



## Installing the Switch

---

- [Unpacking the Switch, on page 1](#)
- [Install the Switch as Shipped, on page 2](#)
- [Install the Switch with Shelf Brackets, on page 8](#)
- [Install the Switch in NEBS-Compliant Mode, on page 22](#)
- [Establishing System Ground, on page 30](#)
- [Attaching an ESD Strap, on page 32](#)
- [Verifying the Switch Chassis Installation, on page 33](#)

## Unpacking the Switch

Check the contents of the shipping container:

### Procedure

---

- Step 1** Check the contents of the accessory kit. Verify that you have received all the listed equipment, including any optional equipment you may have ordered, such as, network interface cables, transceivers, or special connectors.
- Step 2** Check the modules in each slot. Ensure that the configuration matches the packing list and that all of the specified interfaces are included.
- Step 3** Store the shipping carton.

**Tip** Do not discard the shipping container when you unpack the switch. Flatten the shipping cartons and store them with the pallet. You will require these containers if you have to move or ship the switch in the future.

---

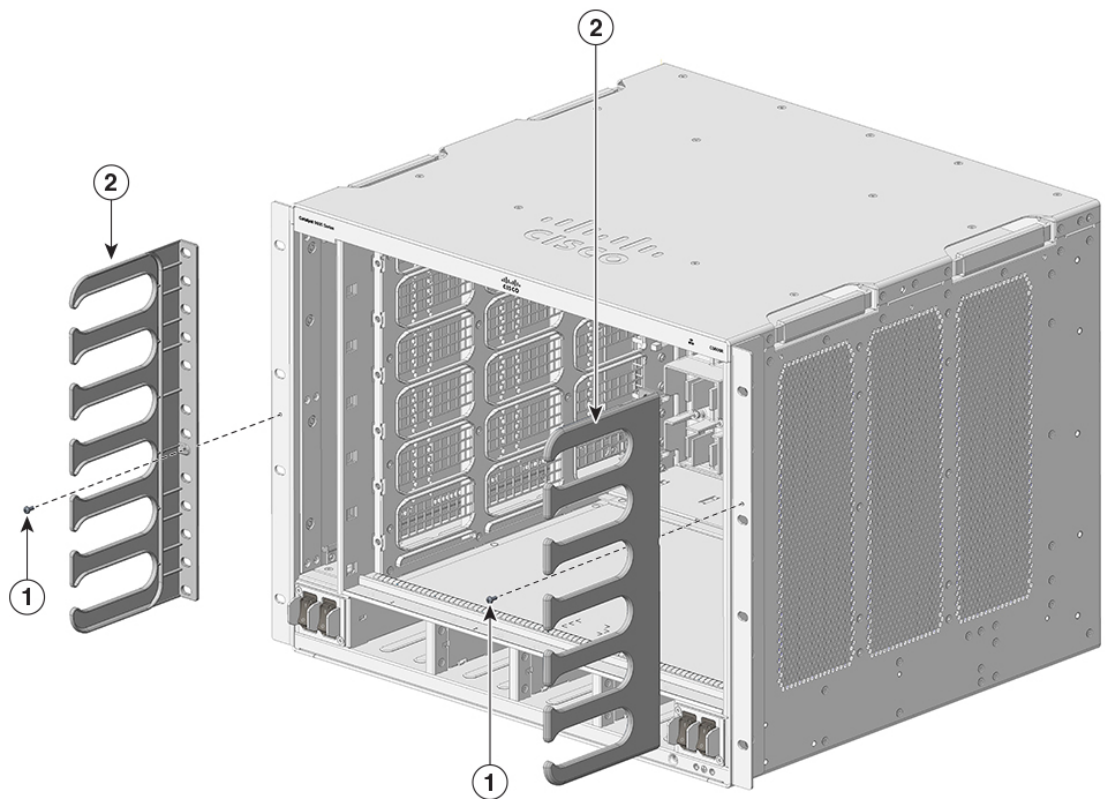
# Install the Switch as Shipped

## Installing the Cable Guide on the Chassis with L-Brackets Preinstalled on the Chassis

### Procedure

- Step 1** Position the cable guides to align with the L-brackets preinstalled on the chassis and secure the cable guides to the L-brackets using the screws provided.

*Figure 1: Attaching the Cable Guides*

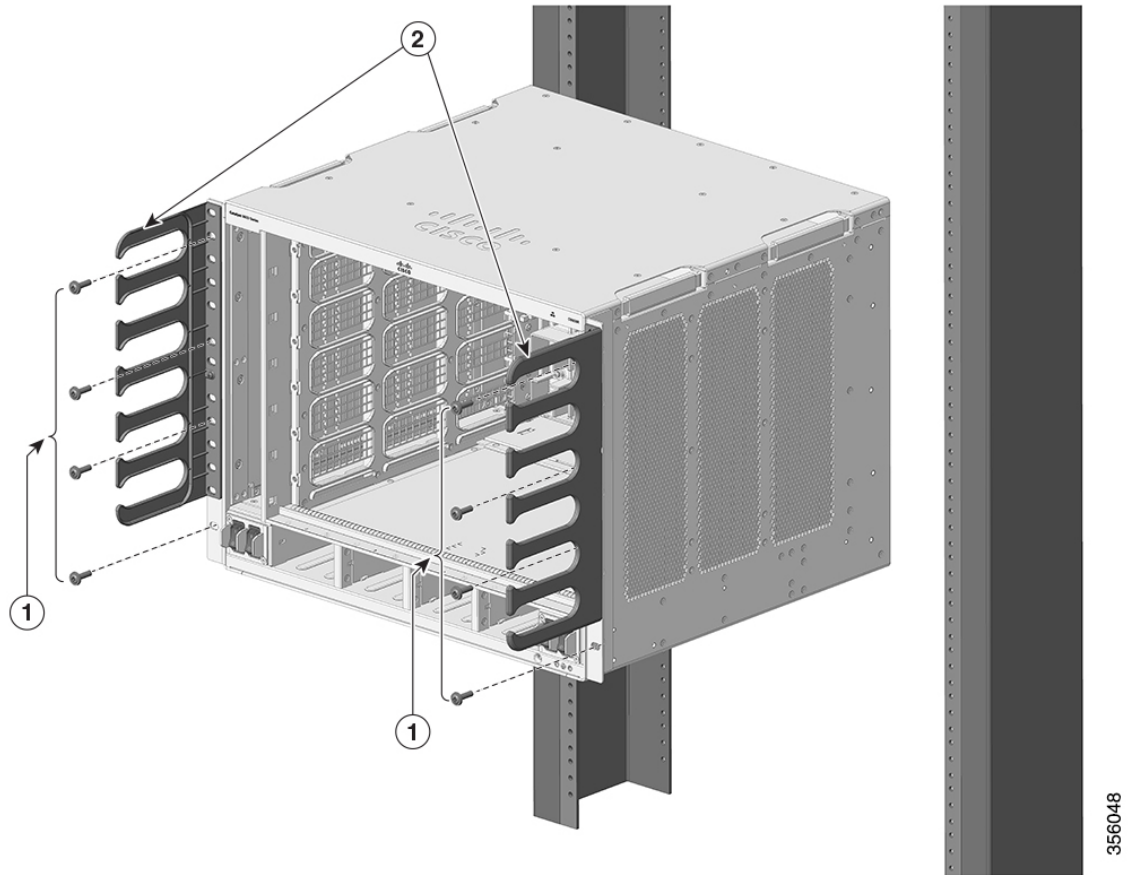


356054

1	Screws to attach the cable guides to the L-brackets on the chassis	2	Cable guides
---	--	---	--------------

- Step 2** Secure the chassis to the rack rails with four screws on each side.

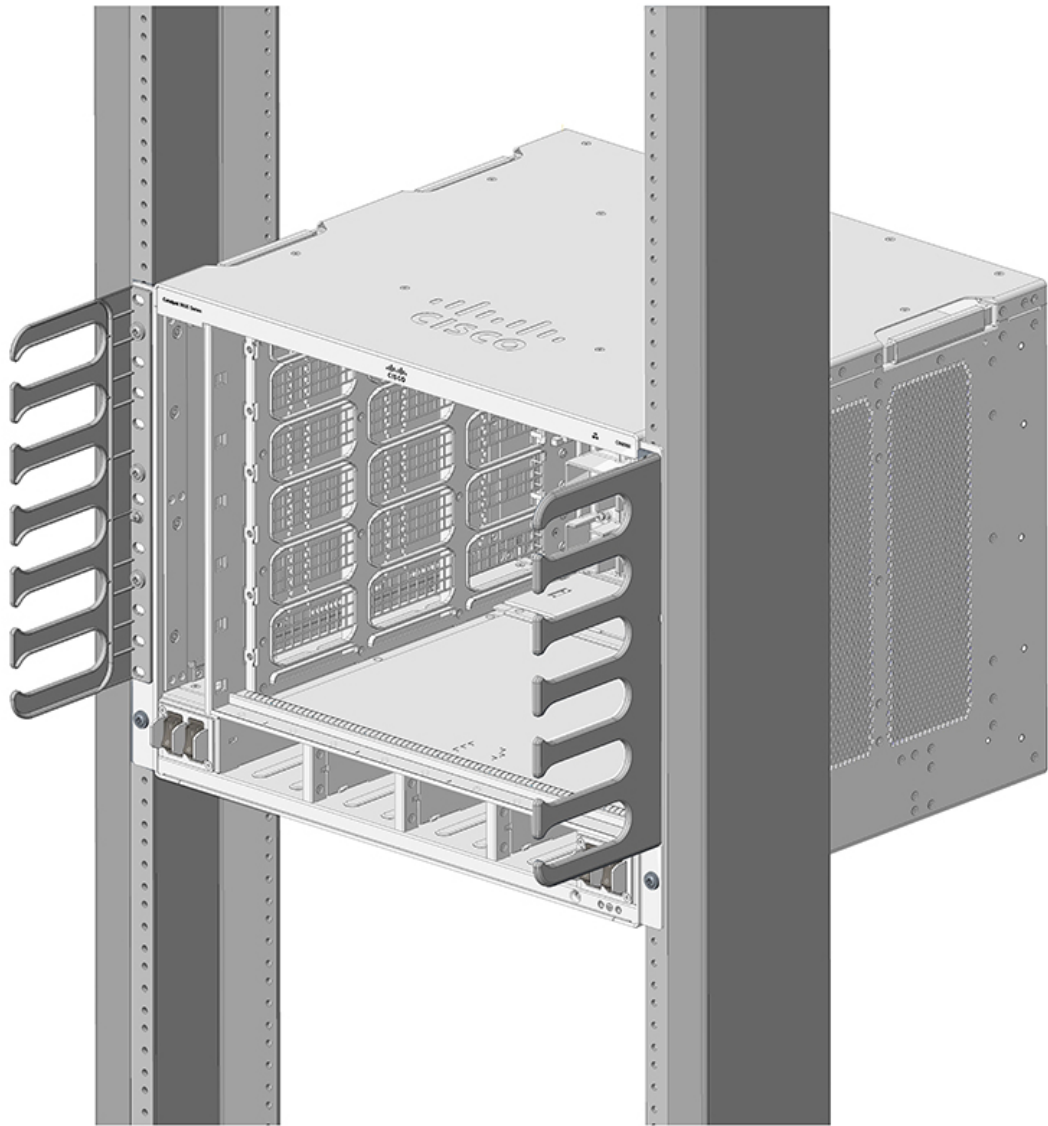
Figure 2: Mounting the Chassis to the Rack



1	Screws to attach the chassis to the rack post	2	Cable guide installed
---	---	---	-----------------------

Cable guide installation is complete.

Figure 3: Chassis with Cable Guide Attached



356049

## Rack-Mounting the Chassis as Shipped

This procedure shows how to rack mount the chassis as shipped.

