



Installing the Cisco UCS 6300 Series Fabric Interconnect

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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:

http://www.cisco.com/en/US/products/ps10281/products_installation_and_configuration_guides_list.html

Installation Options

You can install the Cisco UCS Fabric Interconnect chassis in a perforated or solid-walled EIA cabinet or an open EIA rack (the Cisco R Series Rack is an ideal choice), using the rack-mount kit shipped with the chassis. For instructions on installing the chassis using the rack-mount kit shipped with the chassis, see [Installing the Cisco UCS Chassis or UCS Chassis in a Cabinet or Rack, on page 7](#).

Airflow Considerations

The FI's cooling fans pull air front-to-rear. That is, air intake is on the fan side and air exhaust is on the port side.

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.

Chassis Weight

When lifting the system, follow these guidelines:

- Disconnect all power and external cables before lifting the system.
- Have two people to lift the system. The Cisco UCS 6332 weighs 22 pounds (9.9 kg). The Cisco UCS 6332 16-UP weighs 22.61 pounds (10.2 kg). The Cisco UCS 6454 weighs 25.9 pounds (11.7 kg)
- 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 chassis. [Site Preparation Checklist](#) 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 chassis to allow for servicing and for adequate airflow. [Site Preparation Checklist](#) lists airflow requirements.
- Ensure that the air conditioning meets the heat dissipation requirements listed in [Site Preparation Checklist](#).



Note Jumper power cords are available for use in a cabinet. See [Cabinet Jumper Power Cords](#).

- Ensure that the chassis is adequately grounded. If the chassis is not mounted in a grounded rack, Cisco recommends connecting both the system ground on the chassis 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 chassis:
 - Captive screws: 4 in-lb (0.45 N m)
 - M3 screws: 4 in-lb (0.45 N m)
 - M4 screws: 12 in-lb (1.36 N m)
 - 10-32 screws: 20 in-lb (2.26 N m)
 - 12-24 screws: 30 in-lb (3.39 N m)

Required Equipment

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

- Number 1 and number 2 Phillips screwdrivers with torque 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 lug
- Wire-stripping tool

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 should not obstruct FRU replacement.

General Requirements for Cabinets and Racks

The cabinet or rack must be one of the following types:

- 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. See the [Requirements Specific to Perforated Cabinets](#). (The Cisco R Series Rack is an ideal choice.)

The cabinet or rack must also meet the following requirements:

- The minimum vertical rack space per Cisco UCS 6332 chassis must be one RU (rack unit), equal to 1.75 in. (4.4 cm).
- The minimum vertical rack space per Cisco UCS 6332 16-UP chassis must be one RU (rack unit), equal to 1.75 in. (4.4 cm).
- The minimum vertical rack space per Cisco UCS 6454 chassis must be one RU (rack unit), equal to 1.75 in. (4.4 cm).
- The width between the rack-mounting rails must be at least 17.72 in. (45.0 cm) if the rear of the chassis 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 chassis.
 - 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 chassis and the side wall of the cabinet. No sizeable flow obstructions should be immediately in the way of chassis air intake or exhaust vents.



Note Optional jumper power cords are available for use in a cabinet.

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 4](#), 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.

Requirements Specific to Standard Open Racks

In addition to the requirements listed in the [General Requirements for Cabinets and Racks, on page 4](#), if mounting the chassis in an open rack (no side panels or doors), the minimum vertical rack space per chassis must be one RU (rack unit), equal to 1.75 in. (4.4 cm).

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

Cable Management Guidelines

To help with cable management, you might want to allow additional space in the rack above and below the chassis to make it easier to route as many as 56 fiber or copper cables through the rack.

Required Equipment

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

- Number 1 and number 2 Phillips screwdrivers with torque 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 lug
- Wire-stripping tool

Unpacking and Inspecting the Cisco UCS Fabric Interconnect

**Caution**

When handling chassis components, wear an ESD strap and handle modules by the carrier edges only. An ESD socket is provided on the chassis. For the ESD socket to be effective, the chassis must be grounded through the power cable, the chassis ground, or the metal-to-metal contact with a grounded rack.

**Tip**

Keep the shipping container in case the chassis 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

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- 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
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Installing the Cisco UCS Chassis or UCS Chassis in a Cabinet or Rack

This section describes how to use the rack-mount kit provided with the chassis to install Cisco UCS into a cabinet or rack that meets the requirements described in [Cabinet and Rack Requirements, on page 4](#). All Cisco UCS Fabric Interconnects use the same installation procedure.



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 provided with the chassis.

