

Installing the Cisco UCS Fabric Interconnect

- Preparing for Installation, on page 1
- Cabinet and Rack Requirements, on page 4
- Establishing System Ground, on page 16

Preparing for Installation

Considerations and Warnings

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

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

Note Each new fabric interconnect requires a license. For information on licensing, see the Configuration Guide for the version of Cisco UCS Manager that you are using. The configuration guides are available at the following URL: Cisco UCS Manager Configuration Guides

Warning **Statement 1074 – Comply with Local and National Electrical Codes** To reduce risk of electric shock or file, installation of the equipment must comply with local and national electrical codes.

Warning **Statement 1032 – Lifting the Chassis**To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.

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

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Warning **Statement 1032 – Lifting the Chassis** To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.

Warning **Statement – 1024 – Ground Conductor**

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

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

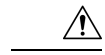
To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

Airflow Considerations

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

Fabric Interconnect Weight



Caution We recommend that you use two people or a mechanical lift when lifting the system.

- The Cisco UCS 6454 FI weighs 22.24 lbs (10.10 kg)
- The Cisco UCS 64108 FI weighs 35.86 lbs (16.27 kg)

When lifting the system, follow these guidelines:

- Disconnect all power and external cables before lifting the system.
- Ensure that your footing is solid and that the weight of the system is evenly distributed between your feet.
- 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 Cisco UCS Fabric Interconnect, follow these guidelines:

- Prepare the site as described in the Site Preparation Checklist.
- Plan your site configuration and prepare the site before installing the fabric interconnect. lists the recommended site planning tasks.
- Record the information listed in Site Preparation Checklist as you install and configure the fabric interconnect.
- Ensure that there is adequate space around the fabric interconnect to allow for servicing and for adequate airflow. The Site Preparation Checklist lists airflow requirements.
- Ensure that the air conditioning meets the heat dissipation requirements listed in Site Preparation Checklist.
- Ensure that the fabric interconnect is adequately grounded. If the fabric interconnect is not mounted in a grounded rack, Cisco recommends connecting both the system ground on the fabric interconnect and the power supply ground to an earth ground.

- Ensure that the site power meets the power requirements listed in Power Specifications. If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

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

- Ensure that circuits are sized according to local and national codes. For North America, the power supply requires a 15-A or 20-A circuit.

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

- Use the following screw torques (listed in Newton-metres) when installing the fabric interconnect:
  - Captive screws: 4 in-lb (0.45 Nm)
  - M3 screws: 4 in-lb (0.45 Nm)
  - M4 screws: 12 in-lb (1.36 Nm)
  - 10-32 screws: 20 in-lb (2.26 Nm)
  - 12-24 screws: 30 in-lb (3.39 Nm)



Note Also, note that you will use a minimum of 10 customer-required screws (typically10-32 or 12-24) which Cisco does not supply. They come with the manufacturer's rack you purchased. For torque values for these screws, consult your manufacturer's documentation.

Cabinet and Rack Requirements

This section provides the requirements for the following types of cabinets and racks, assuming an external ambient air temperature range of 0 to 104°F (0 to 40°C):

- Standard perforated cabinets (60 percent or greater perforation front and back is required; the Cisco R Series rack is an ideal choice)
- Standard open racks



Note If you are using an enclosed cabinet, we recommend one of the thermally validated types: standard perforated or solid-walled with a fan tray.



Note Do not use racks that have obstructions (such as power strips), because the obstructions could impair access to field-replaceable units (FRUs). The Cisco RP series PDUs, when mounted in a Cisco R Series Rack, does not obstruct FRU replacement.

General Requirements for Cabinets and Racks

The cabinet or rack must meet the following requirements:

- The minimum vertical rack space per Cisco UCS 6454 fabric interconnect must be one RU (rack unit), equal to 1.75 in. (4.4 cm). The minimum vertical rack space per Cisco UCS 64108 fabric interconnect must be two RUs (rack units), equal to 3.5 in. (8.8 cm).
- Standard 19 in. (48.3 cm), four-post EIA cabinet or rack, with mounting rails that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992.
- The width between the rack-mounting rails must be at least 17.72 in. (45.0 cm) if the rear of the fabric interconnect is not attached to the rack. For four-post EIA racks, this is the distance between the two front rails.
- For four-post EIA cabinets (perforated):
  - The minimum spacing for the bend radius for fiber-optic cables should have the front-mounting rails of the cabinet offset from the front door by a minimum of 3 in. (7.6 cm), and a minimum of 5 in. (12.7 cm) if cable management brackets are installed on the front of the fabric interconnect.
  - The distance between the outside face of the front mounting rail and the outside face of the back mounting rail should be 23.5 to 34.0 in. (59.7 to 86.4 cm) to allow for rear-bracket installation.
  - A minimum of 2.5 in. (6.4 cm) of clear space should exist between the side edge of the fabric interconnect and the side wall of the cabinet. No sizeable flow obstructions should be immediately in the way of fabric interconnect air intake or exhaust vents.

Requirements Specific to Perforated Cabinets

A perforated cabinet is defined here as a cabinet with perforated front and rear doors and solid side walls. In addition to the requirements listed in the General Requirements for Cabinets and Racks, on page 5, perforated cabinets must meet the following requirements:

- The front and rear doors must have at least a 60 percent open area perforation pattern, with at least 15 square inches of open area per rack unit of door height.
- The roof should be perforated with at least a 20 percent open area.
- The cabinet floor should be open or perforated to enhance cooling.

The Cisco R-Series racks meet or exceed all these requirements.

Unpacking and Inspecting the Cisco UCS Fabric Interconnect



Caution When handling fabric interconnect components, wear an ESD strap and handle modules by the carrier edges only. A grounding lug mounting point is provided on the fabric interconnect. For the grounding lug to be effective, the fabric interconnect must be grounded through the power cable, the chassis ground, or the metal-to-metal contact with a grounded rack.



Tip Optional: Keep the shipping container in case the fabric interconnect requires shipping in the future.