## Before you begin



---

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

## Statement 1006

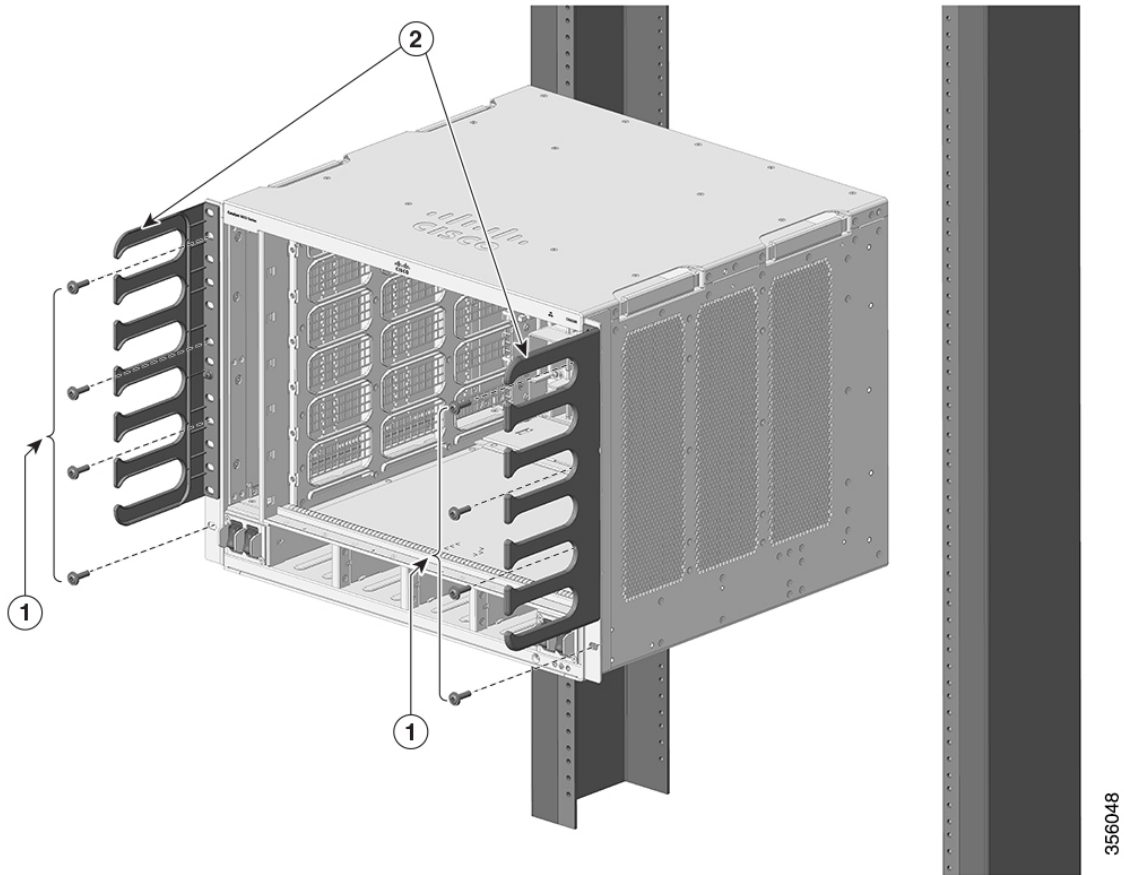
---

## Procedure

---

- Step 1** Insert the rear of the chassis between the mounting posts of the rack.
- Step 2** Align the mounting holes in the L bracket on the switch or on the cable mount (if installed) with the mounting holes in the equipment rack.

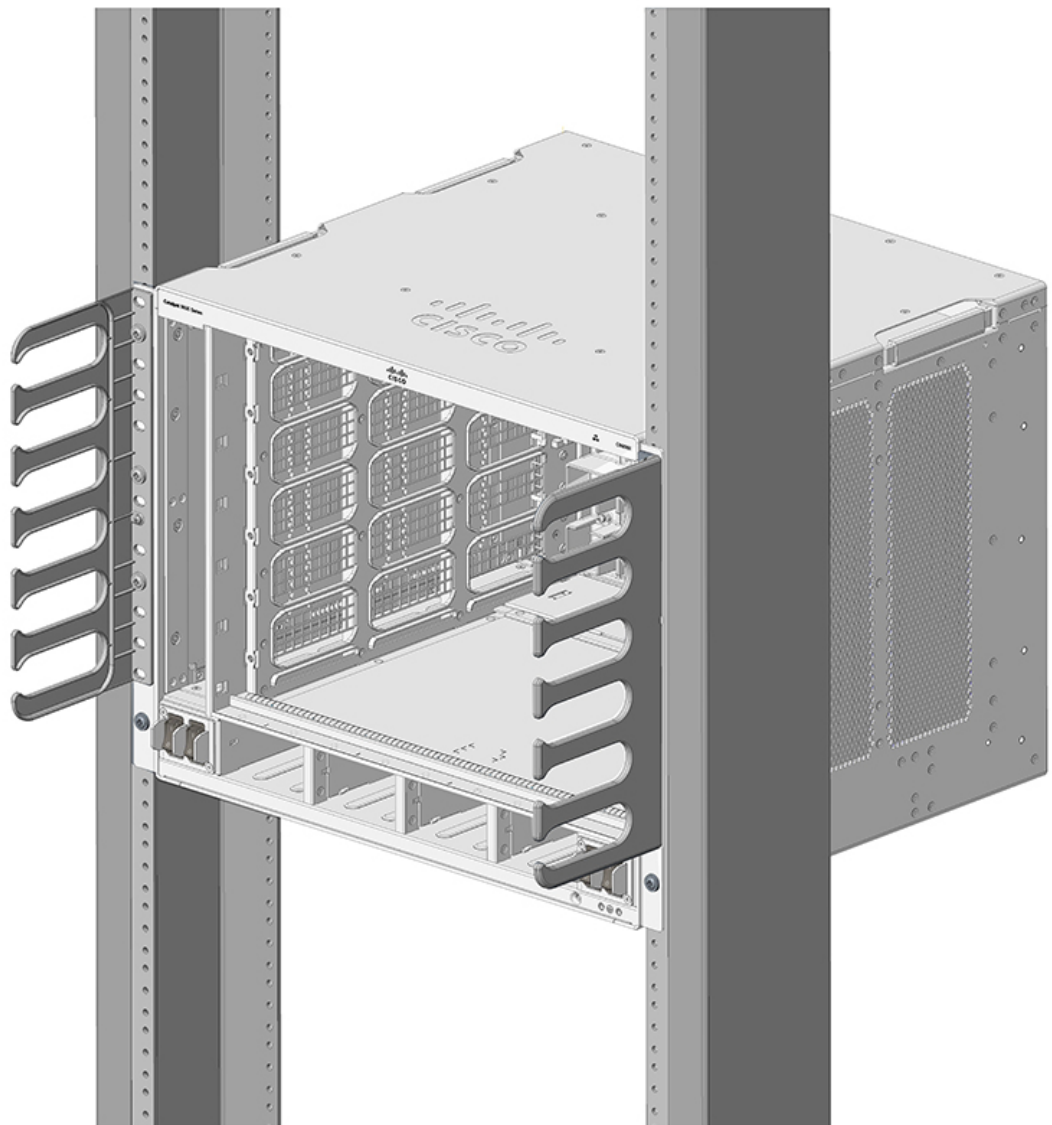
Figure 4: Securing the Chassis to the Rack Posts



1	10-32 or 12-24 pan head screws	2	Cable guides
---	--------------------------------	---	--------------

**Step 3** Secure the chassis to the rack with either 10-32 or 12-24 pan head screws from the chassis standard accessory kit.

Figure 5: Chassis Secured to the Rack Posts



356049

- Step 4** 4. Use a tape measure and level to ensure that the chassis is installed straight and level..

---

#### What to do next

After installing the chassis in its location, complete the installation process by:

1. Connecting the chassis to system ground.
2. Installing and connecting the power supplies to the power source.
3. Connecting the network interface cables to the supervisor module and line card modules. This may involve installing transceivers before you attach the network interface cables.

4. Powering up the chassis and verifying the installation.

## Install the Switch with Shelf Brackets

### Installing the Shelf Kit L-Brackets

The switch chassis is shipped with two L-brackets installed on the front sides of the chassis. If you are rack-mounting the switch using the shelf kit, these L-brackets must be removed and replaced with L-brackets that are part of the shelf kit.

#### Before you begin

You have ordered and received the shelf kit.

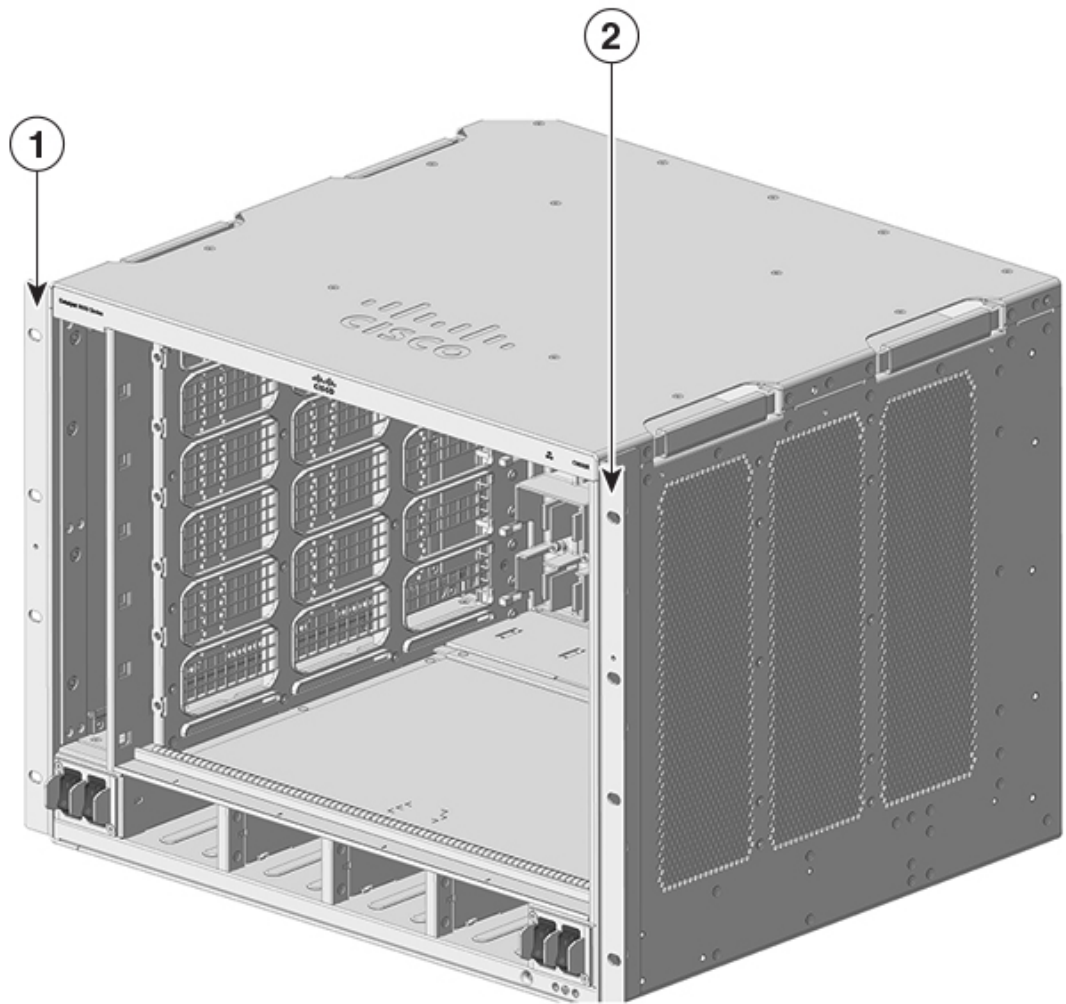
#### Procedure

---

- Step 1** Remove and discard the L-brackets and the ten mounting screws that the chassis is shipped with. Do not re-use them during any part of the installation process.

