Installation

This chapter contains the following topics:

Installation Notes and Warnings for the Cisco UCS X9508 Server Chassis

The following notes and warnings apply to all installation tasks:

Note Before you install, operate, or service the system, see the Regulatory Compliance and Safety Information for Cisco UCS for important safety information.

Caution The chassis can be shipped either empty or pre-populated. If the chassis is shipped pre-populated, do not remove the X-Fabric Modules in the two bottom rear slots. Other rear components, such as Intelligent Fabric Modules and fan modules should be removed to lighten the weight of the chassis.

On the front of the chassis, such as PSUs and Compute Nodes, can be removed to lessen the overall chassis weight before installation. However, even with compute nodes and PSUs removed, the chassis still has considerable weight. So make sure to use a scissors jack, equipment lift, or other machinery to bear the weight of the chassis during installation.

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Warning	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. Statement 1071

SAVE THESE INSTRUCTIONS

⚠	
Warning	This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. Statement 1017

⚠	
Warning	Only trained and qualified personnel must be allowed to install, replace, or service this equipment. Statement 1030

☞	
Important	Watch your hands and fingers whenever you handle the chassis, modules, nodes, and components! Narrow vertical or horizontal spaces in situations like, but not limited to, moving the chassis into or out of the shipping container or equipment rack can cause pinch hazards for your hands and fingers.

Although they do not eliminate the possibility of pinching, the chassis has defined grasp points to facilitate handling and moving it. For information about chassis grasp points, see Handling the Chassis, on page 5.

✎	
Note	Do not lift or handle the chassis by the top rear sheet metal, as indicated by the DO NOT LIFT label on the top rear surface.

Rack Requirements

This section provides the requirements for installing in a standard open rack, assuming an external ambient air temperature range of 41 to 95°F (5 to 35°C):

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Note	Do not use racks that have obstructions. These obstructions could impair access to field-replaceable units (FRUs).

Cisco UCS is compliant with any EIA-310-D/E compliant rack. Your equipment racks must also be compliant with EIA-310-D/E standard.

The Cisco UCS X9508 chassis can be installed in either a 9.5 mm square-hole rack or a 7.1 mm unthreaded round-hole rack. These racks require either square-hole cage nuts or round-hole cage nuts (also called spring nuts), respectively. Cage nuts and spring nuts are not provided by Cisco. They should have accompanied your equipment rack. Use the proper cage nut or spring nut for your rack.

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Caution   Some racks might be tapped, with threaded holes drilled directly into the rack's sheetmetal instead of square- or round-hole punchouts for cage nuts. The rail kit for the server is not currently supported in tapped (threaded hole) racks. Do not attempt to install the chassis in a tapped (threaded hole) equipment rack.

Also, be aware of these additional requirements:

- The tool-less rack-mount kits (either Type 1 or Type 2) shipped with the chassis are required. The adjustable rack rails shipped with each enclosure extend from 29 inches (73.66 cm) to 35 inches (88.9 cm)

- Front and rear doors—If your equipment rack includes closing front and rear doors, the doors must have 65 percent open perforated area evenly distributed from top to bottom to permit adequate airflow.

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Caution   Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

The rack must also meet the following requirements:

- The minimum available vertical rack space per chassis must be seven RU (rack units), equal to 12.25 inches (31.2 cm).

Airflow Considerations

Airflow through the chassis is from front to back. Air enters the chassis through the nodes and power supply grills at the front of the chassis and exits through the fan modules on the back of the chassis. To ensure proper airflow, follow these guidelines:

- Maintain ambient airflow throughout the data center to ensure normal operation.

- Consider the heat dissipation of all equipment when determining air-conditioning requirements. Do not allow the exhaust of one system to be the intake for another system.

- When evaluating airflow requirements, take into consideration that the hot air generated by equipment at the bottom of the rack can be drawn in the intake of the equipment above.

- Make sure that the exhaust at the rear of the chassis is unobstructed for at least 24 in. (61 cm). This includes obstruction due to messy cabling practices.

- If an enclosed rack is used, the front door must be 65 percent perforated to ensure adequate airflow to the nodes.

Earth Ground Considerations

Earth Ground Compliance

Warning 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 that suitable grounding is available. Statement 1024

Warning For Nordic countries (Norway, Finland, Sweden and Denmark) this system must be installed in a Restricted Access Location, where the voltage of the main ground connection of all equipment is the same (equipotential earth) and the system is connected to a grounded electrical outlet. Statement 328

Warning High leakage current – earth connection essential before connection to system power supply. Statement 342

Warning This equipment must be externally grounded using a customer-supplied ground wire before power is applied. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 366

Ground Lug

Connecting the chassis to earth ground is completed by installing a grounding bracket, assembling the ground wire and ground lug, then screwing the ground lug and ground wire to the grounding bracket.

The ground lug is provided in the accessory kit. If needed, additional ground lugs are available through third-party retailers, such as Panduit.

Note The following information is for standard AC power installations in North America. Your location might require different specifications. Make sure that you are using the correct ground lug and ground cable for your location.

The ground lug must be a two-stud, copper barrel lug like the example shown below.

✎
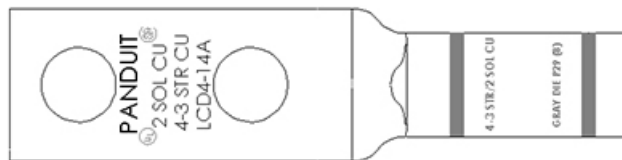
Note The positive and negative wires can be installed pointing either to the right or to the left as long as the terminal cover is used.

Panduit LCD4-14A-L connectors (or equivalent) may be used supply and return wires, and Panduit LCD4-14A or equivalent connectors may be used for the 90-degree ground lug wire. Both connections have double lugs with .25-inch holes measuring .625 inches from center to center.

Handling the Chassis

As a best practice, handle the chassis when it is empty, and use either a scissors jack or multiple people to bear the weight.

The Cisco UCS X9508 has defined areas for holding the chassis (grasp points). Grasp points are not indicated on the chassis itself, but facilitate handling or moving the chassis.

☞

Important Watch your hands and fingers whenever you handle the chassis, modules, nodes, and components! Narrow vertical or horizontal spaces in situations including, but not limited to, moving the chassis into or out of the shipping container or equipment rack can cause pinch hazards for your hands and fingers.

Use the following grasp points when handling the chassis.
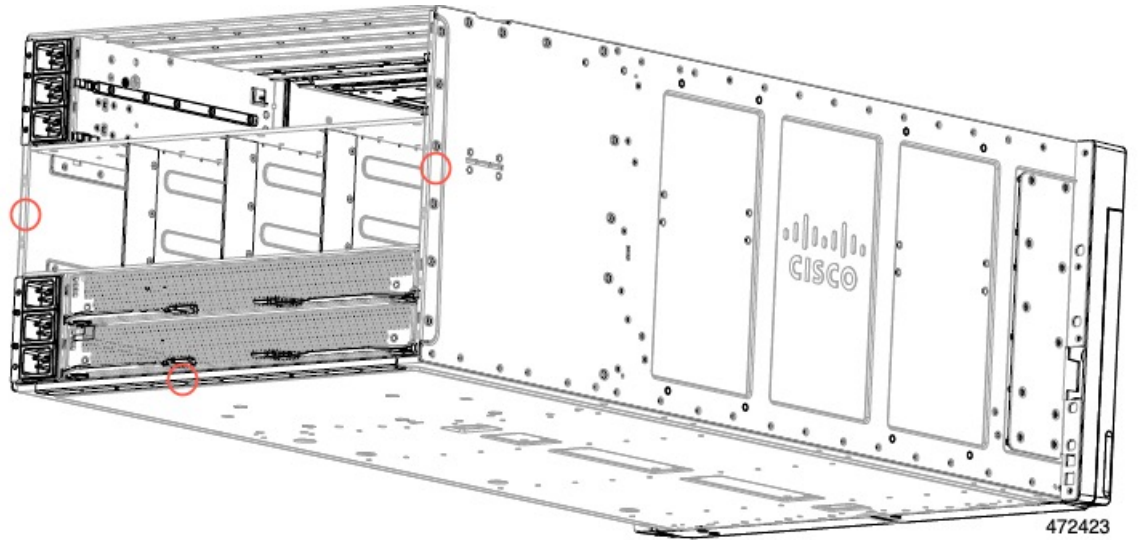
- Front grasp points, horizontal
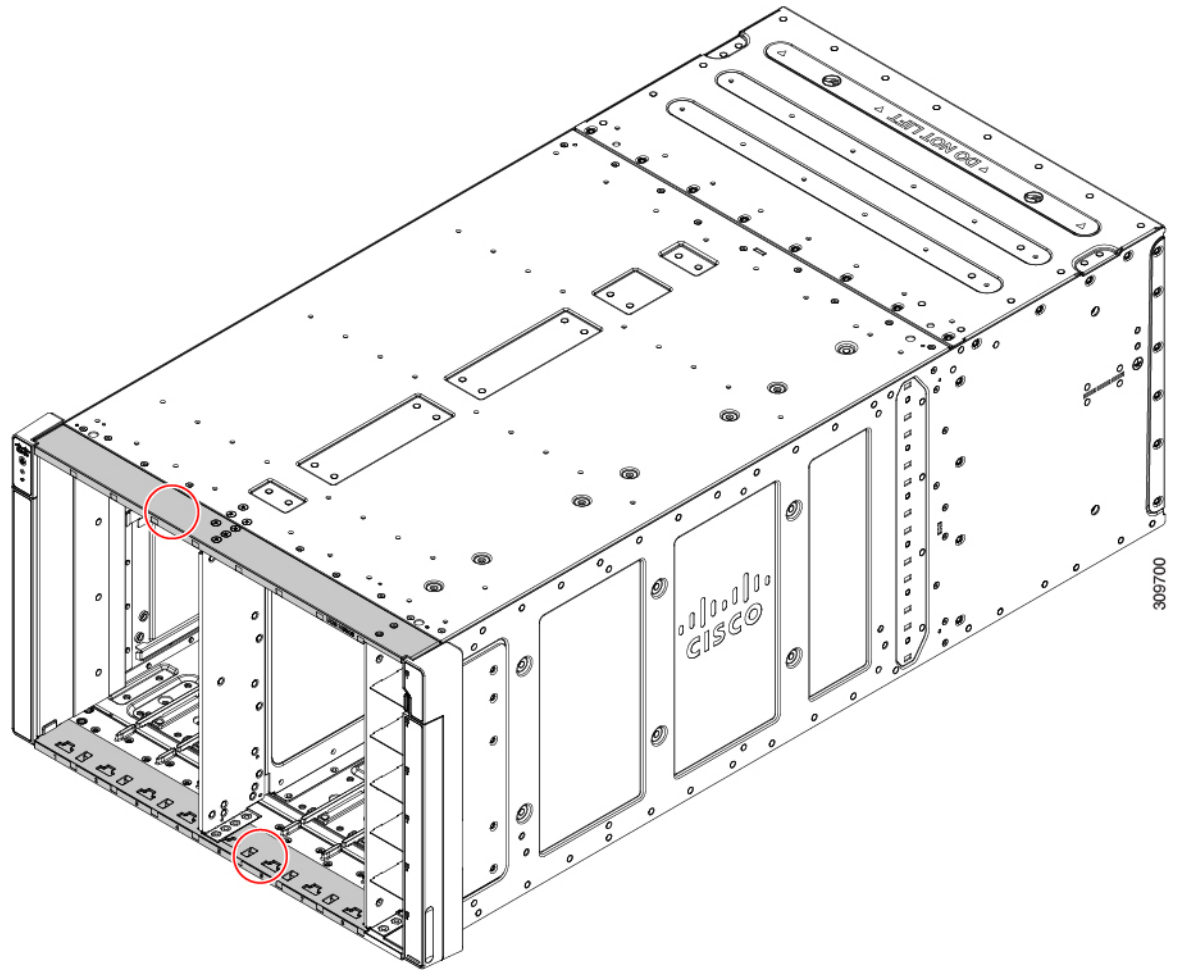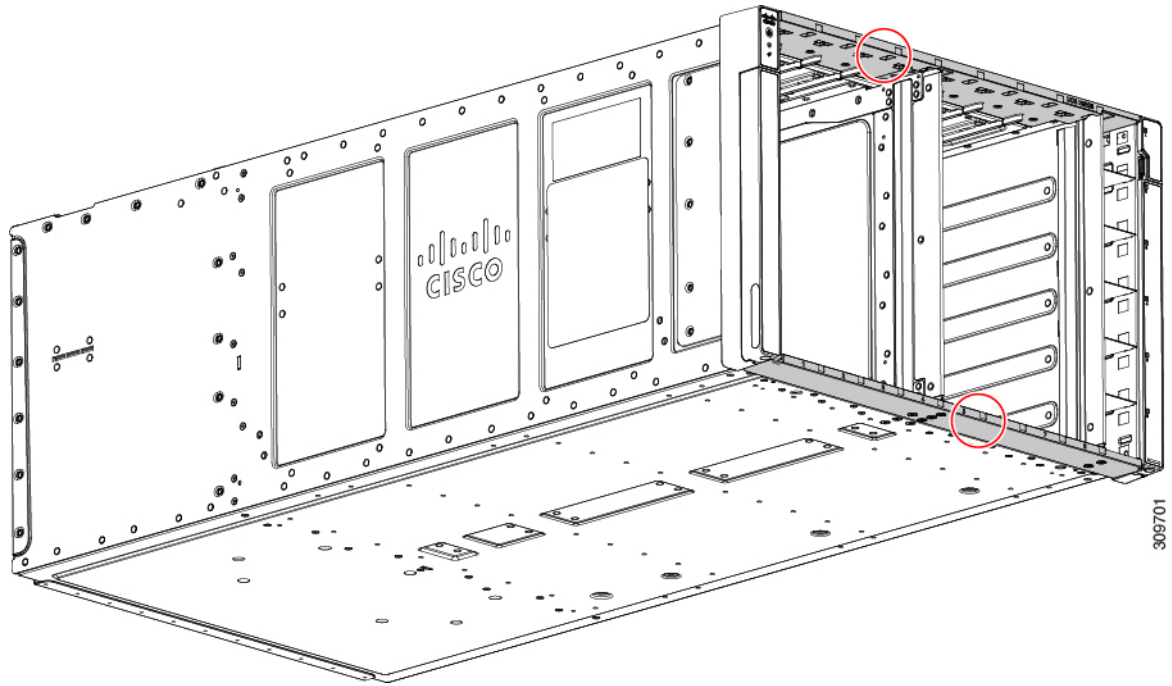
• Rear grasp points

Note Do not lift or handle the chassis by the top rear sheet metal, as indicated by the DO NOT LIFT label on the top rear surface.

Moving Server Chassis

A fully configured chassis is very heavy! Be aware of its weight, and follow these guidelines:

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Caution   Do not try to lift the chassis without mechanical assistance! The chassis weighs 400 lbs (181.43 kg) fully configured and 92 lbs (41.73 kg) empty. If available, use a scissor jack or other lifting device designed for installing heavy equipment into data center racks.

- Disconnect all power and external cables before lifting the chassis.

- Remove all IFMs, fan modules, power supplies and compute nodes from the chassis before lifting. If XFMs are installed, do not remove them. Instead, leave them in the chassis during installation.

- Ensure that your footing is solid, and the weight of the system is evenly distributed between your feet.

- If you must lift an empty chassis, do not attempt this alone. Get assistance from at least one other person. Lift the system slowly, keeping your back straight. Lift with your legs, not with your back. Bend at the knees, not at the waist.

Installation Guidelines

When installing the chassis, follow these guidelines:

- Plan your site configuration and prepare the site before installing the chassis. See Site Planning and Maintenance Records for the recommended site planning tasks. For details, see the Cisco UCS Site Preparation Guide.

- Record the information listed in Site Planning and Maintenance Records as you install and configure the chassis.

- Ensure that there is adequate space around the chassis to allow for servicing the chassis and for airflow.

- Ensure that the air-conditioning meets the heat dissipation requirements listed in Technical Specifications

- Ensure that the cabinet or rack meets the requirements listed in Rack Requirements, on page 2.

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Note   Jumper power cords are available for use in a rack. See Specifications for the Cisco UCS X9508 Chassis Power Supply Units.

- Ensure that the site power meets the power requirements listed in Technical Specifications. We recommend that you use a UPS to protect the UCS system. Using an unprotected supply exposes you to a risk of system failure due to input supply voltage variations or failures.

  Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco UCS, which can have substantial current draw fluctuations due to fluctuating data traffic patterns.

- Ensure that circuits are sized according to local and national codes. For North America, the power supply requires a 20 A circuit.

  To prevent loss of input power, ensure that the total maximum loads on the circuits supplying power to the chassis are within the current ratings for the wiring and breakers.

- Use the following torque values when installing the chassis:

  - M6 x 20 mm screws: 48 +/- 5 in-lb

Required Equipment

Before you begin the installation, ensure that you have the following items:

- Scissor jack or other lift device capable of bearing the weight of a fully loaded chassis, which is 400 lbs (181.43 kg).

- Number 1 and number 2 Phillips-head screwdrivers with torque measuring capabilities

- Flat-head screwdriver

- Tape measure and level

- ESD wrist strap or other grounding device

- Antistatic mat or antistatic foam

Unpacking and Inspecting the Chassis

Caution   When handling chassis components, wear an ESD strap and handle modules by the carrier edges only.

Tip   Keep the shipping container in case the chassis requires shipping in the future.

Note   The chassis is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer service representative immediately.

As part of this procedure, you will be moving an empty chassis out of the shipping container. Be aware of the following precautions:

Note   You will find it helpful to wear gloves when unpacking and lifting the chassis. Also, beware of hand and finger placement while unpacking, lifting, and moving the chassis to avoid possible pinch hazards.

Caution   To lighten the weight of the chassis, remove compute nodes and PSUs from the front of the chassis. Remove the IFMs and fan modules from the rear of the chassis, but leave the XFMs installed in the lower rear slots of the chassis. Even with these parts removed, the chassis still has considerable weight. Always use a scissors jack, equipment lift, or other mechanical device to lift and support the chassis when moving or installing it.

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Warning   Use two or more people to lift the empty chassis. Do not attempt to lift the chassis by yourself! Always use safe lifting practices when lifting or moving the chassis.

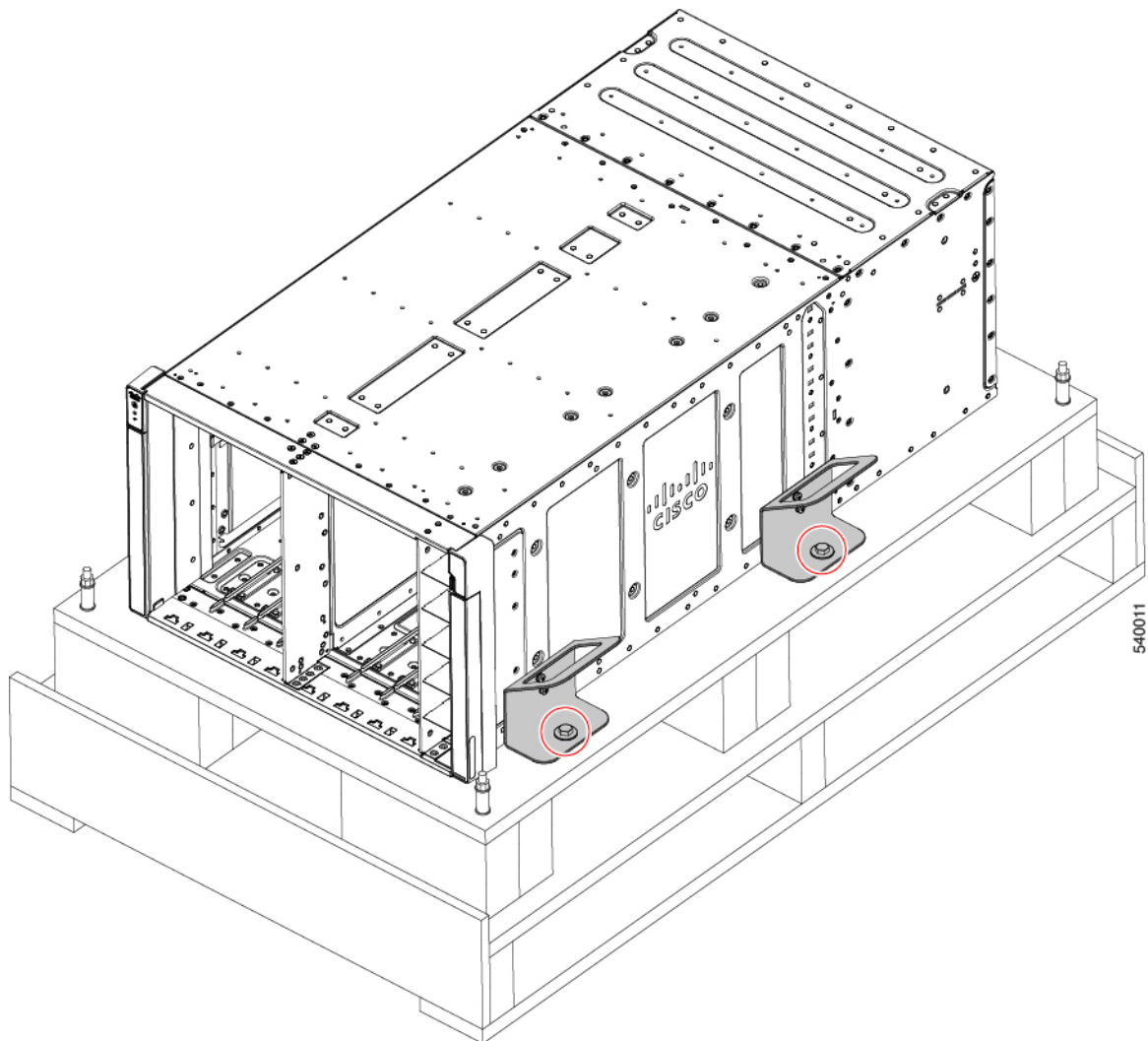Use a lift or scissors jack to support the chassis when lifting and moving it.