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

Procedure

Step 1 Compare the shipment to the equipment list provided by your customer service representative and verify that you have received all items, including the following:

- Grounding lug kit
- Rack-mount kit
- ESD wrist strap
- Cables with connectors
- Any optional items ordered

Step 2 Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:

- Invoice number of shipper (see packing slip)
- Model and serial number of the damaged unit
- Description of damage
- Effect of damage on the installation

Required Equipment

Before beginning the installation, ensure that the following items are ready:

- Number 1 and number 2 Phillips screwdrivers with torque-measuring capability
- 3/16-inch flat-blade screwdriver
- Tape measure and level
- ESD wrist strap or other grounding device
- Antistatic mat or antistatic foam

The following additional items (not found in the accessory kit) are required to ground the chassis:

- Grounding cable (6 AWG recommended), sized according to local and national installation requirements; the required length depends on the proximity of the Cisco UCS Fabric Interconnect to proper grounding facilities.
- Crimping tool large enough to accommodate girth of the lug
- Wire-stripping tool

Required Items for the Cisco UCS FI 64108

The Cisco UCS 64108 FI accessory kit (UCS-ACC-64108) comes with several items, although, not all items are required for installation. The kit comes with extra items used with other Cisco hardware.

The following figure and table identifies the items contained in the accessory kit provided with the Cisco UCS 64108 FI. All required items for installation are indicated via bold text.

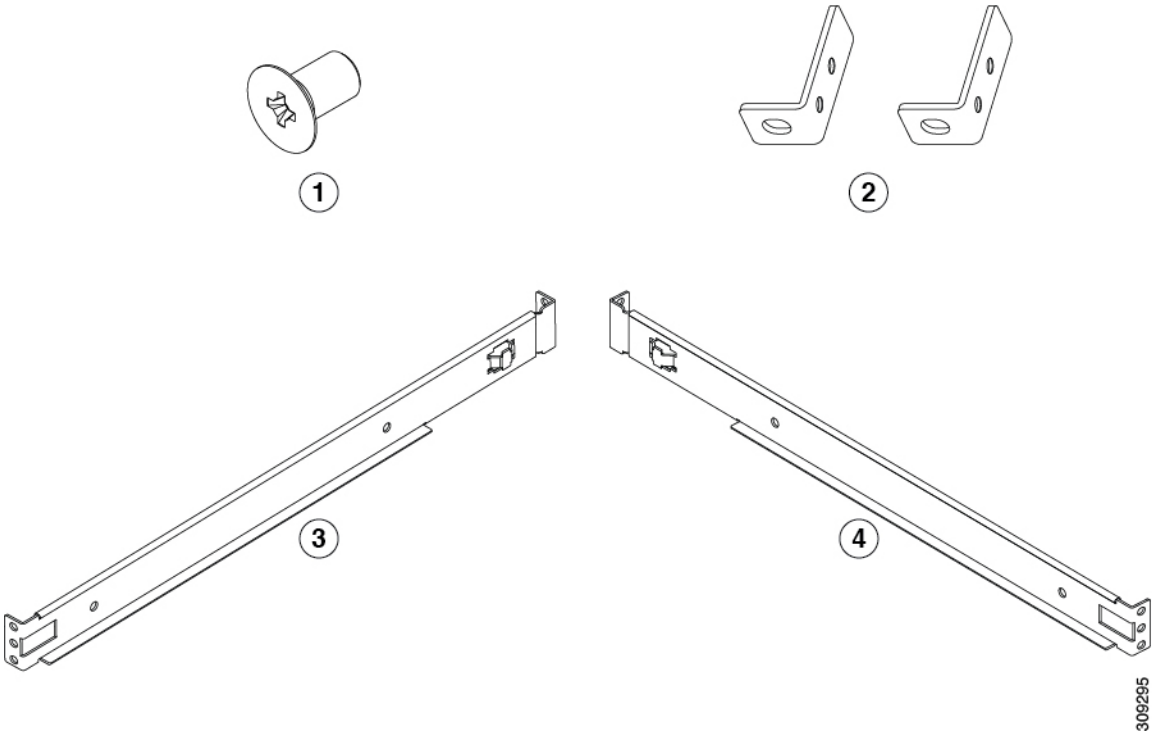


Table 1: Cisco UCS 64108 FI Accessory Kit

Required	Quantity with Plug	Quantity with No Plug	Part Description
	8	1	M4x0.7 x 6-mm Phillips countersink screws (For a Four-Post Rack) **Required for the UCS 64108**. 6 are required, 2 extra.
	2	2	Front-mount brackets (For a Four-Post Rack) **Required for the UCS 64108**
	1	3	Slider rail, Right (For a Four-Post Rack) **Required for the UCS 64108**

r n e e	Quantity h r u g i	N i t F	Part Description
	1	4	Slider rail, Left (For a Four-Post Rack) **Required for the UCS 64108**
-	1 kit	-	Ground lug kit • Two-hole lug (1) **Required for the UCS 64108** • M4 x 8-mm Phillips pan-head screws (two) **Required for the UCS 64108**
-	1	-	ESD wrist strap (disposable)**Required for the UCS 64108**
-	2	-	Rack-mount brackets (For a Two-Post Rack)
-		-	M4x0.7 x 7-mm Phillips countersink screws (For a Two-Post Rack)

Installing the Cisco UCS FI 6454 in a Cabinet or Rack

This section describes how to use the rack-mount kit provided to install a Cisco UCS FI 6454 into a cabinet or rack that meets the requirements described in Cabinet and Rack Requirements, on page 4.

Caution If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized.

This table lists the items contained in the rack-mount kit (UCS-ACC-6332) provided with the Cisco UCS FI 6454.