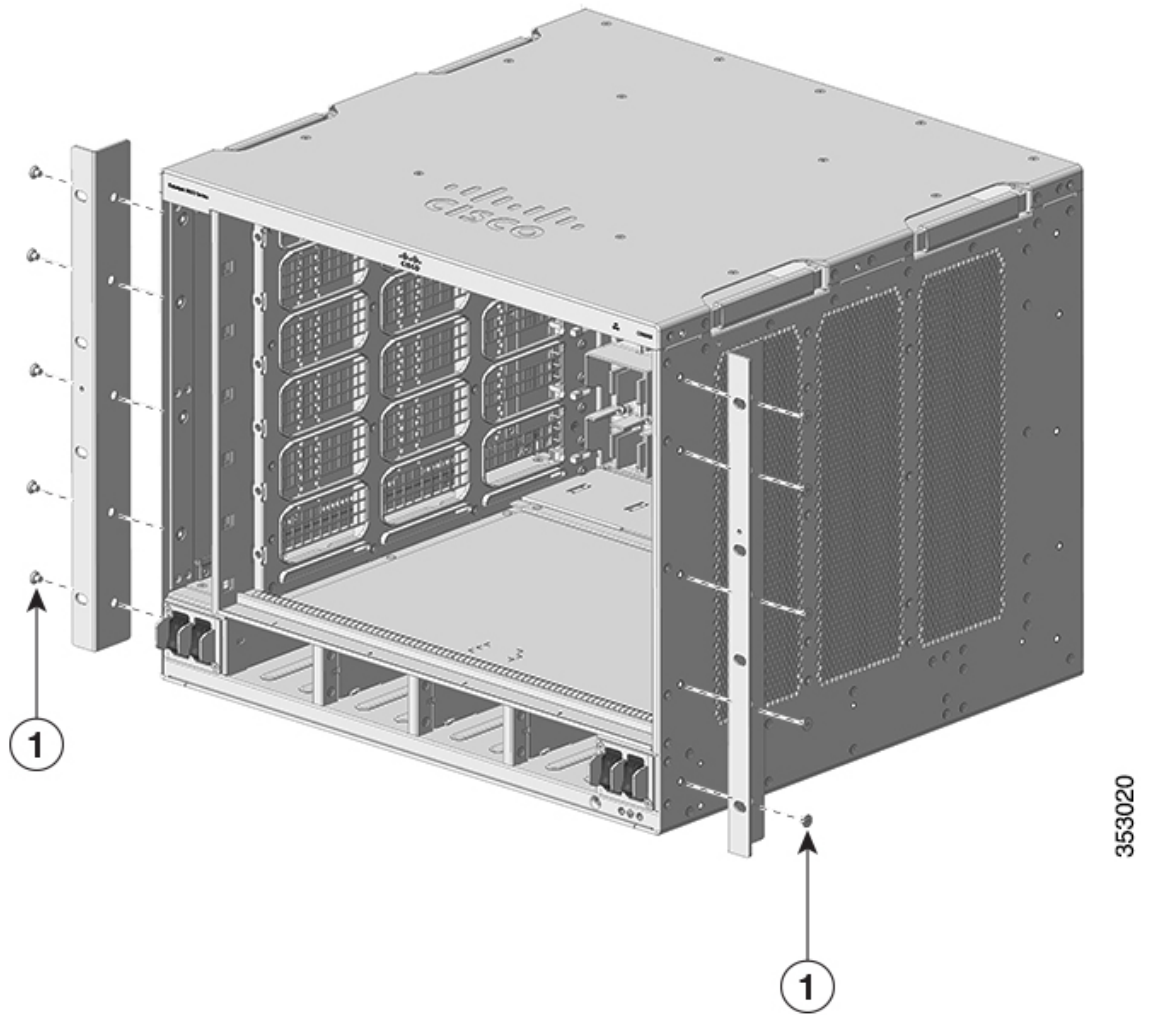


Figure 6: L-Brackets the Chassis is Shipped with



1	Left L-bracket	2	Right L-bracket
---	----------------	---	-----------------

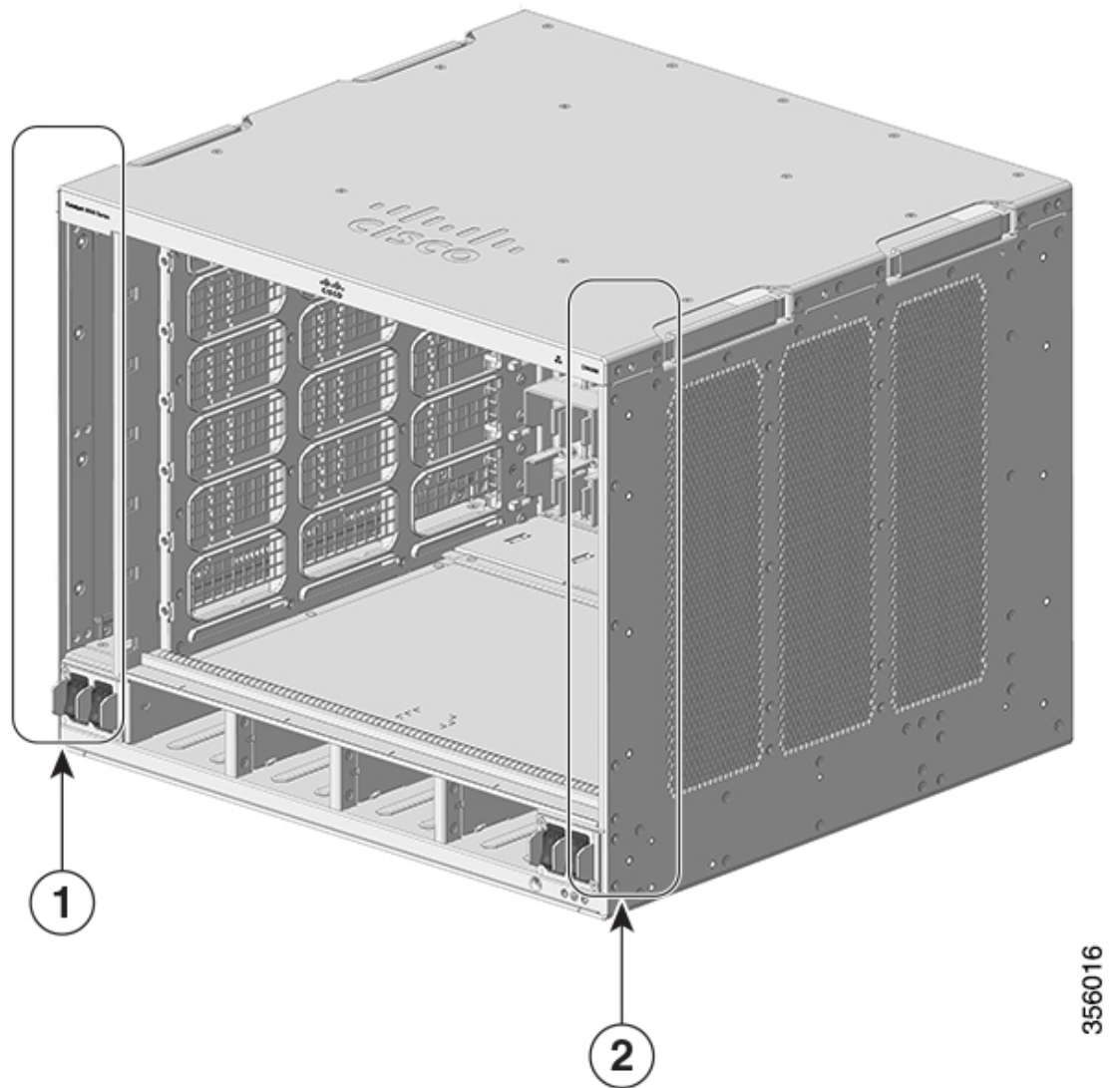
Figure 7: Removing L-Brackets the Chassis is Shipped With



353020

1	Mounting screws the chassis is shipped with	-	-
---	---	---	---

Figure 8: Chassis Without L-Brackets

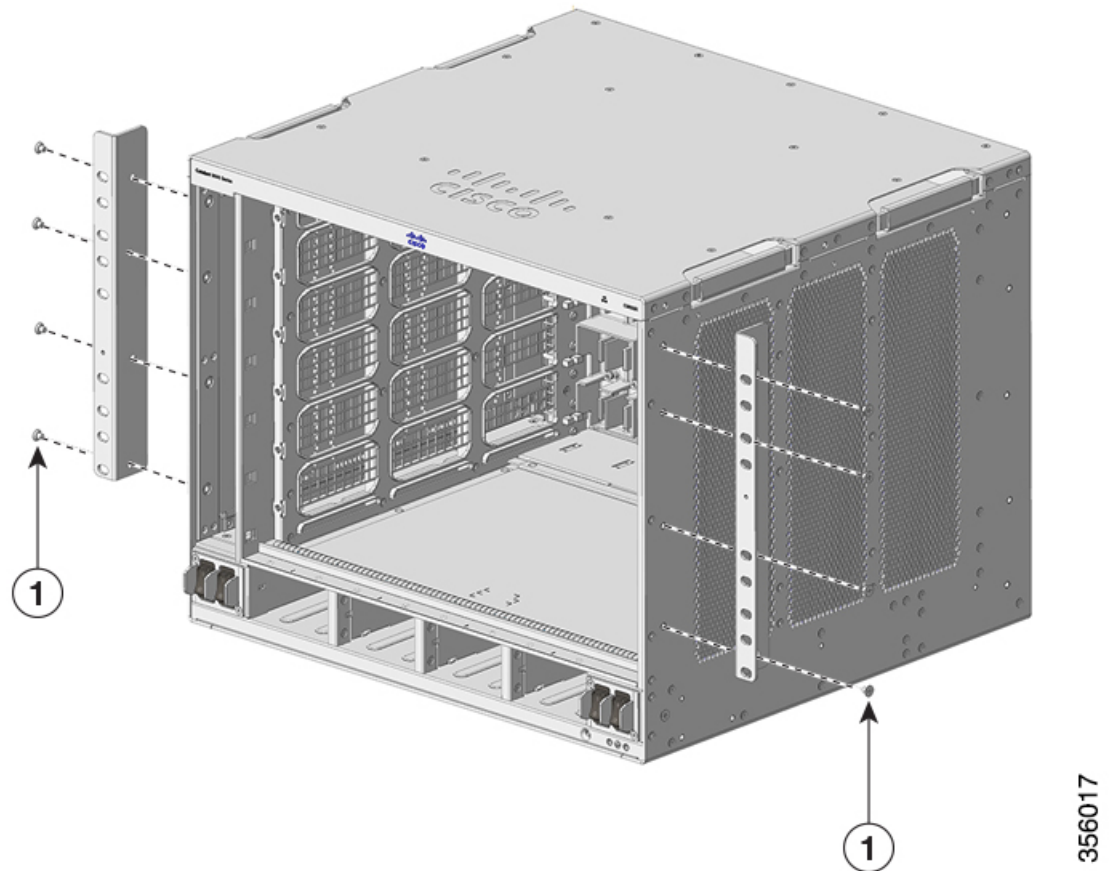


1	Chassis without left L-bracket	2	Chassis without right L-bracket
---	--------------------------------	---	---------------------------------

**Step 2**      Unpack the L-brackets from the shelf kit.

**Step 3**      Using the M4 x 8 mm Phillips flat head screws in the shelf kit, secure the L-brackets to the front-left and front-right sides of the chassis (four on each side).

Figure 9: Installing Shelf Kit L-Brackets



356017

1	M4 x 8 mm Phillips flat head screws	-	-
---	-------------------------------------	---	---

**What to do next**

Install the shelf brackets on the rack.

**Installing the Shelf Brackets and the Crossbar**

Install the shelf brackets and the crossbar before you install the chassis in the rack to help support the weight of the chassis while you secure the L-brackets to the rack enclosure.

You have to front-mount the shelf brackets.

**Before you begin**

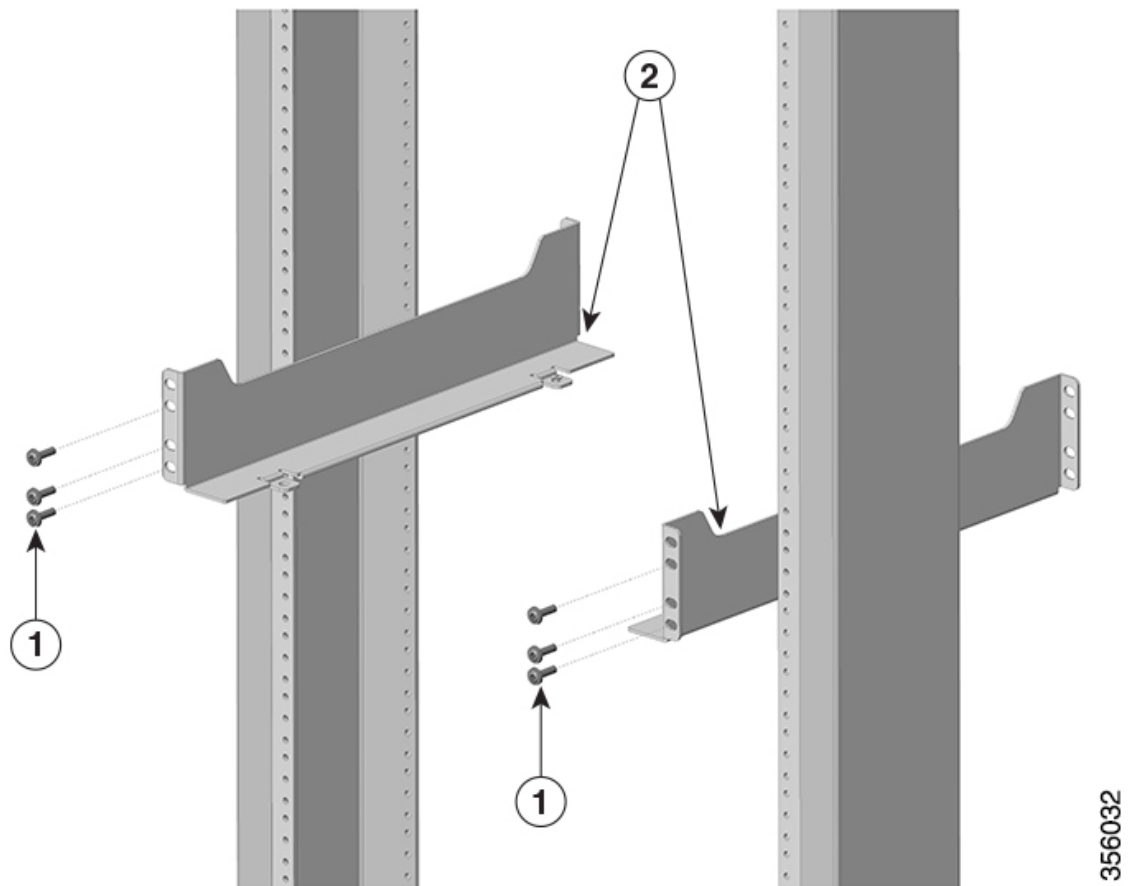
Determine the clearance between the insides of the left and right rails of your rack system and install the shelf brackets accordingly. Keep these tools handy:

- Number 1 and Number 2 Phillips screwdrivers
- 3/16-inch flat-blade screwdriver
- Tape measure and level

### Procedure

- Step 1** Position the support flange of the left shelf bracket on the front of the left rail. Align and secure the bracket to the rack by using three screws. Use either 10-32 or 12-24 pan head screws from the shelf kit.
- Step 2** Position the support flange of the right shelf bracket on the front of the right rail — make sure that it is level with the left shelf bracket. Align and secure the bracket to the rack by using three screws.
- Use the same type of screws for the left and right shelf bracket.

