transfer Chassis to a Mechanical Lifting Device, on page 19](#)
- [Mount Chassis Into the Rack, on page 21](#)
- [Attach Front Door to Chassis, on page 24](#)

## Unpack and Install the Chassis



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

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## Unpack the Chassis



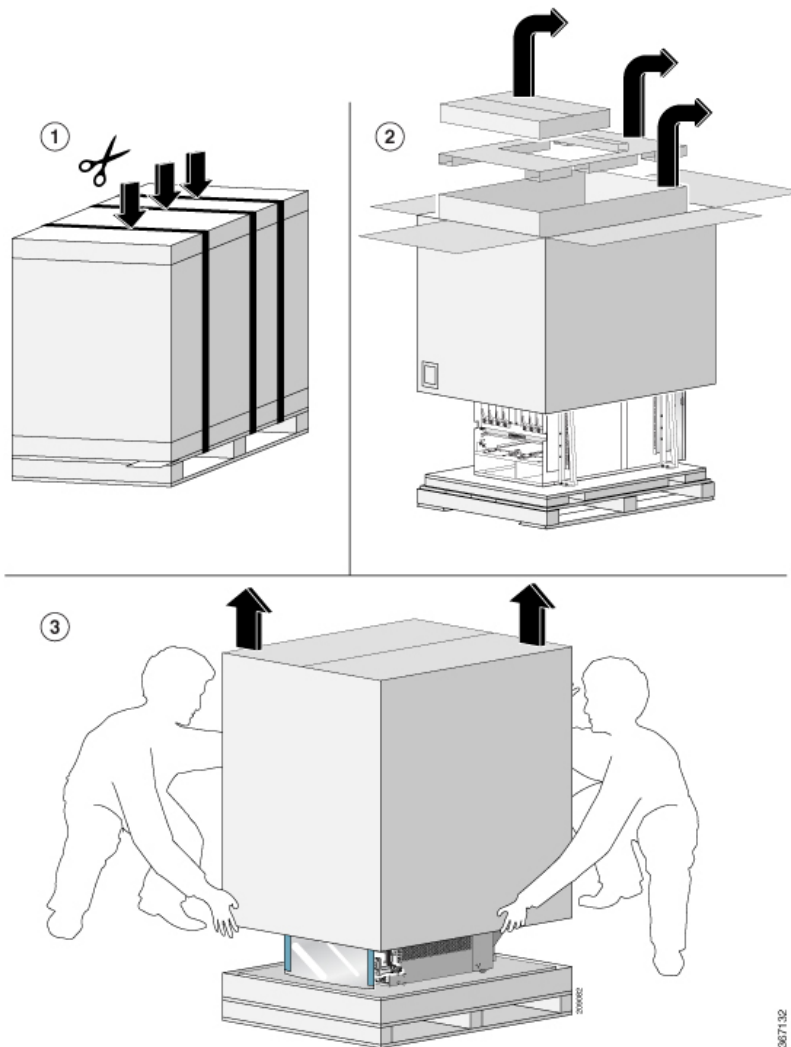
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**Tip** Be sure to save the packaging in case you need to return any of the components products.

---

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.



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

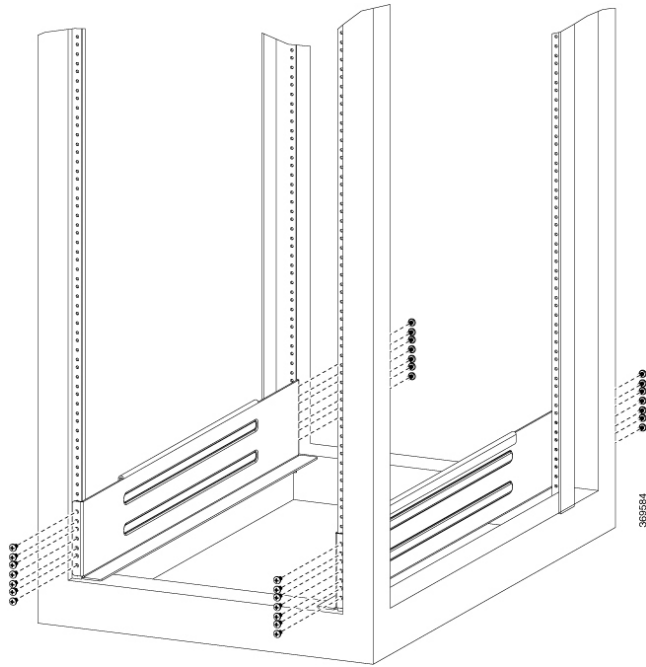
Leave the chassis on the pallet until you are ready to move and install the chassis in a rack.

## 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).

- Step 1** Position the vertical rack rails at 32" depth to match with the length of the bottom-support rails. Check spacing considerations.
- Step 2** Attach the bottom-support rail to the rack using a Phillips torque screwdriver on M6 x 19 mm or 12–24 x 3/4 inch screws for each end of the rail (as shown in the following figure) and tighten each screw to 40 in-lbs (4.5 N-m) of torque.

**Figure 6: 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

- Step 1** Place the mechanical lifting device in front of the chassis on the pallet (or on Line Card side) as shown.

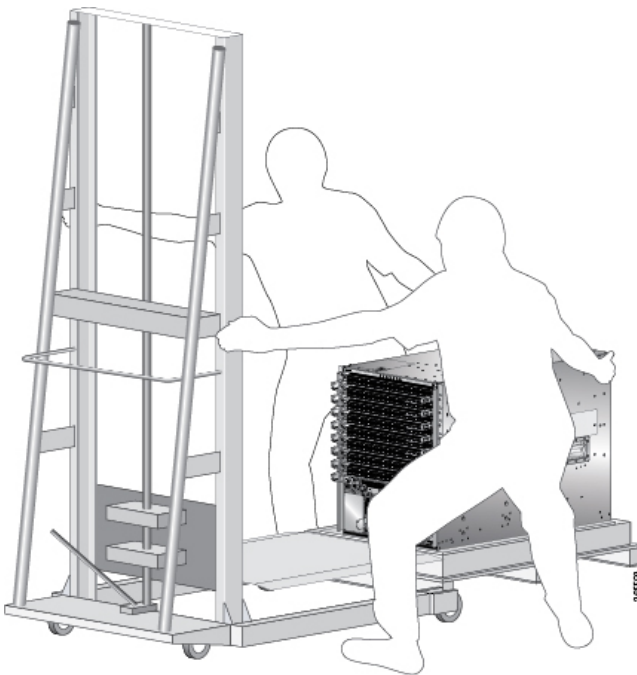
**Note** Illustrations are for representational purposes only.

**Figure 7:** 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 8:** 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.

---

**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.

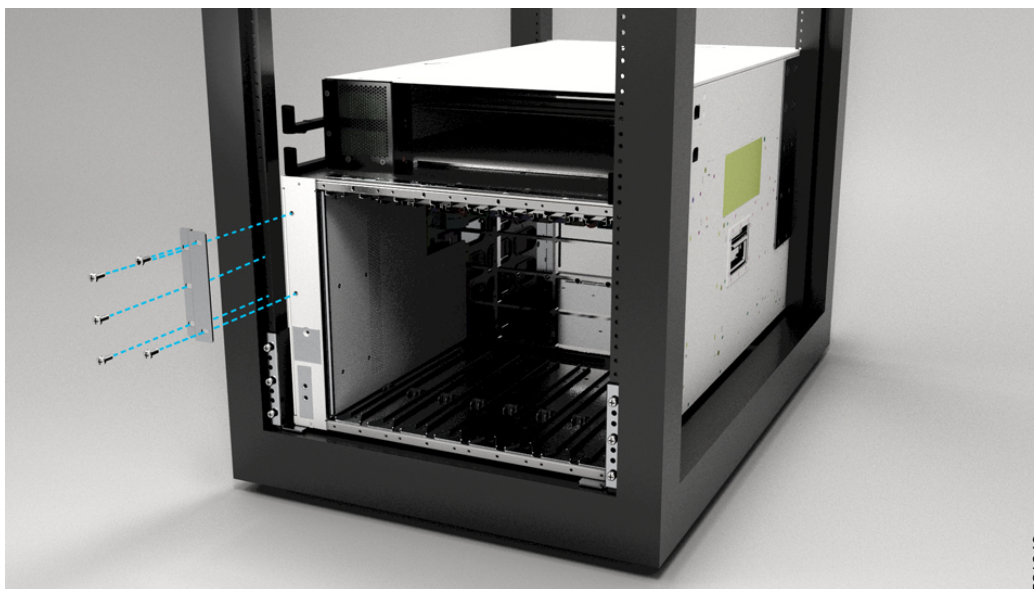
**Step 2** Push the chassis all the way onto the rack so that the vertical mounting brackets on the front of the chassis come in contact with the vertical mounting rails on the rack.

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

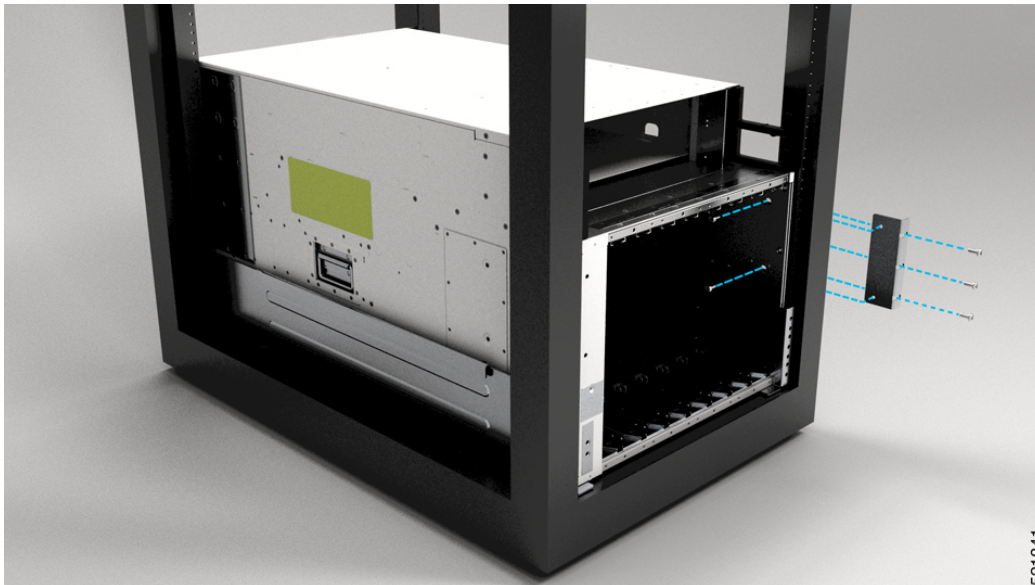
**Note** You should remove the power shelf to facilitate attaching chassis to the rack.

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

*Figure 9: Attach Chassis to Rack - Rear Left View*



*Figure 10: 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

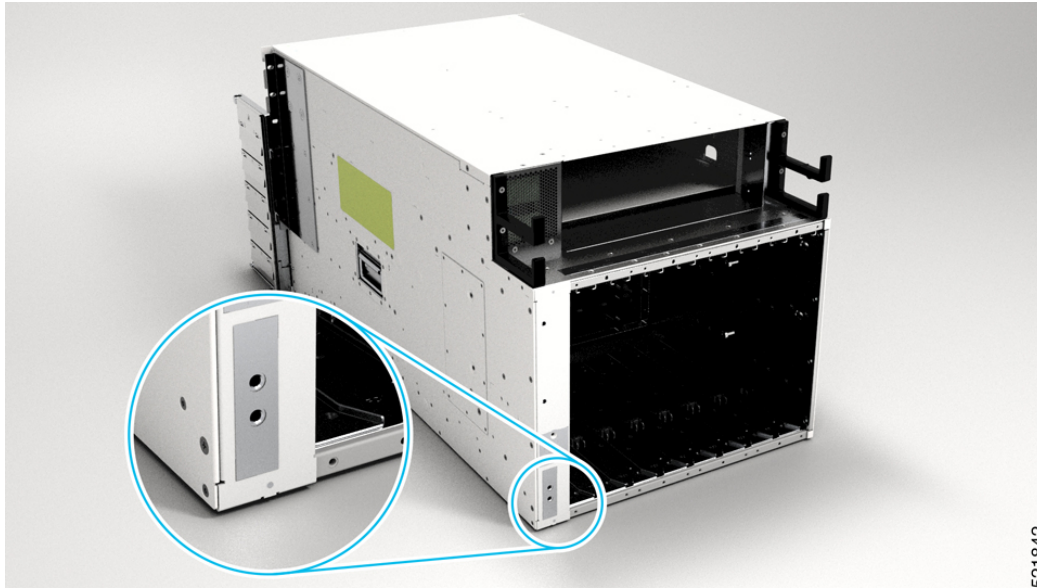
**Step 1** Locate the chassis grounding receptacles on your chassis.