Table 2: Cisco UCS FI 6454 Fabric Interconnect Rack-Mount Kit

Quantity	Part Description
2	Rack-mount brackets
2	M4x0.7x8mm Phillips countersink screws
16	M4x0.7x7mm Phillips countersink screws
2	Rack-mount guides
2	Slider rails

Procedure

Step 1 Install the front rack-mount brackets as follows:

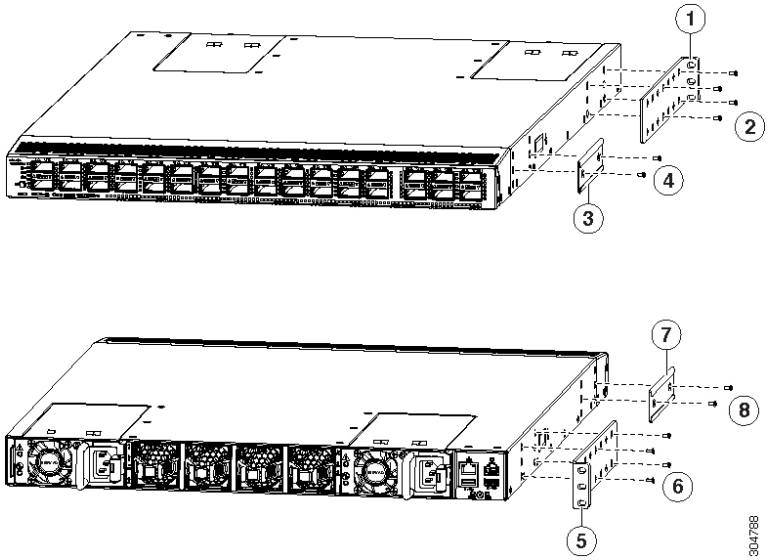
a) Position a front rack-mount bracket against the FI and align the screw holes as shown below. You can attach the front rack-mount bracket at the front (fan side) or the rear (port side) of the FI, depending on which side you want to locate on the cold aisle.

Note
You can align any four of the holes in the front rack-mount bracket to four of the six screw holes on the side of the FI. The holes that you use depend on the requirements of your rack and the amount of clearance required for interface cables and power supply handles.

b) Attach the front rack-mount bracket to the FI with four M4 screws.
c) Repeat Step 1 for the front rack-mount bracket on the opposite side of the chassis.

The following figure shows two alternate ways to mount the brackets, depending on which side you want to locate on the cold aisle.

Figure 1: Attaching the Rack-Mount Brackets to the FI



1	Front rack-mount bracket aligned to the rear of the FI	2	Four M4x0.7 x 7-mm screws used to attach the front bracket
3	Rear rack-mount guide aligned to the front of the FI	4	Two M4x0.7 x 7-mm screws used to attach the rear bracket
5	Alternate mounting: Front rack-mount bracket aligned to the front of the FI	6	Four M4x0.7 x 7-mm screws used to attach the front bracket
7	Alternate mounting: Rear rack-mount guide aligned to the rear of the FI	8	Two M4x0.7 x 7-mm screws used to attach the rear bracket

Step 2 Install the rear rack-mount guides onto the chassis as follows:

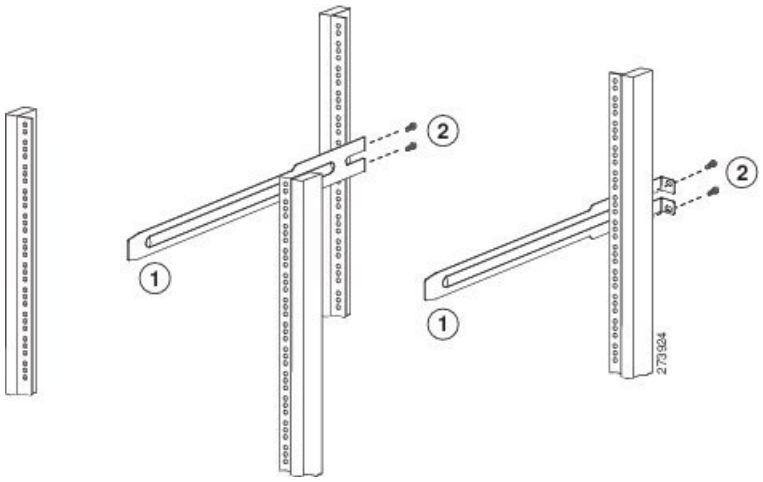
a) Align the two screw holes on a rear rack-mount guide to the middle two screw holes of the remaining six screw holes on a side of the chassis. If you are aligning the guide to holes that are near the front (fan side) of the chassis, see callout 3 in the previous figure. If you are aligning the guide to holes that are near the rear (port side) of the chassis, see callout 7 in the previous figure.
b) Attach the bracket to the chassis with two of the flat-head M4 screws. See callout 4 or 8 in the previous figure.

c) Repeat Step 2 with the rear rack-mount bracket on the other side of the chassis.

Step 3 Attach the slider rails to the rack. Use 2 customer-supplied 12-24 screws or 2 10-32 screws, depending on the rack rail thread type. Cisco recommends use for this kit is based on your rack. For racks with square holes, insert the 12-24 cage nuts in position behind the mounting holes in the slider rails.

a) Repeat with the slider rail on the opposite side of the rack.
b) Use a tape measure and level to verify that the rails are horizontal and at the same height.

Figure 2: Installing the Slider Rails

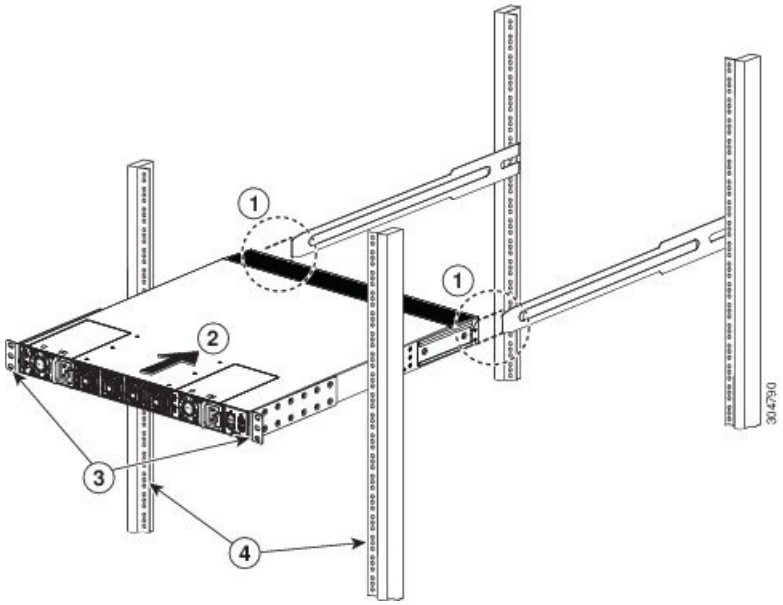


Step 4 Insert the FI into the rack:

Note
The UCS 6454 FI weighs 22 lb (9.97 kg) when fully loaded with components. The Cisco UCS 64108 FI weighs 27.4 pounds (12.4 kg) when fully loaded with components.

a) Supporting both sides of the FI, position the two rear rack-mount guides on the chassis between the two posts that do not have slider rails attached to them (see the following figure).
b) Align the two rear rack-mount guides on either side of the chassis with the slider rails installed in the rack. Slide the rack-mount guides onto the slider rails, and then gently slide the chassis all the way into the rack. If the chassis does not slide easily, try realigning the rack-mount guides on the slider rails.

Figure 3: Sliding the FI Into the Rack

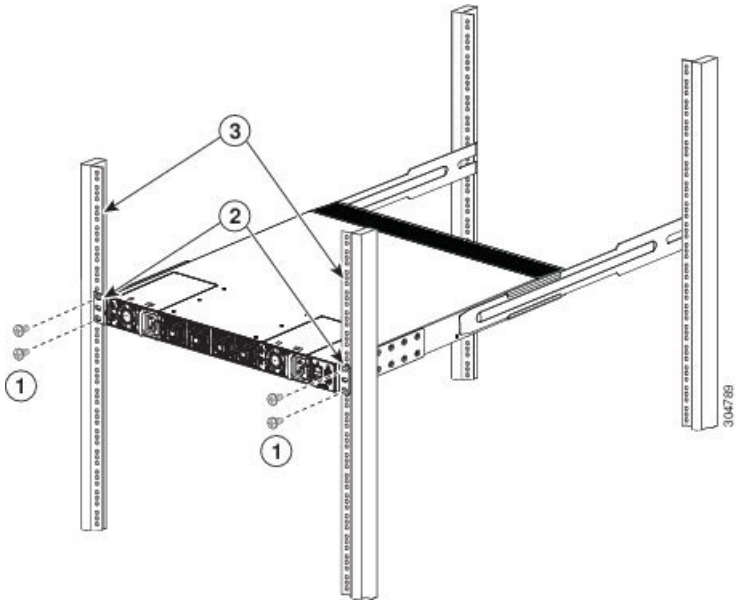


Step 5 Stabilize the chassis in the rack by attaching the front rack-mount brackets to the front rack posts:

a) Insert 2 screws (12-24 or 10-32, depending on rack type) through the front rack-mount brackets and into the threaded holes in the rack post.

b) Repeat for the front rack-mount bracket on the opposite rack post.

Figure 4: Attaching the Front Rack-Mount Brackets to the Rack Posts



Installing the Cisco UCS 64108 FI in a Cabinet or a Rack

This section describes how to use the UCS-ACC-64108 accessory kit provided to install a Cisco UCS 64108 FI into a cabinet or four-post rack. This kit contains items for both the Cisco UCS 64108 FI and other Cisco hardware. Check Required Items for the Cisco UCS FI 64108, on page 7 to verify you have the necessary items to proceed with the installation. This table lists the items contained in the rack-mount kit provided with the Cisco UCS 64108 FI. For warnings, see Considerations and Warnings, on page 1.

The chassis that you are installing ships with two adjustable bottom-support rails that you can attach to a cabinet or four-post rack to hold the chassis. Each of these bottom-support rails has two pieces—one that slides into the other so that you can adjust them to fit racks with front and rear mounting posts that are spaced less than 36 inches (91 cm). On each bottom-support rail, the rail half that slides into the other rail includes a chassis stop that fits into the module end of the chassis.

You need to slide the chassis onto the bottom-support rails so that the power supply end locks onto the chassis stops at the end of the rails and so that the front-mount brackets on the chassis come into contact with the front-mount rails on the rack.

Before you begin

Before you can install the bottom support rails for the chassis, check the following:

- Check to make sure you have the required items to proceed with the installation. See Required Items for the Cisco UCS FI 64108, on page 7.
- Verify that a four-post rack or cabinet is installed.
- If any other devices are stored in the rack or cabinet, verify that the heavier ones are installed below lighter devices.
- Verify that the bottom-support rails kit is included in the accessory kit.
- Gather the customer-supplied 10 screws for attaching the bottom support brackets to the racks (typically 10-32 or 12-24 screws) or the screw appropriate for the vertical mounting rails on the rack. Note that the rack screws may be a different mm size than the kit screws.
- You must have a manual Phillips-head torque screwdriver.
- You need (2) front-mount brackets and M4 x 6 mm screws (4) found inside the accessory kit.