Step 1   Make sure to read and understand the preceding warnings in this topic, as well as the information in the following topics:

- Installation Notes and Warnings for the Cisco UCS X9508 Server Chassis, on page 1
- Handling the Chassis, on page 5
- Moving Server Chassis, on page 7

Step 2   Open the chassis shipping container.
   a) Remove the top and side panels so that the chassis is sitting on the bottom pallet.
   b) Save all packaging material.

Step 3   Do a visual inspection of the chassis to ensure there was no damage during transport.

Step 4   Compare the shipment to the equipment list provided by your customer service representative and verify that you have received the following items:

- Accessory kit, which contains:
    - M6 cage nut (4)
    - M6 x 20mmL screw (16)
    - Power Cable Management Arm (2), UCSX-9508-PCMA
    - ESD Strap (Clip Terminated)
    - Rail Kit, UCSX-9508-RAIL1=

- Any printed documentation

- Any optional items, which will be present in the accessory kit only if you ordered them with your system.
    - Rear Mounting Brackets (1 left bracket, 1 right bracket), UCSX-9508-RACKBK. These brackets are optional. They should be ordered only if you plan to install the chassis in shippable rack. If you don't plan on shipping the rack, these brackets are not required.
    - Compute Node Debug Cable, UCSX-C-DEBUGCBL, which is orderable as a customer option.

Step 5   Verify that all unused node slots and power supply bays have blank covers.

Step 6   If your chassis was shipped with hardware pre-installed, make sure to remove all compute nodes and PSUs, fans, and IFMs to reduce the chassis weight significantly before lifting it out of the shipping container. Blank faceplates can remain installed. Leave the XFMs installed in the bottom two rear chassis slots.n

Warning   Do not lift a chassis! The chassis has considerable weight even with all modules except the XFMs removed. Use a mechanical lift of scissors jack to lift and bear the weight of the chassis.

Step 7 Locate the chassis handles, which are also the stabilizing brackets that secure the chassis to the bottom pallet.
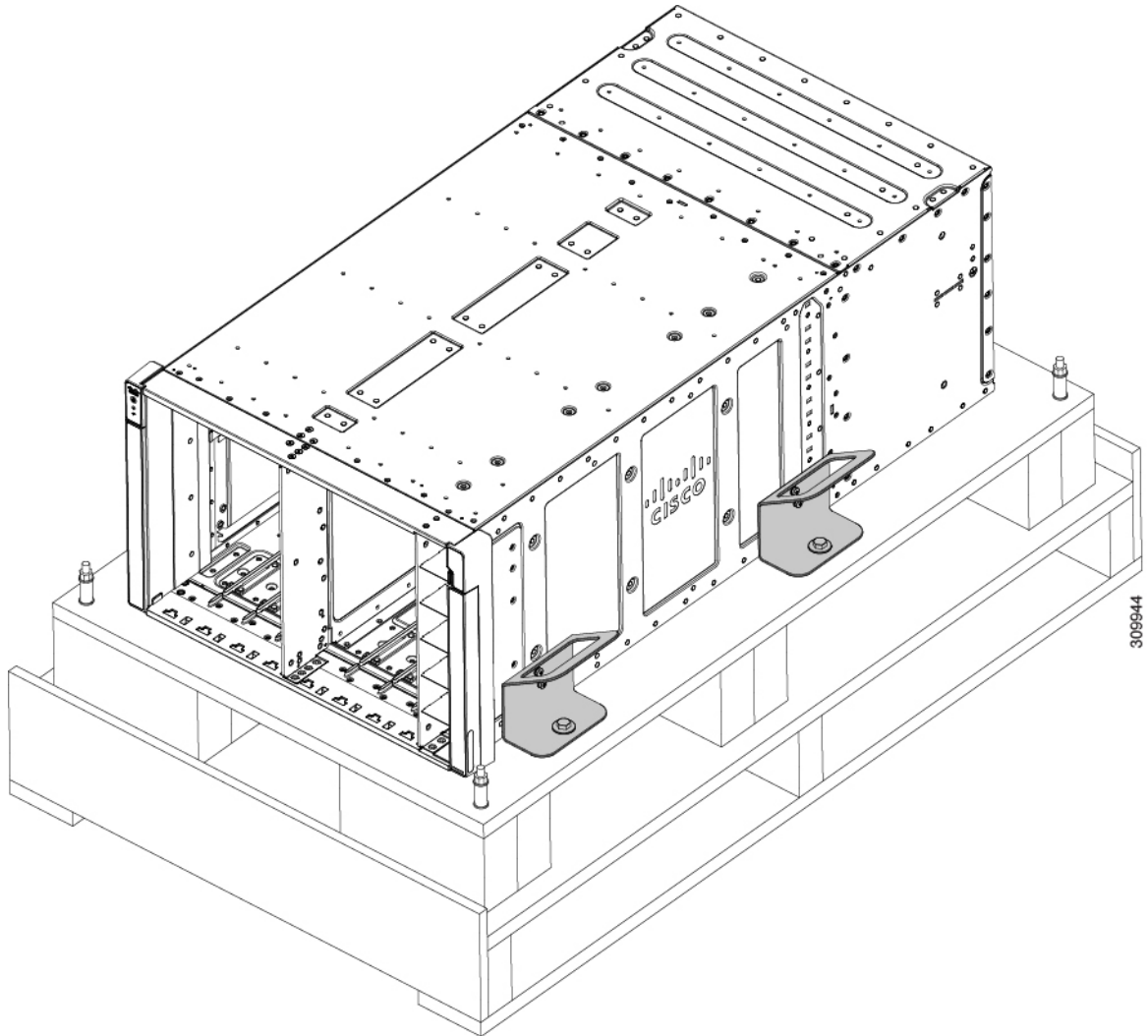
Step 8 Using a 13-millimeter socket driver, remove the four M8 hex-head securing bolts (two per side).

Note Save the securing bolts.

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Step 9   With two or more people, grasp the handles, lift the empty chassis off of the bottom palette, and set the chassis onto a lift or scissor jack that can support the chassis weight.

Step 10   Before installing the chassis into an equipment rack, use a #2 Phillips screwdriver to remove the two M5 screws (two per handle) that secure the handles to the chassis.

> **Note**   Save the handles and screws.
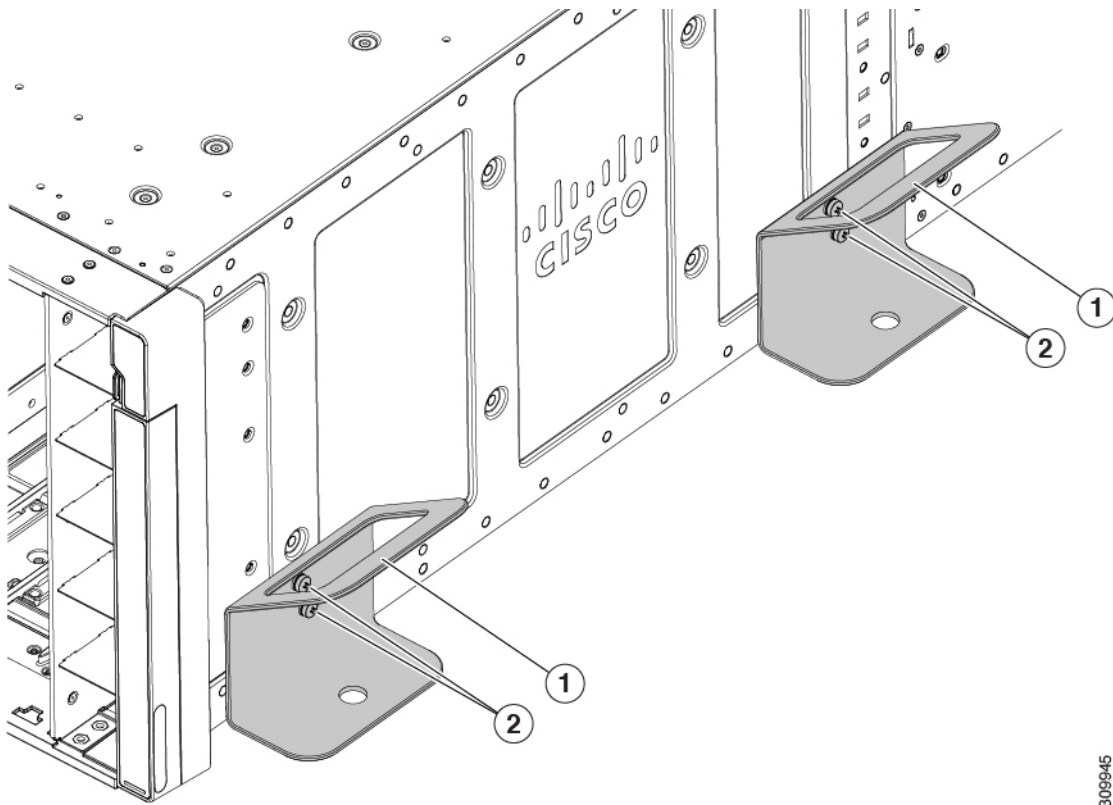
1	Chassis handles, two per side	2	M5 screws, two per handle

Rail Installation Templates

Two rail kits are available, and each shipping container will contain a left and right rail as a matched set. For each rail kit, a corresponding template is provided for reference through the following sections of this document. The templates show the locations on the rack for cage nuts, rail kit locator pegs, and screws should be installed.

The templates facilitate installing the rail kit and chassis by ensuring proper spacing and alignment of installation hardware in both the left and right sides of the rack. The chassis has one template for the front of the rack and one for the back.

Rail installation templates are applicable to either square-hole or round-hole equipment racks.

For each rail installation template, see:

Front Install Template

Use this installation to locate the correct spacing and alignment for chassis mounting hardware on the rack. This template shows the rack locations for mounting the front of the chassis.

Align the Chassis Top of the template with the location in the rack where the top of the chassis will be and install the cage nuts and other hardware as shown.

Figure 1: Rack Installation Template, Front
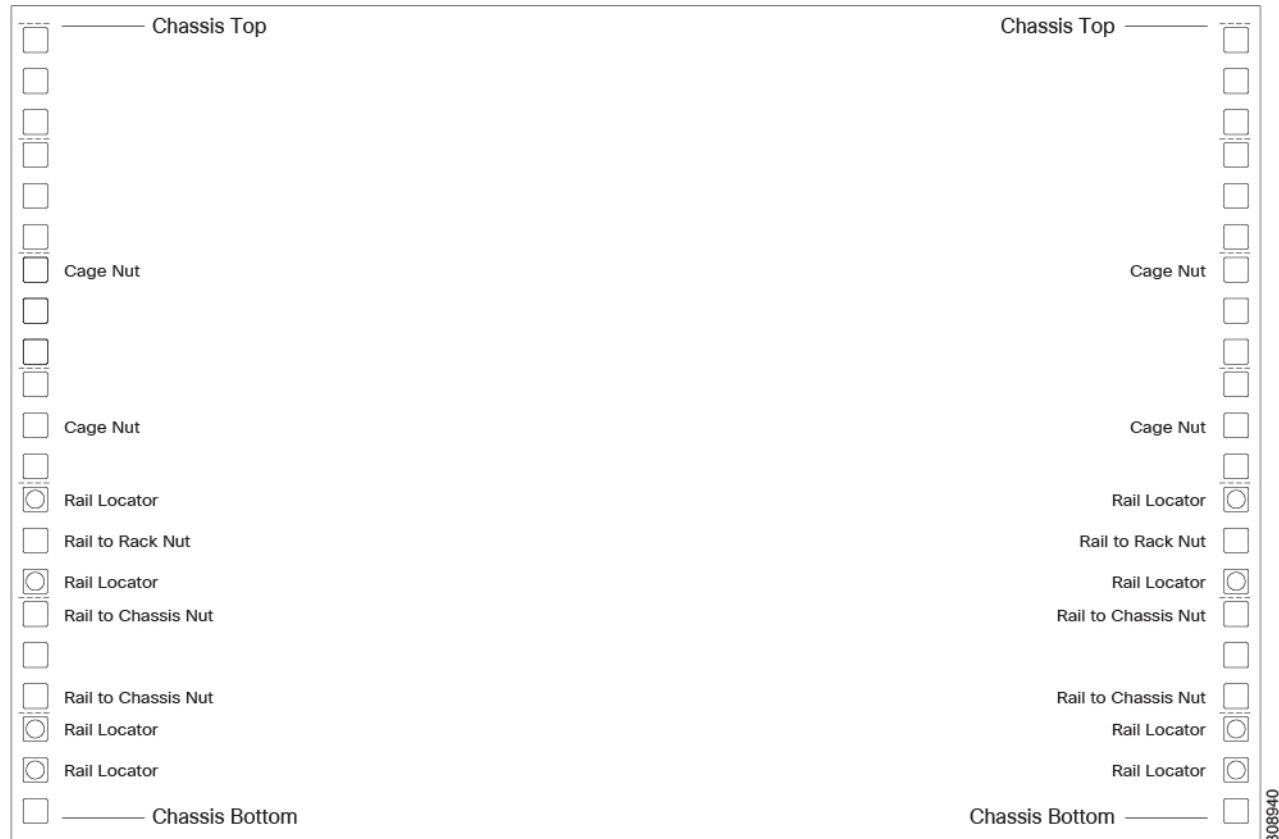
Rear Install Template

Use this installation to locate the correct spacing and alignment for chassis mounting hardware on the rack. This template shows the rack locations for mounting the rear of the chassis.

Align the Chassis Top of the template with the location in the rack where the top of the chassis will be and install the cage nuts and other hardware as shown.

Figure 2: Rack Installation Template, Rear
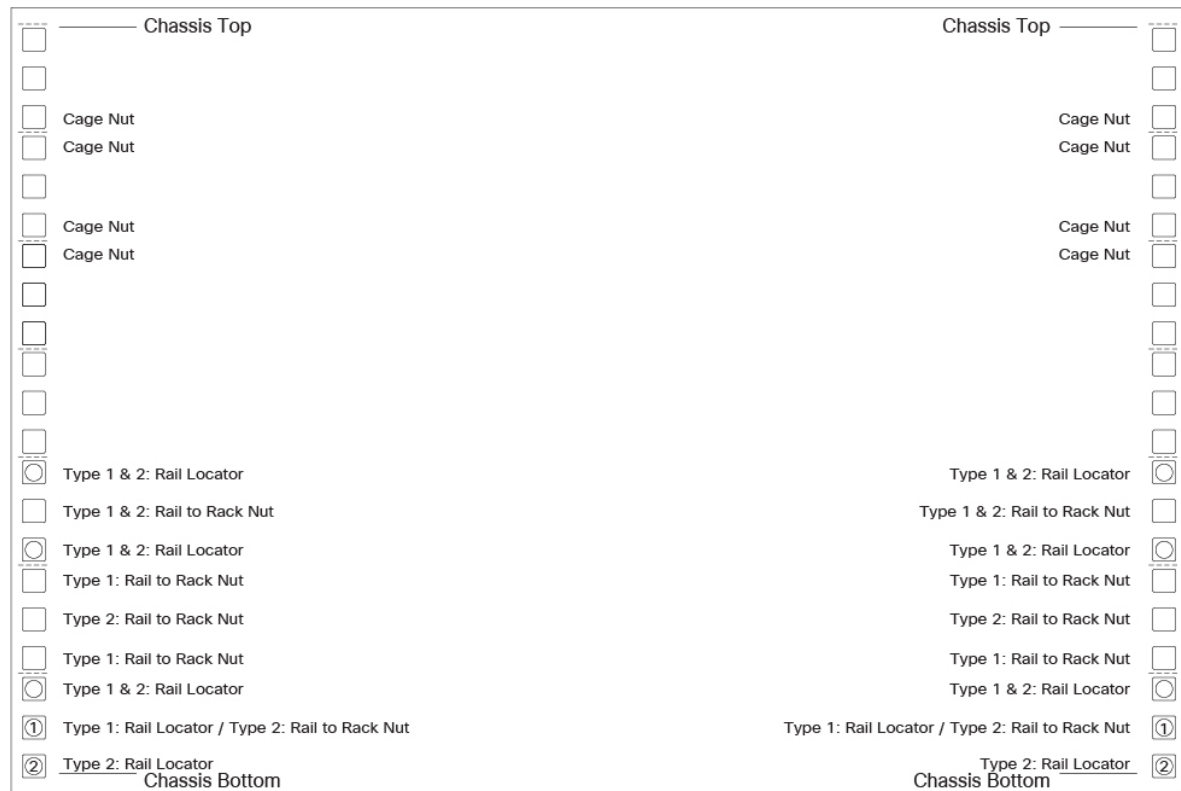
Note The eight cage nuts shown near the top of the template (four per side) are required only when you are installing the rear tie down brackets, which are an orderable option, but not required for basic installation.

Installing Cage Nuts

The Cisco UCS X9508 chassis can be installed in standard size, untapped equipment racks that have either square or round-holes. For more information, see Rack Requirements, on page 2. The X9508 server is supported on a rail kit which mounts to the square-hole or round hole cage.

Caution For untapped equipment racks, you must install cage nuts to provide a way for mounting screws to secure rails and the chassis to the rack.

Use the appropriate option depending on your type of equipment rack:

- Installing Cage Nuts, Square-Hole Rack, on page 16
- Installing Cage Nuts, Round-Hole Rack, on page 17

Installing Cage Nuts, Square-Hole Rack

Use the following task to install twelve, M6x1.00 square-hole cage nuts into a 9.5 mm unthreaded square-hole rack. Spring nuts are not supplied by Cisco. They should have accompanied your equipment rack.

Before you begin

This document provides illustrations of installation templates for the front and rear of the chassis. The templates are designed to show you the proper holes within which the rails and cage nuts should be placed. Once you align the rack holes line up with the template, you should mark the holes on the rack so that they are easy to use.

To use the rack installation templates, go to the appropriate topic:

Step 1   Gather the M6 cage nuts and a flat head screwdriver.

Step 2   Locate the template and refer to the chassis location in the rack and the cage nut locations on the template.

Step 3   Position one of the curled sides of the cage nut on the inside of the square cutout in the rack.

Step 4   Press the cage nut into the cutout and use the screwdriver to pinch the other curled edge inward until the cage nut clicks into place in the rack.

Note   Cage nuts install on the inside of the rack so that most of the nut is behind the rack's sheet metal.