You can locate them at the following position:

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

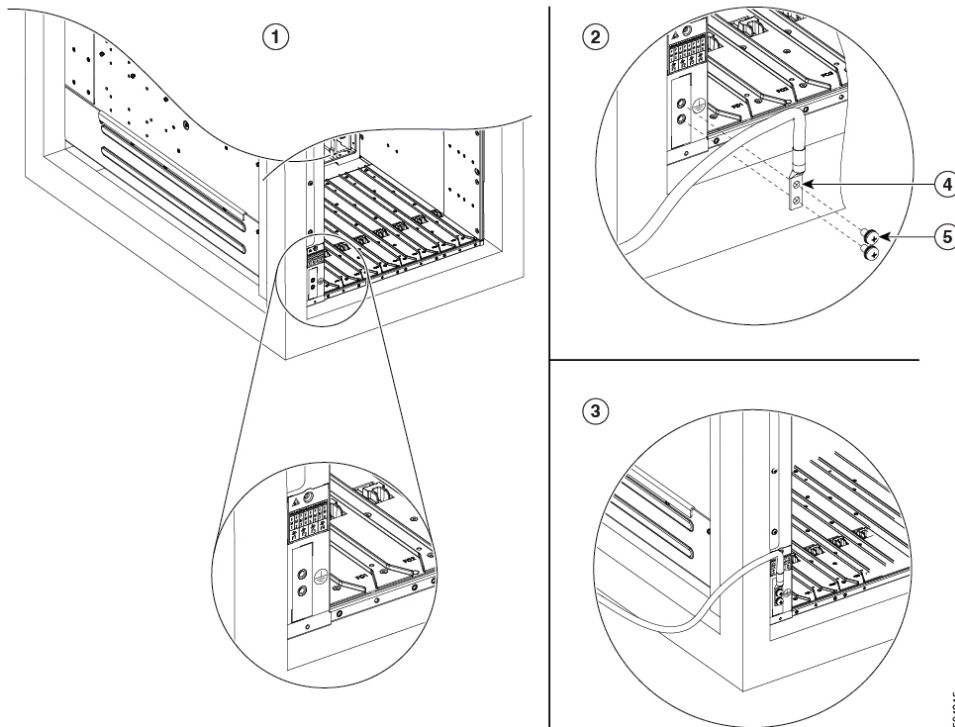


Figure 11: Chassis Ground Receptacles



- 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 12: 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.

## Attach Front Door to Chassis

### Before you begin

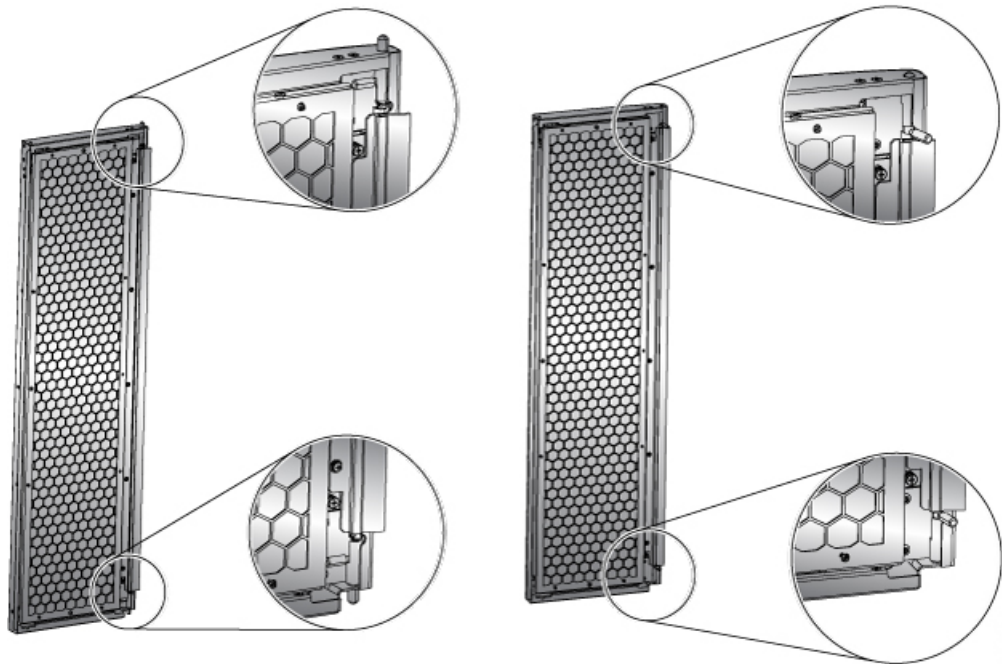
Before you can attach the front door to the chassis, you must attach the cable management brackets, bottom plate, and top hood onto the chassis.

Required tools and equipment:

- Phillips screwdriver with a torque capability (customer supplied)

- 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.

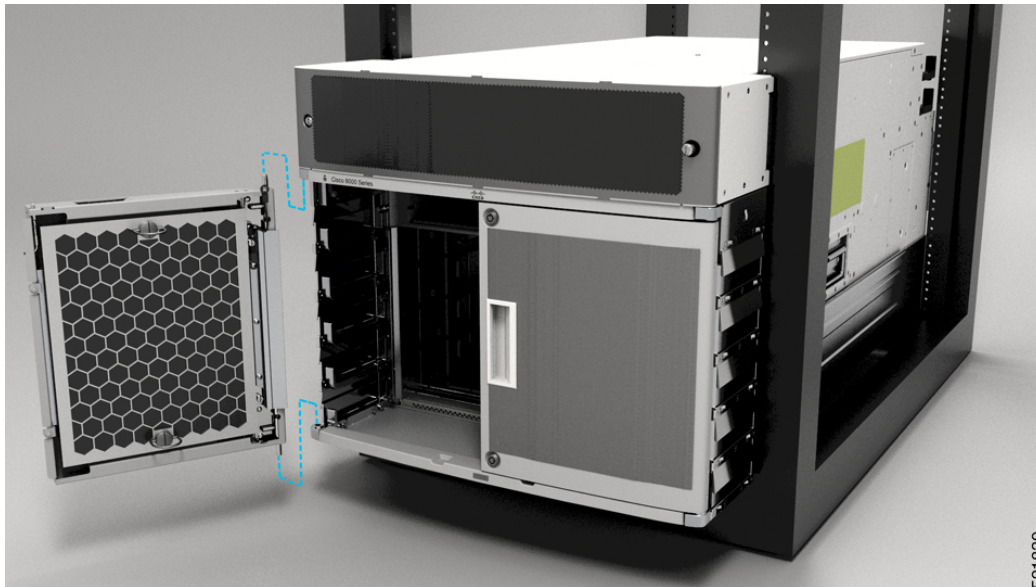
Figure 13: Front Door Pins



366132

**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 14: Attach Front Door



521839

- 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 26](#).

**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 80](#).

**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

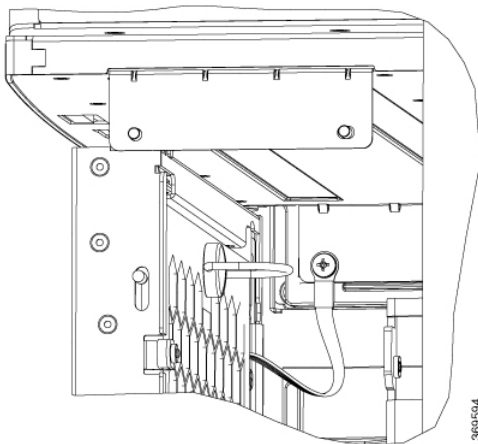


**Note** To comply with GR-1089, you have to bond the front doors to the ground port on the chassis using the ground braid.

**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 15: 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.





## CHAPTER 4

# Powering on the Switch

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- [Powering on the Switch, on page 29](#)
- [Power Module Overview, on page 29](#)
- [Connect HVAC Power Supply to Power Source, on page 30](#)
- [Power Supply Power Cord Specifications, on page 32](#)

## 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 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 9804 chassis contains two power trays

Each power tray supports up to three AC 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 Power Supplies

HVAC power modules operate in the input range of 180 VAC to 305 VAC (nominal input level of 200 to 240 VAC, 277 VAC).

- NXX-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.

- NXX-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.

## Connect HVAC Power Supply to Power Source

The HVAC 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 power supply provides  $n+n$  or  $n+x$  line redundancy mode in a single power supply for the switch.

The HVAC 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.

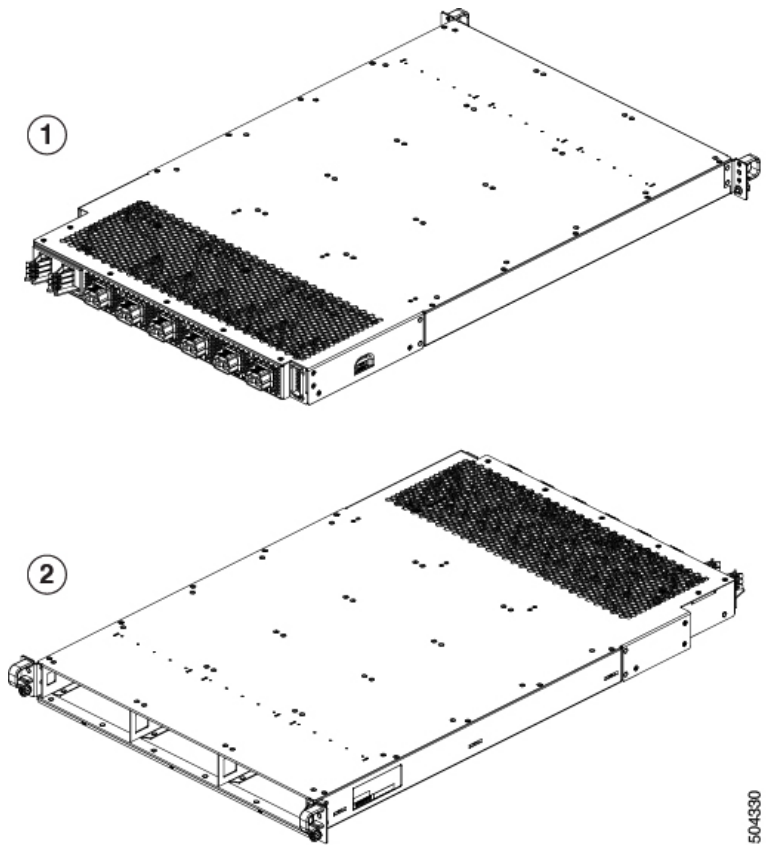
### Before you begin

- 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.
- NXX-HV-6.3KW30A-A: The HVAC power sources are rated for 30A maximum input current.
- NXX-HV-6.3KW20A-A: The HVAC power sources are rated for 20A maximum input current.

- 
- Step 1** Choose your power supply (HVAC) 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.

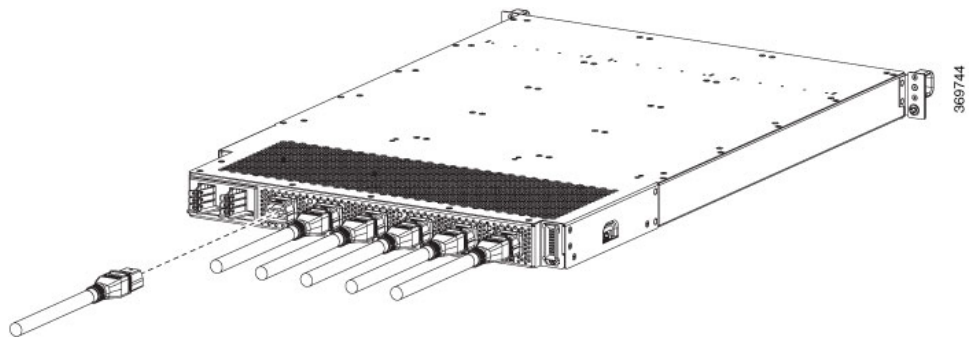


Figure 16: HV Power Tray



1	Rear	2	Front
---	------	---	-------

Figure 17: HVAC Power Connection



**Step 3** Verify that the Saf-D-Grid plug is plugged in completely to secure the built-in retaining latch.

**Step 4** Turn on the circuit breaker for the HVAC 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 5** 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.

