Installing a Chassis

Installing a Rack or Cabinet

Before you install the switch, you must install a standard four-post, 19-inch (48.3 cm) EIA data center rack (or a cabinet that contains such a rack) that meets the requirements listed in Rack and Cabinet Requirements.

Warning **Statement 1048—**Rack Stabilization

Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Warning **Statement 1018—**Supply Circuit

Take care when connecting units to the supply circuit so that wiring is not overloaded.

Step 1 Bolt the rack to the subfloor before moving the chassis onto it.

Step 2 If the rack has bonded construction, connect it to the earth ground. This action enables you to easily ground the switch and its components and to ground your electrostatic discharge (ESD) wrist strap to prevent discharge damage when you handle ungrounded components during installation.

Step 3 If you need access to the source power at the rack, include AC power receptacles with the amperage required by the switch that you are installing.

Note If you are using the combined power mode or power-supply redundancy, you need only one power source. If you are using input-source redundancy, you need two power sources.

Unpacking and Inspecting a New Switch

Before you install a new chassis, you need to unpack and inspect it to be sure that you have all the items that you ordered and verify that the switch was not damaged during shipment.

Caution When you handle the chassis or its components, you must follow ESD protocol at all times to prevent ESD damage. This protocol includes but is not limited to wearing an ESD wrist strap that you connect to the earth ground.

Tip Do not discard the shipping container when you unpack the switch. Flatten the shipping cartons and store them with the pallet used for the system. If you need to move or ship the system in the future, you will need these containers.

Step 1 Compare the shipment to the equipment list that is provided by your customer service representative and verify that you have received all of the ordered items. The shipment should include boxes for the following:

- Switch accessory kit

  To see a list of what is included in this kit, see Accessory Kit Contents .

Step 2 Check the contents of each box for damage.

Step 3 If you notice any discrepancies or damage, send the following information to your customer service representative by email:

- Invoice number of the shipper (see the packing slip)
- Model and serial number of the missing or damaged unit
- Description of the problem and how it affects the installation

Installing the Bottom-Support Rails

The bottom-support rails support the weight of the switch chassis in the rack or cabinet. To maximize the stability of the rack, you must attach these rails at the lowest possible rack unit (RU).

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.

Before You Begin

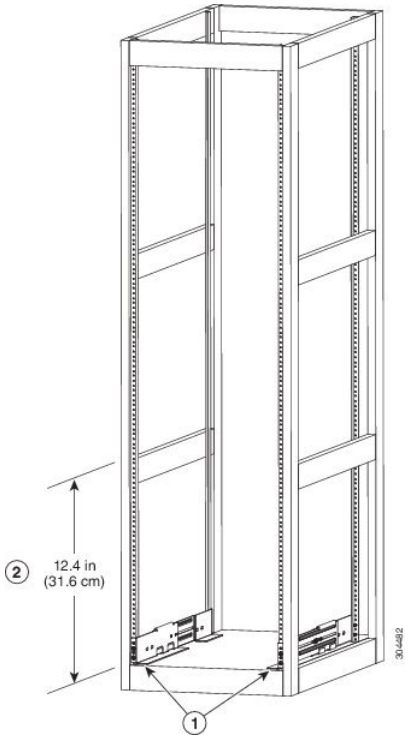
Before you can install the bottom support rails for the chassis, you must do the following:

- Verify that a four-post rack or cabinet is installed and secured to the concrete subfloor (see Installing a Rack or Cabinet).
- If any other devices are stored in rack or cabinet, verify that they are located below where you plan to install the switch. Also, verify that lighter devices in the same rack are located above where you plan to install this switch.
- Verify that the bottom-support rails kit is included in the switch accessory kit (see Unpacking and Inspecting a New Switch).

Step 1 Position one of the two adjustable bottom-support rails at the lowest possible RU in the rack or cabinet and adjust the length of each rail so that it stretches from the outer edges of the front and rear vertical mounting rails on the rack. Be sure there is at least 7.1 RU (12.4 in [31.6 cm]) of vertical space above the rails to install the chassis (see the following figure).

You can expand the rail so that its mounting brackets are spaced between 24 to 32 inches (61.0 to 81.3 cm).