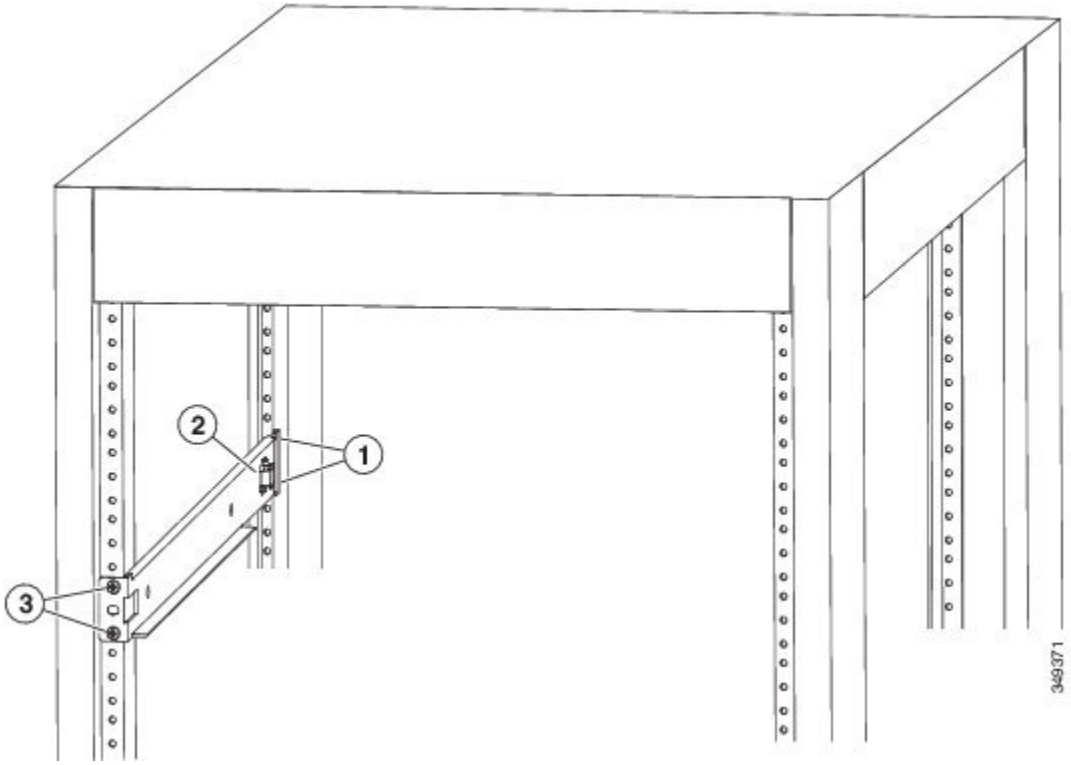
Procedure

Step 1 Look at the fan and power supply modules installed in the chassis to determine how you must position the bottom-support rails on the rack. Position the bottom support rails so that the chassis stop is positioned by the cold aisle.

Step 2 Separate the two sliders that make up one bottom-support rail and position the half with the chassis stop by the appropriate aisle for the fan and power supply modules. Also make sure that there is at least 1 rack unit open above the bottom-support rails so that you can easily install the chassis.

Step 3 Use two customer-supplied screws (typically 10-32 or 12-24 screws) to attach the bottom-support rail half to the vertical mounting rails on the rack post. Tighten each screw to the appropriate torque setting for the screws (for 10-32 or 12-24 screws, use 40 in. lbs [4.5 N·m] of torque).

Step 4 Slide the other half of the bottom-support rail onto the attached half of the rail set and use two customer supplied screws (typically 10-32 or 12-24 screws) to secure that portion to the vertical mounting rails on the rack. Tighten each screw to the appropriate torque setting for the screws (for 10 - 32 or 12 -24 screws, use 40 in. lbs [4.5 N·m] of torque).



1	Two screws holding one end of the bottom-support bracket to the rear of the rack
2	Chassis stop on the expanding bottom-support bracket
3	Two screws holding the front end of the bottom-support bracket to the front side of the rack

Step 5 Repeat Steps 2 through 4 to attach the other expanding bottom-support rails to the other side of the rack.

What to do next

You are ready to attach the front-mount brackets to the chassis. See Attaching Front-Mount Brackets to the Cisco UCS 64108 FI Chassis, on page 13.

Attaching Front-Mount Brackets to the Cisco UCS 64108 FI Chassis

This section explains how to attach front-mount brackets to the chassis. You need to attach a right-angled bracket to each side of the chassis. This bracket holds the chassis in place on a four-post rack.

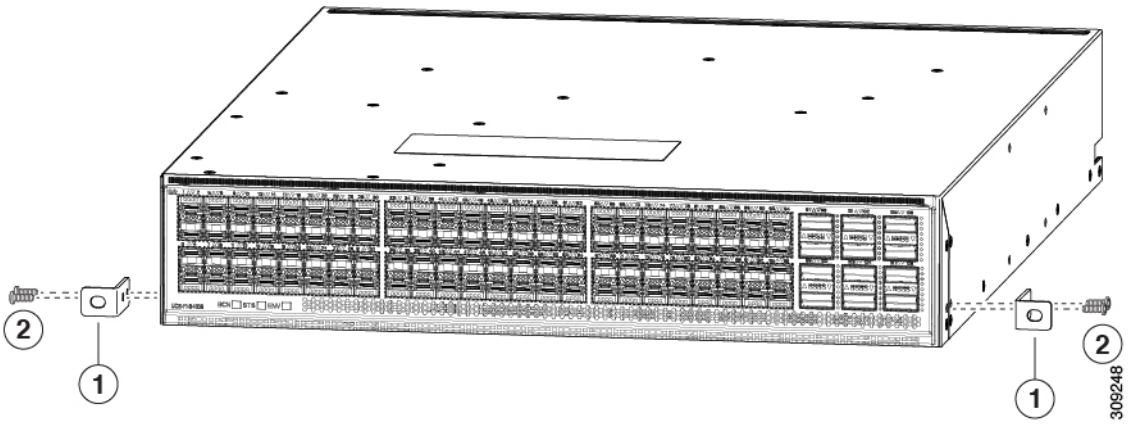
Before you begin

You must have the following tools and equipment:

- Manual Phillips-head torque screwdriver
- Two Front-mount brackets and M4 x 6 mm screws (4) found inside the accessory kit)

Procedure

Step 1 Align the two holes in one side of one of two front-mount brackets to two holes on the left or right side of the chassis (see the following figure). Be sure the other side of the bracket faces toward the front (port end) of the chassis.



1	Front-mount bracket with two screw holes aligned to two screw holes in the chassis and one screw hole facing the front (port side) of the chassis.
2	Two M4 x 6 mm screws used to fasten the bracket to the chassis.