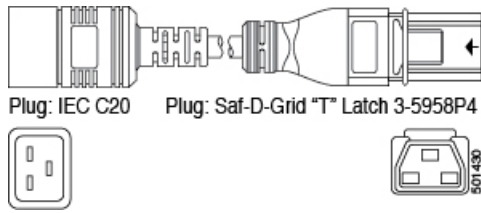
**Table 8: Standard AC and HDVC Power Cords**

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 <a href="#">Power Cord Illustrations, on page 34</a>
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 <a href="#">Power Cord Illustrations, on page 34</a>

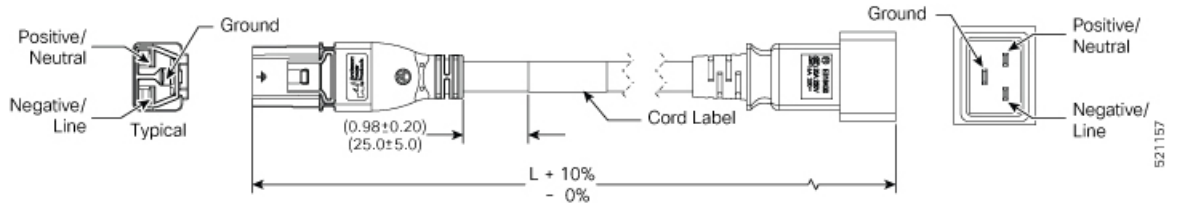
Locale	Part Number	Cisco Part Number (CPN)	Power Cord Set Rating	Connector Part Number	Power Cord Illustration
IEC/EU, AUSTRALIA/NEW ZEALAND, SWITZERLAND, ITALY, SOUTH AFRICA, ISRAEL, BRAZIL, ARGENTINA, INDIA	CAB-AC-32A-ANZ, CAB-AC-32A-CHE, CAB-AC-32A-ITA, CAB-AC-32A-BRZ, CAB-AC-32A-ZAF, CAB-AC-32A-ISR, 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 <a href="#">Power Cord Illustrations, on page 34</a>
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 <a href="#">Power Cord Illustrations, on page 34</a>
NORTH AMERICA	CAB-AC-30A-US3	37-101013-01	30A, 277VAC	Saf-D-Grid 3-5958P4 to HBL2631	Refer the figure in <a href="#">Power Cord Illustrations, on page 34</a>
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 <a href="#">Power Cord Illustrations, on page 34</a>
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 <a href="#">Power Cord Illustrations, on page 34</a>
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 <a href="#">Power Cord Illustrations, on page 34</a>
CHINA	CAB-AC-32A-CHN	37-101010-01	32A, 250VAC	-	Refer the figure in <a href="#">Power Cord Illustrations, on page 34</a>
KOREA	CAB-AC-32A-KOR	37-101012-01	32A, 250VAC	-	Refer the figure in <a href="#">Power Cord Illustrations, on page 34</a>

# Power Cord Illustrations

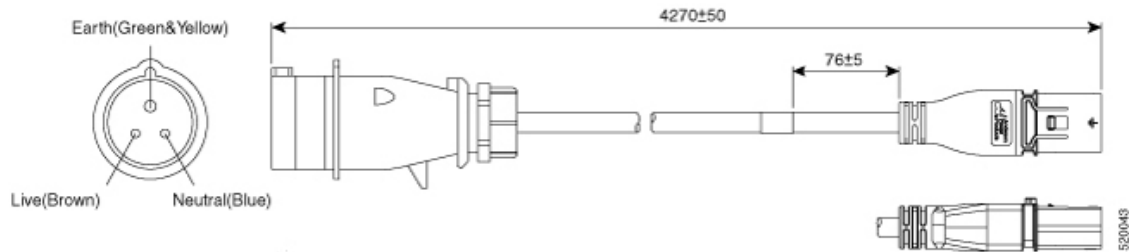
**Figure 18: CAB-AC-20A-SG-C20 Power Cord and Plugs for Standard AC Power Supply**



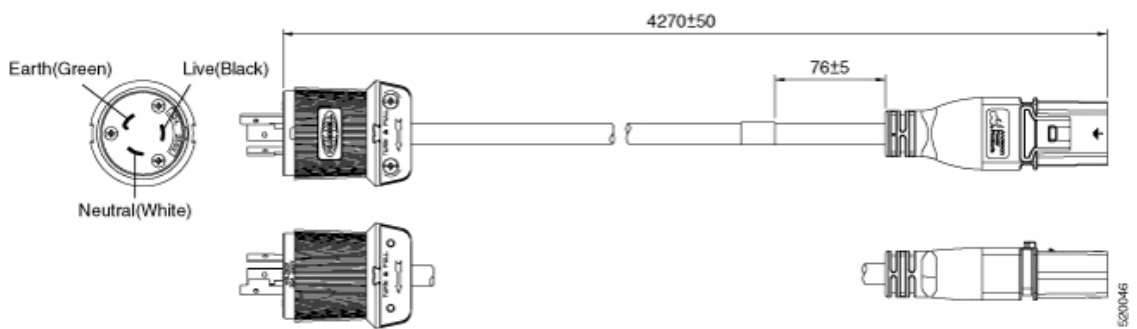
**Figure 19: CAB-AC-20A-NA Power Cord and Plugs for Standard AC Power Supply**



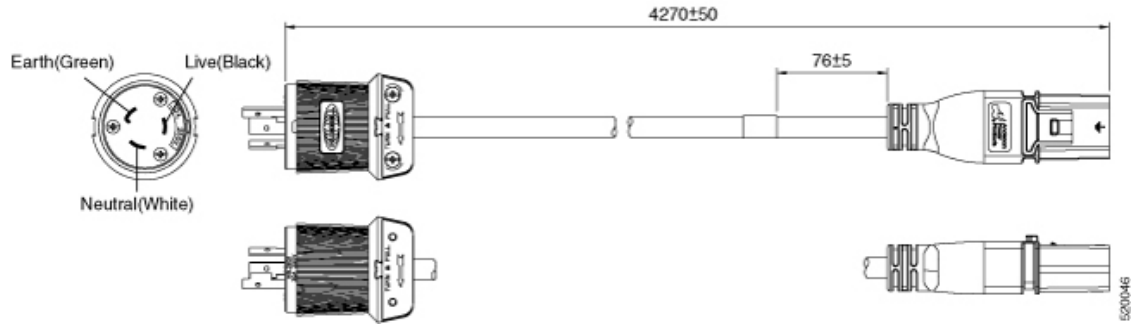
**Figure 20: CAB-AC-32A-ANZ, CAB-AC-32A-CHE, CAB-AC-32A-ITA, CAB-AC-32A-BRZ, CAB-AC-32A-ZAF, CAB-AC-32A-ISR, CAB-AC-32A-IND, CAB-AC-32A-ARG Power Cord and Plugs for Standard AC Power Supply**



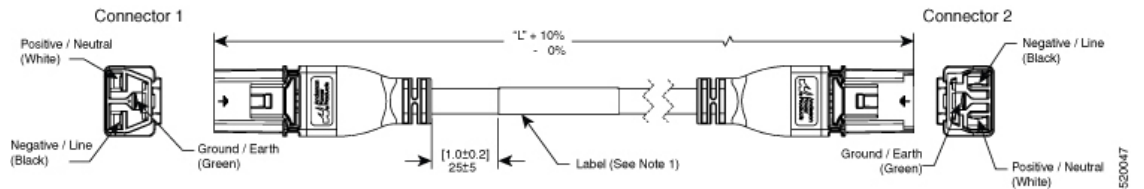
**Figure 21: CAB-AC-30A-US1, CAB-AC-30A-US2 Power Cord and Plugs for Standard AC Power Supply**



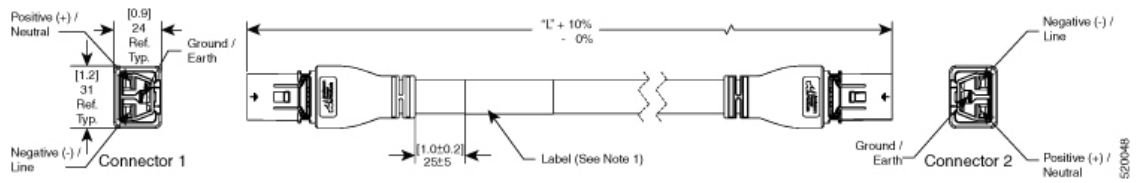
**Figure 22: CAB-AC-30A-US3 Power Cord and Plugs for Standard AC Power Supply**



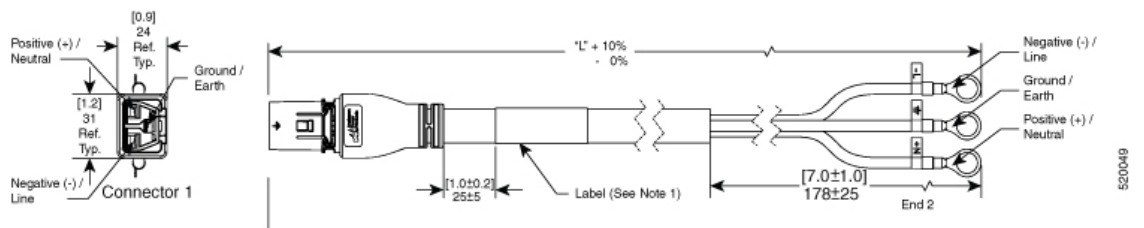
**Figure 23: CAB-AC-30A-US4 Power Cord and Plugs for Standard AC Power Supply**



**Figure 24: CAB-AC-32A-EU Power Cord and Plugs for Standard AC Power Supply**



**Figure 25: CAB-DC-32A-EU1, CAB-DC-32A-EU2 Power Cord and Plugs for HVDC Power Supply**



**Figure 26: CAB-AC-32A-CHN Power Cord and Plugs for Standard AC Power Supply**

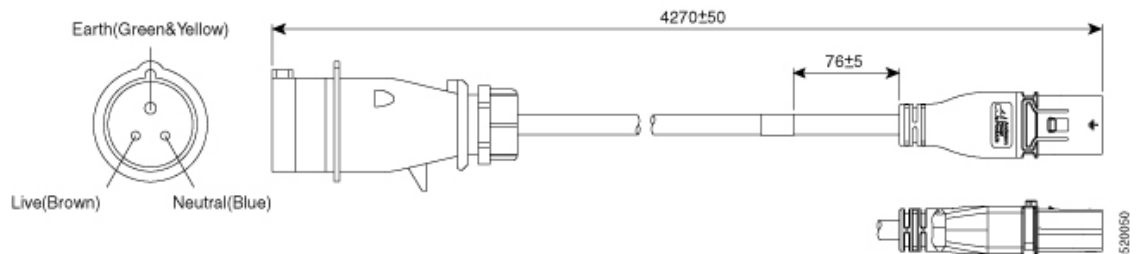
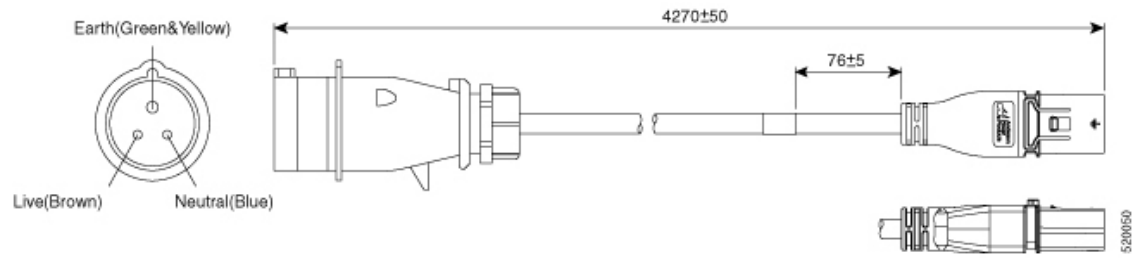


Figure 27: CAB-AC-32A-KOR Power Cord and Plugs for Standard AC Power Supply





## CHAPTER 5

# Connect Switch to the Network

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- [Connect Switch to the Network, on page 37](#)
- [Connecting a Console to the Switch, on page 37](#)
- [Connect the Management Interface, on page 38](#)
- [Transceivers, Connectors, and Cables, on page 39](#)
- [Install and Remove QSFP Transceiver Modules, on page 40](#)
- [Connect Interface Ports, on page 44](#)
- [Maintain Transceivers and Optical Cables, on page 45](#)
- [Create the Initial Switch Configuration, on page 45](#)

## Connect Switch to the Network



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**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.