Figure 3: Cage Nut Installation
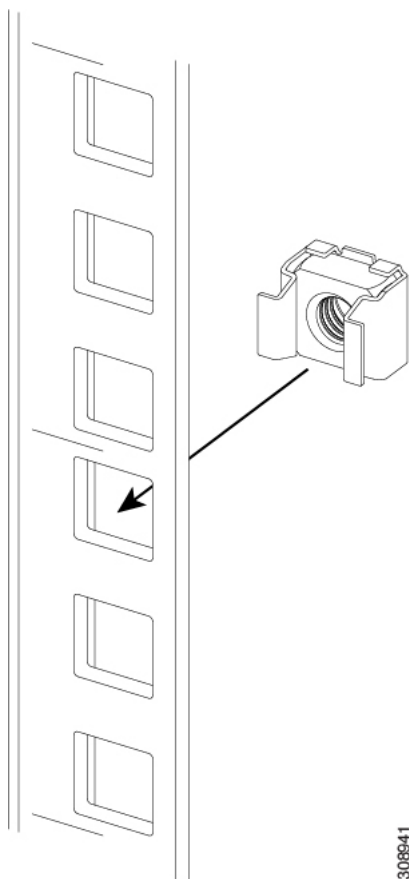
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Step 5   Verify that the cage nut is fully and correctly installed before installing the remaining cage nuts.

Installing Cage Nuts, Round-Hole Rack

Use the following task to install twelve, M6x1.00 round-hole cage nuts (also called spring nuts) into a 7.1 mm unthreaded round-hole rack. Spring nuts are not supplied by Cisco. They should have accompanied your equipment rack.

Before you begin

This document provides illustrations of installation templates for the front and rear of the chassis. The templates are designed to show you the proper holes within which the rails and cage nuts (spring nuts) should be placed. Once you align the rack holes line up with the template, you should mark the holes on the rack so that they are easy to use.

To use the rack installation templates, go to the appropriate topic:

Step 1   Gather the M6 spring nuts and a flat head screwdriver.

Step 2   Using the rack installation template, refer to the chassis location in the rack and the spring nut locations on the template.

Step 3   Position the open end of the spring but so that the rack's sheetmetal can slide into the gap between the spring nut's sheetmetal. the cage nut on the inside of the square cutout in the rack.

Step 4   Slide the spring nut so that its round hole lines up with the round hole in the equipment rack.

        Note   Cage nuts install so that most of the nut is behind the rack's sheet metal.

        Note   If needed, use the flat-head screwdriver to slightly pry open the gap between the spring nut's sheetmetal to allow it to slide onto the rack over the round hole.
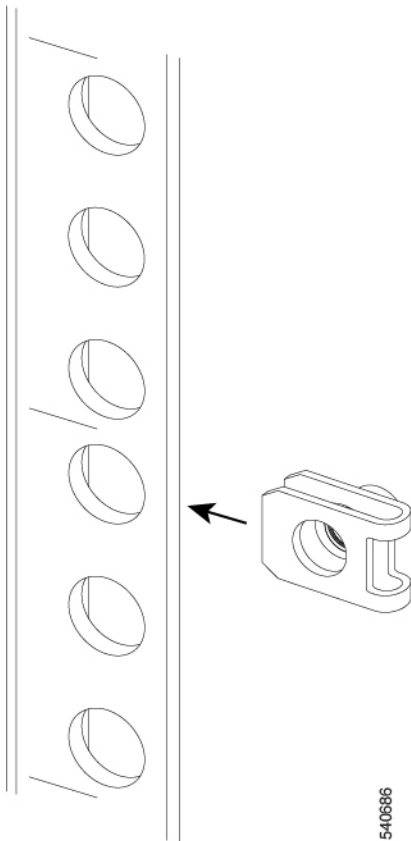
Step 5   Verify that the cage nut is fully and correctly installed before installing the remaining cage nuts.

Rail Kits

The Cisco UCS X9508 supports two rail kits, Type 1 and Type 2.

- Each rail kit consists of two stationary rails that facilitate rack installation of the chassis and stabilize the chassis in the rack.

- Each rail extends to fit the depth of the rack. The rails are not a sliding shelf that allow pulling the chassis out of the rack to gain access to the chassis' sides.

- Each rail kit can fit into either a 9.5 mm square hole equipment rack or a 7.1 mm round-hole equipment rack.

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Caution   Some racks might be tapped, with threaded holes drilled directly into the rack's sheetmetal instead of square- or round-hole punchouts for cage nuts. The rail kit for the server is not currently supported in tapped (threaded hole) racks. Do not attempt to install the chassis in a tapped (threaded-hole) equipment rack.

The rails are shipped in the accessory kit with each chassis, and each rail kit will contain a left and right side as a matched pair. Both sides must be installed in the rack to securely support the chassis.

If you ordered multiple UCS X9508 chassis, you might receive both types of rail kit. For example, in a shipment of 4 chassis, the shipment might have all one type of rail kit, or a few chassis with each type of rail kit.

Compare the two types of rail kits:

Figure 4: Two Types of Rail Kits
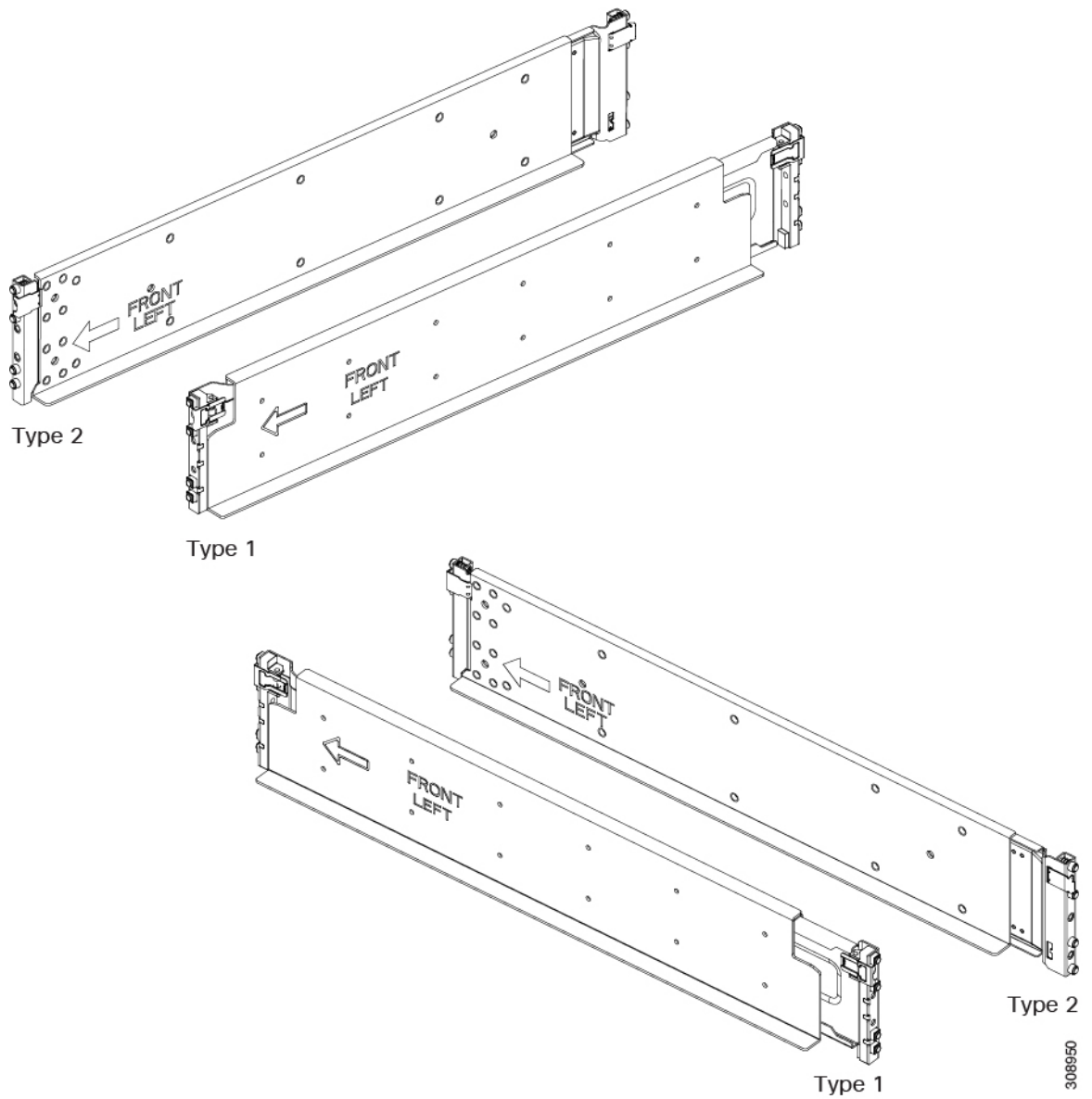
The rail kits are similar in size, function, and construction with a few exceptions:

- the type of release tab at the top corner of the rail

- the type of locator pegs, either round or square depending on whether you have a round-hole or square-hole rack. The locator pegs temporarily hold the rail in the rack to allow free use of both hands.

- the positioning of the screw holes at the rear of the rails

Installing the Chassis

This section describes how to install the chassis in either a square-hole unthreaded or round-hole unthreaded equipment rack. This two-part process consists of installing the rails into the rack, then installing the chassis into the rack and onto the rails.

Caution   The fully configured chassis weighs approximately 400s lbs (163.29 kg)! Never attempt to lift the chassis by yourself. Instead, use a chassis lift or some other device to lift and bear the weight of the chassis while you are installing it.

Caution   If the rack has wheels, ensure that the brakes are engaged, the stabilizing pads are extended, or that the rack is otherwise stabilized.

Warning   The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device. **Statement 1019**

Caution   When connecting the chassis to facility power, make sure not to overload the capacity of a PDU or power strip. For example, do not connect all PSUs to one PDU or power strip that is not capable of carrying the total power draw of the chassis.

Important   Watch your hands and fingers whenever you handle the chassis, modules, nodes, and components! Narrow vertical or horizontal spaces in situations including, but not limited to, moving the chassis into or out of the shipping container or equipment rack can cause pinch hazards for your hands and fingers.

Although they do not eliminate the possibility of pinching, the chassis has defined grasp points to facilitate handling and moving it. For information about chassis grasp points, see Handling the Chassis, on page 5.

Note   To complete the installation, the chassis must be connected to earth ground, which requires a ground lug that Cisco provides, or an equivalent. See "Ground Lug" in Earth Ground Considerations, on page 4.

Where applicable, the following installation topics have options for square-hole and round-hole racks. Pick the appropriate topic based on your rack type.

Installing the Rails, Square-Hole Rack

Use the following task to install the rail kit into a square-hole unthreaded equipment rack by using twelve, M6x1.00 square-hole cage nuts.

Before you begin

Make sure that you have marked the correct cage nut and rail locations on the rack by using the illustrations of the rack installation templates. See Rail Installation Templates, on page 13.

Step 1 Adjust the length of the rail by sliding the ends of the rail back and forth until they match the depth of the rack.

Step 2 At the front of the rack, use the front installation template to position the two locator pegs on the rail with the corresponding location in the rack. See Front Install Template, on page 14.

The locator pegs will hold the rail in the rack so that you don't have to hold the rail in place.

Step 3 At the rear of the rack, use the rear installation template to position the two locator pegs on the rail with the corresponding location in the rack. See Rear Install Template, on page 14.

Step 4 Repeat the previous steps to install the other rack rail.

Figure 5: Install Rails into Front of the Rack
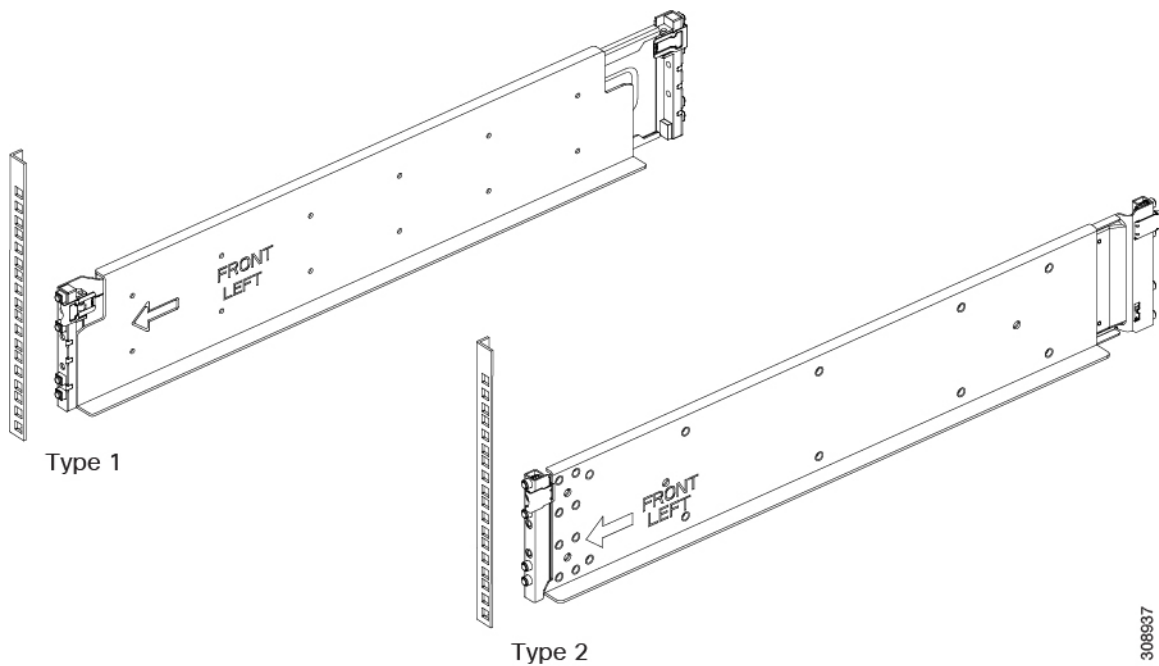
**Step 5** (Optional) Use a tape measure and level to verify that the rack rails are horizontal and at the same height.

Step 6 At the front of the rack, refer to the template, then insert a screw in each front rail to secure each rail to the rack at the correct location.

Figure 6: Secure the Rail at the Front to the Rack
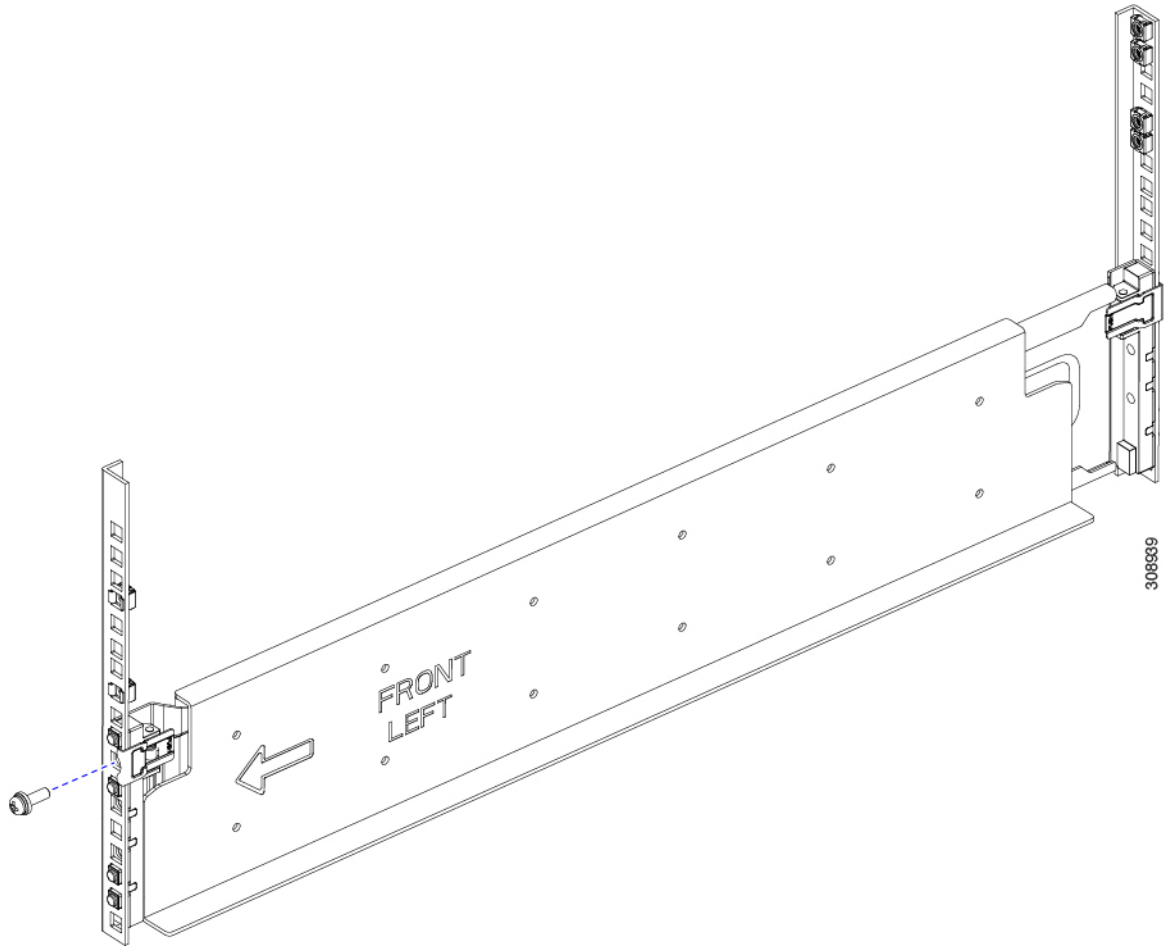
Step 7   At the rear of the rack, refer to the template, then insert a screw in each rear rail to secure each rail to the rack at the correct location.

Step 8   *Figure 7: Secure the Rail at the Rear of the Rack*
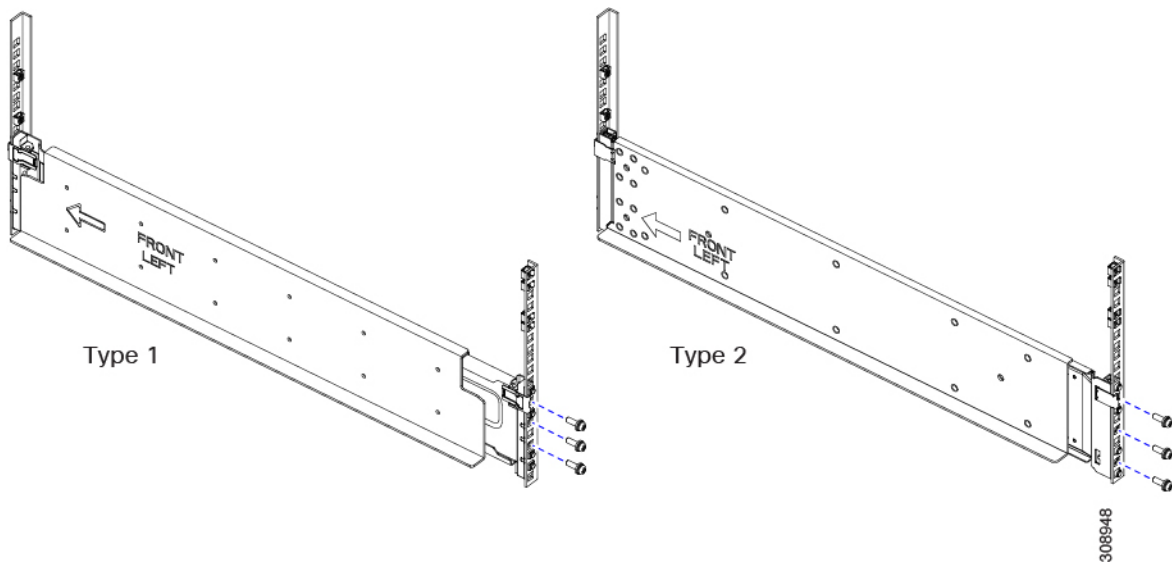
What to do next

Verify that the rails are correctly installed. See Rail Installation Layout, Square-Hole Rack, on page 27.

Installing the Rails, Round-Hole Rack

Use the following task to install the rail kit into a round-hole unthreaded equipment rack by using twelve, M6x1.00 round-hole spring nuts.

Before you begin

Make sure that you have marked the correct cage nut (spring nut) and rail locations on the rack by using the illustrations of the rack installation templates. See Rail Installation Templates, on page 13.

Step 1   Adjust the length of the rail by sliding the ends of the rail back and forth until they match the depth of the rack.

Step 2   At the front of the rack, use the front installation template to position the two locator pegs on the rail with the corresponding location in the rack. See Front Install Template, on page 14.

The locator pegs will keep the rail in the rack so that you don't have to hold the rail in place.

Step 3   At the rear of the rack, use the rear installation template to position the two locator pegs on the rail with the corresponding location in the rack. See Rear Install Template, on page 14.

Step 4   Repeat the previous steps to install the other rack rail.