Table 1: Chassis Rack-Mount Kit

Quantity	Part Description
2	Rack-mount brackets
12	M4x0.7 x 8-mm Phillips countersink screws
10	10-32 cage nuts
10	10-32 x 3/4-inch Phillips pan-head screws

Quantity	Part Description
2	Rack-mount guides
2	Slider rails

Procedure

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

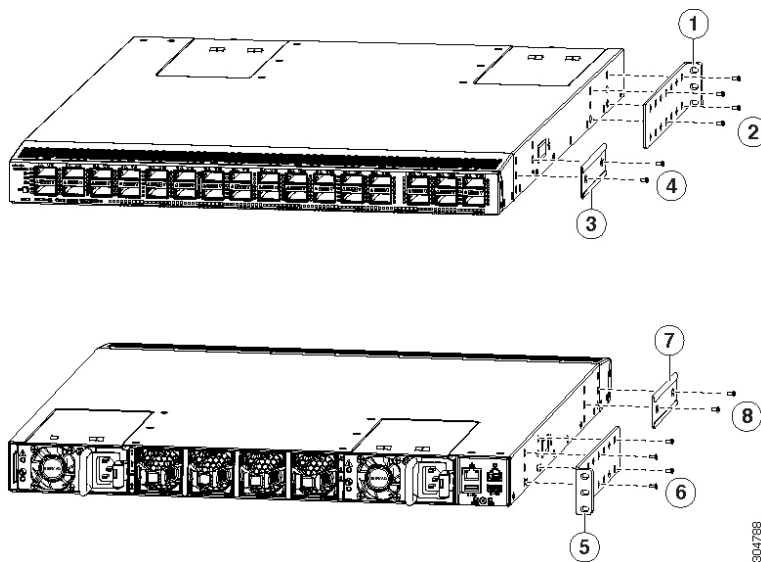
Note The port side of the FI is the rear and it faces the rear of the rack. The fan side of the FI is the front and it faces the front of the rack. Cooling fans pull air front-to-rear. That is, air intake is on the fan side and air exhaust is on the port side.

- a) Position a front rack-mount bracket against the chassis and align the screw holes as shown below. You can attach the front rack-mount bracket at the front or the rear of the chassis, depending on which side you want to locate on the cold aisle. Then attach the front rack-mount bracket to the chassis with four M4 screws.

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 chassis. 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) Repeat Step 1 for the other front rack-mount bracket on the other side of the chassis.

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



1	Front rack-mount bracket aligned to the rear of the chassis	2	Four M4 screws used to attach the bracket to the chassis
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3	Rear rack-mount guide aligned to the front of the chassis	4	Two M4 screws used to attach the brackets
5	Front rack-mount bracket aligned to the front of the chassis	6	Four M4 screws used to attach the bracket to the chassis
7	Rear rack-mount guide	8	Two M4 screws used to attach the bracket to the chassis

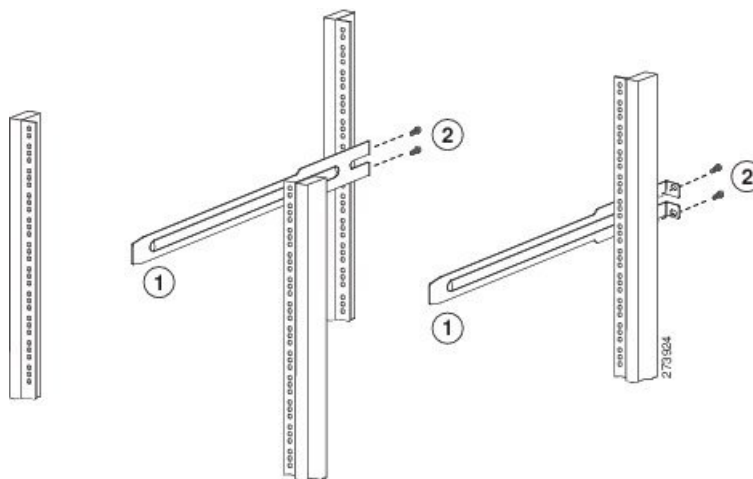
Step 2 Install the rear rack-mount guides on the chassis as follows:

- Align the two screw holes on a rear rack-mount bracket to the middle two screw holes in the remaining six screw holes on a side of the chassis. If you are aligning the bracket to holes that are near the front end of the chassis, see callout 3 in the previous figure. Otherwise, see callout 7 in the previous figure.
- Attach the bracket to the chassis with two of the flat-head M4 screws. See callout 4 or 8 in the previous figure.
- Repeat Step 2 with the other rear rack-mount bracket on the other side of the chassis.