---

**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 an 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 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.

- 
- 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:

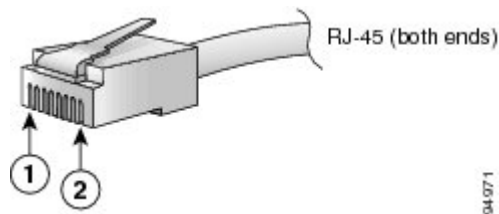
- Switch chassis
  - CONSOLE port
  - MGMT ETH port



**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 28: RJ-45 Connector**



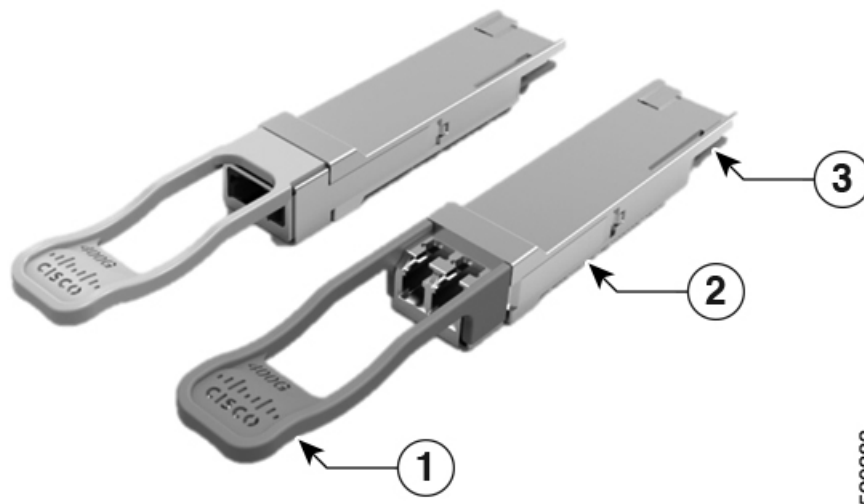
1	Pin 1	2	Pin 8
---	-------	---	-------

## 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 29: 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.

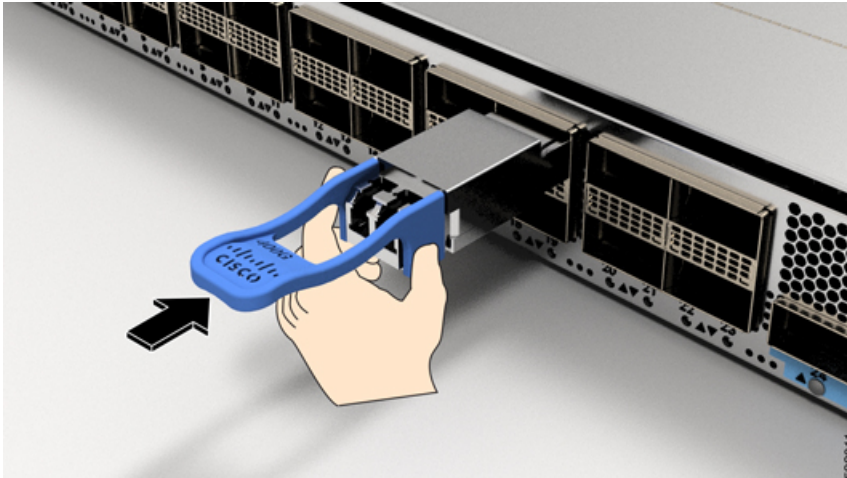
The switch ships with dust caps plugged in. We highly recommend you to keep the dust caps plugged in until you are ready to plug an optic.

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:

- 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.

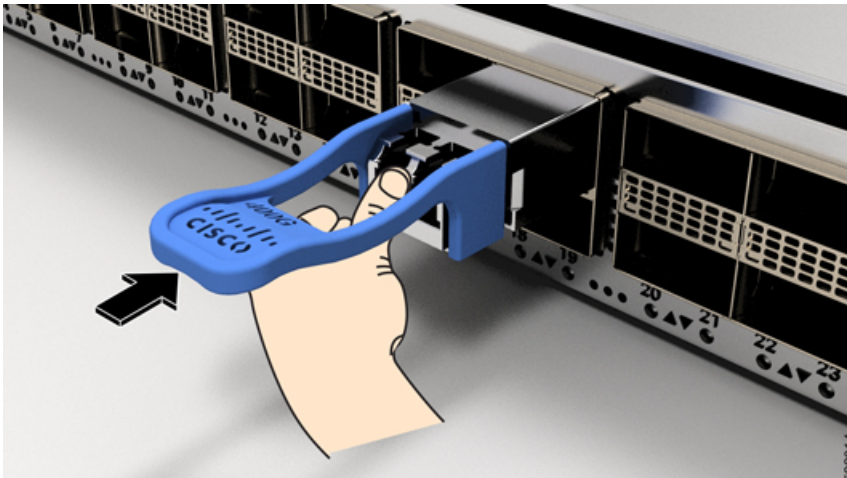
*Figure 30: Installing the QSFP Transceiver Module*



**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 31: 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.

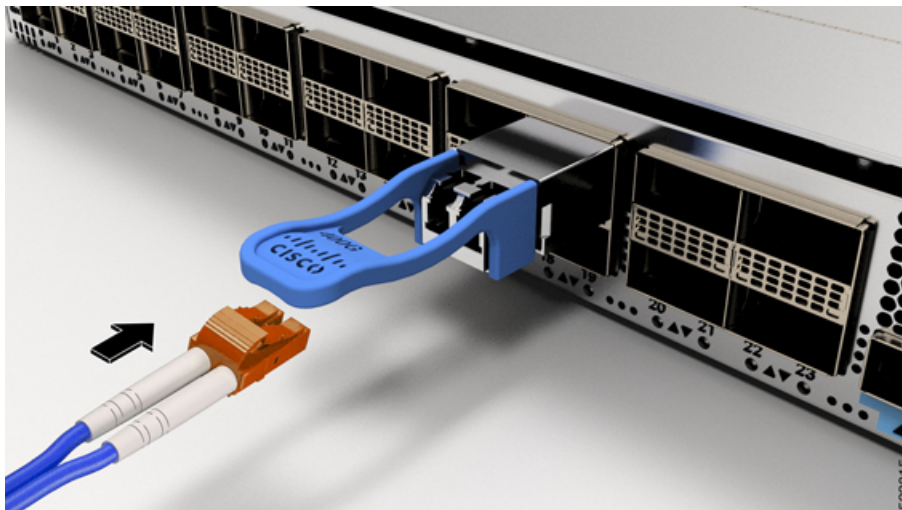


**Note** Inspect the MPO connector for the correct cable type, cleanliness, and any damage. For complete information on inspecting and cleaning fiber-optic connections, see the [Inspection and Cleaning Procedures for Fiber-Optic Connections](#) document.

**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 32: Cabling a Transceiver Module**



## Removing the Transceiver Module

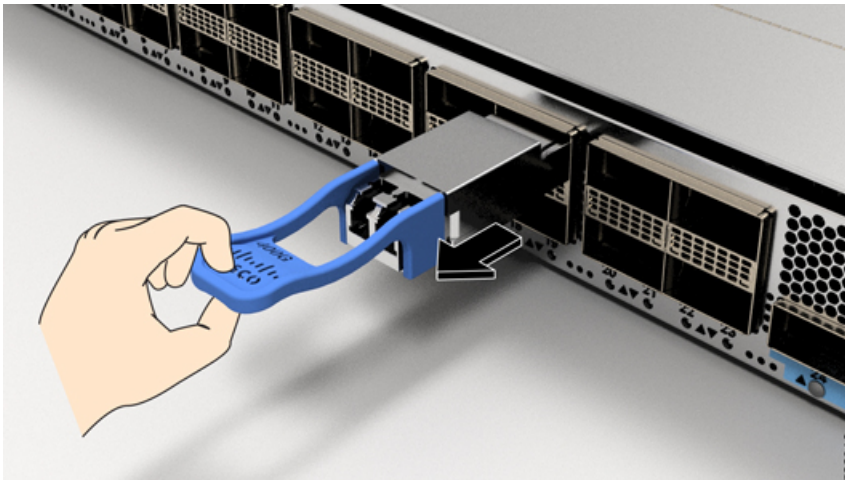


**Caution** The transceiver module is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling transceiver modules or coming into contact with modules.

To remove a transceiver module, follow these steps:

- 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 33: 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 with other devices for network connectivity.

### Connect a Fiber-Optic Port to the Network

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

**Caution**

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

## Disconnect Optical Ports from the Network

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

## Maintain Transceivers and Optical Cables

Refer to [Inspection and Cleaning Procedures for Fiber-Optic Connections](#) document for inspection and cleaning processes for fiber optic connections.

## 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`  
:

---

**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.**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.



Command	Description
show redundancy	Displays the status of supervisor module redundancy.
n9k-184-Man(config)# show locator-led st	<p>Displays LED information for the switch, or for a specific LED location.</p> <pre>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</pre>
show inventory	Displays information about the field replaceable units (FRUs), including product IDs, serial numbers, and version IDs.
show environment	<p>Displays all the environment-related information.</p> <pre>n9k-184-Man(config)# show environment ?  fan Fan information power Power capacity and power distribution information temperature Temperature sensor information</pre>