Step 2 Use two M4 x 6 mm screws to attach the bracket to the chassis. Tighten each screw to 11 to 15 in-lb (1.2 to 1.7 N·m).

Step 3 Repeat Steps 1 and 2 to attach the second center-mount bracket to the other side of the chassis.

What to do next

You are ready to mount the chassis to the four-post rack. See Installing the Cisco UCS 64108 FI Chassis in a Four-Post Rack, on page 14.

Installing the Cisco UCS 64108 FI Chassis in a Four-Post Rack

This task explains how to mount the chassis to a cabinet or four-post rack.

Before you begin

- Make sure the four-post rack is properly installed and secured to the concrete subfloor.
- Make sure the bottom-support rails are installed so that the fan modules are positioned in a cold aisle (the chassis stop on the bottom-support rails is positioned by the cold aisle).
- Make sure that two front-mount brackets are securely fastened to the sides of the chassis at the port end.

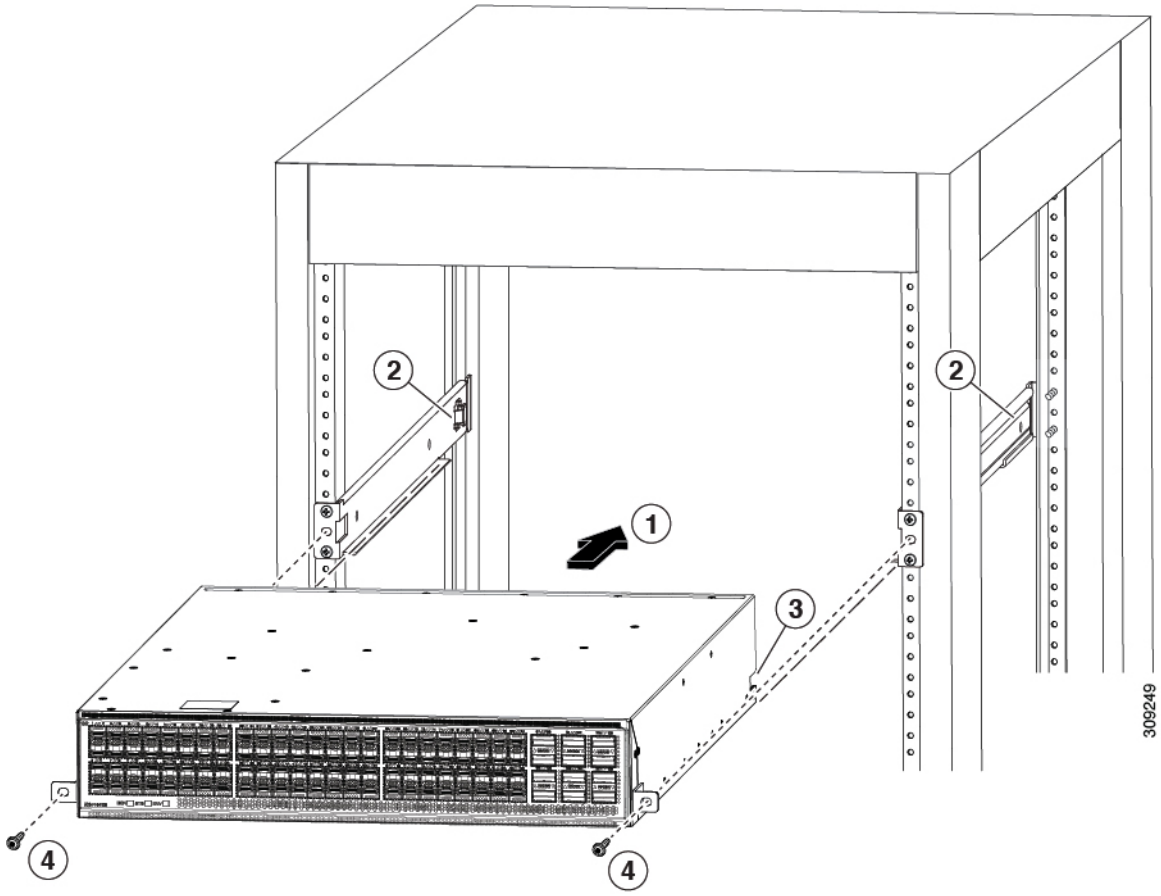
- Make sure that you have two customer-supplied rack-mount screws (10-32 or 12-24 or appropriate screw for the vertical mounting rails on the rack).

Procedure

Step 1 Slide the power supply end of the chassis onto the bottom-support rails that are installed on the rack as shown in callout 1 in the figure.

Be sure that the sides of the chassis by the power supplies clip into the chassis stops on the bottom-support rails and the front-mount brackets come in contact with the rack (see the following figure).

Note
If the bottom-support rails are extended a long distance, they can bend outwards slightly when you install the chassis and the chassis stops at the far end of the rails might not fit into the end of the chassis. If this happens, press the side rails toward the sides of the chassis so that the chassis stops can go inside the chassis and hold it in place on the rack.



2	Chassis stops for holding the chassis (positioned by the aisle required for the fan and power supply modules).

3	Receiving hole on each side of the chassis for the chassis stops on the bottom-support rails.
4	6 customer-supplied rack-mount screws (10-32 or 12-24 screw or other screw appropriate for the rack) used to secure each side of the chassis to the rack.

Step 2 Use a customer-supplied rack-mount screw (a 10-32 or 12-24 screw or other appropriate screw for the rack) to attach each of the two mounting brackets on the chassis to the rack and tighten each screw to the appropriate torque setting for the screw (for 10-32 or 12-24 screws, use 40 in-lbs [4.5 N·m] of torque).

What to do next

You are ready to establish system ground. See Grounding the Cisco UCS 64108 Fabric Interconnect, on page 19.

Establishing System Ground

The system ground is referred to as the network equipment building system (NEBS) ground. You must use the NEBS ground on AC-powered systems if you are installing this equipment in a U.S. or European Central Office.