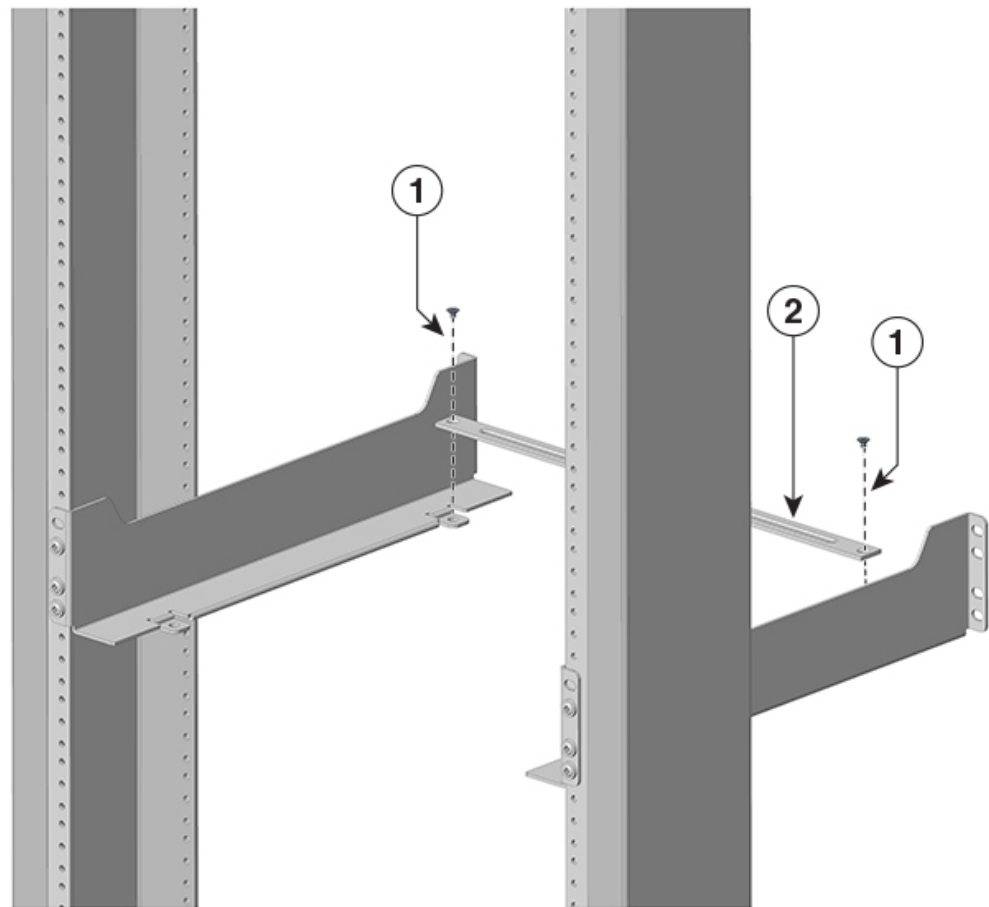
**Figure 10: Installing the Shelf Brackets**



1	Pan head screws from the shelf kit to secure the shelf brackets to the rack posts	2	Shelf brackets
---	---	---	----------------

**Step 3** Secure the crossbar to the shelf brackets by using two M4 screws, with one screw on each side.

*Figure 11: Securing the crossbar to the shelf brackets*



356032

1	M4 x 5 mm flat-head screw	2	Crossbar
---	---------------------------	---	----------

The shelf brackets and the crossbar are now securely mounted to the rack posts.

#### What to do next

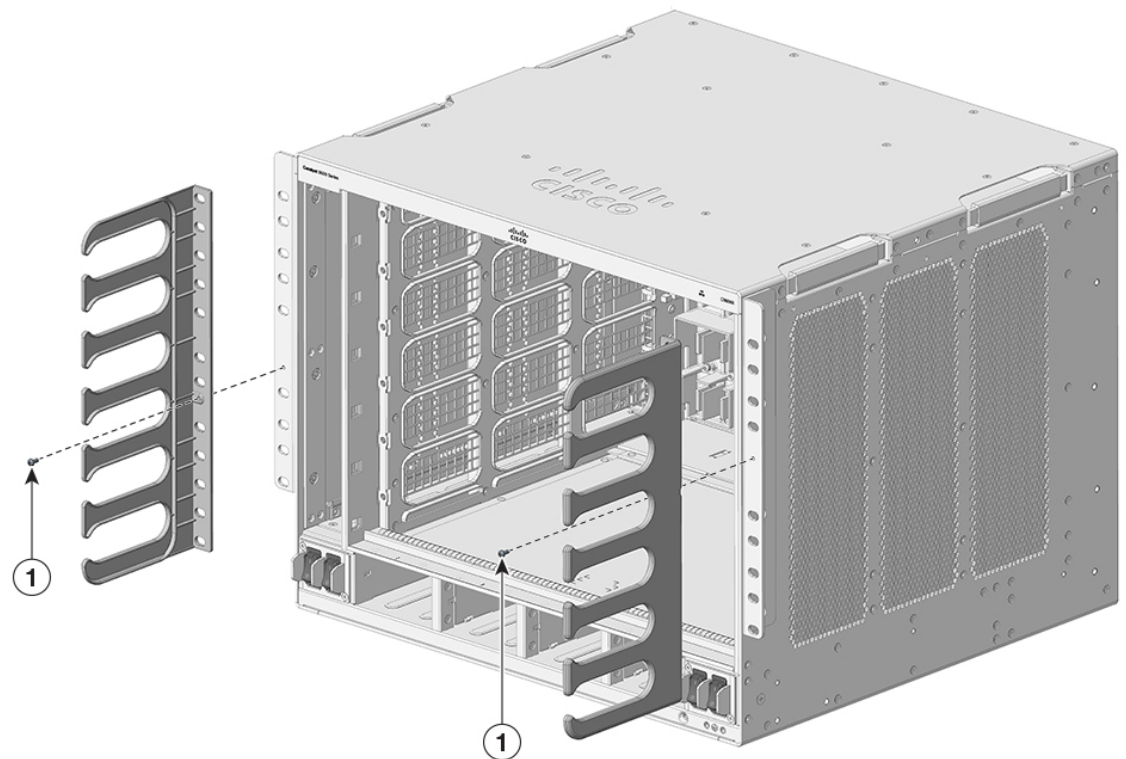
Install the cable guide to the chassis. Two people will be required for this task.

## Installing the Cable Guide on the Chassis with Shelf Kit L-Bracket

### Procedure

**Step 1** Position the cable guides and align with the shelf kit L-brackets installed on the chassis.

Figure 12: Installing the Cable Guide



356037

1	Screws to mount the cable guide
---	---------------------------------

**Step 2** Secure the cable guides to the L brackets using the screws (one on each side) provided.

### What to do next

Rack mount the chassis to a rack installed with shelf brackets and a crossbar.

## Rack-Mounting the Chassis

This procedure shows how to rack mount the chassis with shelf brackets.



**Warning** Two people are required to lift the chassis. To prevent injury, keep your back straight and lift with your legs, not your back. **Statement 164**



**Tip** We recommend that you have a third person to assist in this procedure.

**Warning**

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

**Statement 1006**

To install the switch chassis in the equipment rack, perform these steps:

**Before you begin**

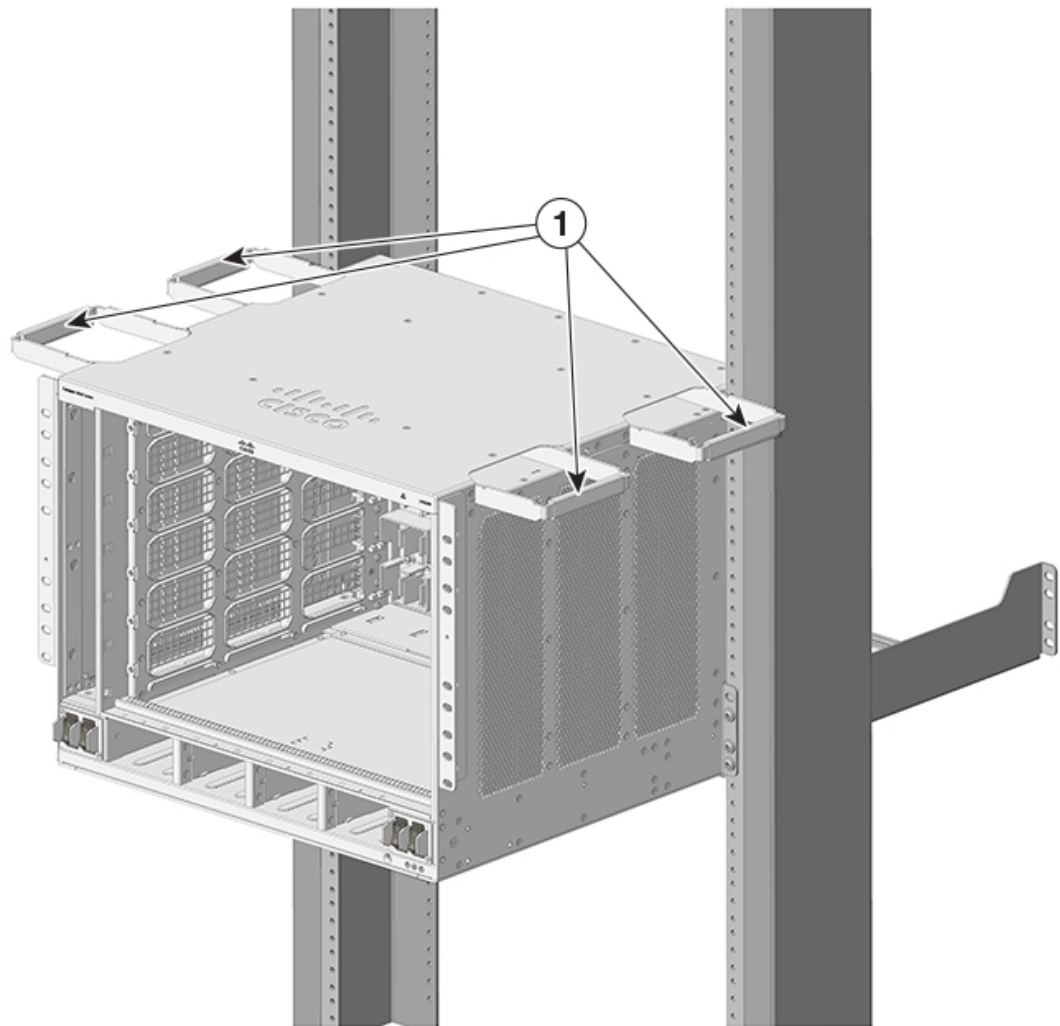
- Install the shelf kit L brackets on the chassis and the shelf brackets and crossbar on the rack posts.
- Install the cable guide.

**Procedure**

- 
- Step 1** Pull out all four of the handholds on the chassis.



Figure 13: Chassis handholds

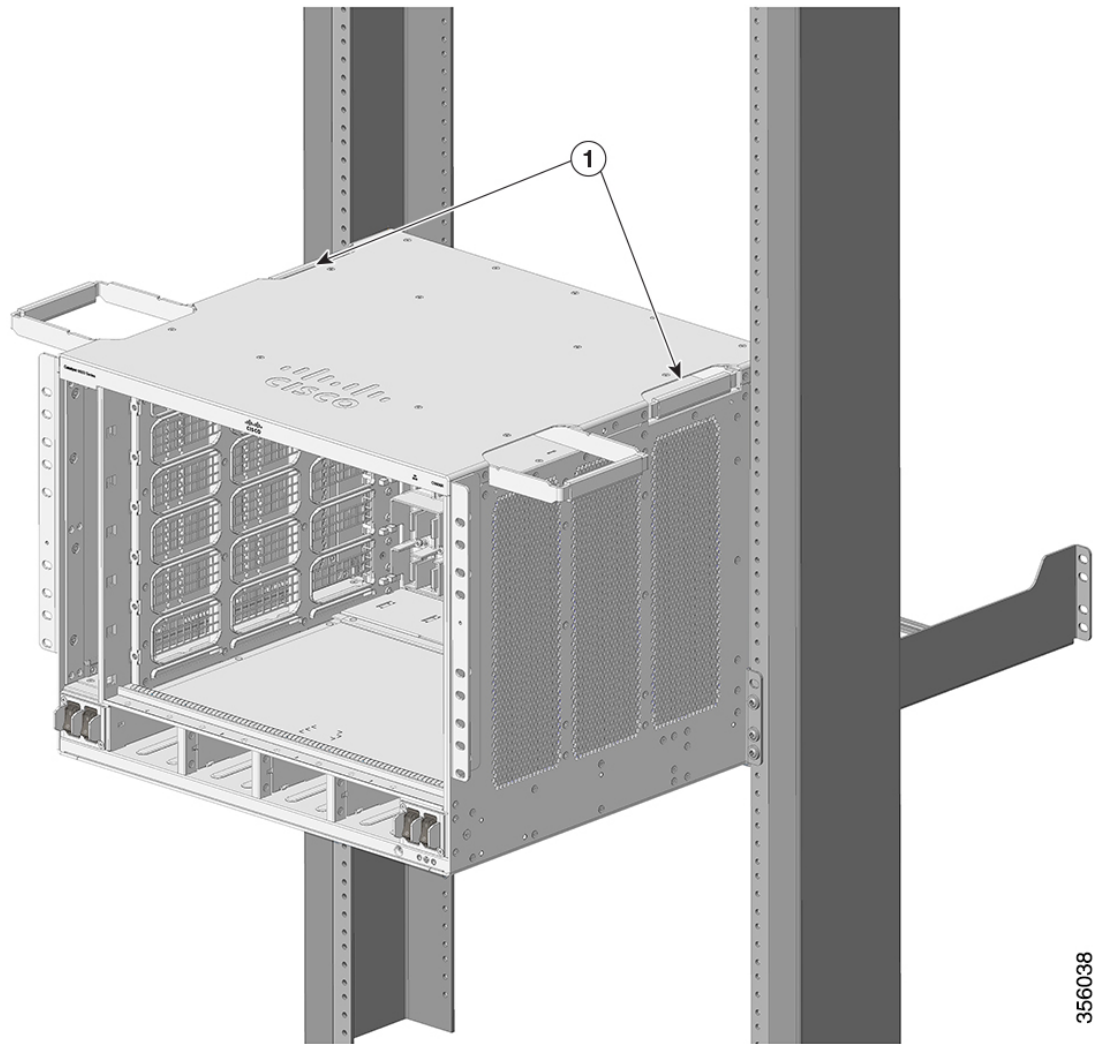


355034

1	All four of the chassis handholds pulled out and the back end of the chassis resting on the edges of the shelf bracket rails.	-	-
---	---	---	---