Figure 8: Install Rails into Front of the Rack
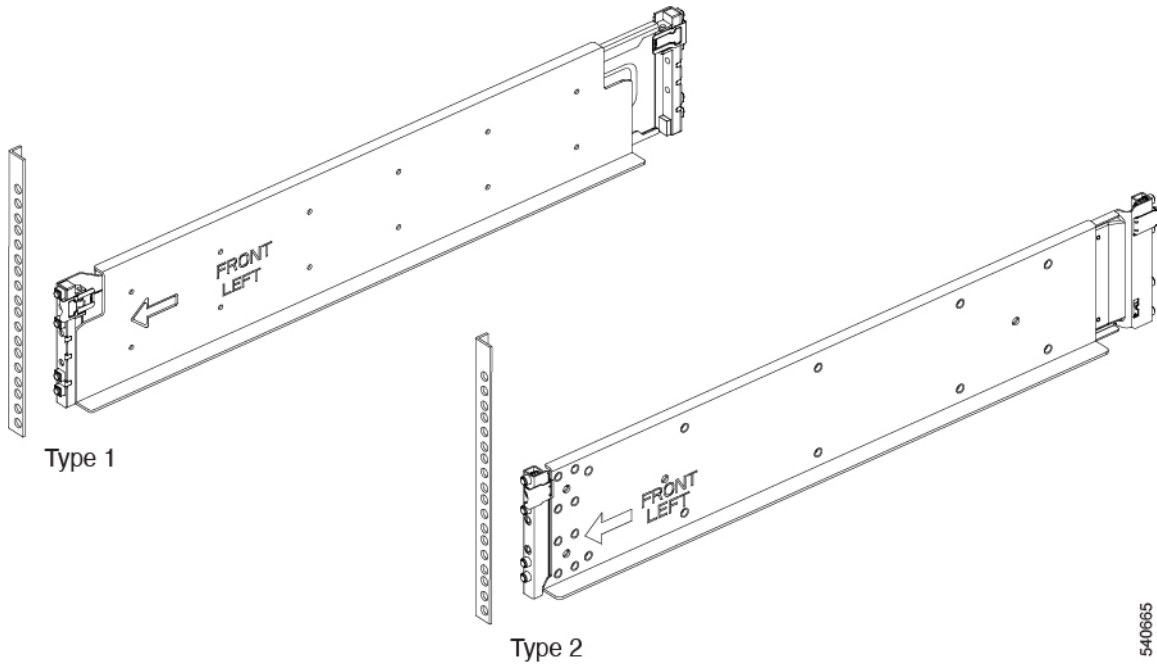
Type 1

Type 2

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Step 5 (Optional) Use a tape measure and level to verify that the rack rails are horizontal and at the same height.

Step 6 At the front of the rack, refer to the template, then insert a screw in each front rail to secure each rail to the rack at the correct location.

Figure 9: Secure the Rail at the Front to the Rack
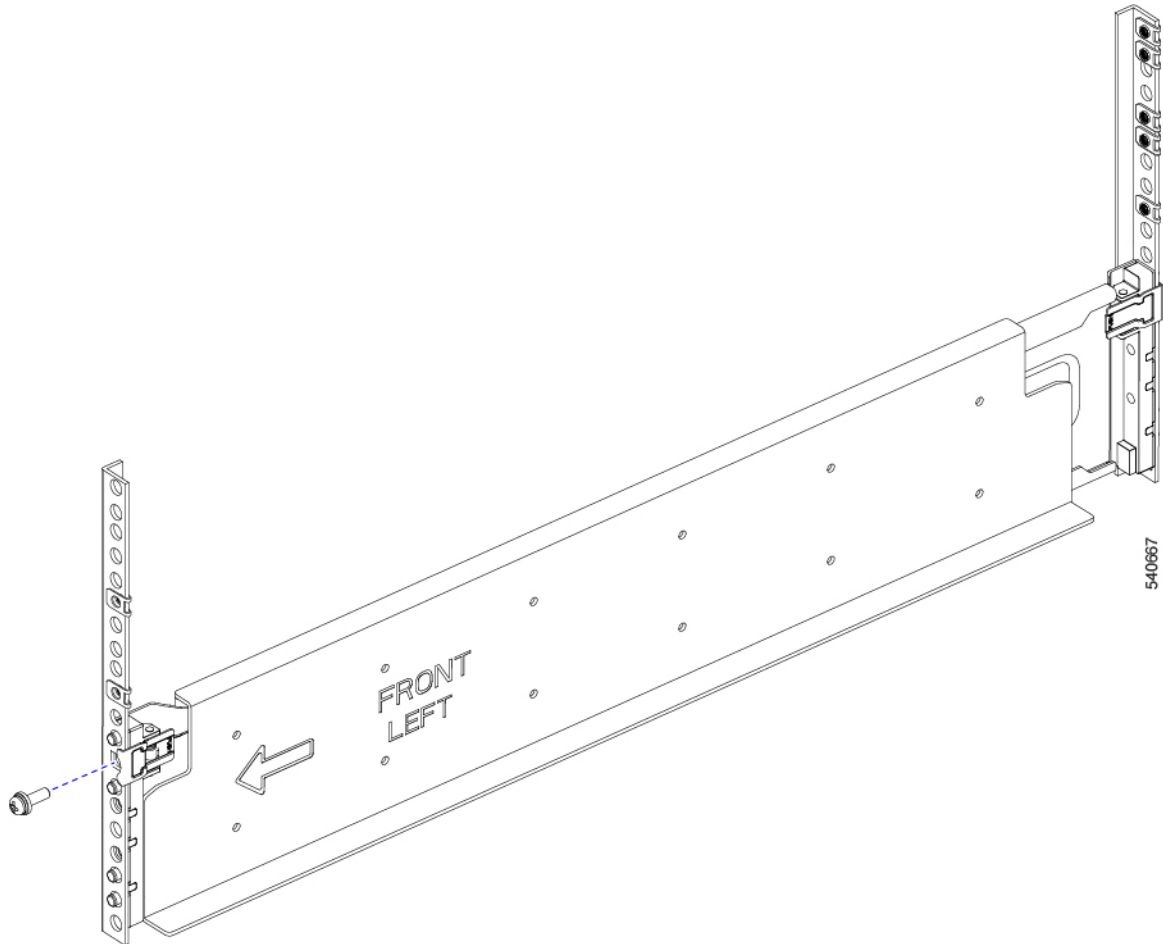
Step 7   At the rear of the rack, refer to the template, then insert a screw in each rear rail to secure each rail to the rack at the correct location.

Step 8 *Figure 10: Secure the Rail at the Rear of the Rack*
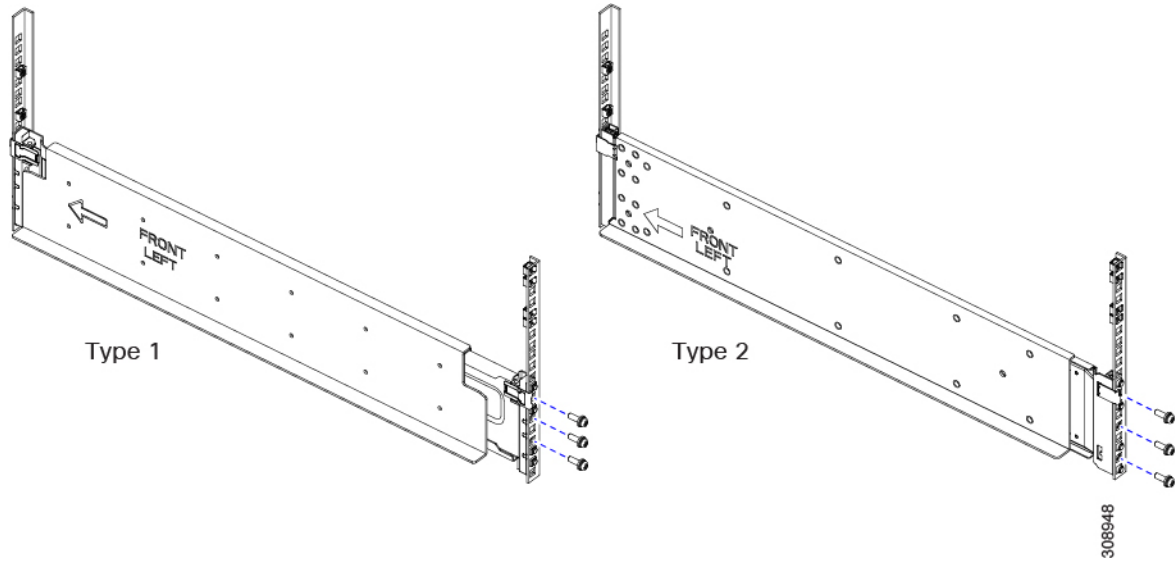
What to do next

Verify that the rails are correctly installed. See .

Rail Installation Layout, Square-Hole Rack

Before installing the chassis in the rack, compare the rail installation in the rack against the following layout images. If the rail installation is different than what is shown in each layout, remove the rails and reinstall them.

Figure 11: Front Rail Layout, Both Rail Kits

Type 1   Type 2
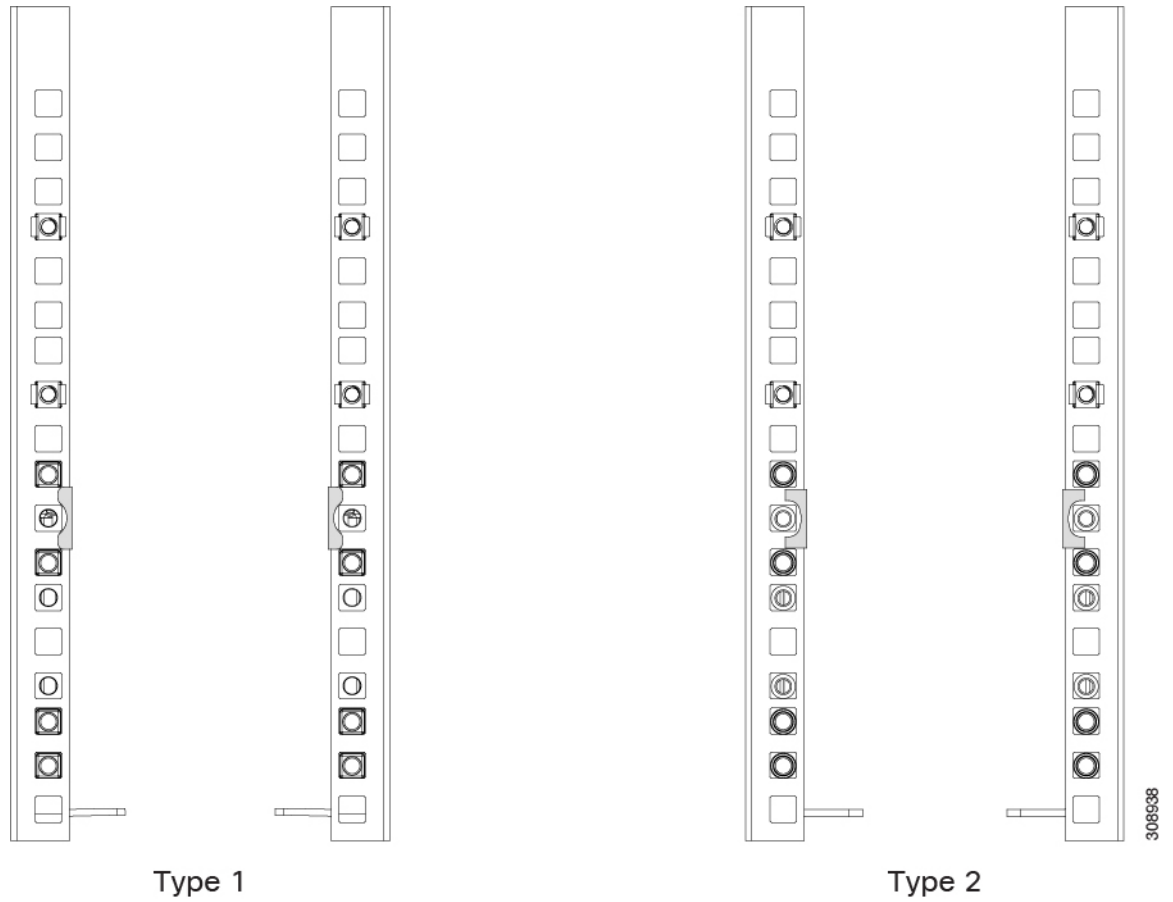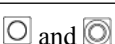
[O]	Cage Nut, square-hole rack
☐	Empty RETMA Rail Hole, square-hole rack
◎	Locator Peg for Rail Kit
○ and ◎	Mounting Screw for Rail Kit

Figure 12: Rear Rail Layout, Both Rail Kits

Type 1

Type 2
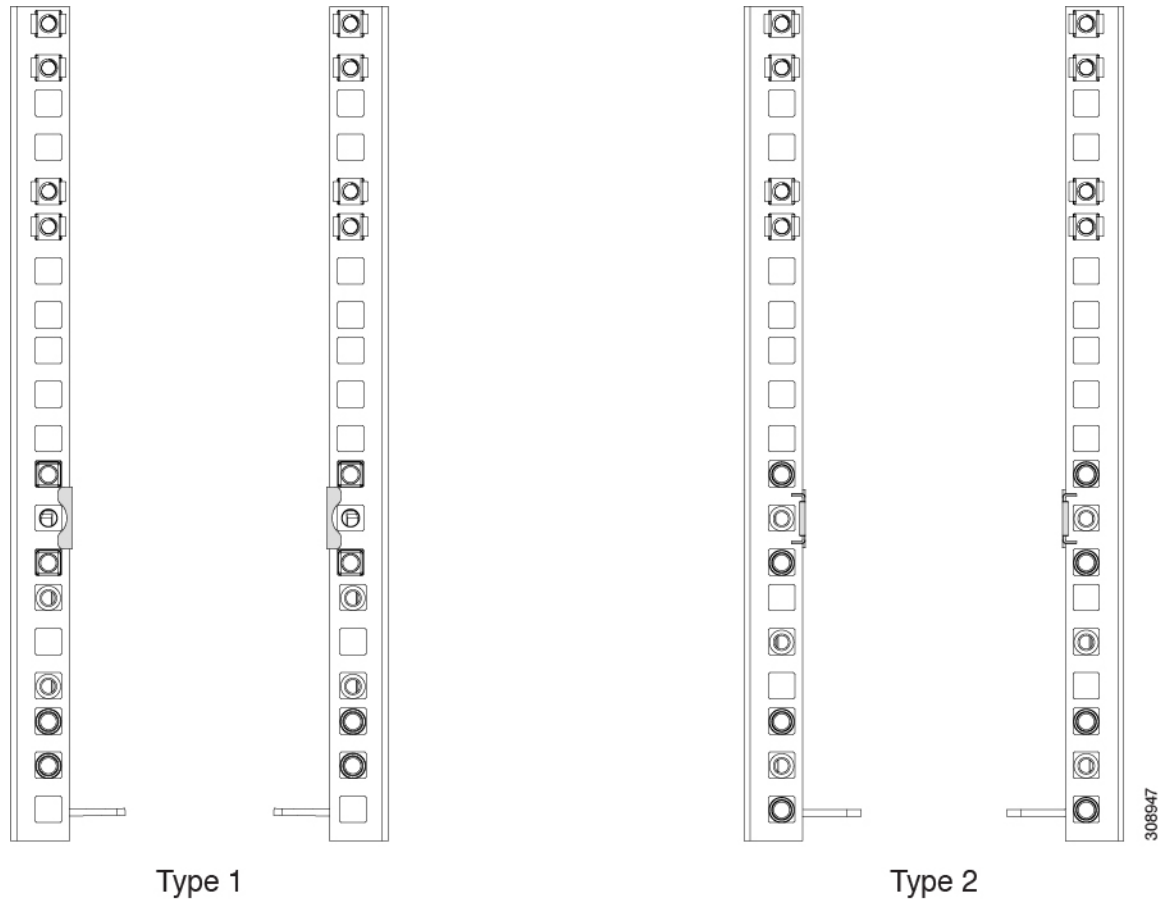
⬚	Cage Nut, square-hole rack
▢	Empty RETMA Rail Hole, square-hole rack
◎ and	Locator Peg for Rail Kit
▢ and ◎	Mounting Screw for Rail Kit

Rail Installation Layout, Round-Hole Rack

Before installing the chassis in the rack, compare the rail installation in the rack against the following layout images. If the rail installation is different than what is shown in each layout, remove the rails and reinstall them.

Figure 13: Front Rail Layout, Both Rail Kits
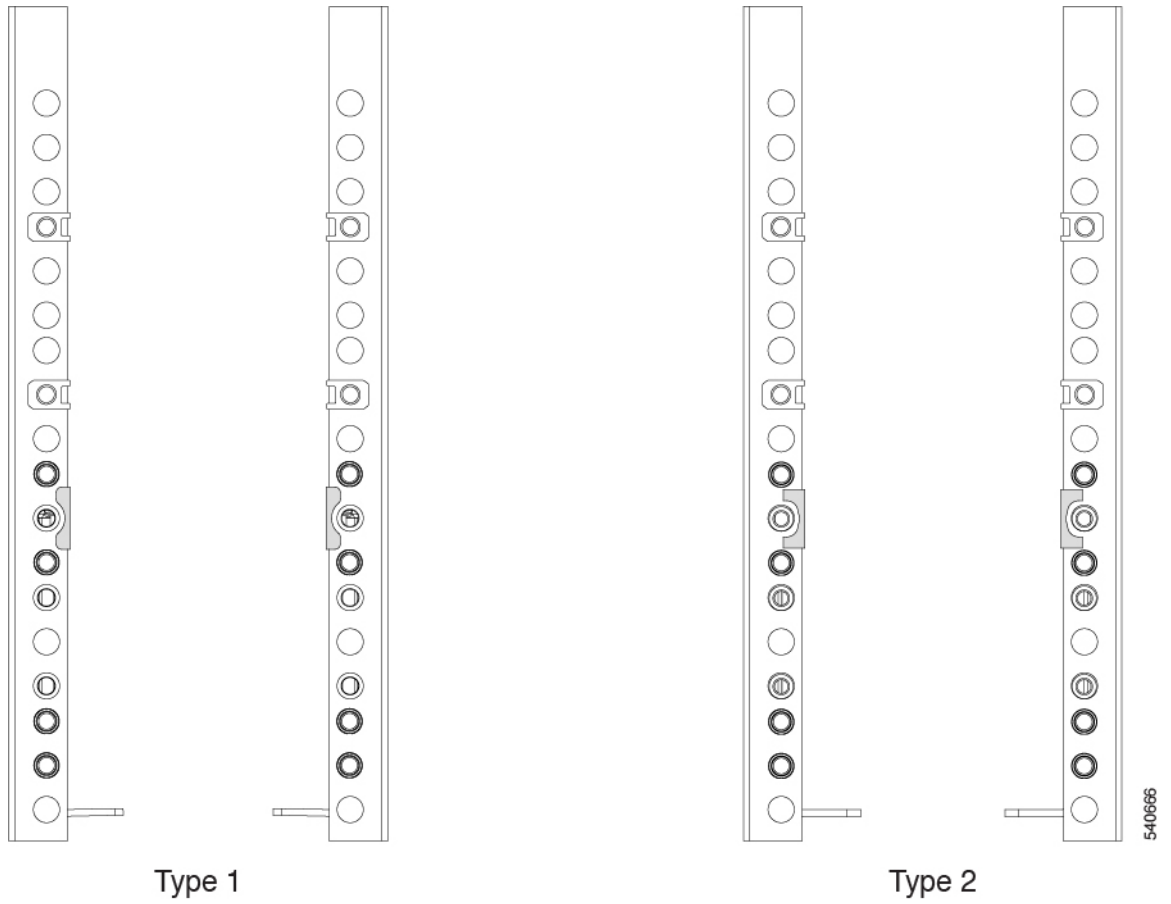
Type 1   Type 2

⬭	Spring Nut for round-hole rack
◯	Empty RETMA Rail Hole, round-hole rack
◉	Locator Peg for Rail Kit
◎	Mounting Screw for Rail Kit