Command	Description
show environment temperature	<p>Displays temperature readings for card temperature sensors. Each Supervisor Module, line card, and fabric cards have temperature sensors with two thresholds:</p> <ul style="list-style-type: none"> <li>• Minor temperature threshold – When a minor threshold is exceeded, minor alarm occurs and the following actions occur for all four sensors: <ul style="list-style-type: none"> <li>• Displays system messages</li> <li>• Sends SNMP notifications (if configured)</li> <li>• Log environmental alarm event that can be reviewed by running the show alarm command.</li> </ul> </li> <li>• Major temperature threshold – When a major threshold is exceeded, a major alarm occurs and the following actions occur: <ul style="list-style-type: none"> <li>• For sensors 1, 3, and 4 (outlet and on board sensors), the following actions occur: <ul style="list-style-type: none"> <li>• Displays system messages.</li> <li>• Sends SNMP notifications (if configured).</li> <li>• Logs environmental alarm event that can be reviewed by running the show alarm command.</li> </ul> </li> <li>• For sensor 2 (intake sensor), the following actions occur: <ul style="list-style-type: none"> <li>• If the threshold is exceeded in a switching card, only that card is shut down.</li> <li>• 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.</li> <li>• 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.</li> </ul> </li> </ul> </li> </ul> <p><b>Note</b> Cisco recommends that you install dual Supervisor Module.</p>
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
```





# CHAPTER 6

## LEDs

- LEDs, on page 53
- Chassis LED, on page 53
- Port Status LEDs, on page 53
- Power Supply LEDs, on page 54
- Fan Tray LEDs, on page 55
- Supervisor Module LEDs, on page 57
- Fabric Module LEDs, on page 59
- Line Card LEDs, on page 60


## 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.

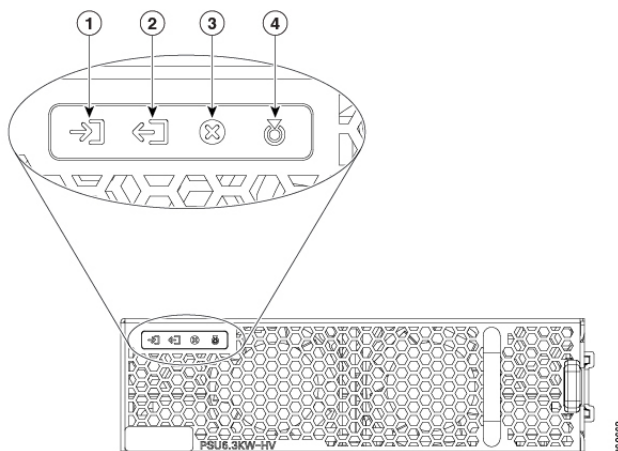
Table 10: Port Status LEDs (One Per Port)

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 34: 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.



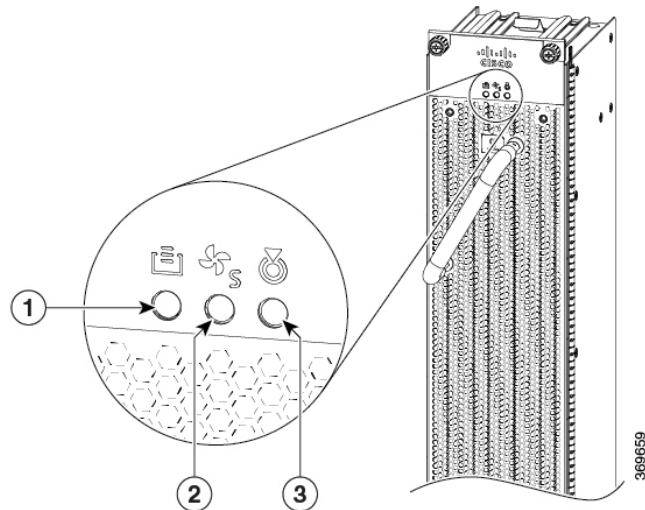
LED	Color	Status
Output OK	Green	Output power is enabled.
	Flashing Green	Output power in power limit, or in overcurrent condition, or is in the sleep-mode. <sup>1</sup>
	Off	Output disabled, or no inputs present, or firmware upgrade in-progress.
Fault	Red	Output voltage is out of the specified range,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

<sup>1</sup> 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 35: Fan Tray LEDs**



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

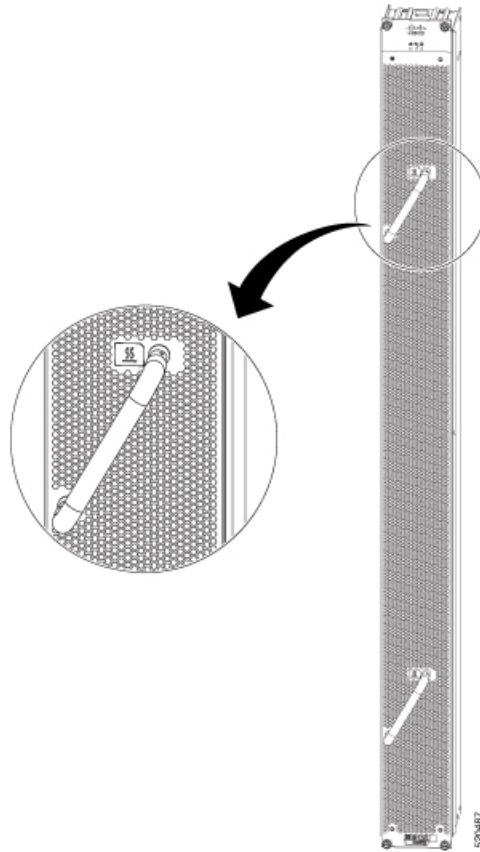
Table 12: Fan Tray LED Descriptions