Step 3 Attach the slider rails to the rack. Use 2 12-24 screws or 2 10-32 screws, depending on the rack rail thread type. For racks with square holes, insert the 12-24 cage nuts in position behind the mounting holes in the slider rails.

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

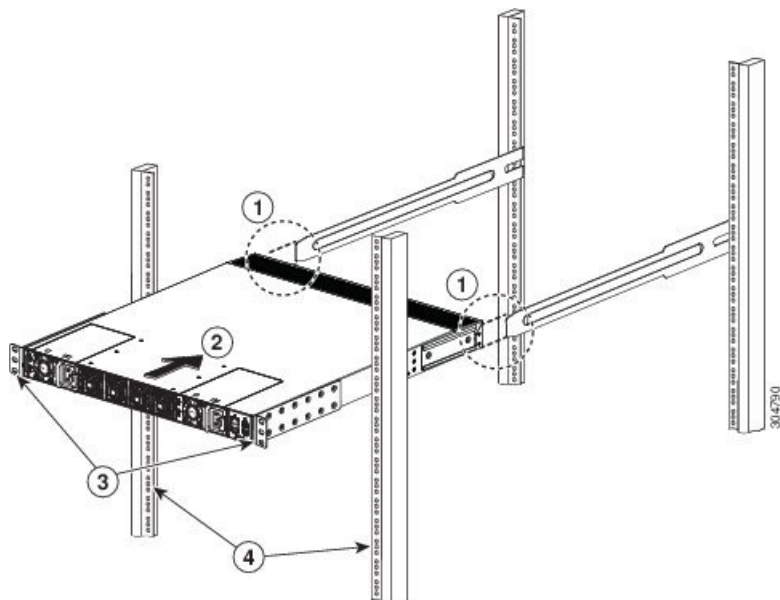
Figure 2: Installing the Slider Rails



Step 4 Insert the chassis into the rack:

- Holding the chassis with both hands, position the two rear rack-mount brackets on the chassis between the two posts that do not have slider rails attached to them (see the following figure).
- 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 glides 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 glides on the slider rails.

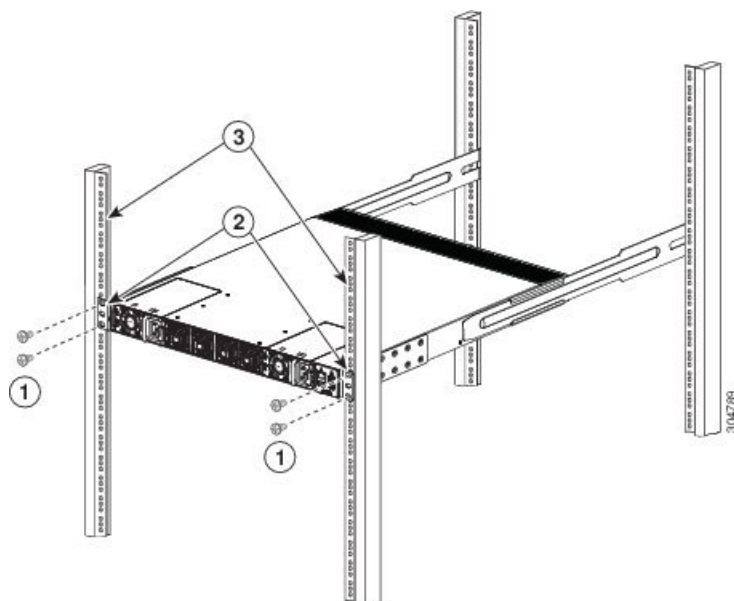
Figure 3: Sliding the Chassis Into the Rack

**Step 5**

Stabilize the chassis in the rack by attaching the front rack-mount brackets to the front rack-mounting rails:

- a) Insert 2 screws (12-24 or 10-32, depending on rack type) in each the two front rack-mount brackets (using a total of four screws) and into the threaded holes in the vertical rack-mounting rail.
- b) Repeat for the front rack-mount bracket on the other side of the chassis.

Figure 4: Attaching the Chassis to the Rack



Grounding the System

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.

Table 2: 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.

Environment	Electromagnetic Noise Severity Level	Grounding Recommendations
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.



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



Note Always ensure that all of the modules are completely installed and that the captive installation screws are fully tightened. In addition, ensure that all I/O cables and power cords are properly seated. These practices are normal installation practices and must be followed in all installations.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damage, which can occur when modules or other devices are improperly handled, results in intermittent or complete failures. Modules consist of printed circuit boards that are fixed in metal carriers. Electromagnetic interference (EMI) shielding and connectors are integral components of the carrier. Although the metal carrier helps to protect the board from ESD, always use an ESD grounding strap when handling modules.