Figure 14: Rear Rail Layout, Both Rail Kits
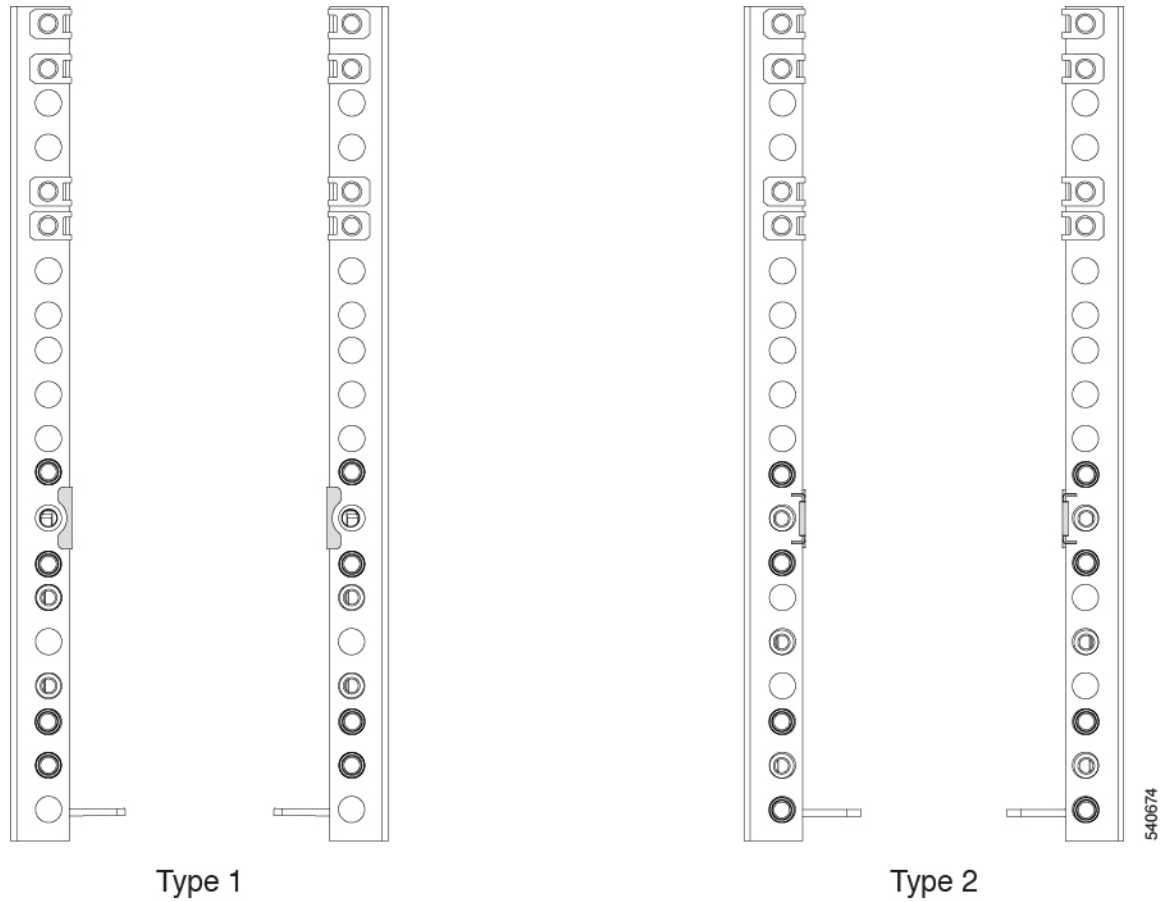
Type 1   Type 2

⬭	Spring Nut for round-hole rack
◯	Empty RETMA Rail Hole, round-hole rack
◎	Locator Peg for Rail Kit
◉	Mounting Screw for Rail Kit

Installing the Top Cable Management Arms

The accessory kit contains two cable management assemblies, each one consisting of three cable management arms and three cable ties. The cable management assemblies facilitate gathering and organizing the chassis power cables.

Note The server also has cable management trays (UCSX-9508-CMA) for gathering and organizing the cables from the IFMs and X-Fabric modules.

In this topic, top and bottom refer to the location on the chassis. Cable management arms are interchangeable, so there is no specific top and bottom cable arm.

Each cable management assembly is for a set of three PSUs. The top cable management arms attach to the top set of PSUs in the chassis. The bottom cable management arms attach a grounding bracket for the bottom set of PSUs, so the installation procedure is slightly different. See Installing the Ground Bracket and Bottom Cable Management Arms, on page 33.

Use this task to attach the cable management assemblies to the chassis before installing the chassis in the rack.

Step 1 Align the captive screws in the cable management sheet metal with the threaded standoffs on the chassis.

Step 2 Using a #2 Phillips-head screwdriver, attach the cable management arms to the server chassis by tightening the captive screws.
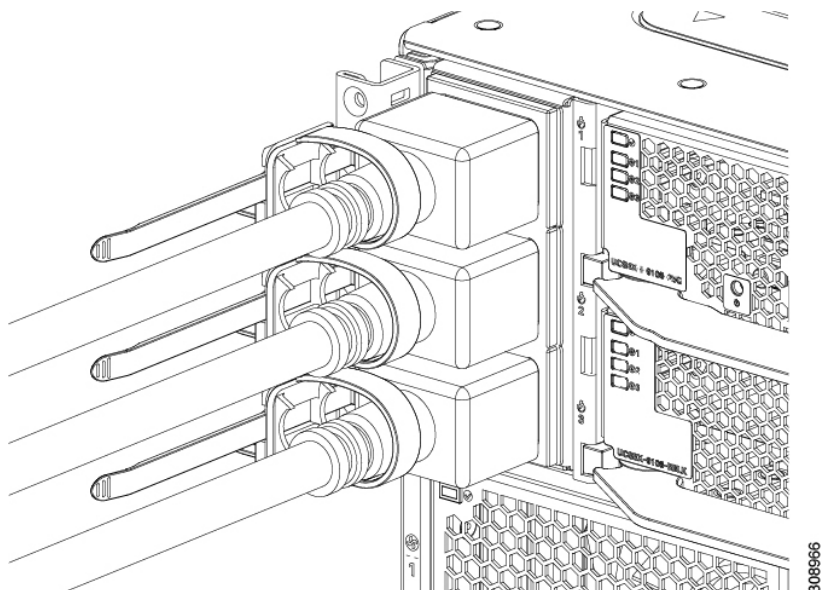
Figure 15: Attaching the Top Cable Management Arms to the Chassis
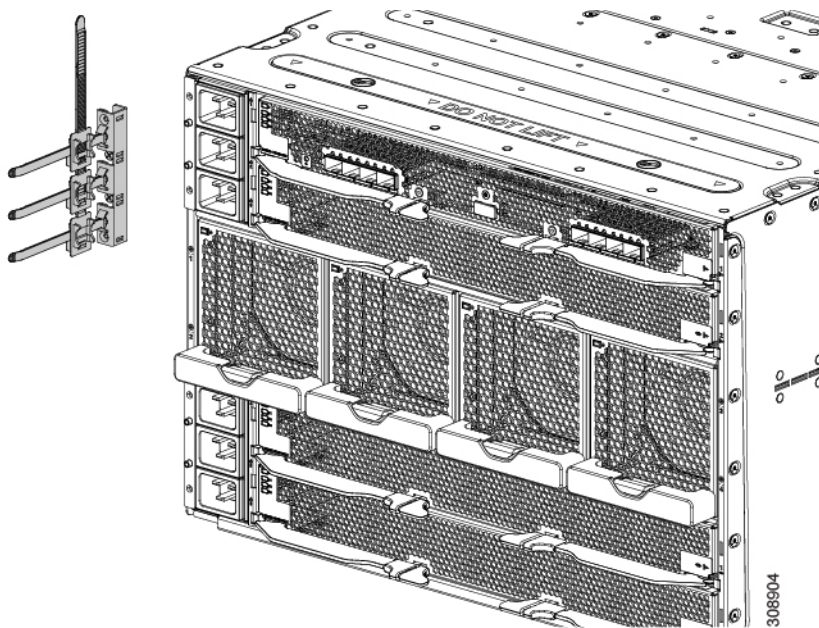
Step 3 Adjust the cable tie horizontally to align with where you wish to grasp the power cable.

Step 4 You can use the cable ties to gather the power cables and secure the plugs in place.

Figure 16: Gathering Power Cables

What to do next

Attach the remaining cable management arms. See Installing the Ground Bracket and Bottom Cable Management Arms, on page 33.

Installing the Ground Bracket and Bottom Cable Management Arms

The cable management arm (CMA) for the bottom set of PSUs contains an integrated ground lug that provides earth grounding for the chassis. The horizontal metal piece is the ground lug to which the grounding cable can be attached.

✎

Note   In this topic, top and bottom refer to the specific cable management arms. Cable management arms are not interchangeable. The bottom CMA contains the integrated ground lug, but the top CMA does not.

For the additional ground requirements, see Earth Ground Considerations, on page 4.

Attach the bottom cable management arm to the chassis.

a)   Align the long side of the ground bracket with the threaded standoff on the chassis.

b)   Align the captive screws in the cable management arm with the threaded standoffs on the chassis.
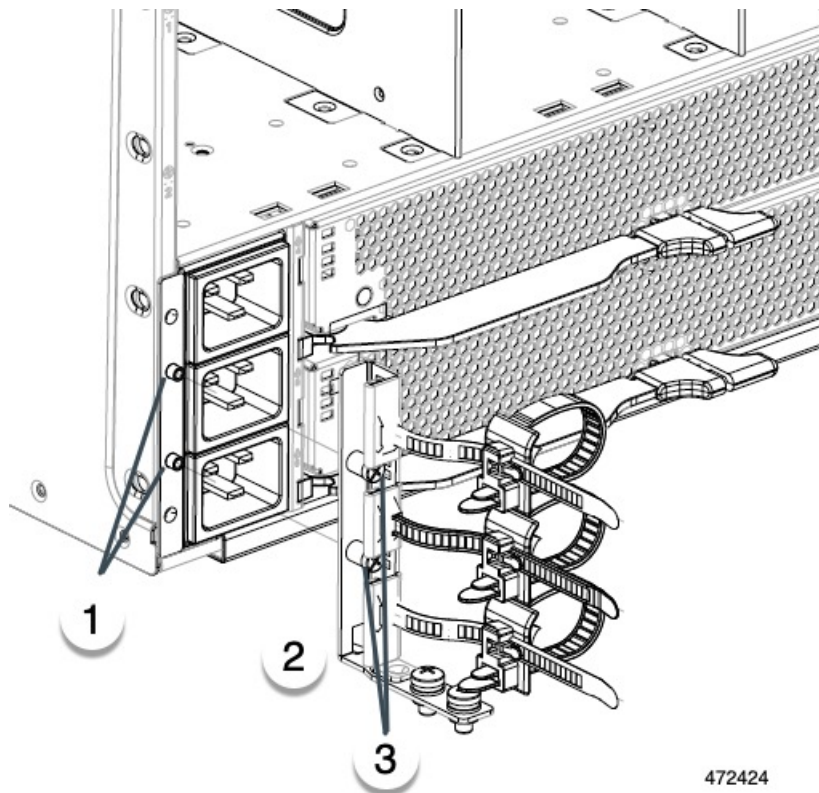
1	Threaded Standoffs on chassis	2	Bottom CMA, long side aligned with standoffs
3	Captive Screws on CMA		

c) Using a #2 Phillips-head screwdriver, secure the bottom cable management arms to the server chassis by tightening the captive screws.

Inserting the Chassis into a Square-Hole Rack

Before you begin

If you have not already verified that the rails are installed as indicated in the front and rear layouts, do so now. See Rail Installation Layout, Square-Hole Rack, on page 27.

Also, make sure to review Installation Notes and Warnings for the Cisco UCS X9508 Server Chassis, on page 1.

The chassis must be grounded by a ground lug that Cisco provides, or an equivalent. See "Ground Lug" in Earth Ground Considerations, on page 4.

⚠

Caution Before beginning this procedure, make sure that the rails are correctly installed, and all the rail kits' mounting screws are installed and tightened.

☞

Important Watch your hands and fingers whenever you handle the chassis, modules, nodes, and components! Narrow vertical or horizontal spaces in situations including, but not limited to, moving the chassis into or out of the shipping container or equipment rack can cause pinch hazards for your hands and fingers.

Although they do not eliminate the possibility of pinching, the chassis has defined grasp points to facilitate handling and moving it. For information about chassis grasp points, see Handling the Chassis, on page 5.

🔎

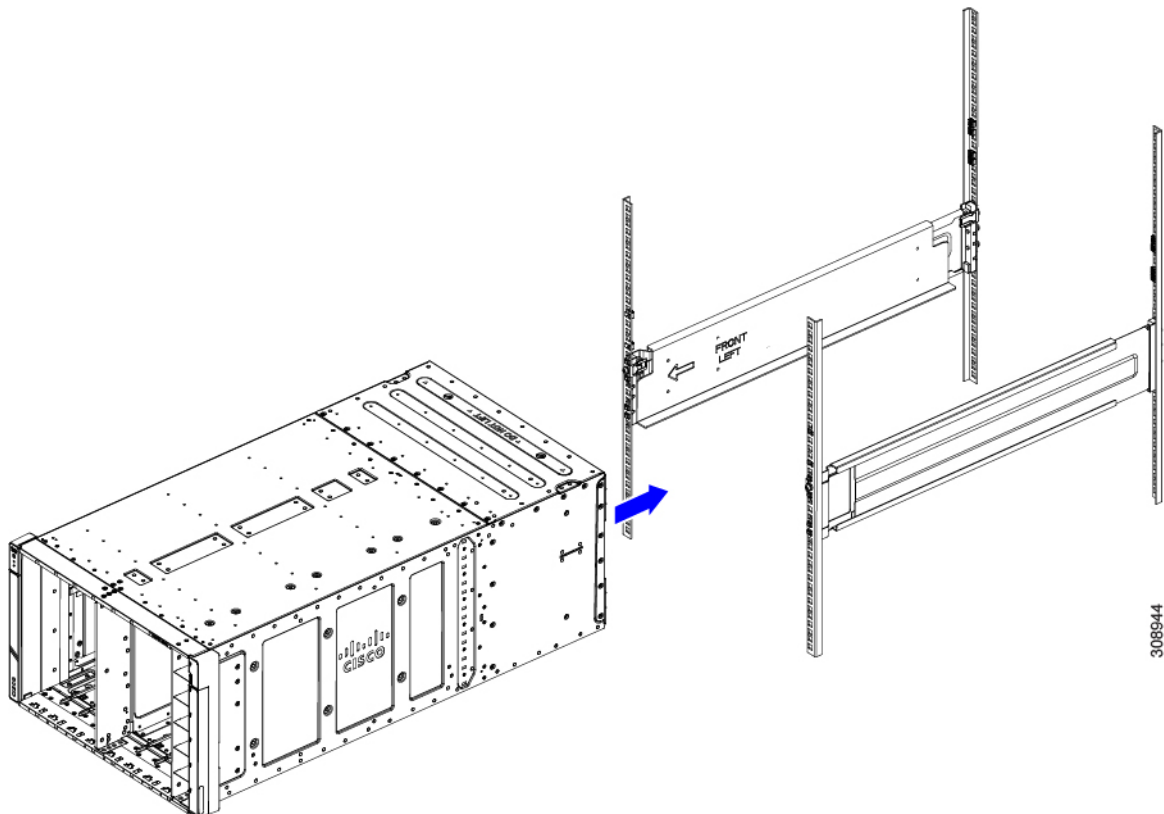**Tip** You will find it easier to move the chassis if you have additional people to help you.

Step 1 Using a scissor jack, chassis lift, or other mechanical device, lift the chassis and position it so that you can slide it into the rack.

Step 2 Slide the chassis into the rack until the front flange is flat against the cage nuts.

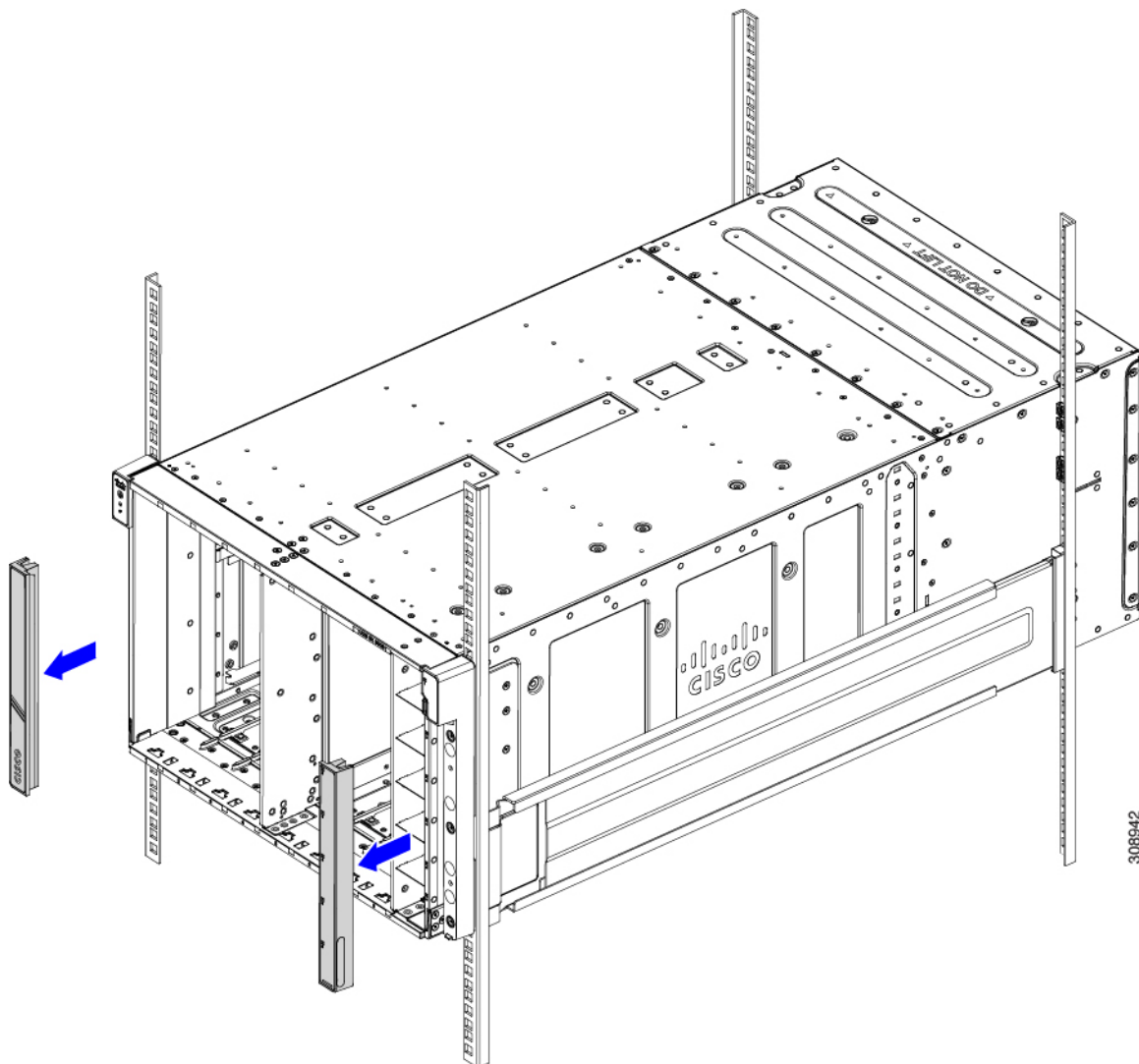**Figure 17: Inserting the Chassis into the Rack**

Step 3   At the front of the chassis, remove each of the side trim panels from the chassis.

The side trim panels are attached magnetically, so you should be able to easily pull them off.