The NEBS ground provides additional grounding for EMI shielding requirements and grounding for the low-voltage supplies (DC-DC converters) on the modules, and is intended to satisfy the Telcordia Technologies NEBS requirements for supplemental bonding and grounding connections. You must observe the following system grounding guidelines for your chassis:

- You must install the NEBS ground connection with any other rack or system power ground connections that you make. The system ground connection is required if this equipment is installed in a U.S. or European Central Office.
- You must connect both the NEBS ground connection and the power supply ground connection to an earth ground. The NEBS ground connection is required if this equipment is installed in a U.S. or European Central Office.

Proper Grounding Practices

Grounding is one of the most important parts of equipment installation. When you properly ground systems during installation, you reduce or prevent shock hazards, equipment damage due to transients, and data corruption.

Note In all situations, grounding practices must comply with local National Electric Code (NEC) requirements or local laws and regulations.

Table 3: Proper Grounding Guidelines

Environment	Electromagnetic Noise Severity Level	Grounding Recommendations
Commercial building is subjected to direct lightning strikes. For example, some places in the United States, such as Florida, are subject to more lightning strikes than are other areas.	High	All lightning protection devices must be installed in strict accordance with manufacturer recommendations. Conductors carrying lightning current should be spaced away from power and data lines in accordance with applicable recommendations and codes. Best grounding recommendations must be closely followed.
Commercial building is located in an area where lightning storms frequently occur but is not subject to direct lightning strikes.	High	Best grounding recommendations must be closely followed.
Commercial building contains a mix of information technology equipment and industrial equipment, such as welding.	Medium to high	Best grounding recommendations must be closely followed.
Existing commercial building is not subject to natural environmental noise or man made industrial noise. This building contains a standard office environment. This installation has a history of malfunction due to electromagnetic noise.	Medium	Determine source and cause of noise if possible, and mitigate as closely as possible at the noise source or reduce coupling from the noise source to the affected equipment. Best grounding recommendations must be closely followed.
New commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment.	Low	Electromagnetic noise problems are not anticipated, but installing a grounding system in a new building is often the least expensive route and the best way to plan for the future. Best grounding recommendations should be followed as closely as possible.
Existing commercial building is not subject to natural environmental noise or man-made industrial noise. This building contains a standard office environment.	Low	Electromagnetic noise problems are not anticipated, but installing a grounding system is always recommended. Best grounding recommendations should be followed as much as possible.

Grounding the Cisco UCS 6454 Fabric Interconnect

The fabric interconnect has a grounding pad with two threaded M4 holes for attaching a grounding lug. The following are guidelines for grounding the fabric interconnect.

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

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

- We recommend grounding the fabric interconnect, even if the rack is already grounded.
- All power supplies must be grounded. The receptacles of the AC power cables used to provide power to the fabric interconnect must be the grounding type, and the grounding conductors should connect to protective earth ground at the service equipment.
- Grounding the fabric interconnect is required if you are using DC power supplies, even if the rack is already grounded. A grounding pad with two threaded M4 holes is provided on the fabric interconnect for attaching a grounding lug. The ground lug must be NRTL listed. In addition, the copper conductor (wires) must be used and the copper conductor must comply with NEC code.

Procedure

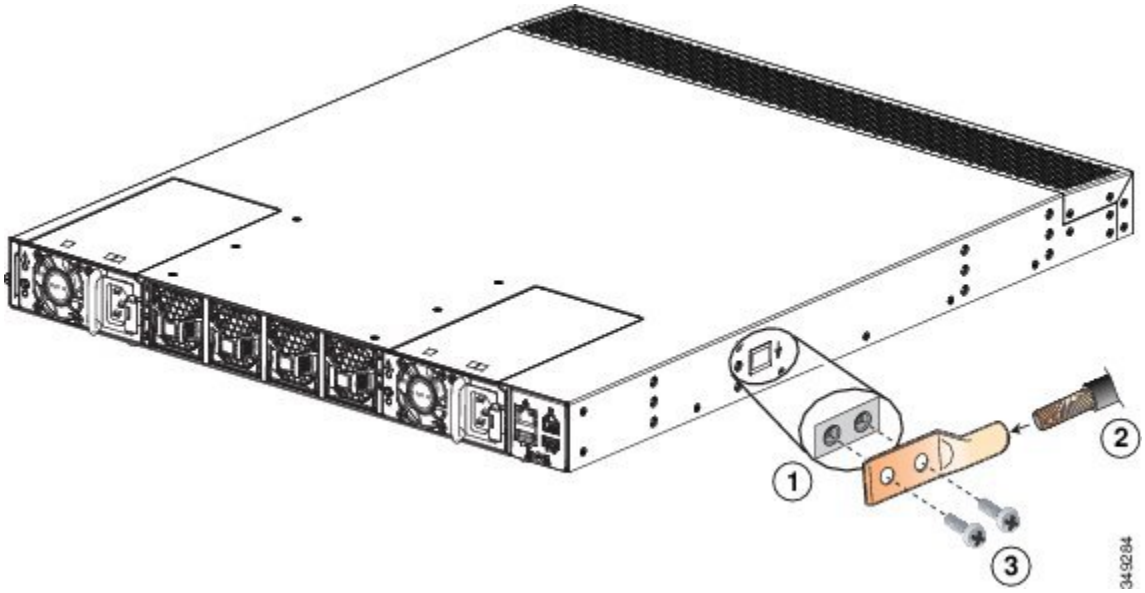
Step 1 Use a wire-stripping tool to remove approximately 0.75 inches (19 mm) of the covering from the end of the grounding cable.

Step 2 Insert the stripped end of the grounding cable into the open end of the grounding lug.

Step 3 Use the crimping tool to secure the grounding cable in the grounding lug.

Step 4 Remove the adhesive label from the grounding pad on the fabric interconnect.

Figure 5: Connecting the System Ground (Cisco UCS 6454 FI shown)



1	Grounding pad on FI, with two M4-threaded screw holes (enlarged view shown)	2	Stripped copper wire
3	M4 screws (two)	-	-

Step 5 Place the grounding lug against the grounding pad so that there is solid metal-to-metal contact, and insert the two M4 screws through the holes in the grounding lug and into the grounding pad.