- Step 2** With a person standing at each side of the chassis, insert one hand into each handhold. Slowly lift the chassis. Avoid sudden twists or moves to prevent injury.
- Step 3** Rest the back end of the chassis on the edges of the shelf bracket rails and slide it in until the first pair of handles on both sides of the chassis are near the rack posts.
- Step 4** Push in the handholds that are closest to the rack posts.

Figure 14: Sliding the Chassis in - Part 1

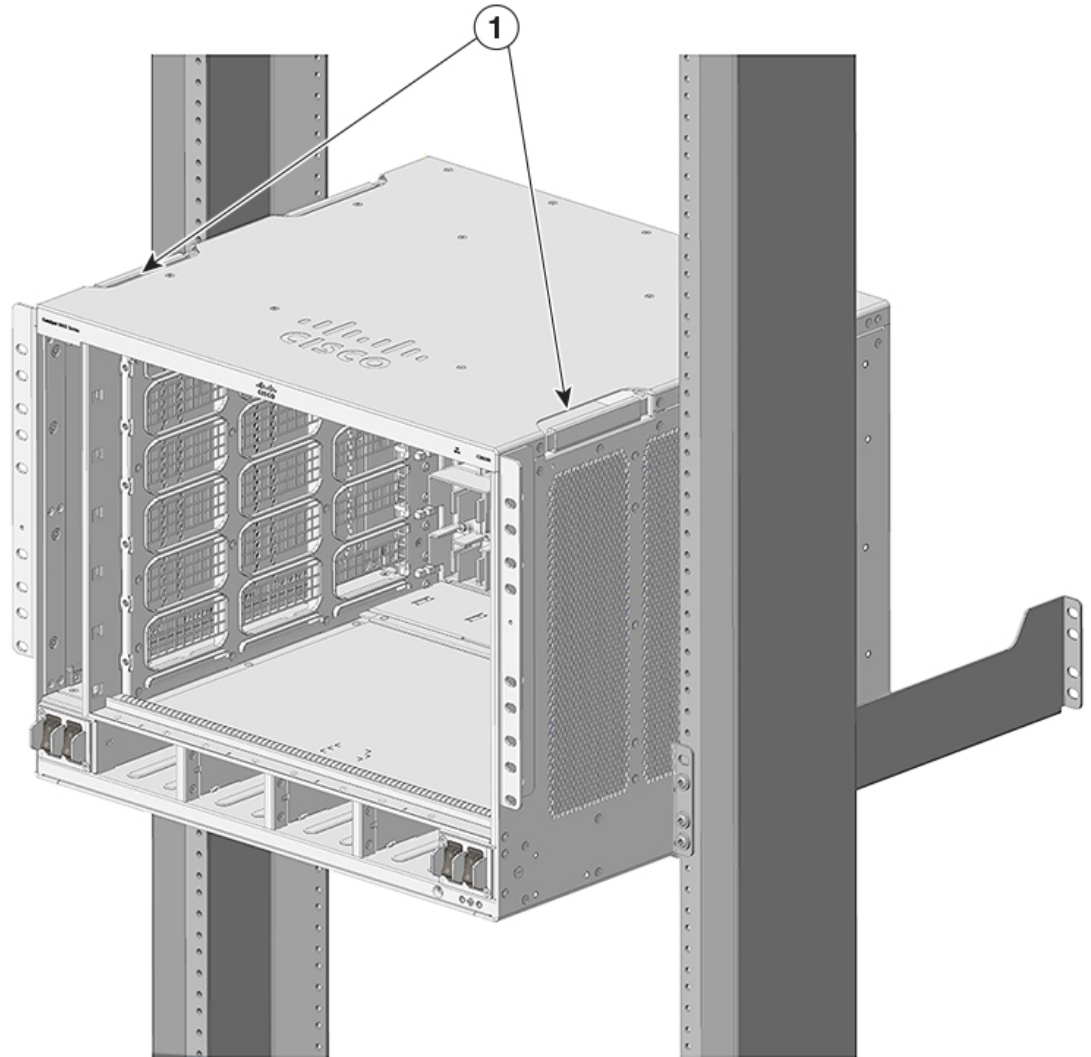


356038

1	Handholds closest to the rack posts, pushed in.	-	-
---	---	---	---

**Step 5** Continue sliding the chassis in until the second pair of handholds are near the rack posts. Push in the second pair of handholds.

Figure 15: Sliding the Chassis in - Part 2



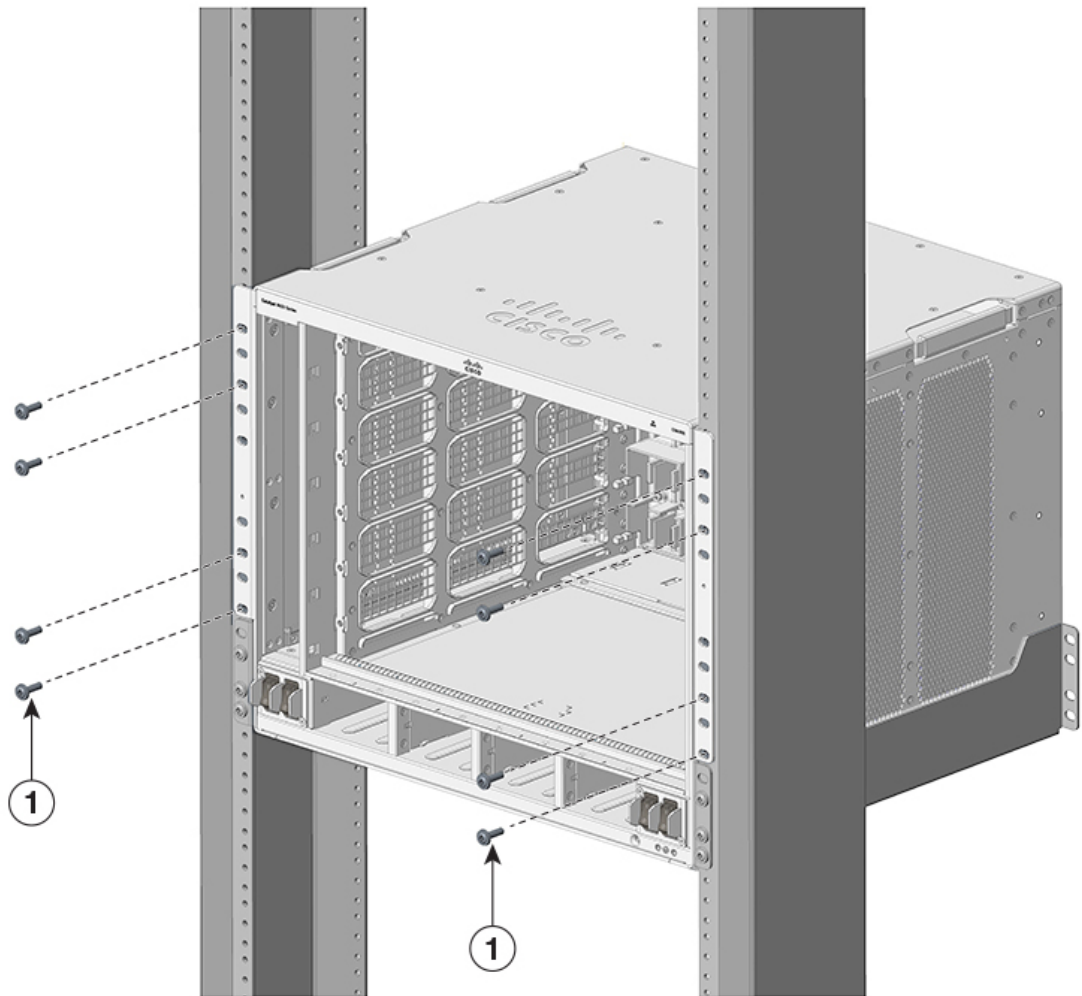
356040

1	Second pair of handholds, pushed in.
---	--------------------------------------

**Step 6** Continue sliding the chassis rests completely on the shelf brackets and the crossbar. Slide in further until the L brackets make contact with the rack posts.

**Step 7** Secure the chassis to the rack with either the 10-32 or 12-24 pan head screws from the chassis standard accessory kit.

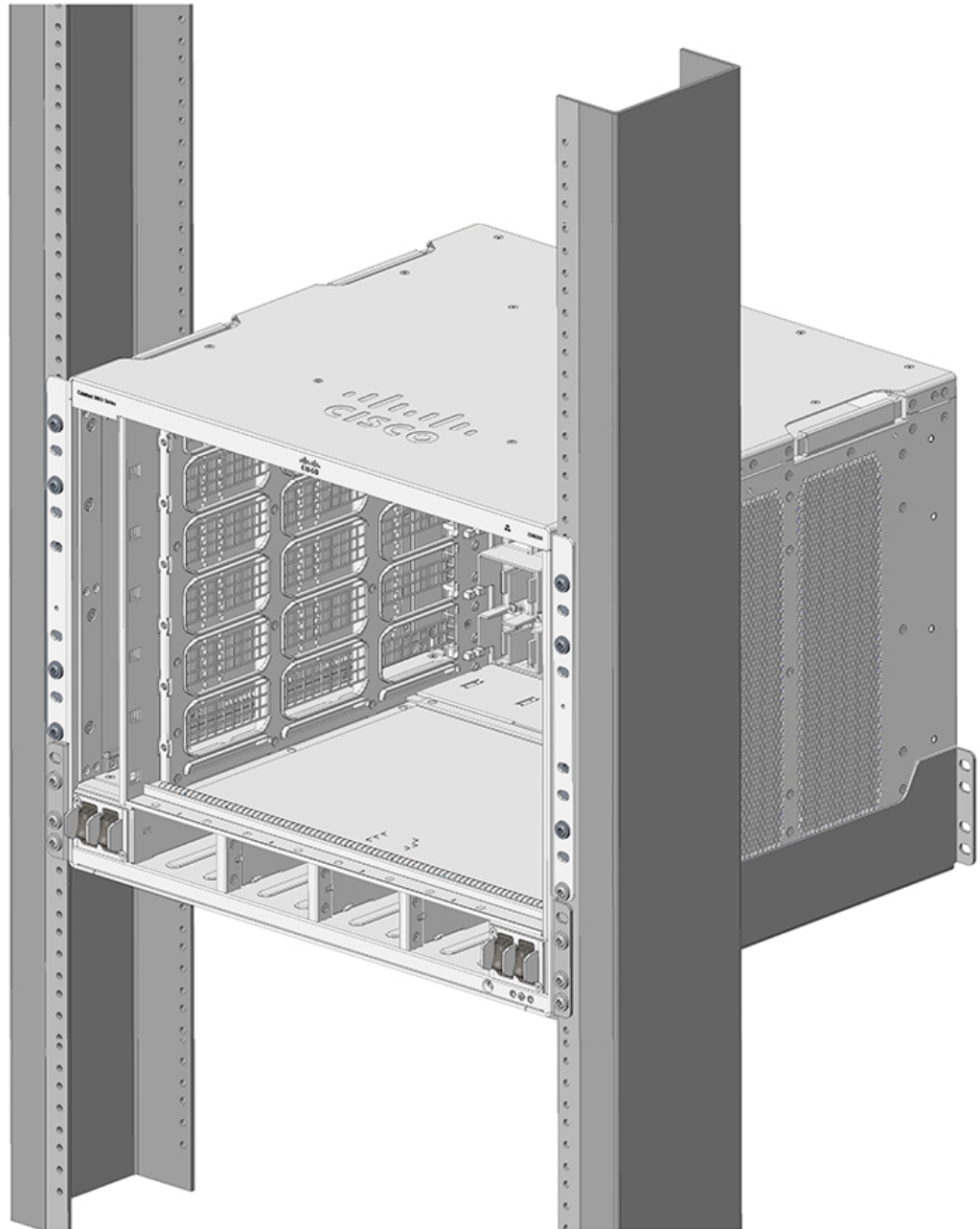
Figure 16: Securing the Chassis to the Rack Posts



356045

1	10-32 or 12-24pan head screws
---	-------------------------------

*Figure 17: Chassis Secured to the Rack Posts*



356047

### **What to do next**

After installing the chassis in its location, complete the installation process by:

1. Connecting the chassis to system ground.
2. Installing and connecting the power supplies to the power source.

3. Connecting the network interface cables to the supervisor module and line card modules. This may involve installing transceivers before you attach the network interface cables.
4. Powering up the chassis and verifying the installation.