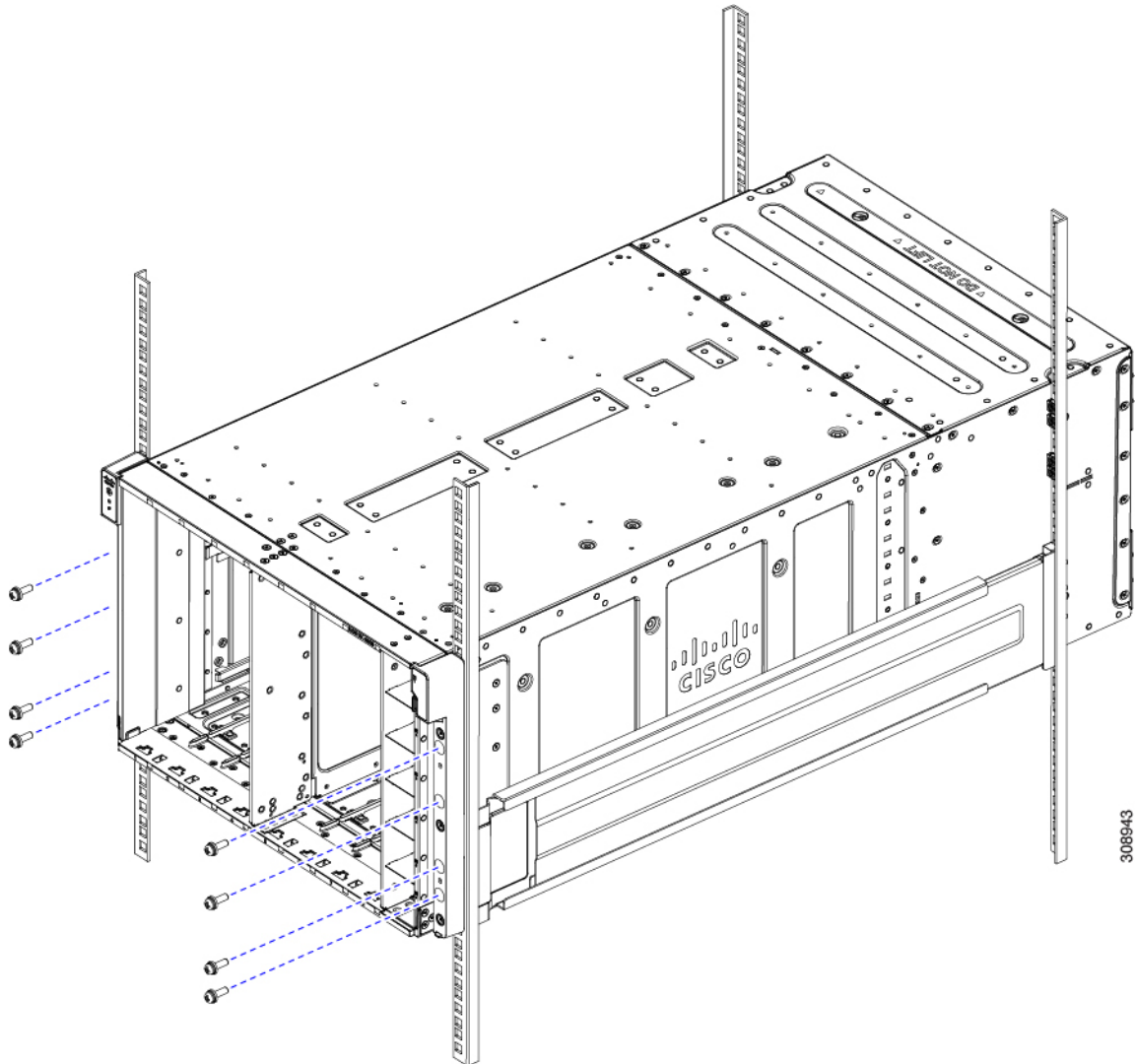Removing the side trim panels exposes the screw holes in each of the front mounting brackets.

Note   Keep the side trim panels in a safe location nearby. You will replace them when the chassis is installed.

Figure 18: Detach the Chassis Side Trim Panels

Step 4   At the front of the chassis, use a #3 Phillips-head screwdriver to insert and tighten the eight M6 x 20mm screws through the front mounting flanges.

Figure 19: Securing the Front of the Chassis to the Rack

Step 5   Choose the appropriate option:

a)   If your chassis will ship per-installed in a rack, attach the rear mounting brackets. If you plan to install and ship your chassis in a shippable rack, attach the rear mounting brackets. See .

b)   If you will be installing the chassis in a stationary rack, continue the installation procedure. See .

Inserting the Chassis into a Round-Hole Rack

Before you begin

If you have not already verified that the rails are installed as indicated in the front and rear layouts, do so now. See Rail Installation Layout, Round-Hole Rack, on page 29.

Also, make sure to review Installation Notes and Warnings for the Cisco UCS X9508 Server Chassis, on page 1.

The chassis must be grounded by a ground lug that Cisco provides, or an equivalent. See "Ground Lug" in Earth Ground Considerations, on page 4.

⚠

Caution Before beginning this procedure, make sure that the rails are correctly installed, and all the rail kits' mounting screws are installed and tightened.

☞

Important Watch your hands and fingers whenever you handle the chassis, modules, nodes, and components! Narrow vertical or horizontal spaces in situations including, but not limited to, moving the chassis into or out of the shipping container or equipment rack can cause pinch hazards for your hands and fingers.

Although they do not eliminate the possibility of pinching, the chassis has defined grasp points to facilitate handling and moving it. For information about chassis grasp points, see Handling the Chassis, on page 5.

🔍

Tip You will find it easier to move the chassis if you have additional people to help you.

Step 1 Using a scissor jack, chassis lift, or other mechanical device, lift the chassis and position it so that you can slide it into the rack.

Step 2 Slide the chassis into the rack until the front flange is flat against the cage nuts (spring nuts).

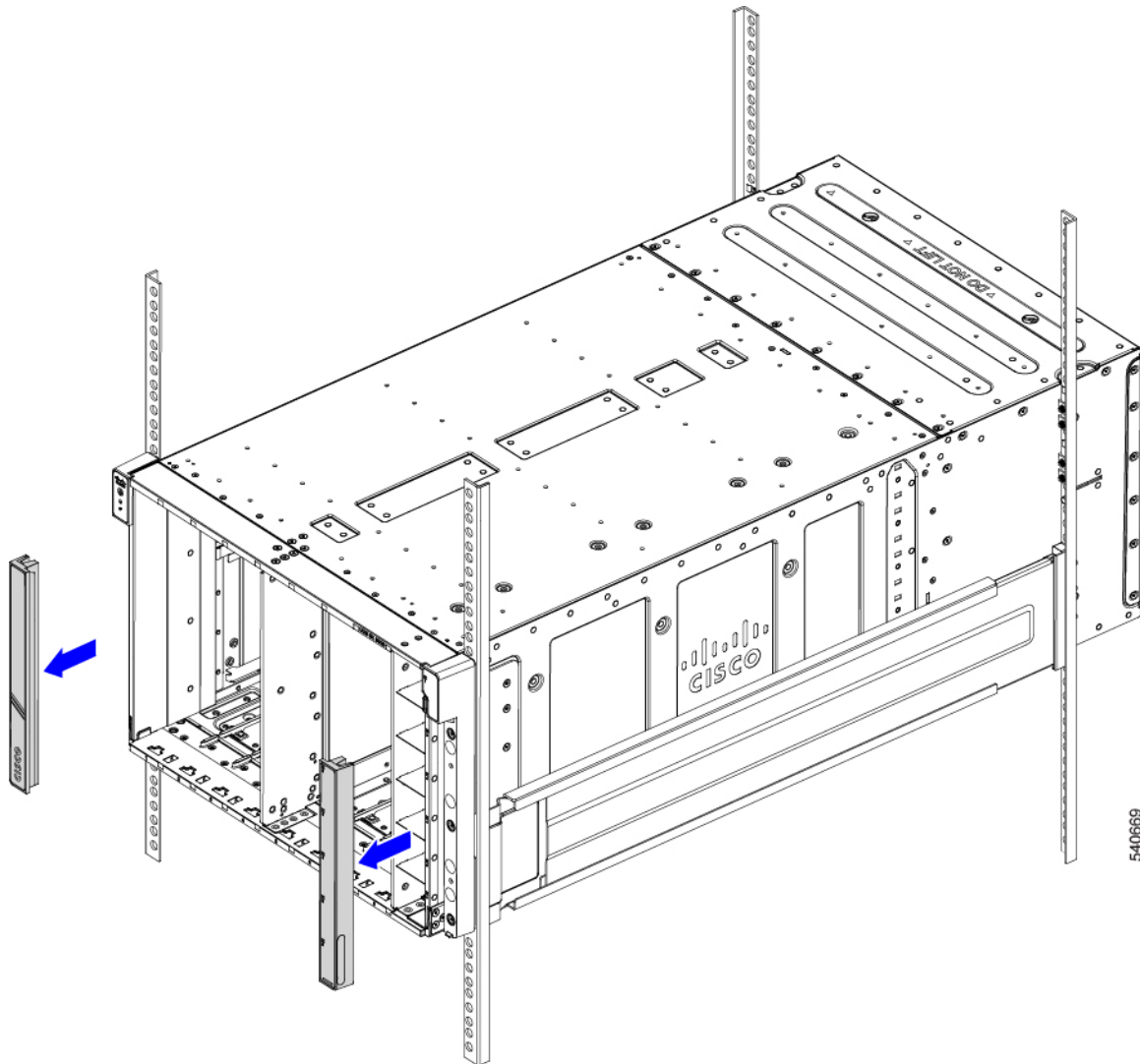*Figure 20: Inserting the Chassis into the Rack*
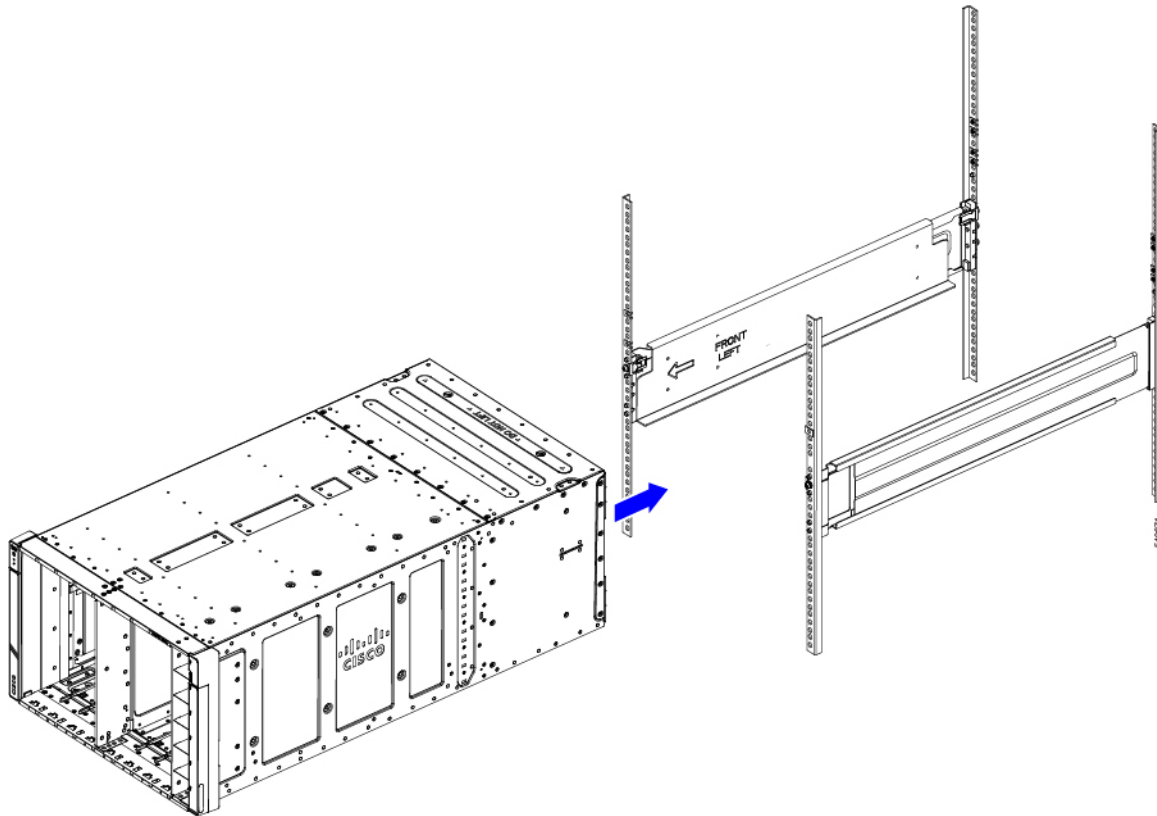
Step 3 At the front of the chassis, remove each of the side trim panels from the chassis.

The side trim panels are attached magnetically, so you should be able to easily pull them off.

Removing the side trim panels exposes the screw holes in each of the front mounting brackets.
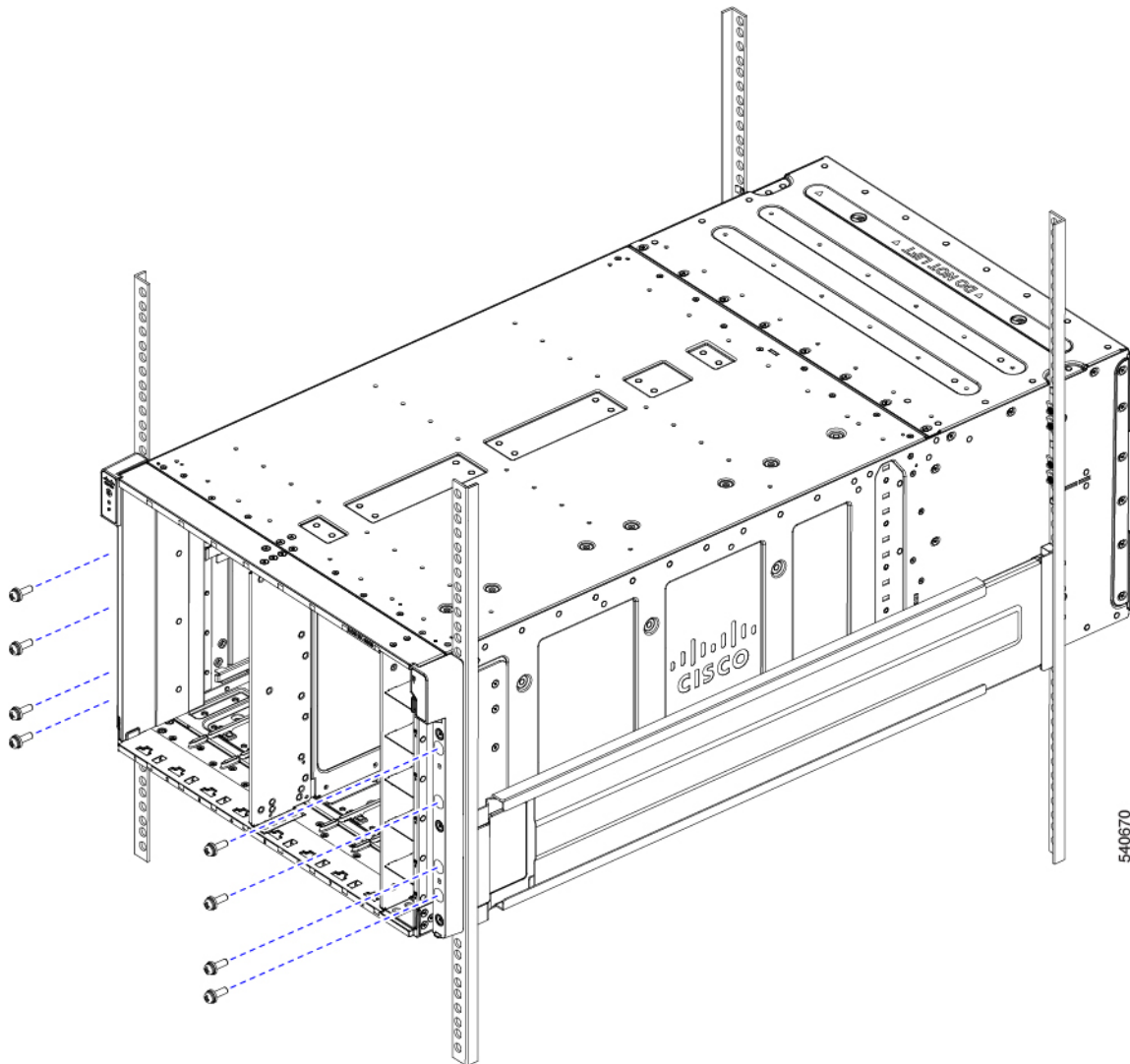
Note Keep the side trim panels in a safe location nearby. You will replace them when the chassis is installed.

Figure 21: Detach the Chassis Side Trim Panels

Step 4   At the front of the chassis, use a #3 Phillips-head screwdriver to insert and tighten the eight M6 x 20mm screws through the front mounting flanges.

Figure 22: Securing the Front of the Chassis to the Rack

Step 5   Choose the appropriate option:

    a) If your chassis will ship pre-installed in a rack, attach the rear mounting brackets. If you plan to install and ship your chassis in a shippable rack, attach the rear mounting brackets. See Installing Rear Mounting Brackets, Round-Hole Rack, on page 43.

    b) If you will be installing the chassis in a stationary rack, continue the installation procedure. See Completing Installation, on page 45.

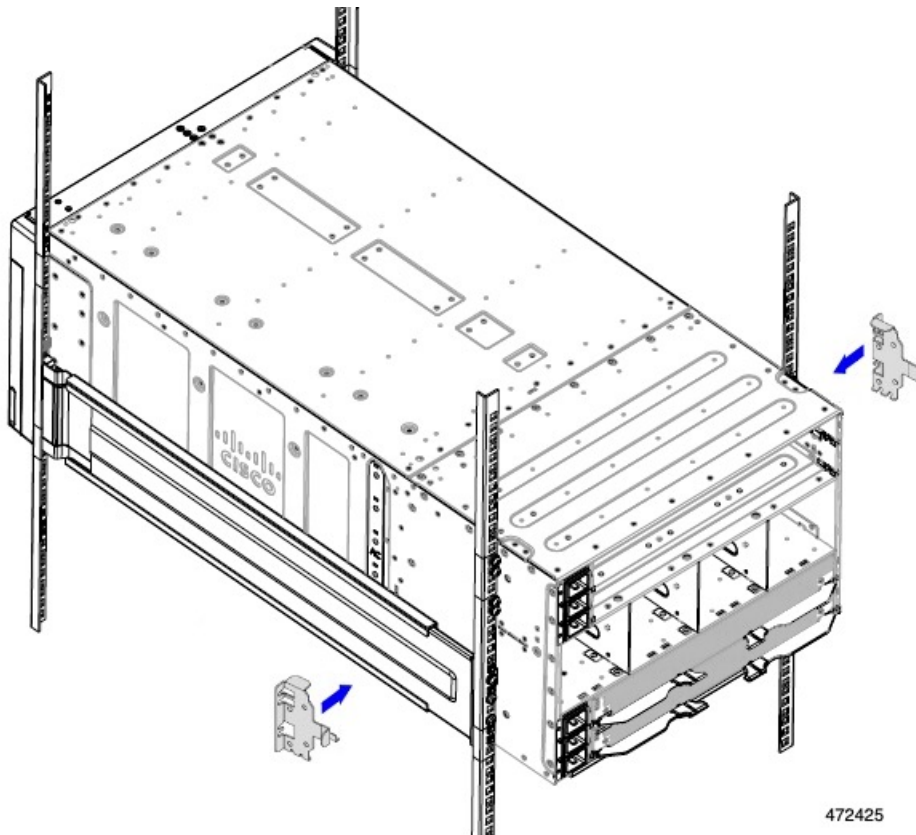# Installing Rear Mounting Brackets, Square-Hole Rack

Use this procedure to install the rear mounting (tie down) brackets (UCSX-9508-RACKBK) for a chassis that is not pre-installed in a rack.