Step 6 Ensure that the lug and cable do not interfere with other equipment.

Step 7 Prepare the other end of the grounding cable and connect it to an appropriate grounding point in your site to ensure adequate earth ground.

Grounding the Cisco UCS 64108 Fabric Interconnect

The chassis is automatically grounded when you properly install the FI in a grounded rack with metal-to-metal connections between the chassis and rack.

You can also ground the chassis, which is required if the rack is not grounded, by attaching a customer-supplied grounding cable. Attach the cable to the chassis grounding pad and the facility ground.

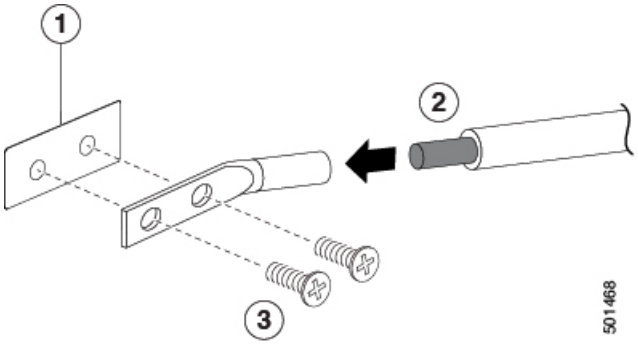
Before you begin

- Before you can ground the chassis, you must have a connection to the earth ground for the data center building.
- Ensure you have the proper grounding cable and grounding wire as appropriate for you country or region.

Procedure

Step 1 Use a wire-stripping tool to remove approximately 0.75 inch (19 mm) of the covering from the end of the grounding wire. We recommend 6-AWG wire for the U.S. installations.

Step 2 Insert the stripped end of the grounding wire into the open end of the grounding lug. The grounding lug is on the front plate of the FI. To identify the location of the grounding lug, see Cisco UCS 64108 Fabric Interconnect Front View. Use a crimping tool to crimp the lug to the wire, see the following figure. Verify that the ground wire is securely attached to the grounding lug by attempting to pull the wire out of the crimped lug.



1	Chassis grounding pad. Remove the grounding pad to connect the grounding wire to the port covered by the pad. For detail on the location of the grounding pad and lug, see Cisco UCS 64108 Fabric Interconnect.
2	Grounding cable, with 0.75 in. (19 mm) of insulation that is stripped from one end, which is inserted into the grounding lug and crimped in place
3	Two M4 screws are used to secure the grounding lug to the chassis

Step 3 Secure the grounding lug to the chassis grounding pad with two M4 screws, see the previous figure. Tighten the screws to 11 to 15 in-lb (1.2 to 1.7 N·m) of torque.

Step 4 Prepare the other end of the grounding wire and connect it to the facility ground.

Starting the System

Note Do not connect the Ethernet port to the LAN until the initial system configuration has been performed. For instructions on configuring the system, see the *Configuration Guide* for the version of Cisco UCS Manager that you are using. The configuration guides are available at this URL: http://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-manager/products-installation-and-configuration-guides-list.html

Procedure

Step 1 Verify that the power supply and the fan modules are installed.

Note
Depending on the outlet receptacle on your power distribution unit, you may need the optional jumper power cord to connect the Cisco UCS Fabric Interconnect to your outlet receptacle. See *Cabinet Jumper Power Cords*.

Step 2 Ensure that the chassis is adequately grounded, and that the AC or DC power available has the required power voltages (see *Power Specifications*). For a DC installation, see Wiring a *DC Power Connector* to correctly wire the DC connector before applying a DC cable.

Step 3 For a first-time installation, you will need to work with your network manager to determine the following parameters:

- System name
- Password for the admin account. Choose a strong password that meets the guidelines for Cisco UCS Manager passwords. This password can not be blank.
- Management port IP address and subnet mask
- Default gateway IP address
- DNS server IP address (optional)
- Domain name for the system (optional)

Step 4 Connect a PC or laptop directly to the local console port of the primary or standalone fabric interconnect. In a cluster configuration, the primary is the fabric interconnect that powers up first.

The console port on the terminal should be set to 9600 baud, 8 data bits, no parity, 1 stop bit.

Step 5 If the fabric interconnect will be running in a cluster with another fabric interconnect, connect Ethernet cables between the L1 and L2 ports. Connect Port L1 on fabric interconnect A to L1 on fabric interconnect B. Connect Port L2 on fabric interconnect A to L2 on fabric interconnect B.

If the fabric interconnect and the UCS instance will be in standalone mode, this step is not necessary.

Step 6 Connect the power cable to a power source. The system should power on as soon as you connect the cable.

Step 7 After the system boots, verify that the LED operation is as follows:

- Fan modules—Status LED is green.
- Power supplies—Status LED is green.
- After initialization, the system status LED is green, indicating that all chassis environmental monitors are reporting that the system is operational. If this LED is orange or red, then at least one environmental monitor is reporting a problem.

Note
The link LEDs for the Fibre Channel ports remain yellow until the ports are enabled, and the LED for an Ethernet connector port remains off until the port is connected.

Step 8 If there is a problem, try removing and reinstalling a component that is not operating correctly. If it still does not operate correctly, contact your customer service representative for a replacement.

Note
If you purchased this product through a Cisco reseller, contact the reseller directly for technical support. If you purchased this product directly from Cisco, contact Cisco Technical Support at this URL: http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html.

Step 9 Verify that the system software has booted and that the system has initialized without error messages.

If you cannot resolve an issue, contact your customer service representative.

Step 10 Complete the worksheets provided in *Site Preparation Checklist* for future reference.

Step 11 Configure the primary fabric interconnect as described in thr *Configuration Guide* for the version of Cisco UCS Manager that you are using. The configuration guides are available at this URL: http://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-manager/products-installation-and-configuration-guides-list.html

Step 12 Repeat this procedure for the secondary fabric interconnect.