For preventing ESD damage, follow these guidelines:

- Always use an ESD wrist strap and ensure that it makes maximum contact with bare skin.
- ESD grounding straps are available with banana plugs, metal spring clips, or alligator clips. All Cisco UCS 6300 Series Fabric Interconnect chassis are equipped with a banana plug connector (identified by the ground symbol next to the connector) somewhere on the front panel. We recommend that you use a personal ESD grounding strap equipped with a banana plug.
- If you choose to use the disposable ESD wrist strap supplied with most field-replaceable units or an ESD wrist strap equipped with an alligator clip, you must attach the system ground lug to the chassis in order to provide a proper grounding point for the ESD wrist strap.



Note This system ground is also referred to as the network equipment building system (NEBS) ground.

- If your chassis does not have the system ground attached, you must install the system ground lug. See the [Establishing the System Ground, on page 14](#) for installation instructions and location of the chassis system ground pads.



Note You do not need to attach a supplemental system ground wire to the system ground lug; the lug provides a direct path to the bare metal of the chassis.

Before you install the system ground lug, you must correctly attach the ESD wrist strap.

Procedure

- Step 1** Attach the ESD wrist strap to bare skin as follows:
- a) If you are using the ESD wrist strap supplied with the FRUs, open the wrist strap package and unwrap the ESD wrist strap. Place the black conductive loop over your wrist and tighten the strap so that it makes good contact with your bare skin.
 - b) Open the package and remove the ESD wrist strap. Locate the end of the wrist strap that attaches to your body and secure it to your bare skin.
- Step 2** Grasp the spring or alligator clip and momentarily touch the clip to a bare metal spot, such as an unpainted rack rail, to safely dissipate any built-up static charge to the entire rack.
- Step 3** Attach the ESD strap to the system ground in one of the following ways:
- If you are using a wrist strap that is equipped with a plug, insert the plug into an open screw hole used for the grounding lug.
 - If you are using a wrist strap with spring or alligator clips, attach either the spring clip or the alligator clip to the ground lug screw:

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

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

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

In addition, follow these guidelines when handling components:

- Handle carriers by available handles or edges only; avoid touching the printed circuit boards or connectors.

- Place a removed component board-side-up on an antistatic surface or in a static-shielding container. If you plan to return the component to the factory, immediately place it in a static-shielding container.
- Never attempt to remove the printed circuit board from the metal carrier.



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

Establishing the System Ground



Note This 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.
- You do not need to power down the chassis because this device is equipped with AC-input power supplies.

Required Tools and Equipment

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

- Grounding lug—A two-hole standard barrel lug. Supports up to 6 AWG wire. Supplied as part of accessory kit.
- Grounding screws—Two M4 x 8mm (metric) pan-head screws. Supplied as part of the accessory kit.
- Grounding wire—Not supplied as part of accessory kit. The grounding wire should be sized according to local and national installation requirements. Depending on the power supply and system, a 12 AWG to 6 AWG copper conductor is required for U.S. installations. Commercially available 6 AWG wire is recommended. The length of the grounding wire depends on the proximity of the chassis to proper grounding facilities.
- No. 1 Phillips head screwdriver.
- Crimping tool to crimp the grounding wire to the grounding lug.

- Wire-stripping tool to remove the insulation from the grounding wire.

Grounding the Fabric Interconnect

The chassis has a grounding pad with two threaded M4 holes for attaching a grounding lug.

**Warning**

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

**Caution**

We recommend grounding the chassis, even if the rack is already grounded.

**Caution**

All power supplies must be grounded. The receptacles of the AC power cables used to provide power to the chassis must be the grounding type, and the grounding conductors should connect to protective earth ground at the service equipment.