## Install the Switch in NEBS-Compliant Mode

### NEBS-Compliant Air Filter

A Network Equipment-Building System (NEBS) compliant installation allows filtered, front-to-rear airflow. To mount the chassis in a NEBS-compliant mode with the air filter, use a 23-inch rack mount. Filter brackets that are mounted on the side of the chassis hold the air filter.

A 23-inch rack mount is used for mounting the switch in a standard 23 inch (58.4 cm) equipment rack with two unobstructed outer posts. This kit is not suitable for racks with obstructions (such as a power strip) that could impair access to the field-replaceable units (FRUs) of the switch.

### Rack-Mounting the Chassis in NEBS-Compliant Mode

#### Before you begin

- Read [Safety Warnings](#) carefully before starting with any installation procedure to make sure you understand the hazards and precautions.
- Place the chassis on the floor or on a sturdy table as close as possible to the rack. Leave enough clearance to allow you to move around the chassis.
- Open the rack-mount kit (C9606-FB-23-KIT=) and verify that all parts are included.



---

**Note** Some equipment racks provide a power strip along the length of one of the rear posts. If your rack has this feature, consider the position of the strip when planning fastener points. Before installing the brackets on the chassis, determine whether to install the chassis from the front or the rear of the rack.

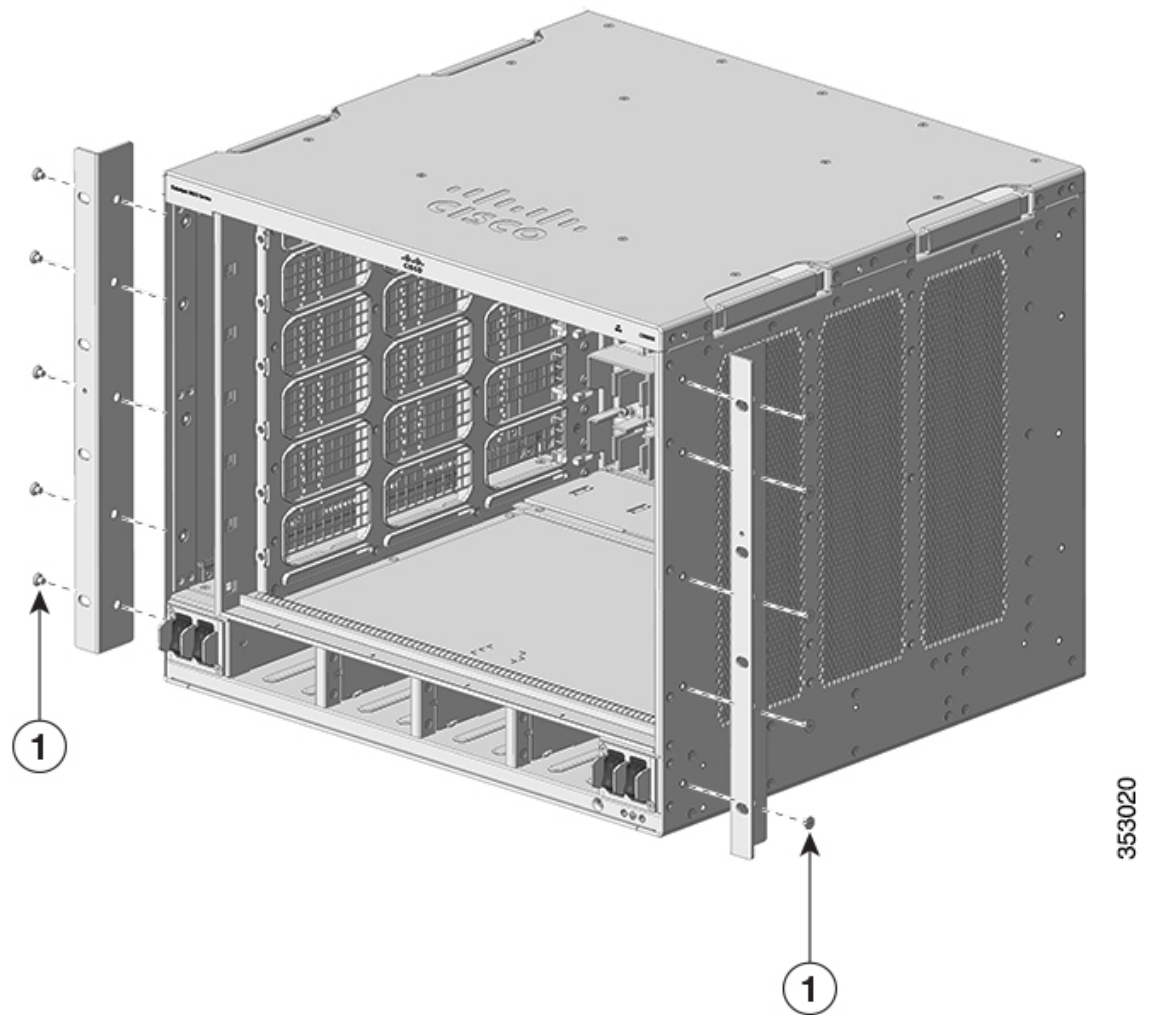
---

#### Procedure

---

- Step 1** Remove and discard the mounting ears and the ten mounting screws of the chassis. Do not reuse them during any part of the installation process.

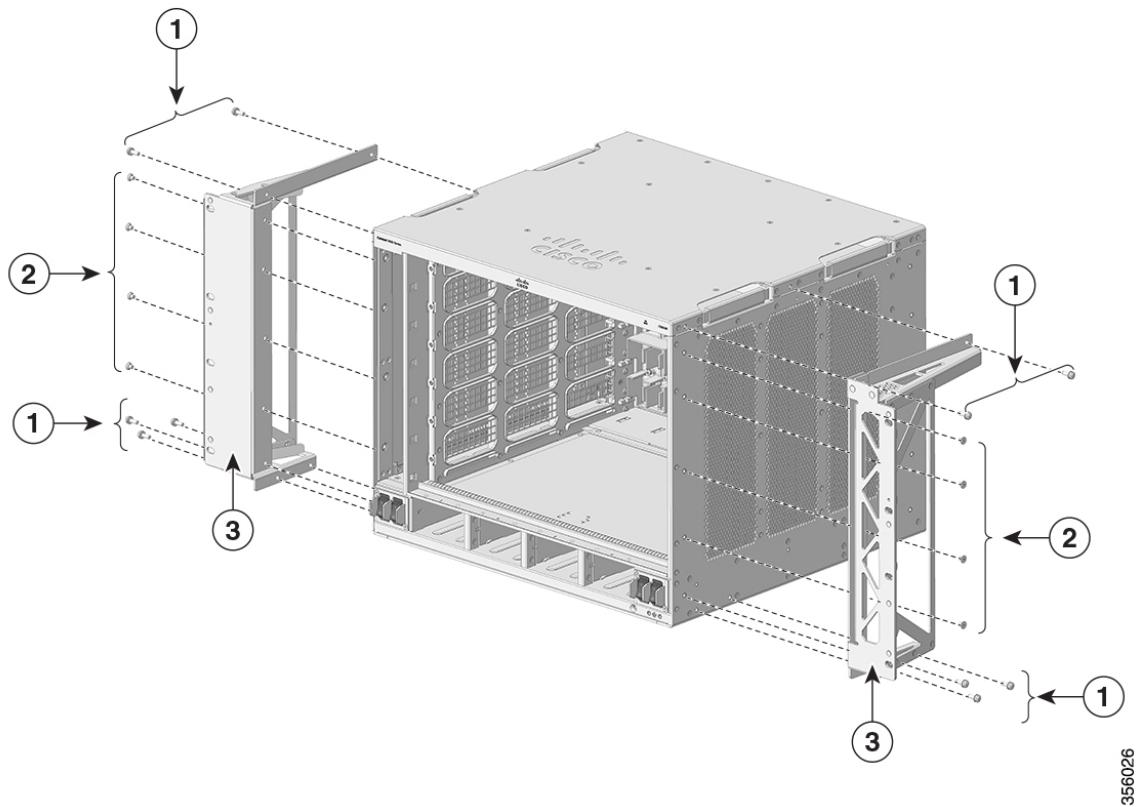
Figure 18: Remove the Mounting Ears



1	Mounting screws
---	-----------------

**Step 2** Install the rack ear brackets on the left and right sides of the chassis. These brackets connect the chassis to the rack.

Figure 19: Install the Rack Ear Brackets



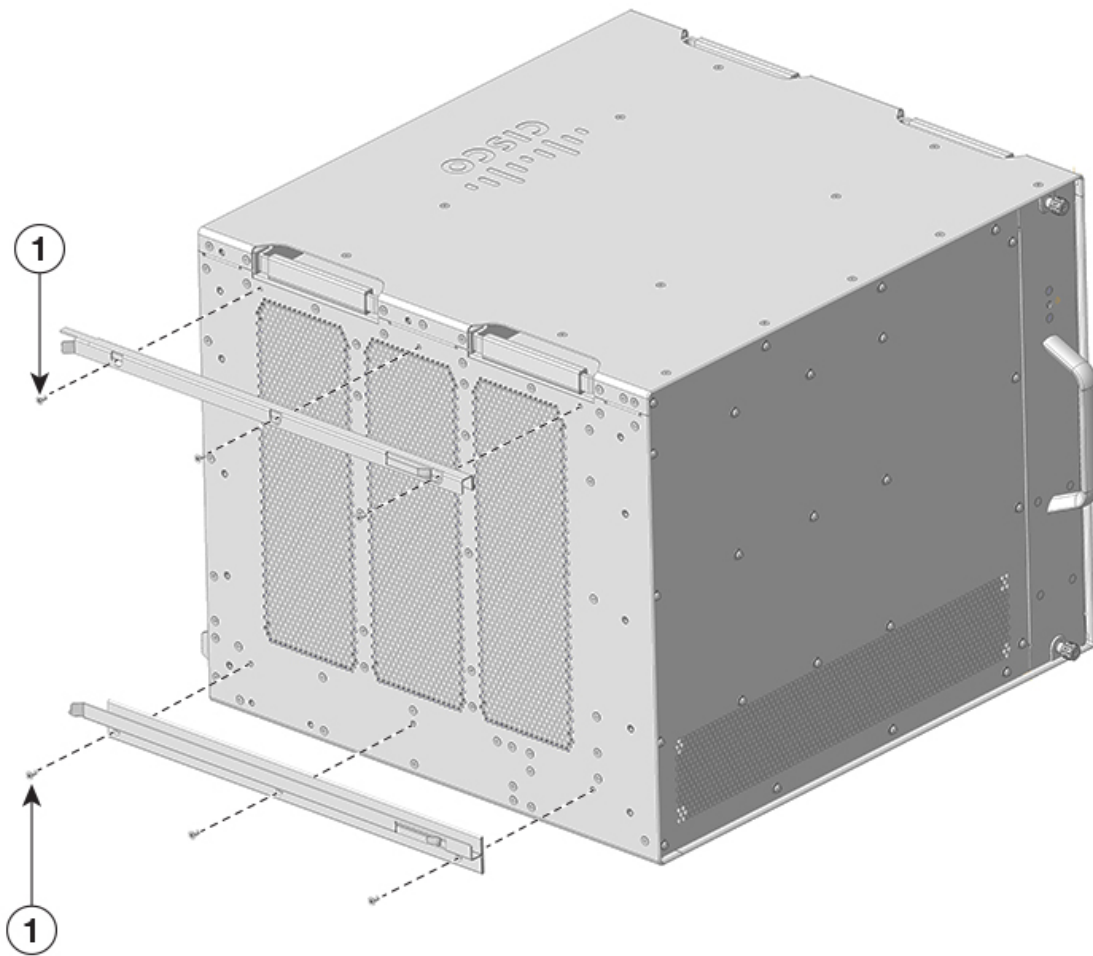
356026

1	10xM4 pan head screws 12 mm long	3	Rack ear brackets
2	8xM4 countersunk screws 5 mm long	-	-