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: <ul style="list-style-type: none"> <li>• Either one or more fabric cards behind this fan tray is not operational.</li> <li>• Either one or more fabric cards behind this fan tray have minor, major or critical alarm.</li> </ul>
	Green	<ul style="list-style-type: none"> <li>• One of the fabric modules is operational and other one not present.</li> <li>• Both fabric cards behind this fan tray are operational.</li> </ul>
	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.

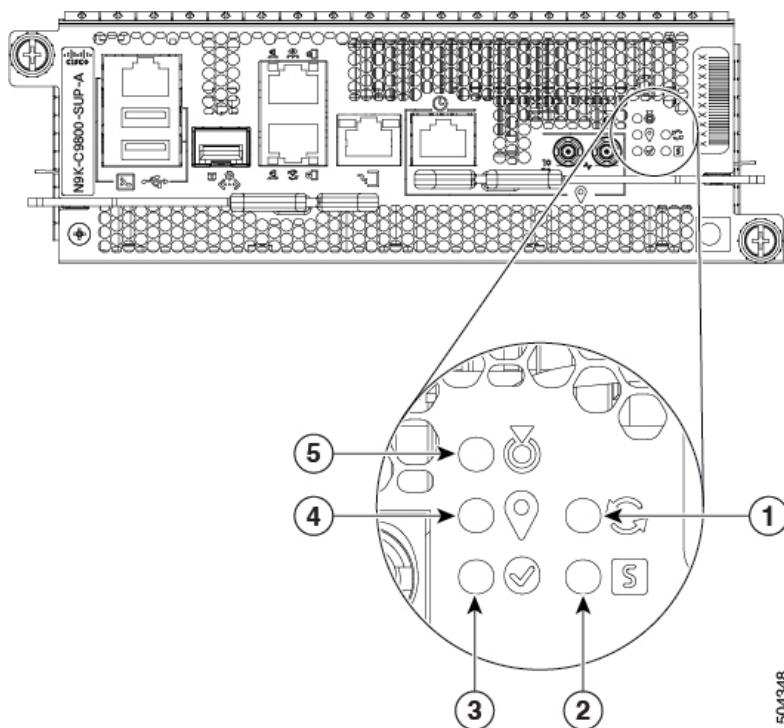
*Figure 36: Temperature Warning Label*



## Supervisor Module LEDs


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




Figure 37: 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: <ul style="list-style-type: none"> <li>• Power cycle</li> <li>• Reload or reimage</li> <li>• Shutdown</li> </ul>
	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: <ul style="list-style-type: none"> <li>• BITS</li> <li>• GPS</li> <li>• Recovered RX Clock</li> </ul>
	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: <ul style="list-style-type: none"> <li>• Power cycle</li> <li>• Reload or reimage</li> <li>• Shutdown</li> </ul>
	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: <ul style="list-style-type: none"> <li>• Power cycle</li> <li>• Reload or reimage</li> <li>• Shutdown</li> </ul>
	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.







## CHAPTER 7

# Replace Chassis Components

---

- [Replace Chassis Components, on page 63](#)
- [Replace Chassis Door Foam Air Filters, on page 63](#)
- [Replace a Supervisor Module, on page 64](#)
- [Replace a Line Card, on page 69](#)
- [Replace a Fan Tray, on page 70](#)
- [Replace Fabric Module, on page 73](#)
- [Replace Power Supply Components, on page 80](#)

## 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.

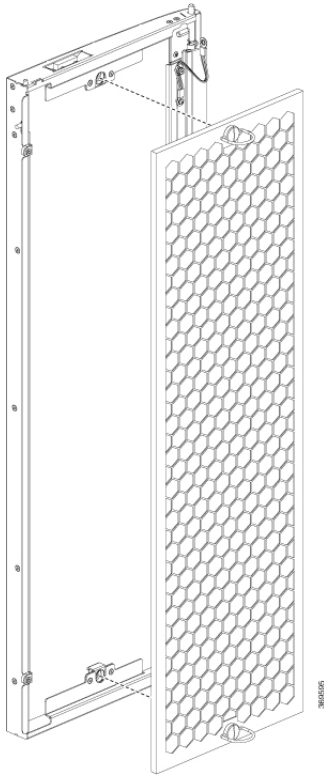
---

The front doors come with pre-installed air filters (N9K-9804-DF-KIT). If air filters need a replacement, follow this procedure.

---

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

Figure 38: 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** Single Sup is supported for this switch.

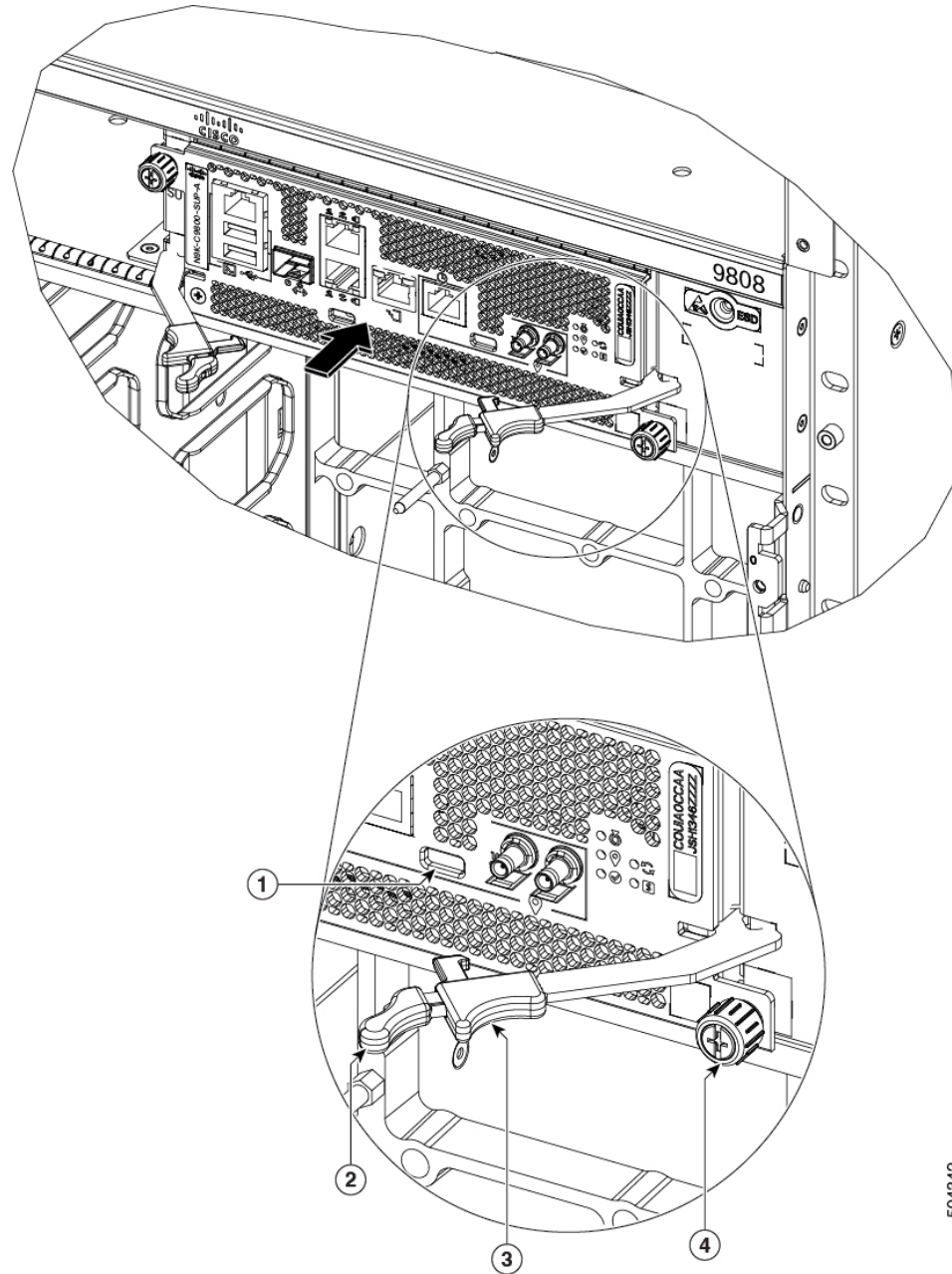


**Warning** Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, they contain electromagnetic interference (EMI) that might disrupt other equipment, and they direct the flow of cooling air through the chassis. Do not operate the system unless 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 39: Supervisor Module Components**



504342

1	Latch Lock	3	Latching Mechanism
2	Ejector Lever Handle	4	Captive Screw



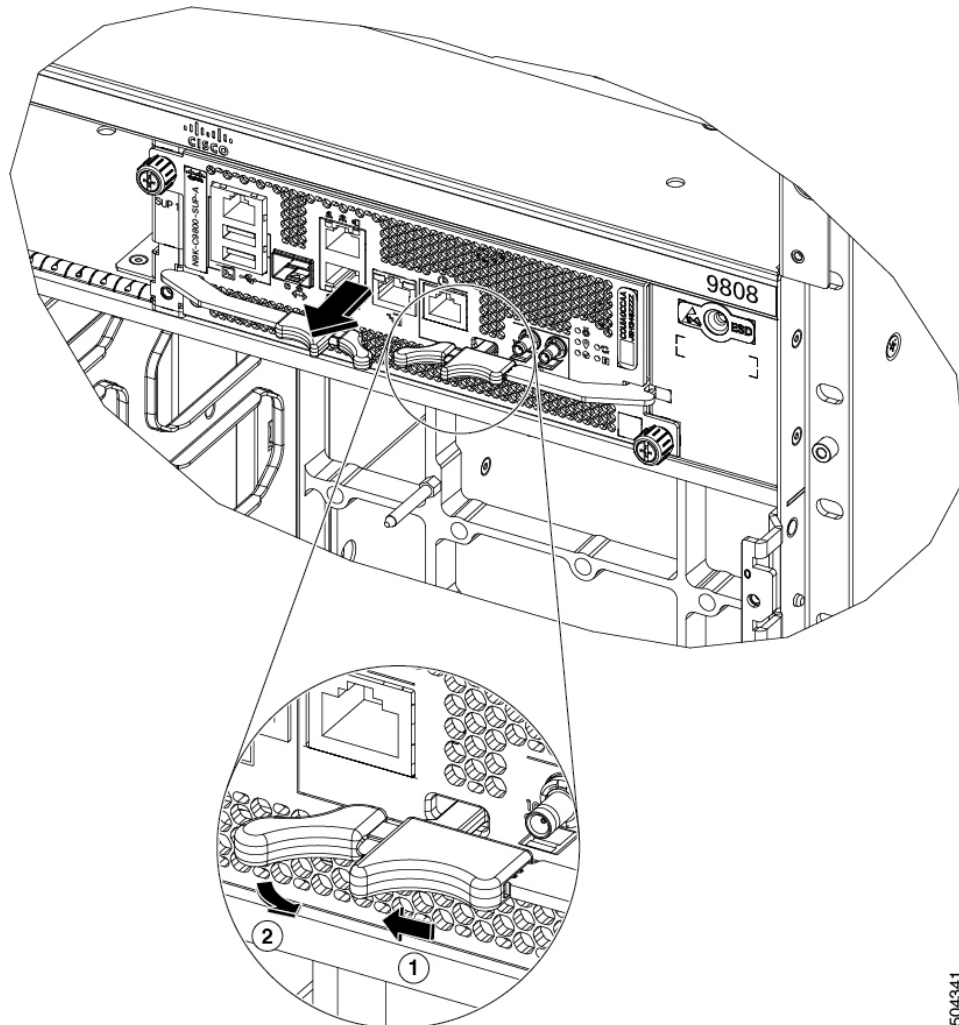
**Caution** Unlatching the right ejector lever, so that it disengages from the latch lock (Callout 1 in above figure) triggers graceful shutdown of the Supervisor if the module is up. If the module shuts down then wait for the Supervisor status LED to turn off before proceeding.

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.