**Warning**

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

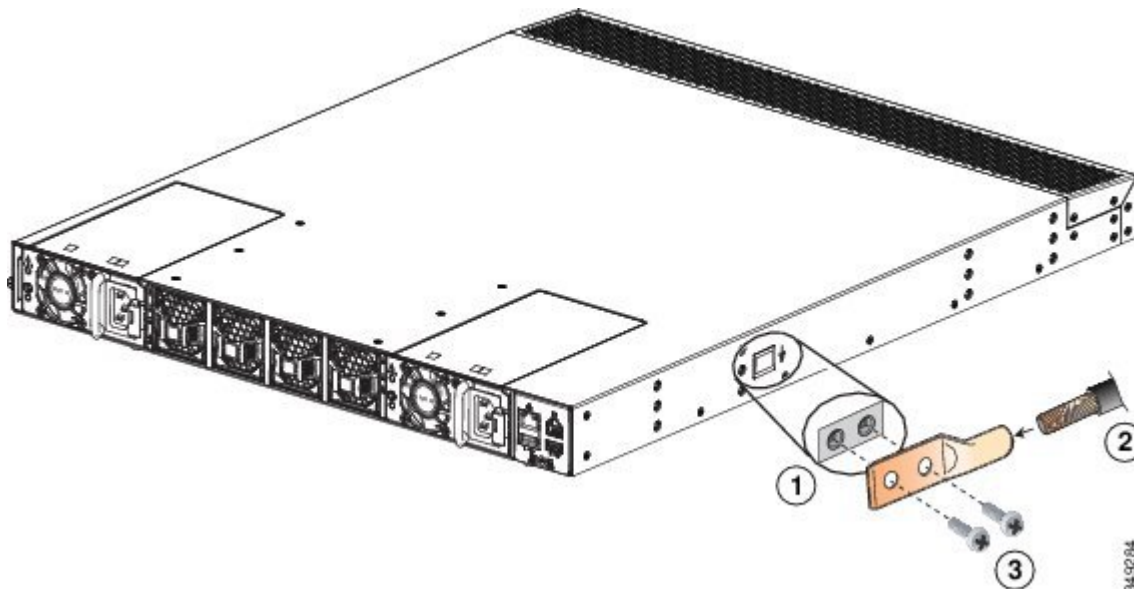
**Caution**

Grounding the chassis 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 chassis 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 chassis.

Figure 5: Connecting the System Ground



Item	Description
1	Grounding Pad
2	Grounding Cable
3	M4 Screws

- 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 with washers 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.

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>



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

Procedure

- Step 1** Verify that empty power supply slots have filler panels installed, the faceplates of all modules are flush with the front of the chassis, and the captive screws of the power supplies, fan module, and all expansion modules are tight.
- Step 2** Verify that the power supply and the fan modules are installed. (See [Replacing or Installing Power Supplies, on page 18](#) if necessary.)
- 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 3** 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, on page 20](#) to correctly wire the DC connector before applying a DC cable.
- Step 4** 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 5** Connect a PC or laptop directly to the console port of the primary or standalone fabric interconnect. In a cluster configuration, the primary will be 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 6** If the fabric interconnect will be running in a cluster with another fabric interconnect, you will need to connect Ethernet cables between the L1 and L2 ports. Port L1 on fabric interconnect A connects to L1 on fabric interconnect B, and Port L2 on fabric interconnect A connects to L2 on fabric interconnect B. If the fabric interconnect and the UCS instance will be in standalone mode this will not be necessary.
- Step 7** Connect the power cable to a power source. The system should power on as soon as you connect the AC power cable, HVDC power cable, or DC power connector.

Step 8 Listen for the fans; they should begin operating when you plug in the power cable.

Step 9 After the system boots, verify that the LED operation is as follows:

- Fan module—Status LED is green.
- Power supply—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.
- The Link LEDs for the Ethernet connector should not be on unless the cable is connected.

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

Step 10 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 11 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 12 Complete the worksheets provided in [Site Preparation Checklist](#) for future reference.

Step 13 Configure the primary fabric interconnect as described in 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>

Step 14 Power up the primary fabric interconnect, connect the terminal to the console port, and configure the secondary fabric interconnect as described in the Cisco UCS Manager *Configuration Guide*.

Replacing or Installing Components



Caution

To prevent ESD damage, wear grounding wrist straps during these procedures and handle modules by the carrier edges only.

Replacing or Installing Power Supplies

The Cisco UCS Fabric Interconnect supports two front-end AC, DC, or HVDC power supplies, but may be used with one power supply. Mixing of AC, DC, or HVDC power supplies is not supported. If you need to replace an existing power supply, follow the procedures that explain how to remove and install power supplies. If you are installing a new power supply where one did not exist before, follow the installation procedure. See [Installing a Power Supply, on page 19](#).



Note You can replace a faulty power supply while the system is operating provided that the other power supply is functioning.

Removing a Power Supply



Caution If you are using the Cisco UCS Fabric Interconnect with one power supply, removing the power supply causes the system to shut down. If you are using two power supplies and you remove one of them, the system continues to operate.