Before you begin

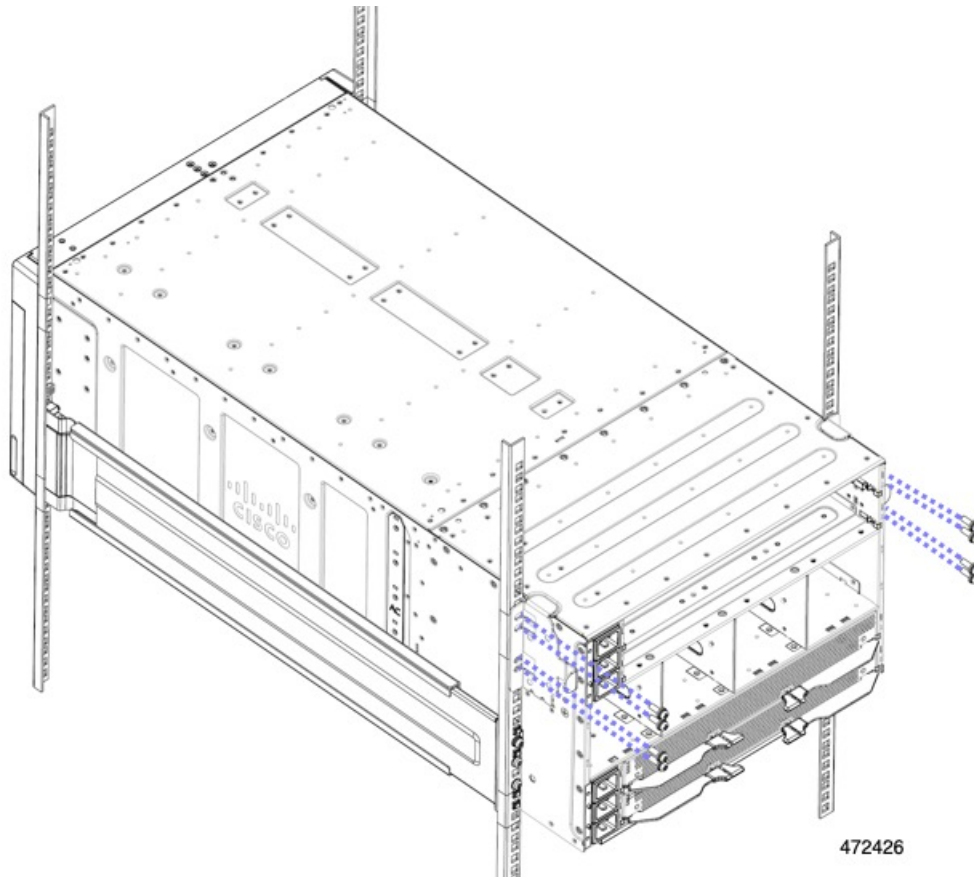If the chassis is shipped pre-installed in a rack, the rear mounting brackets are already attached.

Step 1   At the rear of the chassis, use your hands to install each rear mounting bracket, which has a folded tab at the top and a folded metal hook at the bottom.

a) Slide the hook the into the cutout in the chassis side wall.

b) Slide each rear mounting bracket until the tab seats into the emboss in the chassis top.

Figure 23: Attaching Rear Mouting Brackets, Square-Hole Rack

Step 2   Holding the rear mounting brackets in place, use the #3 Phillips-head screwdriver to insert the 8 M6 x 20mm screws through the rear mounting brackets, then tighten the screws to secure the rear of the chassis to the rear of the rack.

Figure 24: Securing the Chassis to the Rack, Sqaure-Hole Rack

472426

What to do next

Complete installing the chassis into the rack. Go to .

Installing Rear Mounting Brackets, Round-Hole Rack

Use this procedure to install the rear mounting (tie down) brackets (UCSX-9508-RACKBK) for a chassis that is not pre-installed in a rack.

Before you begin

If the chassis is shipped pre-installed in a rack, the rear mounting brackets are already attached.

Step 1 At the rear of the chassis, use your hands to install each rear mounting bracket, which has a folded tab at the top and a folded metal hook at the bottom.

a) Slide the hook the into the cutout in the chassis side wall.

b) Slide each rear mounting bracket until the tab seats into the emboss in the chassis top.

Figure 25: Attaching the Rear Mounting Brackets
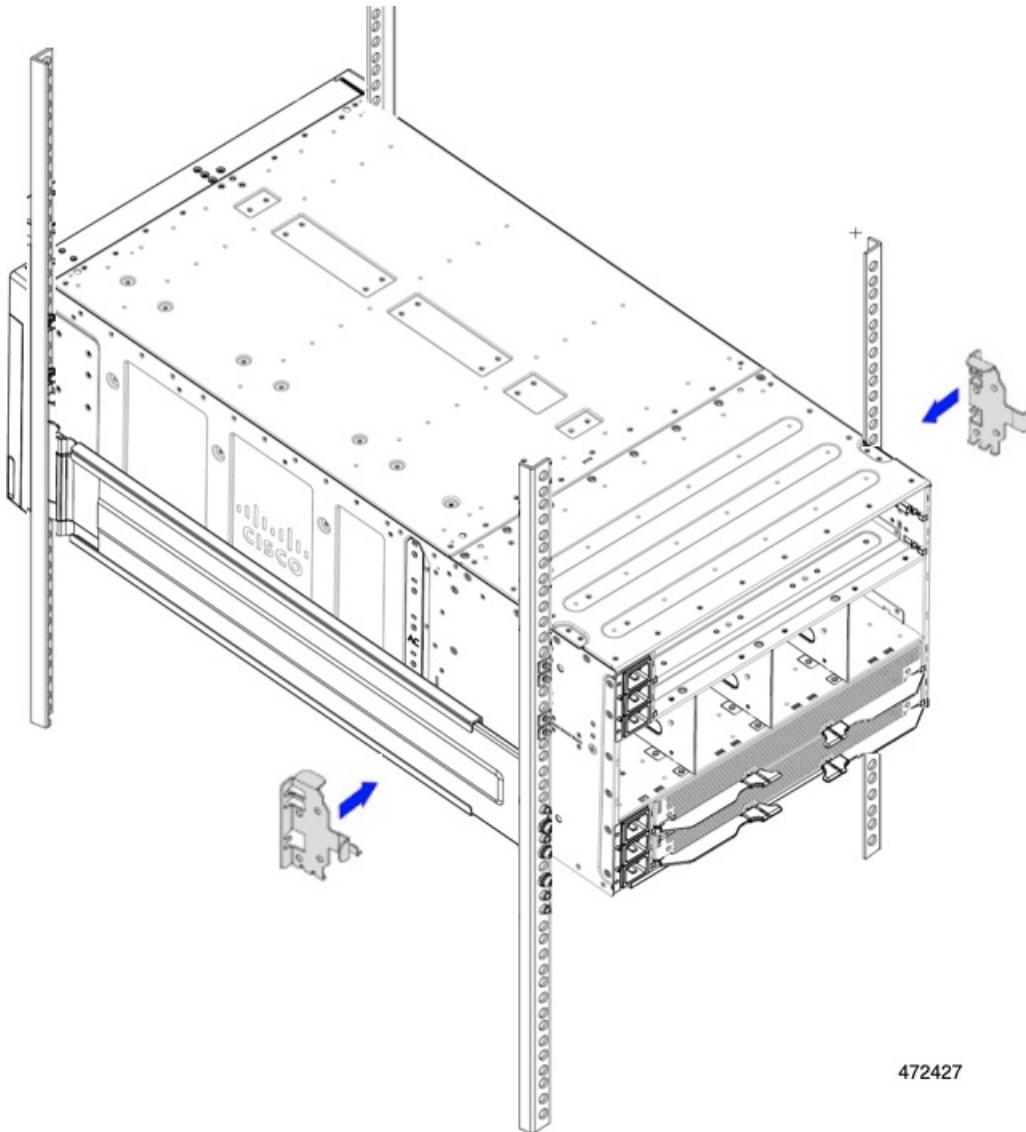
472427

Step 2   Holding the rear mounting brackets in place, use the #3 Phillips-head screwdriver to insert the 8 M6 x 20mm screws through the rear mounting brackets, then tighten the screws to secure the rear of the chassis to the rear of the rack.

Figure 26: Securing the Rear of the Chassis to the Rack
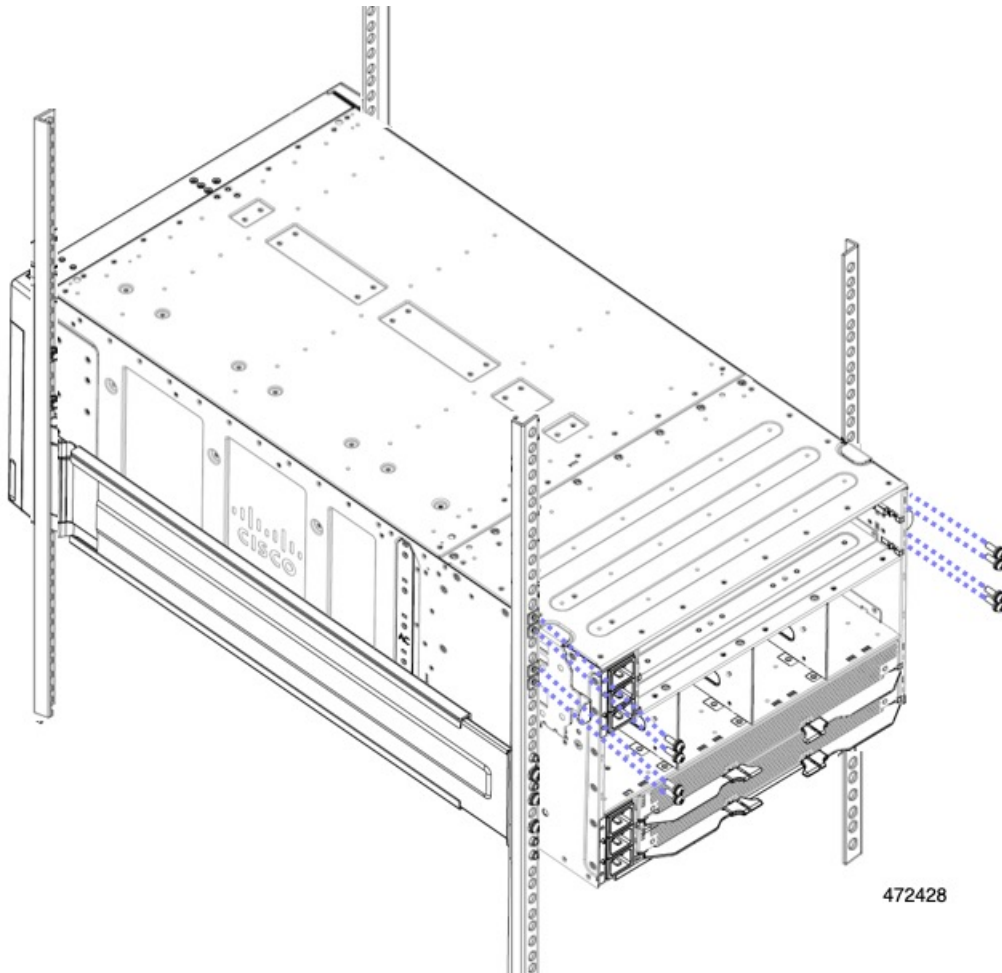
What to do next

Complete installing the chassis into the rack. Go to .

Completing Installation

Continue with installing the chassis.

Step 1 Verify that all the front and rear mounting screws for the rails and the chassis are tight, and the chassis is secured to the rack.

Step 2 At the front of the chassis, attach the side trim panels.

The side trim panels attach magnetically, so you don't need any tools.

Step 3 Making sure that all people and equipment are not under the chassis, lower and remove the lift.

Step 4   Install any additional IFMs, PSUs, nodes or other chassis components, if needed.

Step 5   To power up the chassis, connect the appropriate power cables to the inlet connector corresponding to each installed power supply, and then connect the other end of the cables to the power source. To determine the number of power supplies needed for a given configuration, use the Cisco UCS Power Calculator tool.

> **Note**   Both grids in a power redundant system should have the same number of power supplies. If your system is configured for grid power (N+N redundancy), slots 1, 2, and 3 are assigned to grid 1, and slots 4, 5, and 6 are assigned to grid 2. If fewer than six power supplies (PS) are configured in grid redundant mode, they should be equally distributed between the grid 1 and grid 2 slots.

Step 6   Attach any remaining cables to provide fabric connectivity for the chassis and nodes and do a visual inspection of LEDs to ensure the chassis and its components are operating in runtime.

Choosing Earth Ground Option

The Cisco UCS X9508 server chassis supports connection to facility earth ground through either of the following options:

- side mount, which supports connecting the ground cable directly to the chassis through a ground point on one side of the chassis. For this option, go to Connecting Side-Mount Earth Ground, on page 46.

- rear mount, which supports connecting the ground cable to a ground bracket that attaches to one of the rear mounting brackets at the rear of the chassis. For this option, go to Connecting Rear-Mount Earth Ground, on page 48.

Choose the option that is appropriate for your installation. Both options require you to assemble the ground cable by crimping a ground lug onto the end of the ground cable. For information about the ground lug, see "Ground Lug" in Earth Ground Considerations, on page 4.

Connecting Side-Mount Earth Ground

To connect side-mount earth ground you will connect a ground lug to a ground cable, then attach the cable to the designated earth ground point on the chassis sheet metal. The designated earth ground is on the side of the chassis.

> **Note**   The chassis also has a rear-mount option for earth ground by using a specific ground bracket that attaches to the rear of the chassis. For more information, see Connecting Rear-Mount Earth Ground, on page 48.

The facility ground cable must be terminated with the ground lug provided by Cisco, or an equivalent. For more information, see "Ground Lug" in Earth Ground Considerations, on page 4.

Step 1   Locate the two screw holes for the side-mount attachment point for earth ground.

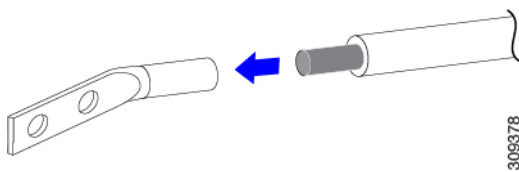The side-mount attachment point is designated with the earth ground symbol ( ).
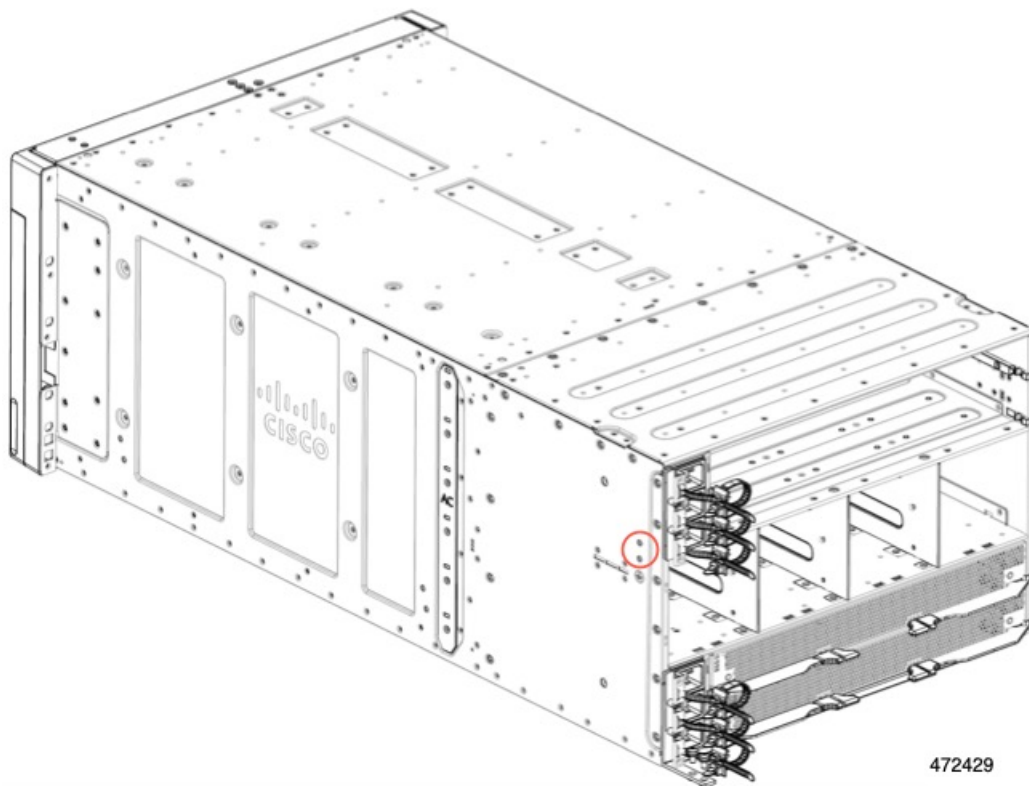
472429

Step 2   Assemble the ground cable.

    a) Use a wire-stripping tool to remove approximately 0.75 inches (19 mm) of the covering from the end of the grounding cable.

    b) Insert the stripped end of the grounding cable into the open end of the grounding lug.

        We recommend 6-AWG wire for the U.S. installations. Make sure to use the proper grounding cable and grounding wire as appropriate for your country or region.


309378

    c) Use a crimping tool to secure the grounding cable in the grounding lug.

    d) Prepare the other end of the grounding cable and connect it to an appropriate ground point at the facility.

        Note   When the chassis is fully installed, the side-mount earth ground point should be in front of the rear mounting brackets. As a result, you should have enough space to attach the ground cable.

Step 3   Attach the grounding cable to the grounding point on the side of the chassis.

    a) Position the ground lug.

    b) Align the terminal holes in the ground lug with the terminal holes in the side of the chassis.

    c) Using a #2 Phillips screwdriver, insert and tighten two M5 x 10mm pan-head screws to secure the grounding cable to the side of the chassis.
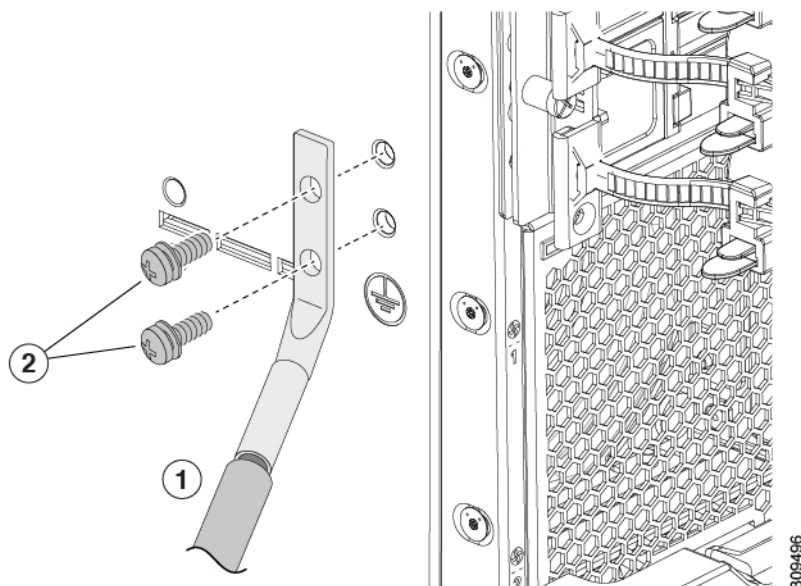
1	Assembled ground cable with lug positioned on chassis ground point	2	Screw down ground cable to secure it to the side-mount ground point

Connecting Rear-Mount Earth Ground

Connecting the chassis to facility earth ground is supported through the chassis ground lug, which installed at the side of the bottom set of PSUs.

The facility grounding cable must be terminated with the ground lug provided by Cisco, or an equivalent. For more information, see "Ground Lug" in Earth Ground Considerations, on page 4.

Use this procedure to connect the chassis to earth ground.

Before you begin

This procedure assumes that you have already attached the bottom cable management arm with the integrated grounding lug. For information, see Installing the Ground Bracket and Bottom Cable Management Arms, on page 33.

Step 1   Verify that the bottom CMA and ground lug is correctly installed. If not, install it now. See Installing the Ground Bracket and Bottom Cable Management Arms, on page 33.
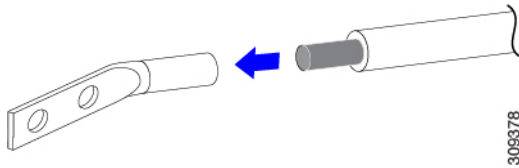
472430
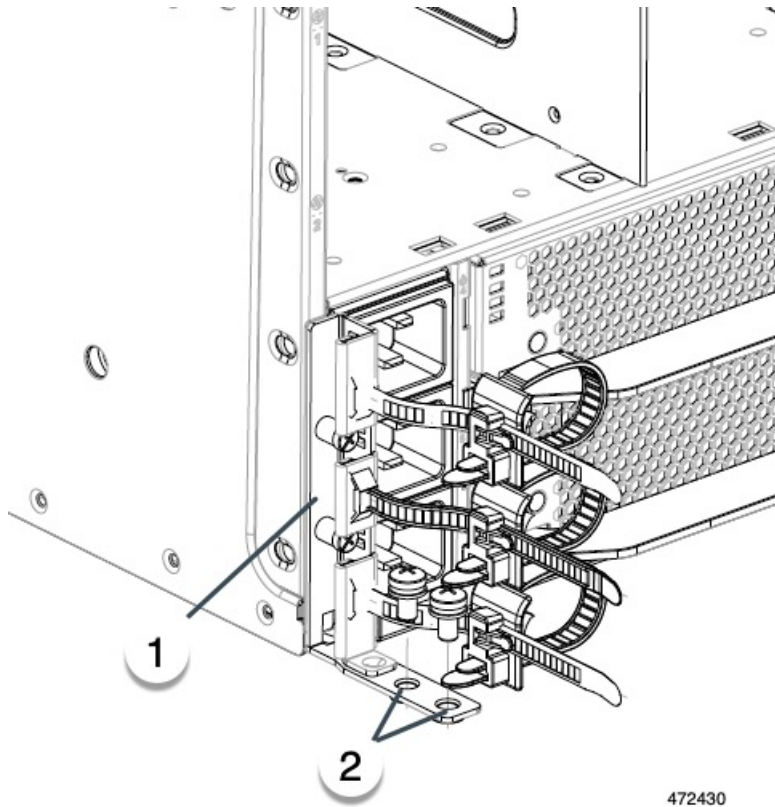
1		Bottom CMA with integrated ground lug	2		Terminal holes for attaching the ground cable

Step 2 Assemble the ground cable.

a) Use a wire-stripping tool to remove approximately 0.75 inches (19 mm) of the covering from the end of the grounding cable.

b) Insert the stripped end of the grounding cable into the open end of the grounding lug.