- 
- 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:
- 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.
  - 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.
  - Disconnect the cables from the module.
  - If there are any external drives attached to the module through its USB ports, detach those drives.
  - Loosen the two captive screws (one on each side of the RP) until the screws are no longer in contact with the chassis.
  - 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 40: Remove Supervisor Module from Chassis



504341

- 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.

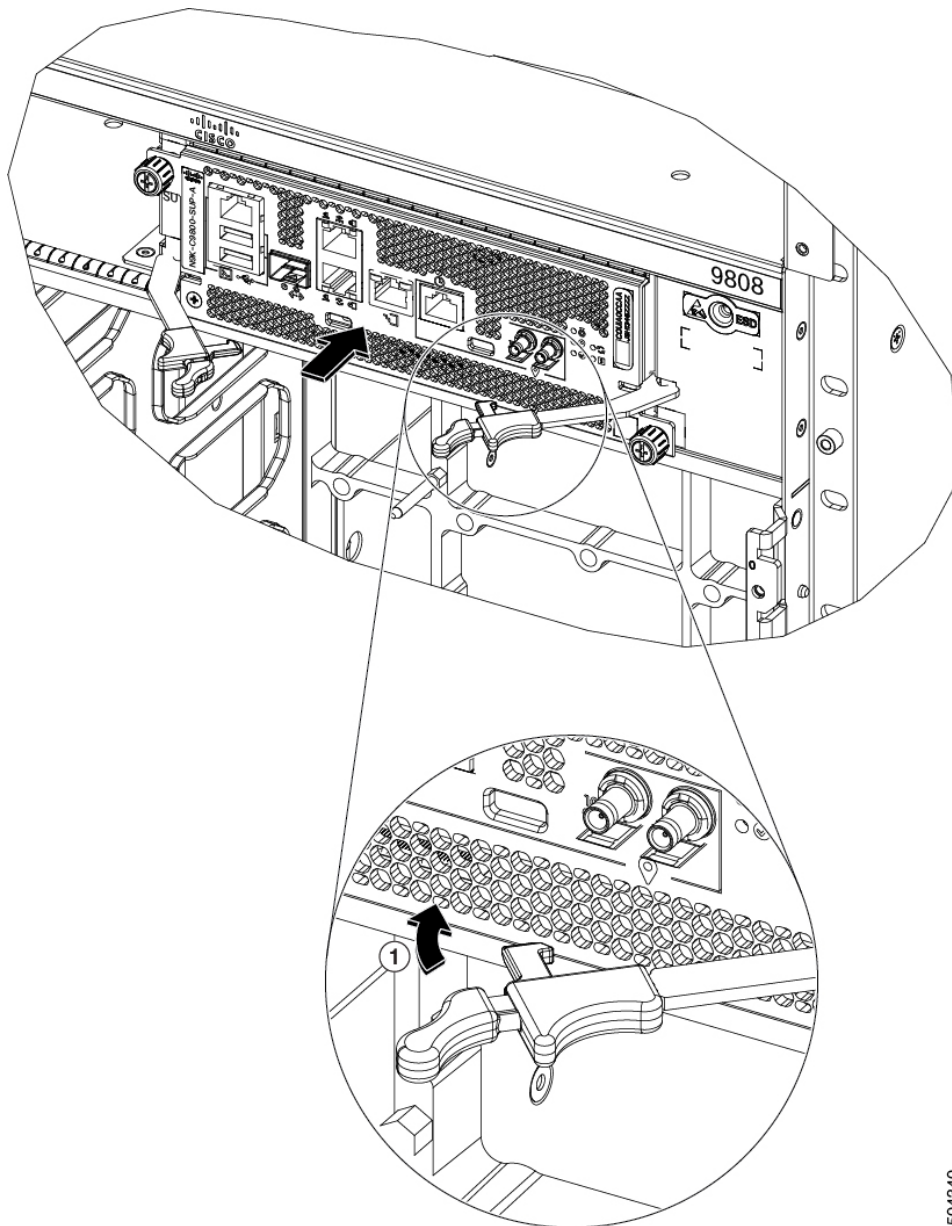
The module stops when its front is about 0.25 inches (0.6 cm) outside the front of the chassis.

- 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 41: Install Supervisor module into Chassis**



504340

- 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.

---

**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:

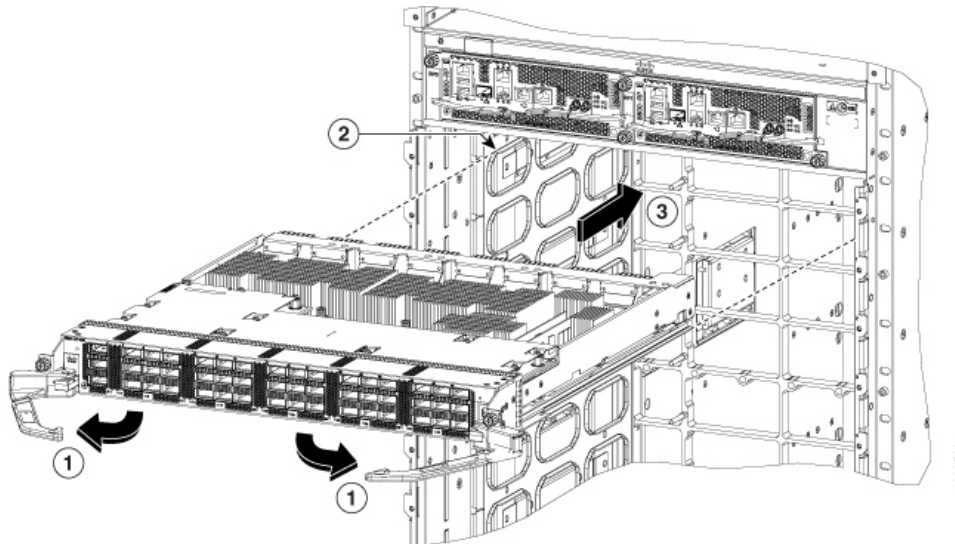
- a) Run the **poweroff module (x) location** command, which gracefully shuts down the line card.
- b) Verify that the Line Card LED for the slot that you specified turns off. Also, you can use the **show module** command to verify that the status of the card is SHUT DOWN.
- c) Disconnect and label each 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 42: 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.





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**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.

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**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.

- 
- 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.
- 

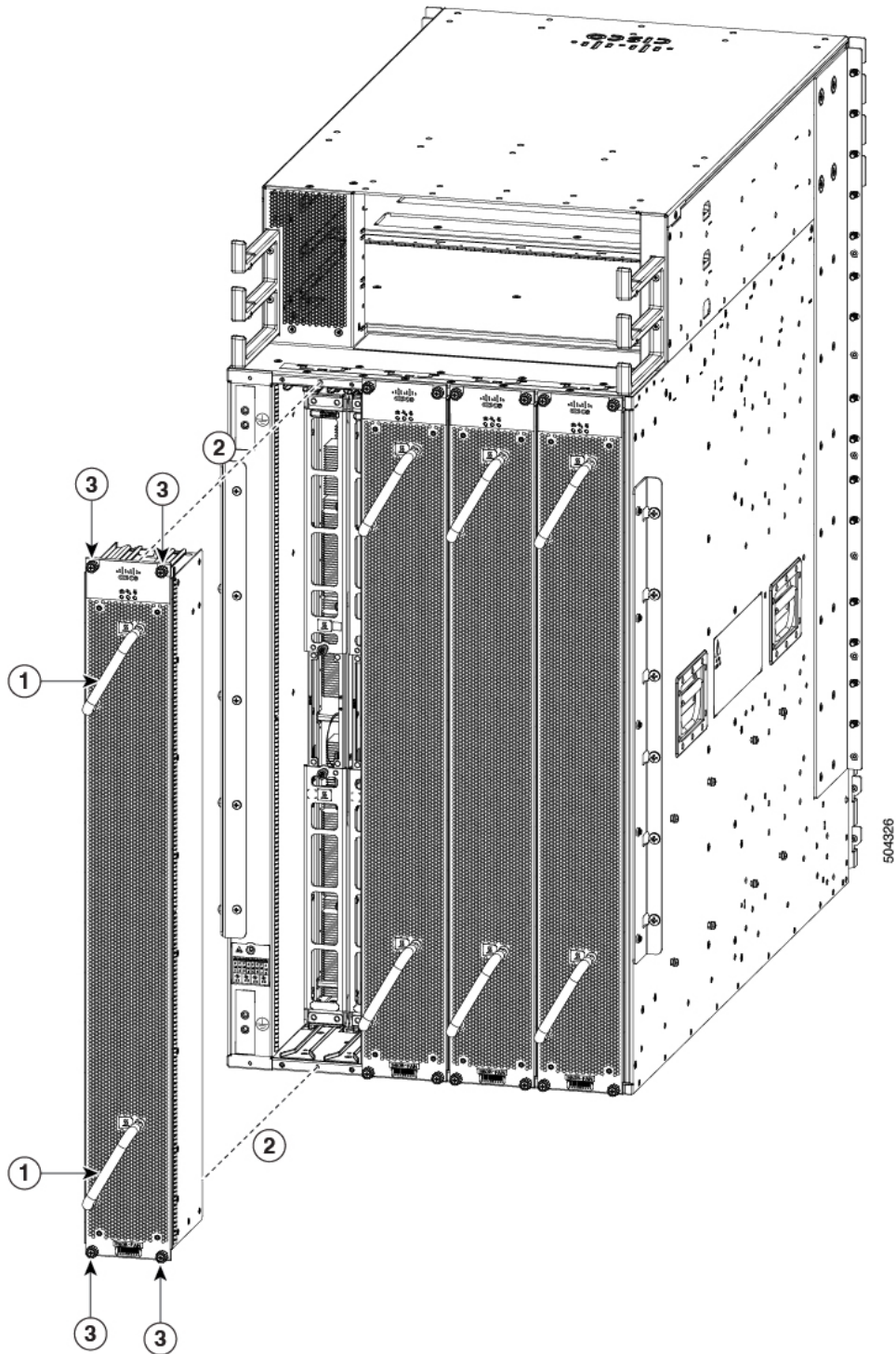
## Install Fan Tray

### 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.

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

Figure 43: 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.



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**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.

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- 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).

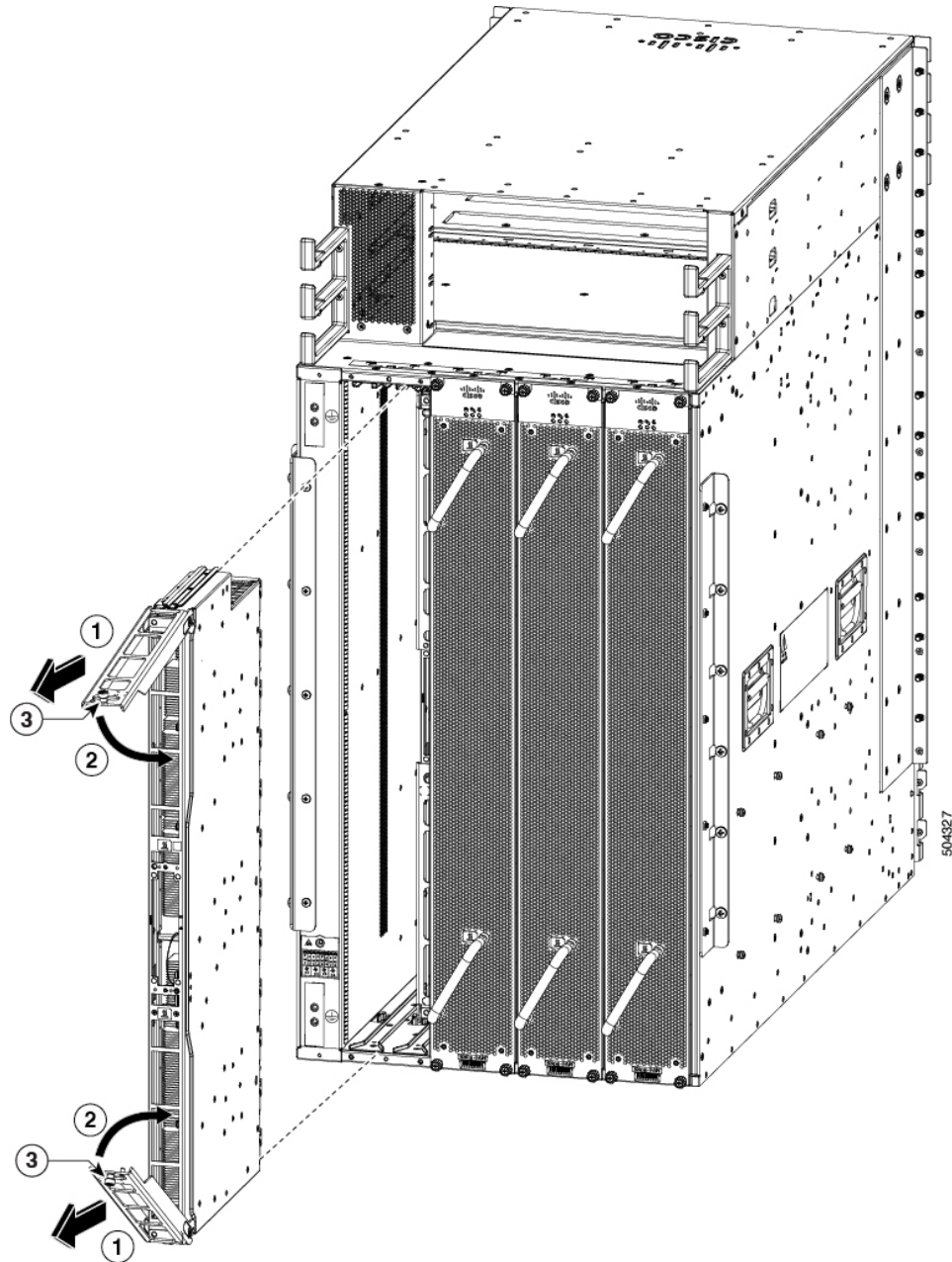
## Remove a Fabric Module

### 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.

- 
- 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.
- 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: [Replace a Fan Tray, on page 70](#)
- Step 4** Remove the fabric module that you are replacing by following these steps:
- 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).
  - Rotate the handles outwards until they stop (see Callout 2 in the following figure).
  - 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 44: 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