Procedure

- Step 1** Ensure that the system (earth) ground connection has been made.
 - Step 2** Remove the AC power cord, HVDC power cord, or DC wiring connector.
 - Step 3** Grasp the power supply handle with your left hand.
 - Step 4** Push against the release latch with your left thumb and slide the power supply out of the chassis.
 - Step 5** Place your right hand under the power supply to support it while you slide it out of the chassis.
 - Step 6** If you are not replacing the power supply, install a blank power supply filler panel. If you are replacing the power supply, proceed to [Installing a Power Supply, on page 19](#).
-

Installing a Power Supply

Procedure

- Step 1** Ensure that the system (earth) ground connection has been made.
- Step 2** If the power supply bay has a filler panel, press the latches on the sides of the filler panel, and then slide it out of the power supply bay.
- Step 3** Hold the power supply by the handle and position it so that the release latch is on the right, and then slide it into the power supply bay, ensuring that the power supply is fully seated in the bay.
- Step 4** Plug the AC power cable, HVDC power cable, or DC wiring connector into the inlet receptacle at the rear of the chassis. For a DC installation, you should secure the plug to the power supply by tightening both captive screws on the plug.
 - 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 5** Connect the other end of the power cable or cables to a power source. DC sources should connect negative (black wire) and then positive (red wire) connections.

In a system with dual power supplies, connect each power supply to a separate power source. In case of a power source failure, the second source will most likely still be available.

Step 6 Verify power supply operation by checking that the power supply LED is green.

Wiring a DC Power Connector



Warning A readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022



Warning This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations. Statement 1045



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



Warning Installation of the equipment must comply with local and national electrical codes. Statement 1074



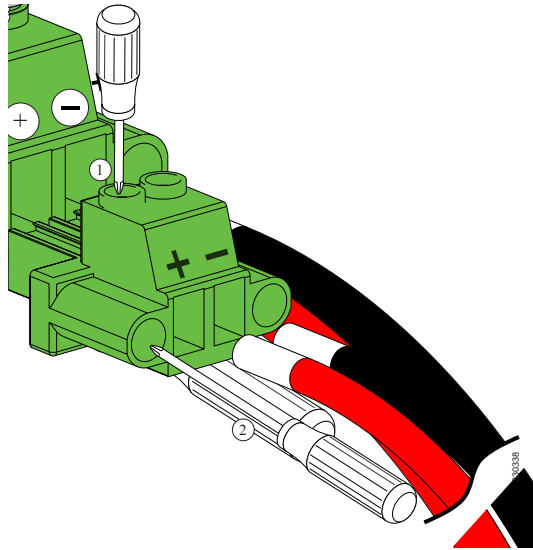
Warning Hazardous voltage or energy may be present on DC power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place. Statement 1075

Before installing a DC power supply to the fabric interconnect, you must attach DC connection wires that you provide (10 GA recommended) to the DC power connector included in the DC power supply's accessory kit.

Procedure

- Step 1** Using a 1/8-inch flat head screwdriver or No. 1 Phillips head screwdriver, loosen the set screws on the connector to freely accept the power wires. The connector will accept 8-24 AWG wires. Use what your local electrical code requires.
- Step 2** Strip 1/2-inch of insulation off the DC wires you will use.
- Step 3** Insert the black (DC negative) wire into the right aperture on the connector and tighten down the connection set screw. Finger tight or about 3 ft./lbs should be sufficient.
- Step 4** Insert the red (DC positive) wire into the left aperture on the connector and tighten down the connection set screw. Do not tighten over 0.51 ft./lbs.

Figure 6: Wiring the DC Power Connector



Fan Modules

Replacing a Fan Module



Warning

When removing the fan tray, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan tray. Statement 258

Procedure

- Step 1** Ensure that the system (earth) ground connection has been made.
- Step 2** Loosen the captive screws on the fan module by turning them counterclockwise, using a flat-blade or number 2 Phillips head screwdriver if required.
- Step 3** Squeeze together the handles of the fan module and pull it outward.
- Step 4** Pull the fan module clear of the chassis and set it down on antistatic foam or place it in an antistatic bag.
- Step 5** Hold the replacement fan module with the LED at the bottom.
- Step 6** Place the fan module into the front chassis cavity so it rests on the chassis. Then push the fan module into the chassis as far as it can go and the captive screw makes contact with the chassis. Tighten the captive screw.
- Step 7** Listen for the fans. If the system is powered on, you should immediately hear them operating. If you do not hear them, ensure that the fan module is inserted completely in the chassis and the faceplate is flush with the outside surface of the chassis.
- Step 8** Verify that the LED is green. If the LED is not green, one or more fans are faulty. If this occurs, contact your customer service representative for a replacement part.