**Step 3** Install the filter brackets.



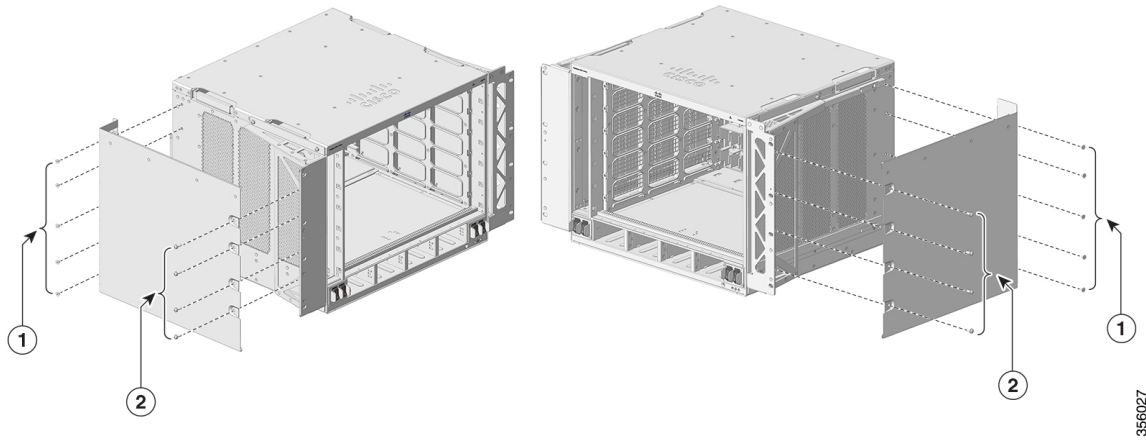
Figure 20: Install the Filter Brackets



1	M3x6mm flat head screws
---	-------------------------

**Step 4** Install the right and the left wall covers.

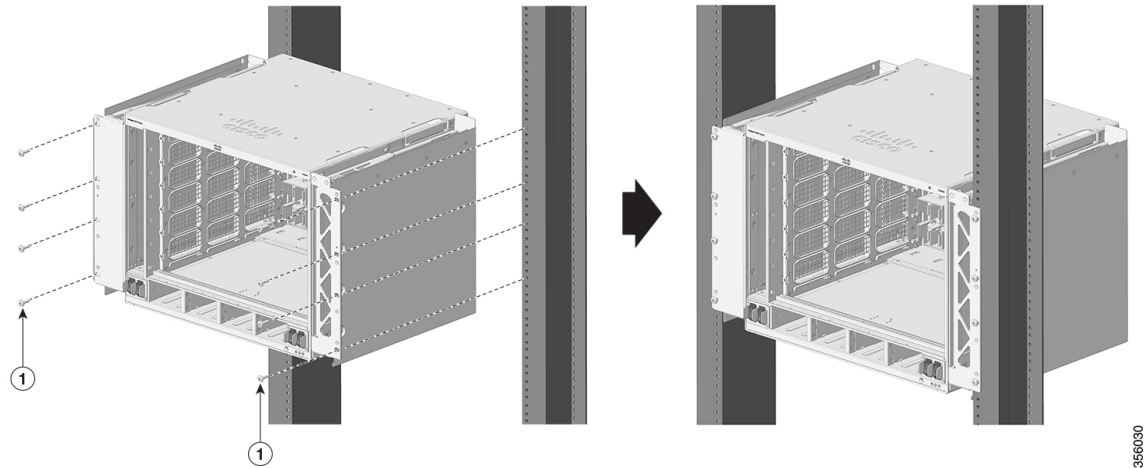
Figure 21: Install the Wall Covers



1	M4x5mm flat head screws	2	M4x12mm pan head screws
---	-------------------------	---	-------------------------

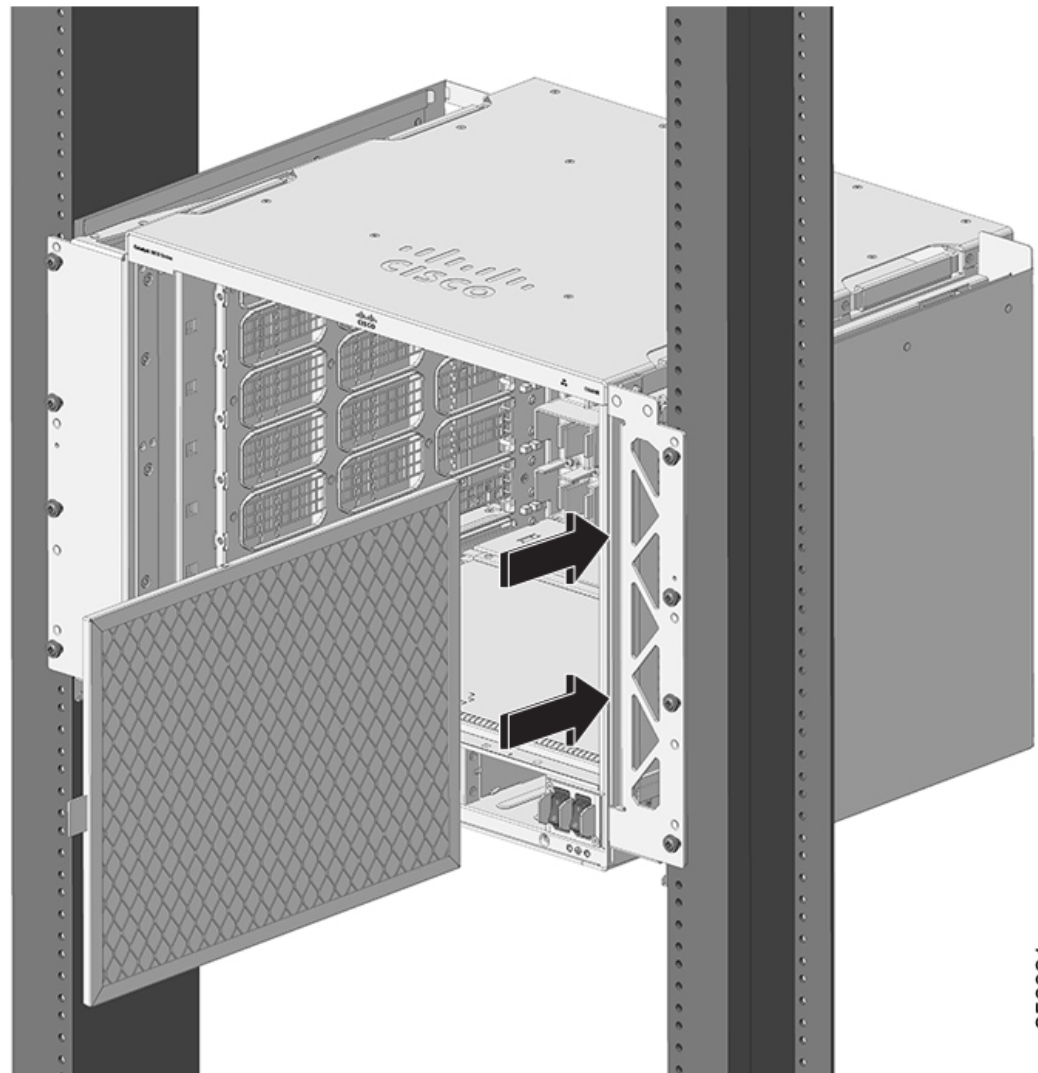
**Step 5** Secure the chassis to the rack with either 10-32 or 12-24 pan head screws from the chassis standard accessory kit.

Figure 22: Secure the Chassis to Rack



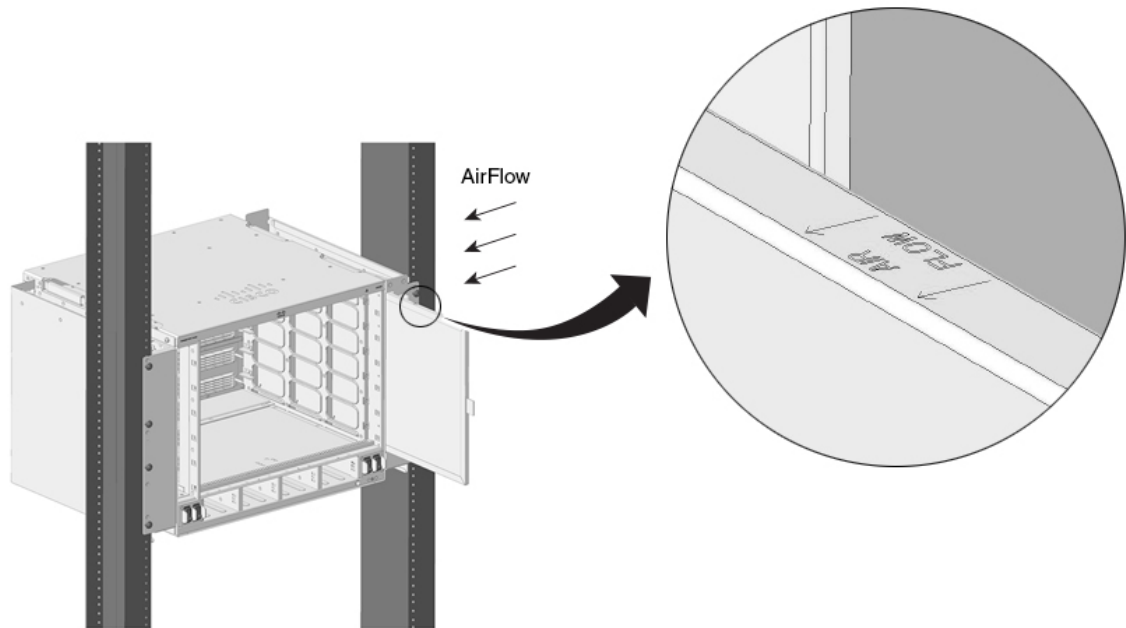
1	10-32 or 12-24 pan head screws
---	--------------------------------

**Step 6** Align the air filter with the top and the bottom edges of the air filter slot.



- Step 7** Insert the air filter into its housing with the arrows pointing toward the chassis. The arrows on the top edge of the air filter note the direction of airflow. Airflow direction is from right to left, when you stand facing the chassis.

Figure 23: NEBS-Compliant Air Filter

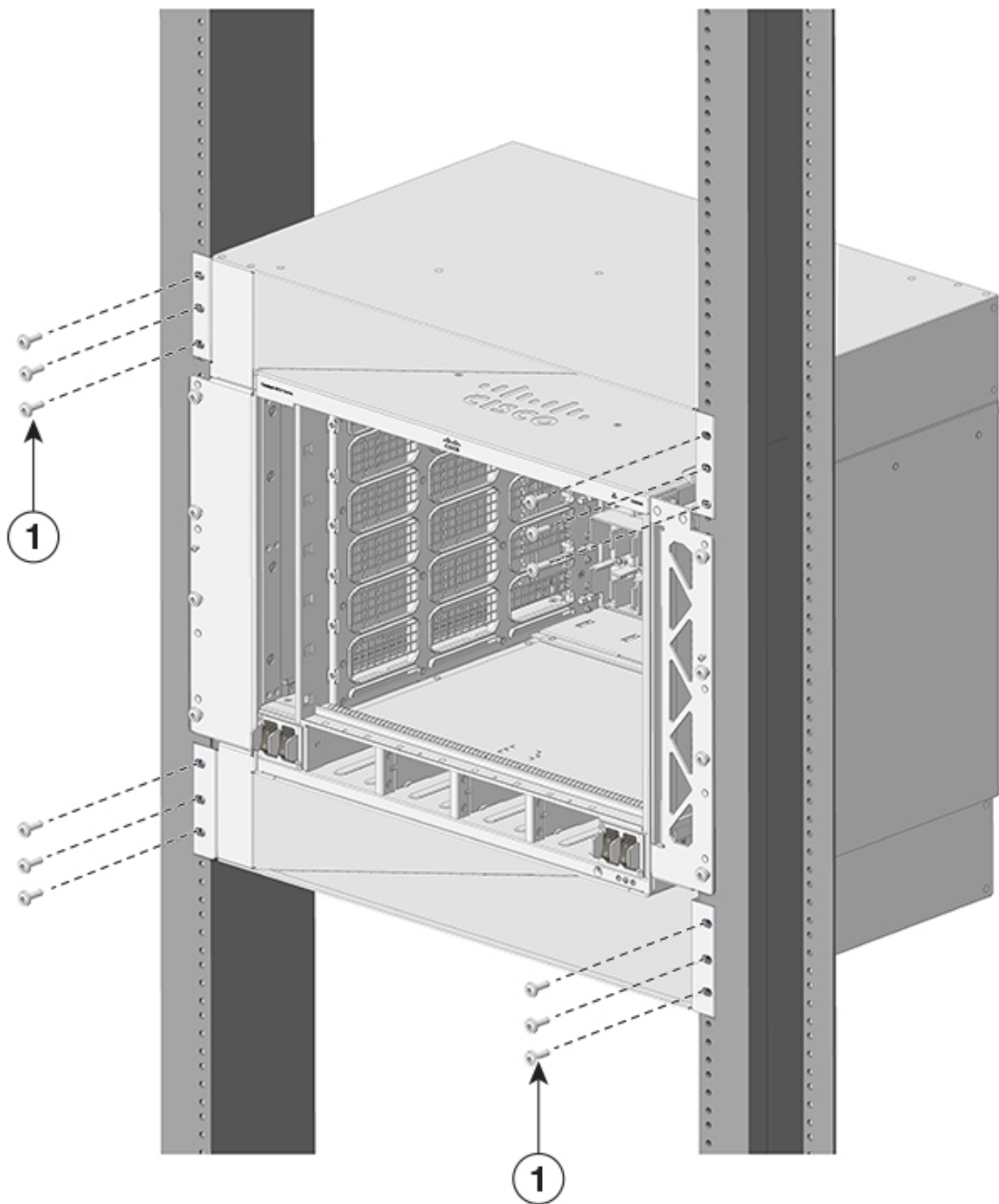


356028

**Note** We recommend that you change the air filter every 3 months. However, examine the air filter once a month (or more often in dusty environments) and replace it if it appears to be excessively dirty or damaged. To comply with Telecordia GR-63-Core standard air filter requirements for NEBS deployments, the air filter must be replaced, not cleaned.