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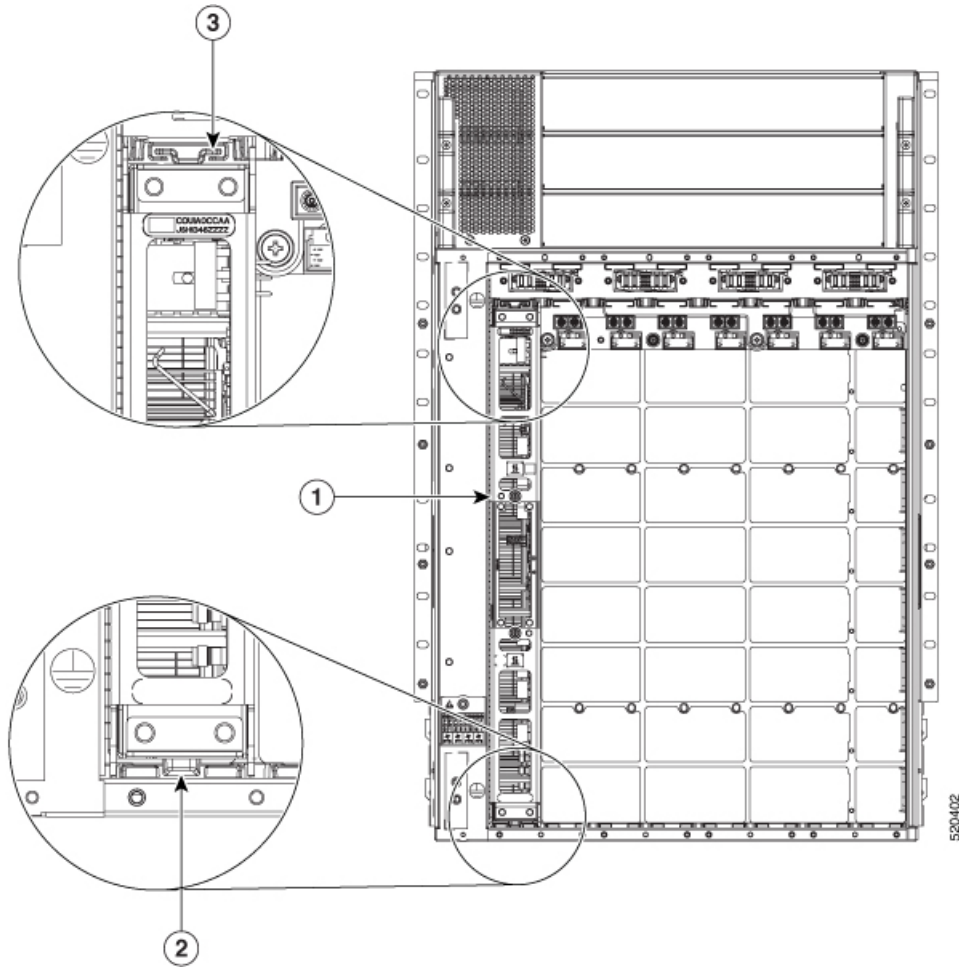
**Step 1** Unscrew the two captive screws (one on each ejector handle) and rotate the ejector handles at least 30 degrees. Ensure that the locking posts on the top and bottom of the chassis rotate into the module so that the module can slide fully into the slot.

**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.

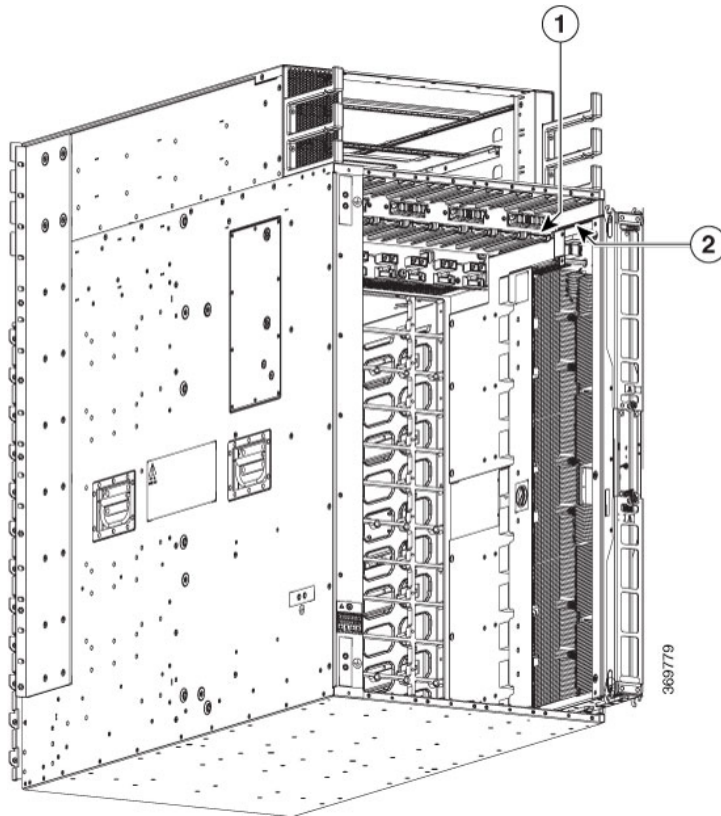
**Note** The lower guide rail extends to the back of the chassis. The upper guide rail does not connect until the module is halfway into the chassis.

Figure 45: Install Fabric Module



1	Always install the fabric module in a vertical position
2	Guide bar and guide slot
3	Guide rail and track

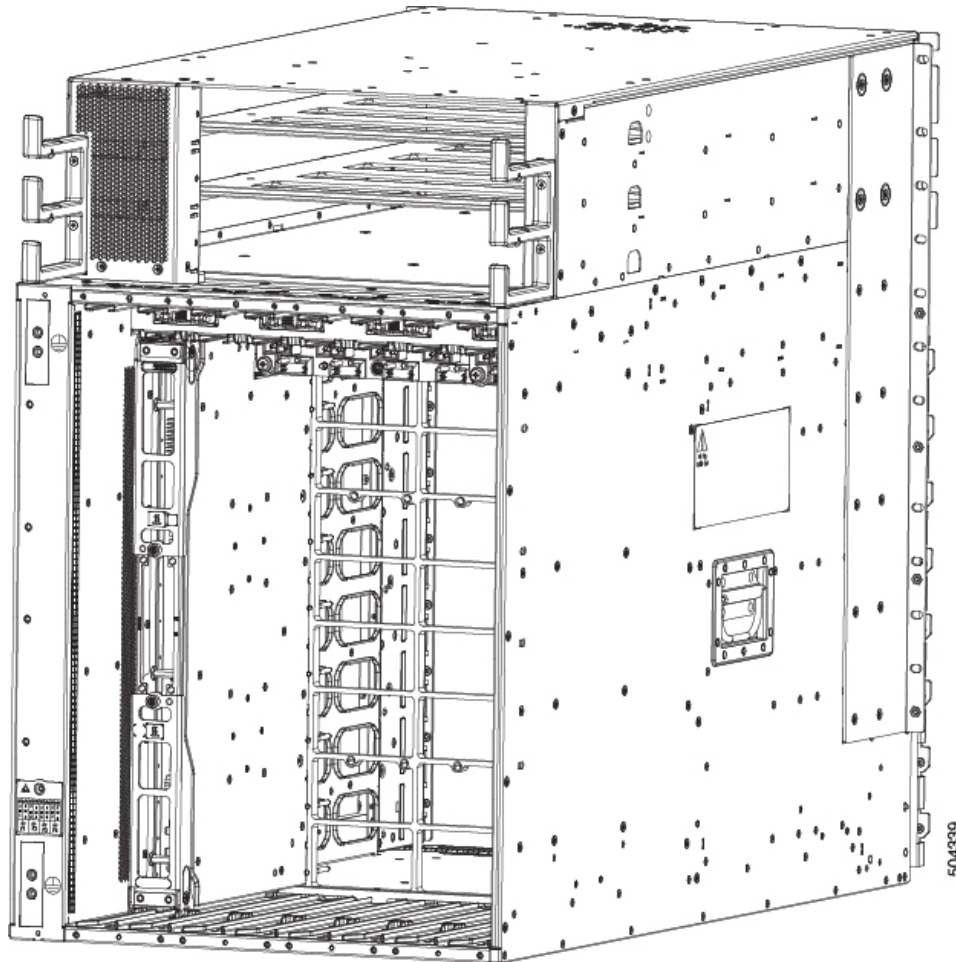
Figure 46: Installing a Fabric Module



1	Chassis top fabric module guide rail.	2	Insert fabric module top guide rail into chassis top fabric module guide rail.
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Figure 47: Fabric Module installed in a Chassis



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- 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 71](#)
- 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** 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.



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**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.

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



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**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.

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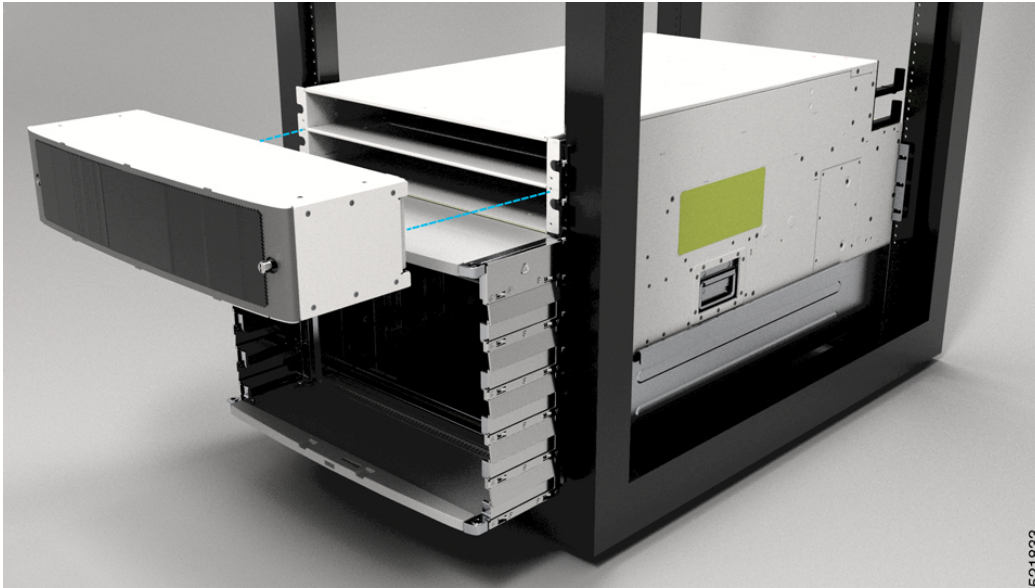
## Install Power Shelf Bezel

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

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Place the power supply bezel as shown in the below figure and secure it with the provided jackscrews.

Figure 48: Power Supply Bezel

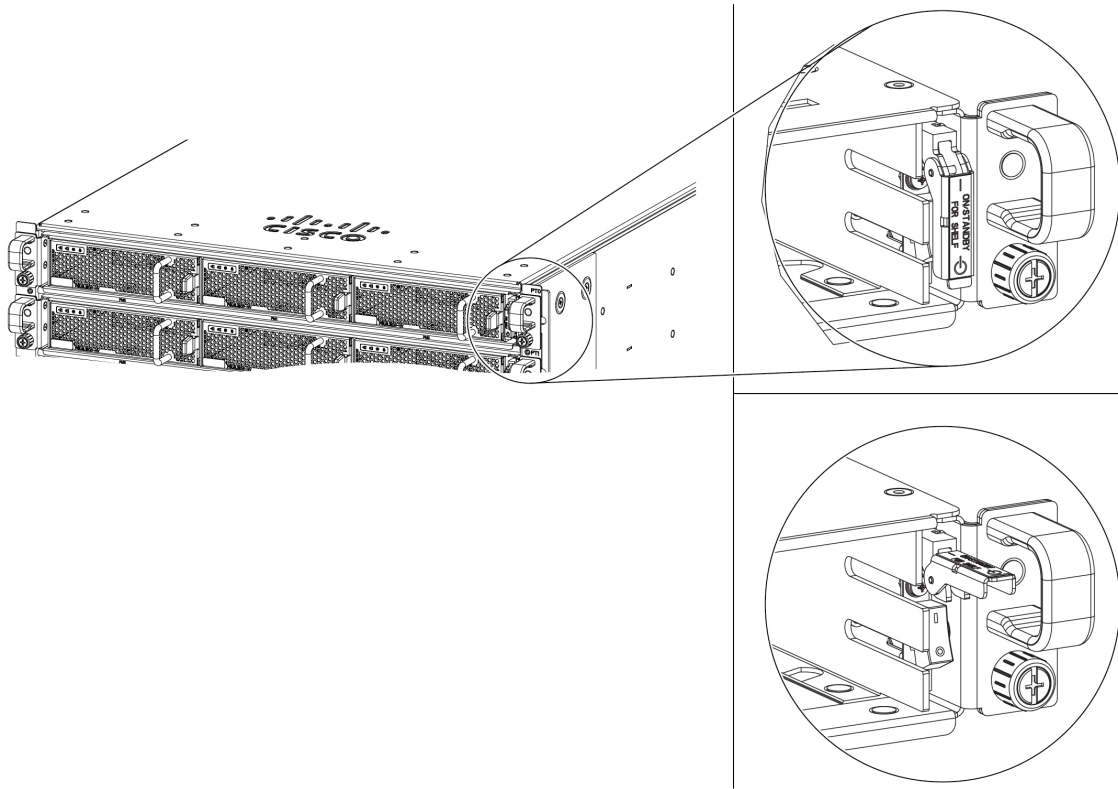


## Replace HVAC Power Module

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

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

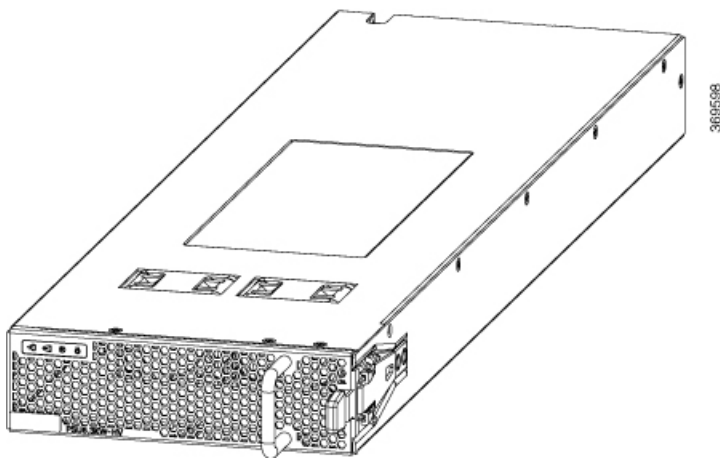
Figure 49: HV Power Tray Standby Mode Switch



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

Figure 50: HV Power Supply



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**Step 3** Slide the new power module into the bay until it mates with its connector.

Figure 51: HV Power Supply on Tray

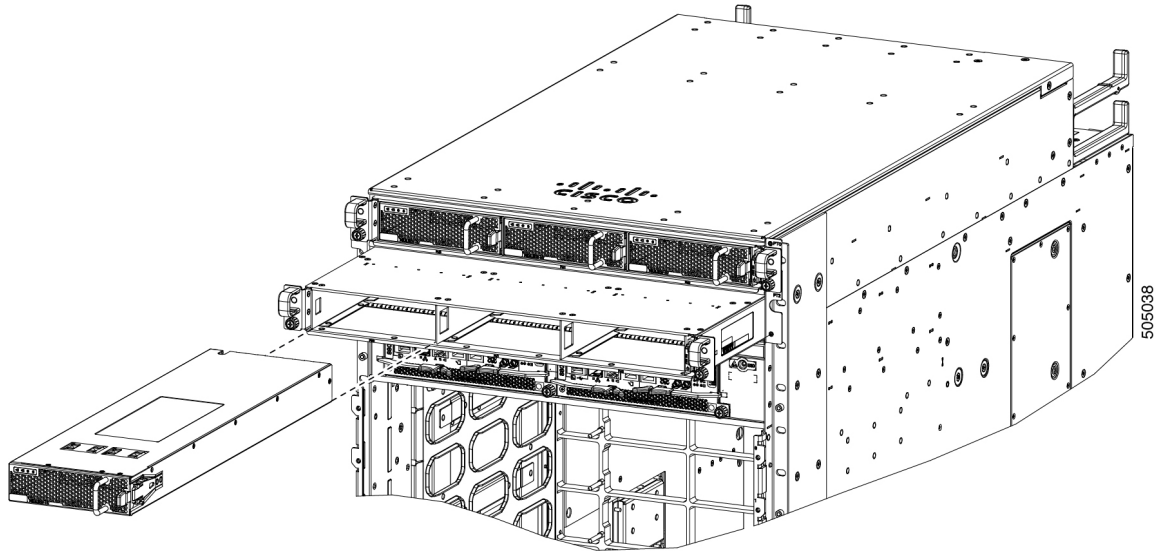
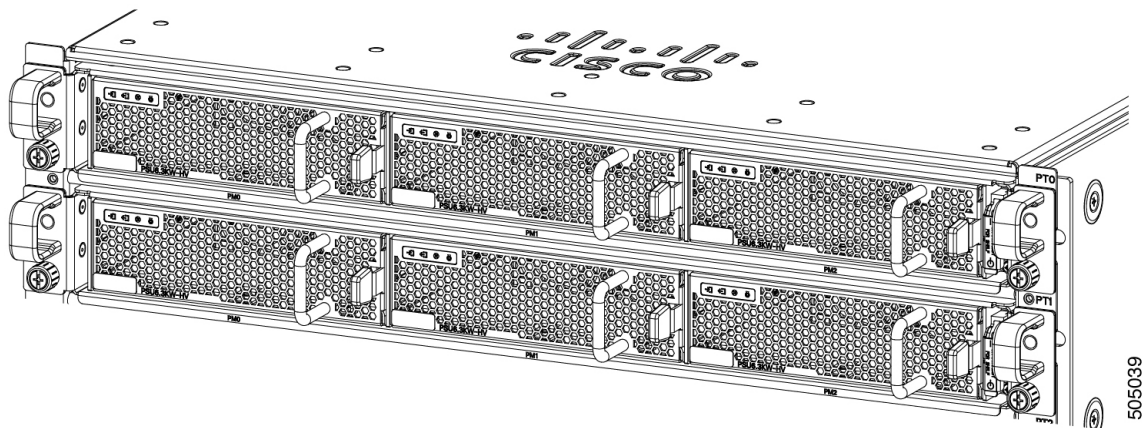


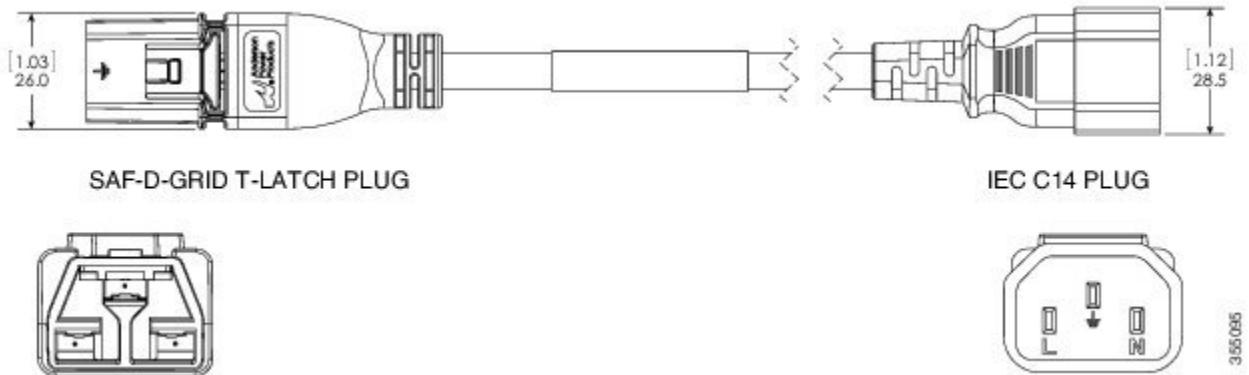
Figure 52: HV Power Supply Trays



**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 53: SAF-D-Grid Plug



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

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