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.

Preparing a Fabric Interconnect for Removal

Removing a standby fabric interconnect is non-disruptive in a redundant Cisco UCS configuration. Removing an active fabric interconnect will cause the standby fabric interconnect to become active with minimal or no disruption.



Caution Be aware that if you remove both the active and standby fabric interconnect, or the sole fabric interconnect from a standalone system, you are shutting down the entire Cisco UCS domain.

Procedure

Step 1 Use Cisco UCS Manager to perform the following tasks:

- a) Back up your Cisco UCS Manager configuration.
- b) Shut down the OS on all servers in the Cisco UCS domain.
- c) Disable the Smart Call Home feature in the Cisco UCS domain.
- d) Decommission every attached chassis in the Cisco UCS domain.

For details, 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>.

Step 2 Power down every attached chassis as described in the [Cisco UCS 5108 Server Chassis Hardware Installation Guide](#).

When powering down and removing clustered fabric interconnects, remove the secondary fabric interconnect first, and then remove the primary fabric interconnect.

Removing a Cisco UCS Fabric Interconnect



Caution The slider rail and front rack-mount brackets do not have a stop mechanism when sliding in and out. If the front of the chassis is unfastened from the rack and the chassis slides forward on the slider rails, it may slip off the end of the rails and fall out of the rack.

Procedure

- Step 1** Ensure that the weight of the Cisco UCS Fabric Interconnect is fully supported and that the chassis is being held by another person.
 - Step 2** Remove the two screws holding the grounding cable to the chassis.
 - Step 3** Disconnect the power cord and the console cables.
 - Step 4** Disconnect all cables that are connected to SFP28 transceivers.
 - Step 5** Remove the screws fastening the front rack-mount brackets to the mounting rails.
 - Step 6** Gently slide the Cisco UCS Fabric Interconnect toward you, off of the slider rails and out of the rack.
-

Removing a Cisco UCS 6332 16-UP Fabric Interconnect



- Caution** The slider rail and front rack-mount brackets do not have a stop mechanism when sliding in and out. If the front of the chassis is unfastened from the rack and the chassis slides forward on the slider rails, it may slip off the end of the rails and fall out of the rack.
-

Procedure

- Step 1** Ensure that the weight of the Cisco UCS 6332 16-UP is fully supported and that the chassis is being held by another person.
 - Step 2** Remove the two screws holding the grounding cable to the chassis.
 - Step 3** Disconnect the power cord and the console cables.
 - Step 4** Disconnect all cables that are connected to SFP+ transceivers.
 - Step 5** Remove the screws fastening the front rack-mount brackets to the mounting rails.
 - Step 6** Gently slide the Cisco UCS 6332 16-UP toward you, off of the slider rails and out of the rack.
-

Replacing a Fabric Interconnect

Use the following procedure when you need to replace a single fabric interconnect with the same model of fabric interconnect.

Use Cisco UCS Manager, either the GUI or the CLI, to perform the software-related tasks mentioned in the following procedure. For additional information, refer to the *Cisco UCS Manager Getting Started Guide*, the *Cisco UCS Manager Infrastructure Management Guide*, and the instructional videos available at this URL: <http://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-manager/products-installation-and-configuration-guides-list.html>

As a best practice, perform a full configuration backup before replacing the fabric interconnect.

- Step 7** Disconnect the cables from the front and back of the fabric interconnect and remove it. Follow the instructions in this section for removing a fabric interconnect.
- Step 8** Install the replacement fabric interconnect. Follow the instructions in this section for installing the fabric interconnect.
- Step 9** Connect the management and console cables to the replacement fabric interconnect.
- Step 10** Connect the L1/L2 cables that were disconnected to the replacement fabric interconnect.
- Step 11** Connect the data cable according to the labels that you created in Step 2.
- Step 12** Connect the power cable to the fabric interconnect and it will automatically boot and run POST tests.

```
---- Basic System Configuration Dialog ----
```

```
This setup utility will guide you through the basic configuration of
the system. Only minimal configuration including IP connectivity to
the Fabric interconnect and its clustering mode is performed through these steps.
```

```
Type Ctrl-C at any time to abort configuration and reboot system.
To back track or make modifications to already entered values,
complete input till end of section and answer no when prompted
to apply configuration.
```

```
Enter the configuration method. (console/gui) ? console
```

```
Installer has detected the presence of a peer Fabric interconnect.
This Fabric interconnect will be added to the cluster. Continue (y/n) ? y
```

```
Enter the admin password of the peer Fabric interconnect:
Connecting to peer Fabric interconnect... done
Retrieving config from peer Fabric interconnect... done
Peer Fabric interconnect Mgmt0 IP Address: 122.255.252.2
Peer Fabric interconnect Mgmt0 IP Netmask: 255.255.255.0
Cluster IP address           : 122.255.252.1
```

```
Physical Switch Mgmt0 IPv4 address : 122.255.252.3
```

```
Apply and save the configuration (select 'no' if you want to re-enter)? (yes/no): yes
Applying configuration. Please wait.
Configuration file - Ok
```

```
Cisco UCS 6300 Series Fabric Interconnect
```

```
FI-B login:
```