**Step 8** Install the top and base covers as shown in the illustrations:

Figure 24: Top Cover and Base Cover



1	10-32 or 12-24 pan head screws
---	--------------------------------

# Establishing System Ground

To attach the grounding lug and cable to the grounding pad, perform these steps:

## Before you begin



---

**Warning** Use copper conductors only. **Statement 1025**

---



---

**Warning** When stranded wiring is required, use approved wiring terminations, such as closed-loop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and should clamp both the insulation and conductor. **Statement 1002**

---



---

**Warning** When installing or replacing the unit, the ground connection must always be made first and disconnected last. **Statement 1046**

---

To connect the system ground, you require the following tools and materials:

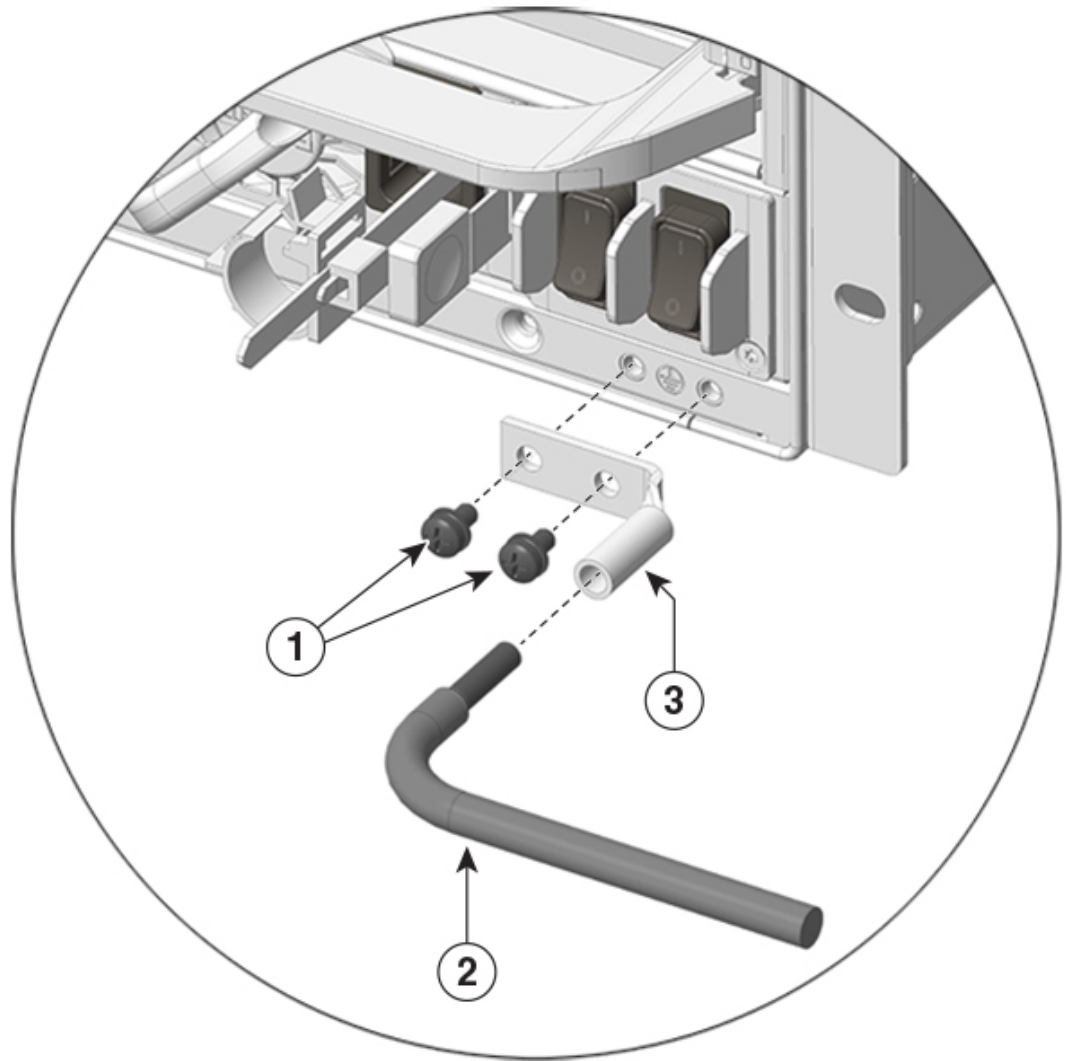
- Grounding lug—A two-hole grounding lug, which supports up to 6 AWG size. Supplied as part of the standard accessory kit.
- Grounding screws—Two M4 x 8 mm (metric) pan-head screws. Supplied as part of the standard accessory kit.
- Grounding wire—The grounding wire should be sized according to local and national installation requirements. Depending on the power supply and system, a 12 to 6 AWG copper conductor is required for U.S. installations. Commercially available 6-AWG wire is recommended. The length of the grounding wire depends on the proximity of the switch to proper grounding facilities.
- No. 1 Phillips screwdriver.
- Crimping tool to crimp the grounding wire to the grounding lug.
- Wire-stripping tool to remove the insulation from the grounding wire.

## Procedure

---

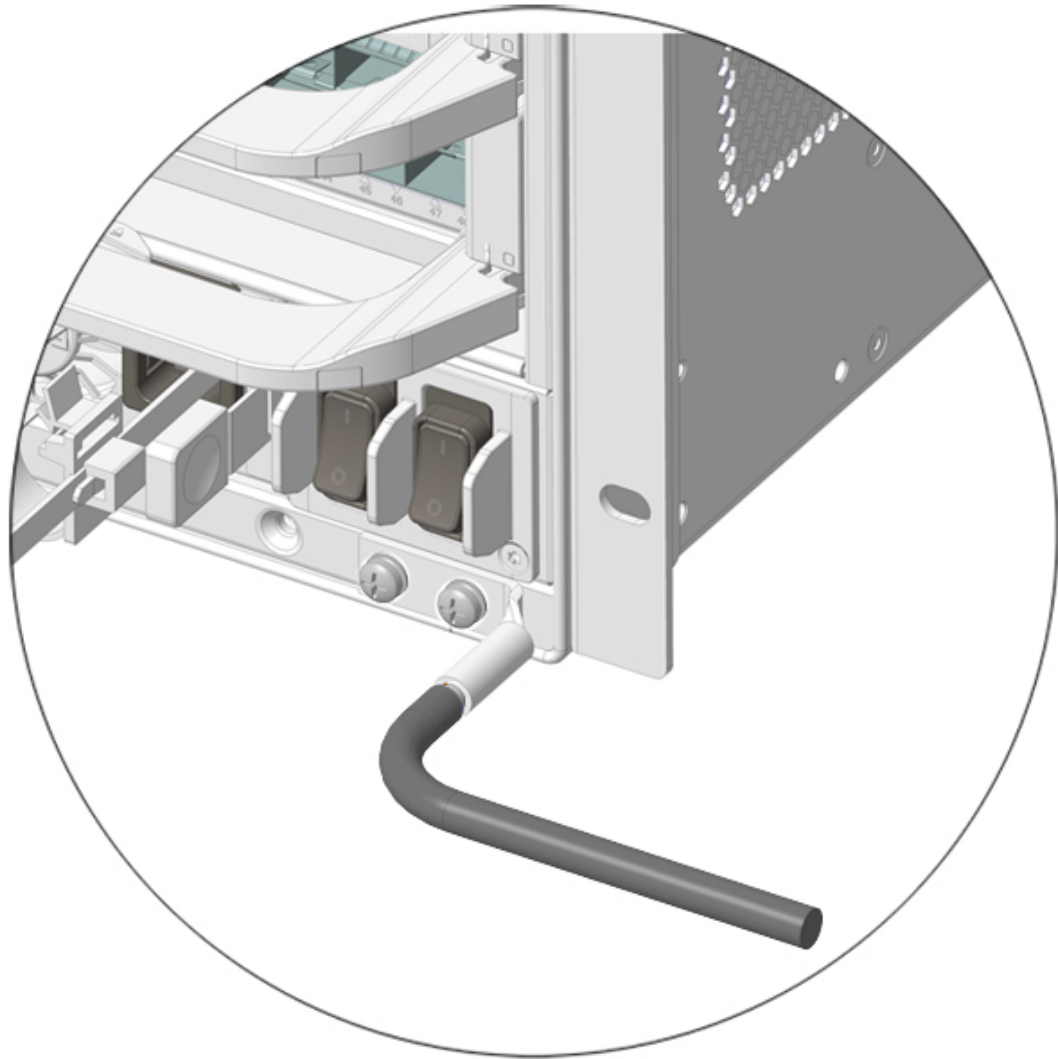
- Step 1** Use a wire-stripping tool to remove approximately 0.75 inches (19 mm) of the covering from the end of the grounding wire.
- Step 2** Insert the stripped end of the grounding wire into the open end of the grounding lug.
- Step 3** Crimp the grounding wire in the barrel of the grounding lug. Verify that the ground wire is securely attached to the ground lug.
- Step 4** Secure the grounding lug to the system ground connector with two M4 screws. Ensure that the grounding lug and the grounding wire do not interfere with other switch hardware or rack equipment.

Figure 25: Locating and Connecting System Ground



1	M4 screws to secure the lug to the connector	3	Grounding lug
2	Stripped end of the grounding wire inserted into the open end of the grounding lug		

Figure 26: System Ground Connected



- Step 5** Prepare the other end of the grounding wire, and connect it to an appropriate grounding point in your site to ensure adequate earth ground for the switch.
- 

## Attaching an ESD Strap

After you install the system ground lug, follow these steps to correctly attach the ESD wrist strap:

### Procedure

---

- Step 1** Attach the ESD wrist strap to bare skin as follows:



- a) If you are using the ESD wrist strap supplied with the FRUs, open the wrist strap package and unwrap the ESD wrist strap. Place the black conductive loop over your wrist and tighten the strap such that it touches your bare skin well.
- b) If you are using an ESD wrist strap equipped with an alligator clip, open the package and remove the ESD wrist strap. Locate the end of the wrist strap that attaches to your body and secure it to your bare skin.

**Step 2** Grasp the spring or alligator clip on the ESD wrist strap and momentarily touch the clip to a bare metal spot (unpainted surface) on the rack. We recommend that you touch the clip to an unpainted rack rail so that any built-up static charge is then safely dissipated to the entire rack.

**Step 3** Attach either the spring clip or the alligator clip to the ground lug screw as follows:

- a) If you are using the ESD wrist strap that is supplied with the FRUs, squeeze the spring clip jaws open, position the spring clip to one side of the system ground lug screw head, and slide the spring clip over the lug screw head so that the spring clip jaws close behind the lug screw head.

**Note** The spring clip jaws do not open wide enough to fit directly over the head of the lug screw or the lug barrel.

- b) If you are using an ESD wrist strap that is equipped with an alligator clip, attach the alligator clip directly over the head of the system ground lug screw or to the system ground lug barrel.

When handling modules, follow these guidelines:

- Handle carriers using the available handles or edges only; avoid touching the printed circuit boards or connectors.
- Place a removed component boardside up on an antistatic surface or in a static shielding container. If you plan to return the component to the factory, immediately place it in a static shielding container.
- Never attempt to remove the printed circuit board from the metal carrier.

**Caution** For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohm (Mohm).

---

## Verifying the Switch Chassis Installation

To verify the switch chassis installation, perform these steps:

### Procedure

---

- Step 1** Verify that the ejector levers of each module are fully closed (parallel to the faceplate) to ensure that the supervisor and all the line cards are fully seated in the backplane connectors.
- Step 2** Verify that all empty module slots and power supply bays have blanks installed properly. The blanks optimize the air flow through the chassis and contain EMI.

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

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

**Step 3**    Turn on the power supply switches to power up the system. During the power-up sequence, the system performs a series of bootup diagnostic tests.

**Note**    The switch is designed to boot up in less than 30 minutes, provided that the neighboring devices are in fully operational state.

---

**What to do next**

Additional system diagnostic tests are also available. These tests allow you to perform a complete sanity check on the system prior to inserting the system into your network and to monitor the health of the system while the system is running.



---

**Tip**    When prestaging systems in a nonproduction environment, we recommend that you run all the diagnostic tests, including the disruptive tests, to prescreen the systems for failures, if any.

---