We recommend 6-AWG wire for the U.S. installations. Make sure to use the proper grounding cable and grounding wire as appropriate for your country or region.


309378

c) Use a crimping tool to secure the grounding cable in the grounding lug.

d) Prepare the other end of the grounding cable and connect it to an appropriate ground point at the facility.

Step 3 Attach the ground cable to the ground lug.

a) Position the ground cable on top of the ground lug.

b) Align the terminal holes in the ground lug with the terminal holes in the ground bracket.

c) Using a #2 Phillips screwdriver, insert and tighten two M5 x 10mm pan-head screws to secure the ground cable to the ground lug.

472431
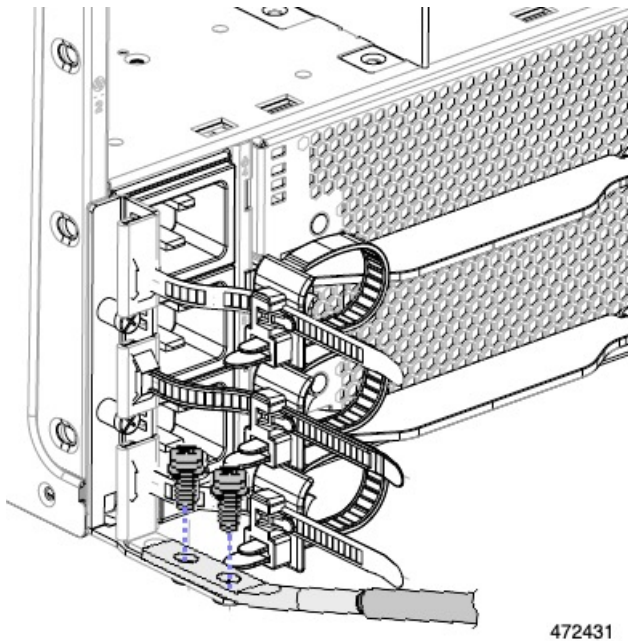
Step 4 Route the ground cable out of the way of the chassis, making sure not to damage the ground cable, for example, by exceeding its bend radius.

Step 5 After the chassis is connected to earth ground, connect PSU cables to power up the chassis.

Attaching Cable Management Trays

The Cisco UCS X9508 server chassis offers up to four cable management trays (UCSX-9508-CMA) to organize the cables for the intelligent fabric module (IFM) cables. The trays are interchangeable, so you can use them for either IFM's cables. There are no specific cable management trays for the top and bottom of the chassis.

You can use one tray for each IFM installed in the Cisco UCS X9508 server chassis but Cisco recommends that you use one tray for all IFM cables.

Note The chassis also has cable management arms, which organize the PSU cables. The cable management arms are different from the cable management tray, which organizes IFM cables.

Because the cable management tray sits in front of an IFM , you should remove the cable management tray to allow access to the IFM. For example, if you need to access IFM 2, you should remove the cable management tray 2

Cable management trays attach to the server chassis by hooks at the top rear of each tray.
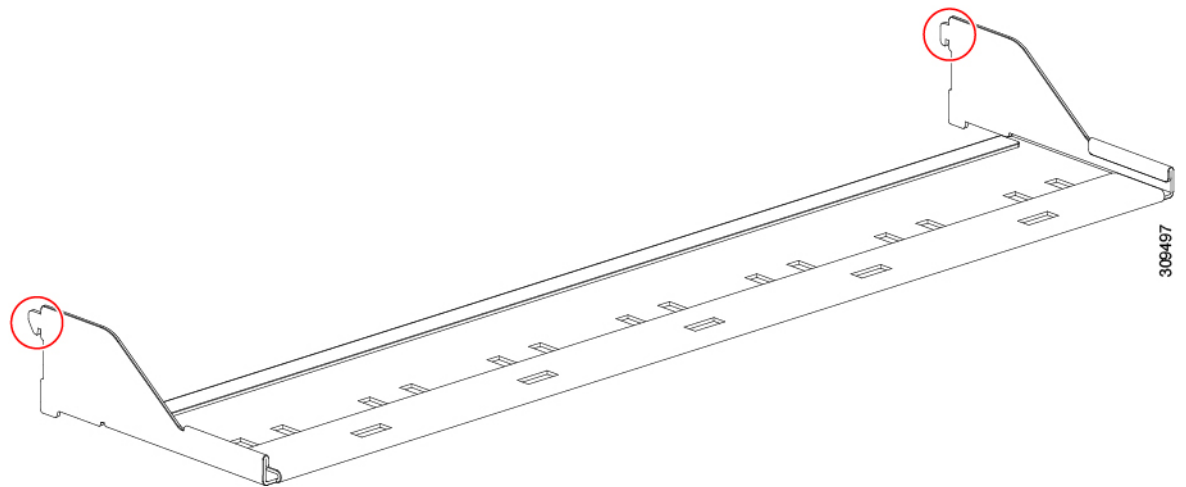
To install or remove the cable management tray, use the following procedures:
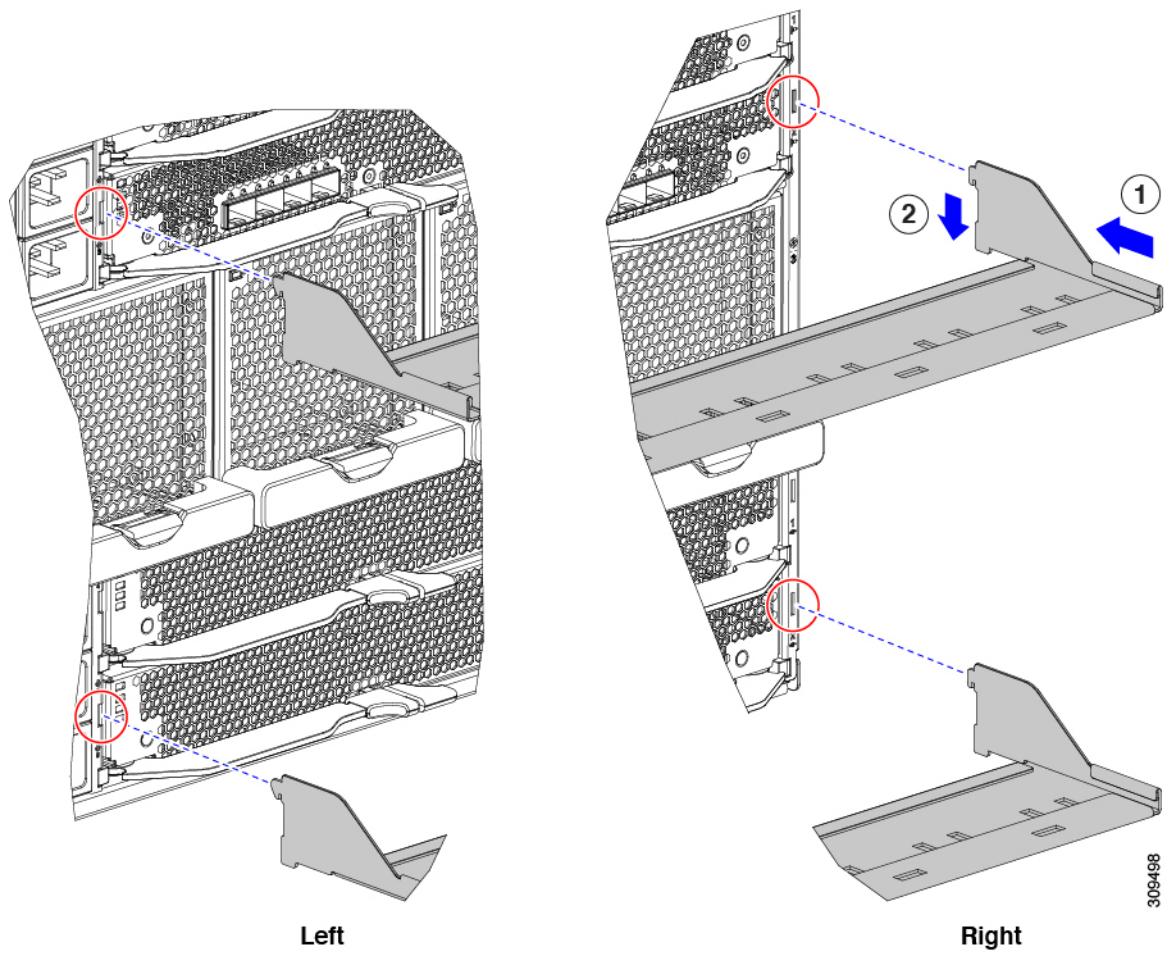
Installing the Cable Management Tray

For IFM cables, you can use the cable management tray to gather and organize the cables. The tray attaches to notches in the server chassis sheet metal.
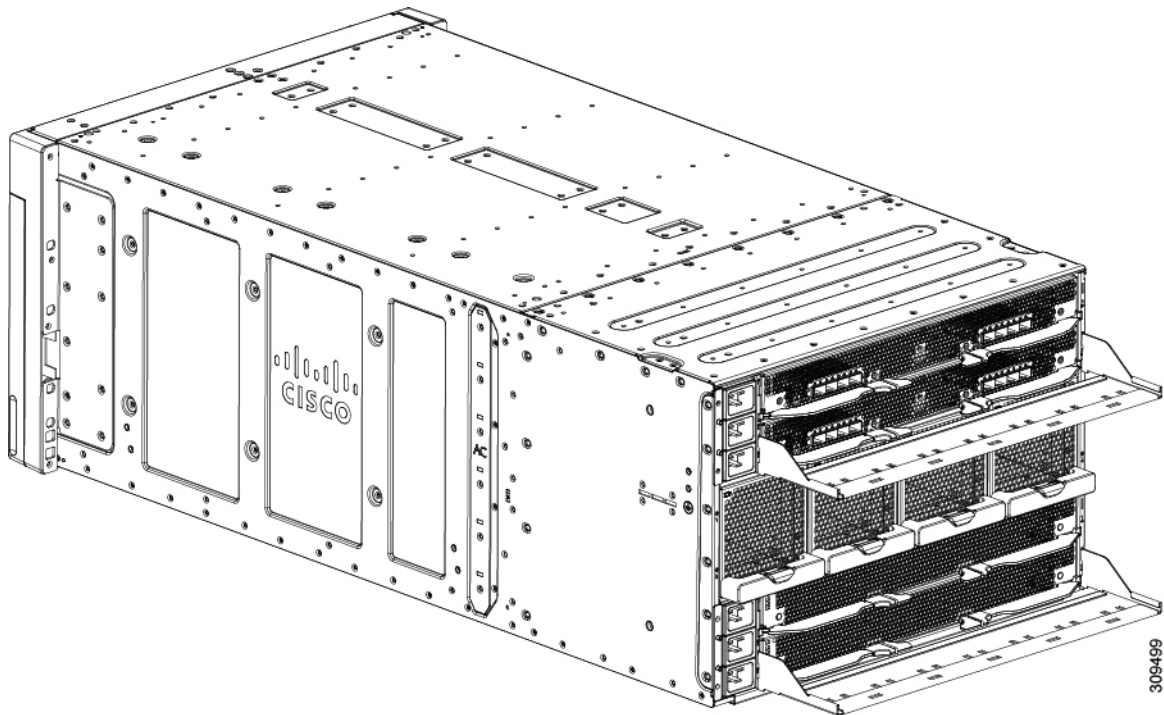
Use the following procedure to install the cable management tray.

Step 1 Orient the cable management tray so that the hooks are at the top and facing toward the chassis.

Step 2 Attach the cable management tray to the chassis.

a) Align the hooks on the cable management tray with the rectangular notches in the server chassis.

b) Holding the cable management tray level, insert the hooks into the notches.

c) When the cable management tray is flush against the chassis, push down to seat the hook into the notch.

Left

Right

309498

Step 3   Repeat this procedure as needed to install the other cable management trays, if needed.

Step 4 Attach any IFM cables as needed.

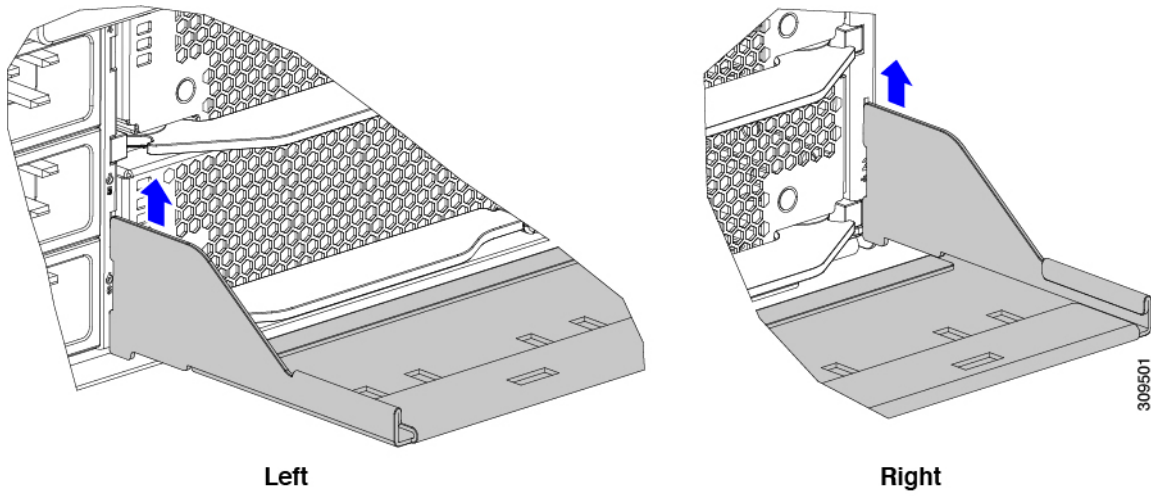## Removing the Cable Management Tray

Use the following procedure to remove the cable management tray(s).

Step 1 (Optional) Remove or lift the cables to allow easier access to the cable management tray.
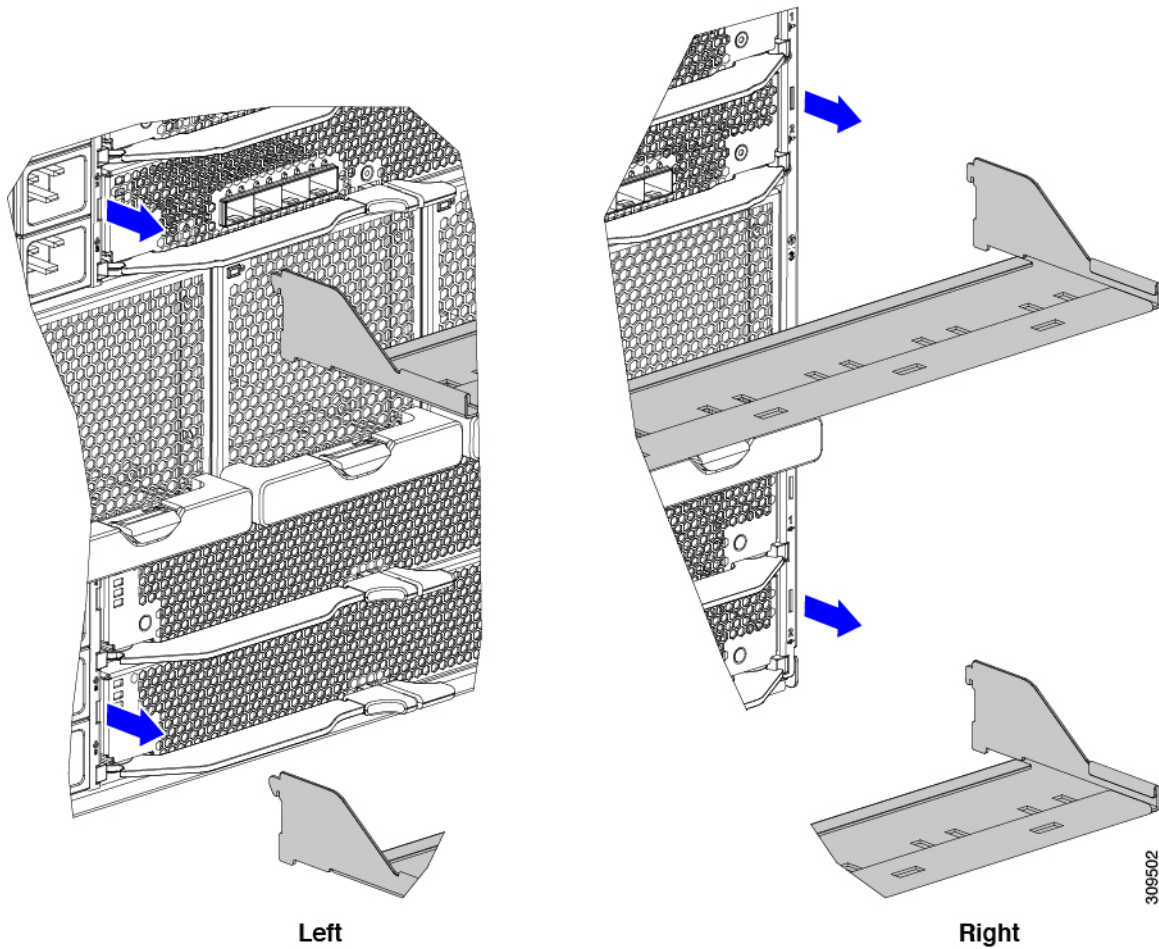
Step 2 Detach the cable management tray from the chassis.

    a) At each corner of the cable management tray, apply equal pressure to slide the tray upward in the chassis notch until it can no longer slide up.

Left   **Right**

b) Holding the cable management tray level, pull it towards you to detach the tray from the chassis.

Left   **Right**

Removing the Chassis from a Rack

Step 1 Use Cisco Intersight to do the following:

   a) Shut down the OS on all nodes in the chassis.
   b) Disable the Smart Call Home feature.
   c) Decommission the chassis.

Step 2 Disconnect the power cords and networking cables from the chassis.

Step 3 Remove all modules, fans, power supplies, and nodes from the chassis to lighten its weight.

Step 4 Remove the screws holding the front rack-mount flange to the rack.

Step 5 With two people holding the chassis, make sure that its weight is fully supported.

> **Important** Watch your hands and fingers whenever you handle the chassis, modules, compute nodes, and components! Narrow vertical or horizontal spaces in situations including, but not limited to, moving the chassis into or out of the shipping container or equipment rack can cause pinch hazards for your hands and fingers.
>
> Although they do not eliminate the possibility of pinching, the chassis has defined grasp points to facilitate handling and moving it. For information about chassis grasp points, see Handling the Chassis, on page 5.

Step 6 Gently slide the chassis off the rails, and out of the rack.

Step 7 Replace the modules, fans, power supplies, and nodes in the server chassis.

If you are returning the product, go to Repacking the Chassis, on page 55.

Repacking the Chassis

If you need to repack the chassis, remove it from the rack by following the steps in the Removing the Chassis from a Rack, on page 55 section.

When repacking the chassis for return shipment, be aware of the following.

> **Warning** Only lift an empty chassis! Make sure that all PSUs, fans, nodes, Intelligent Fabric Modules, and X-Fabric Modules are removed from the chassis before moving it out of the rack and packing it for shipment.

> **Warning** When the chassis is out of the rack, make sure to install the handles onto the chassis before putting the chassis on the bottom palette. The handles are also securing brackets that bolt the chassis onto the bottom pallet.

If possible, use the original packing materials and container to pack the chassis.

If needed, you can order spare packaging from Cisco by using PID UCSX-9508-PKG=.

If you are returning the chassis to Cisco, contact your Cisco customer service representative to arrange for return shipment to Cisco.