- Step 13** If necessary, upgrade the UCS Manager software. If the replacement fabric interconnect is not running the same firmware version as the cluster, the setup utility can upgrade the firmware.

Example:

```
---- Basic System Configuration Dialog ----
```

```
This setup utility will guide you through the basic configuration of
the system. Only minimal configuration including IP connectivity to
the Fabric interconnect and its clustering mode is performed through
these steps.
```

```
Type Ctrl-C at any time to abort configuration and reboot system.
To back track or make modifications to already entered values,
complete input till end of section and answer no when prompted
to apply configuration.
```

```

Enter the configuration method. (console/gui) ? console

Installer has detected the presence of a peer Fabric interconnect.
This Fabric interconnect will be added to the cluster. Continue (y/n) ? y

Enter the admin password of the peer Fabric interconnect:
Connecting to peer Fabric interconnect... done
Retrieving config from peer Fabric interconnect... done
Installer has determined that the peer Fabric Interconnect is
running a different firmware version than the local Fabric.
Cannot join cluster.

Local Fabric Interconnect
  UCSM version      : 3.1(2c)
  Kernel version    : 5.0(3)N2(3.12b)
  System version    : 5.0(3)N2(3.12b)
  local_model_no    : UCS-FI-6332

Peer Fabric Interconnect
  UCSM version      : 3.1(2c)
  Kernel version    : 5.0(3)N2(3.12c)
  System version    : 5.0(3)N2(3.12c)
  peer_model_no     : UCS-FI-6332

Do you wish to update firmware on this Fabric Interconnect to the
Peer's version? (y/n): y
Updating firmware of Fabric Interconnect.....
[ Please don't press Ctrl+c while updating firmware ]

Updating images
Please wait for firmware update to complete.

<output truncated>

Install has been successful.
Firmware Updation Successfully Completed. Please wait to enter the IP address
Peer Fabric interconnect Mgmt0 IPv4 Address: xx.xx.xx.xx
Peer Fabric interconnect Mgmt0 IPv4 Netmask: xx.xx.xx.xx
Cluster IPv4 address      : xx.xx.xx.xx

Peer FI is IPv4 Cluster enabled. Please Provide Local
Fabric Interconnect Mgmt0 IPv4 Address

Physical Switch Mgmt0 IP address : xx.xx.xx.xx

Apply and save the configuration (select 'no' if you want to re-enter)?
(yes/no): yes
Applying configuration. Please wait.

Fri Dec  9 19:57:15 UTC 2016
Configuration file - Ok

```

Step 14 Enter the **show cluster extended-state** command to revalidate the cluster state and verify that HA is ready.

Example:

```

FI-A# show cluster extended-state
Cluster Id: 0x537d0580bf9911e0-0x8955000decd07984

A: UP, PRIMARY
B: UP, SUBORDINATE

```

```
A: memb state UP, lead state PRIMARY, mgmt services state: UP
B: memb state UP, lead state SUBORDINATE, mgmt services state: UP
  heartbeat state PRIMARY_OK
```

```
INTERNAL NETWORK INTERFACES:
eth1, UP
eth2, UP
```

```
HA READY <<<<<<<<<<<<----- HA is READY
Detailed state of the device selected for HA storage:
Chassis 1, serial: FOX1344G1R1, state: active
Chassis 2, serial: FOX1318GDKR, state: active
FI-A#
```

- Step 15** Disable fabric evacuation and verify that traffic is flowing in both fabric interconnects.
- Step 16** Apply the port license to the fabric interconnect.
-

Repacking the Cisco UCS Fabric Interconnect for Return Shipment

If you need to return the fabric interconnect, remove the chassis from the rack by following the steps in [Removing a Cisco UCS Fabric Interconnect, on page 22](#), and repack it for shipment. If possible, use the original packing materials and container to repack the chassis. Contact your Cisco customer service representative to arrange for return shipment to Cisco.