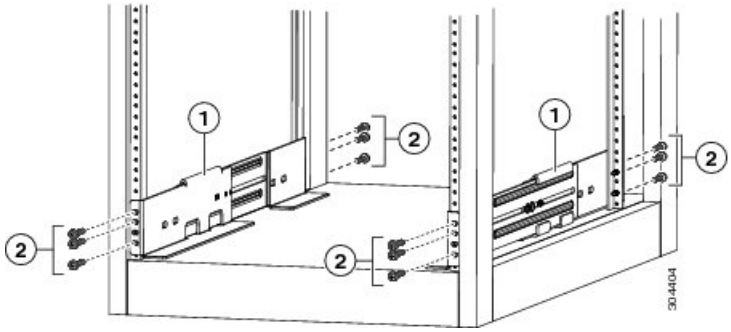
Figure 1: Positioning the Bottom-Support Rails



1	Position two bottom-support rails at the lowest RU on the rack.	**2**	Allow at least 7.1 RU (12.4 in [31.6 cm]) for each chassis.

Step 2 Attach the bottom-support rail to the rack or cabinet using a Phillips torque screwdriver on three M6 x 19 mm or 12-24 x 3/4 inch screws for each end of the rail (using a total of 6 screws for the rail as shown in the following figure) and tighten each screw to 40 in-lbs (4.5 N.m) of torque.

Figure 2: Attaching Bottom-Support Rails to a Rack



1	Adjustable bottom-support rails (2)	2	M6 x 19 mm (or 12-24 x 3/4 in.) Phillips screws (at least 6 per rail)

Note Use at least three screws on each end of each bottom-support rail.

Step 3 Repeat Steps 1 and 2 to attach the other bottom-support rail to the rack.

Note Make sure that the two bottom-support rails are level with one another. If they are not level, adjust the higher rail down to the level of the lower rail.

What to Do Next

When the bottom-support rails are installed at the lowest possible RU and are level, you are ready to install the chassis in the rack or cabinet.

Installing a Chassis in a Rack or Cabinet

Before You Begin

Verify each of the following:

- The chassis shipment is complete and undamaged.
- A four-post rack or cabinet is installed and secured to the concrete subfloor.

Warning **Statement 1048—**Rack Stabilization

Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

- The bottom-support rails have been attached to the lowest possible RU in the rack or cabinet and there is 7.1 RU (12.4 in [31.6 cm]) of space above the rails to install the chassis.
- If there are other devices in the rack, ensure that the heavier devices are installed below where you are going to install the chassis.
- The data center ground is accessible where you are installing the chassis.
- You have the following tools and equipment:
  - Mechanical lift capable of lifting the full weight of the chassis (a maximum of 255 pounds [116 kg]) and its installed modules
  - Phillips-head torque screwdriver
  - Bottom-support rails kit (shipped with the accessory kit)

    Part of this kit has already been used to install the bottom-support rails. You should still have at least 12 12-24 x 3/4-inch or M6 x 19 mm Phillips screws, which are required for attaching the chassis to the rack.

Note You should also have at least two persons to push the chassis and one person to guide the chassis when you slide it into the rack.

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 1074—**Comply with Local and National Electrical Codes

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

Step 1 If you need to make the chassis as light as possible for moving, remove the following modules and place them where their connectors will not be damaged:

- Power supplies—For each power supply, press and hold the eject lever, and use the handle on the front of the power supply to pull the power supply out of the chassis.
- Fan trays—Unscrew the four captive screws, and use the two handles on the fan tray to pull the fan tray out of the chassis.
- Fabric modules—For each fabric module, keep your face at least 12 inches (30 cm) away from the modules, press both eject buttons on the front, rotate both levers away from the front of the module, use the levers to pull the module out of the chassis.

Step 2 Load the chassis onto a mechanical lift as follows:

a) Position the mechanical lift next to the shipping pallet that holds the chassis.
b) Elevate the lift platform to the level of the bottom of the chassis (or no more than 1/4 inch [0.635 cm] below the bottom of the chassis).
c) Use at least two persons to slide the chassis fully onto the lift so that the side of the chassis touches or is close to the vertical rails on the lift. Make sure that the front and rear of the chassis are unobstructed so you can easily push the chassis into 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.

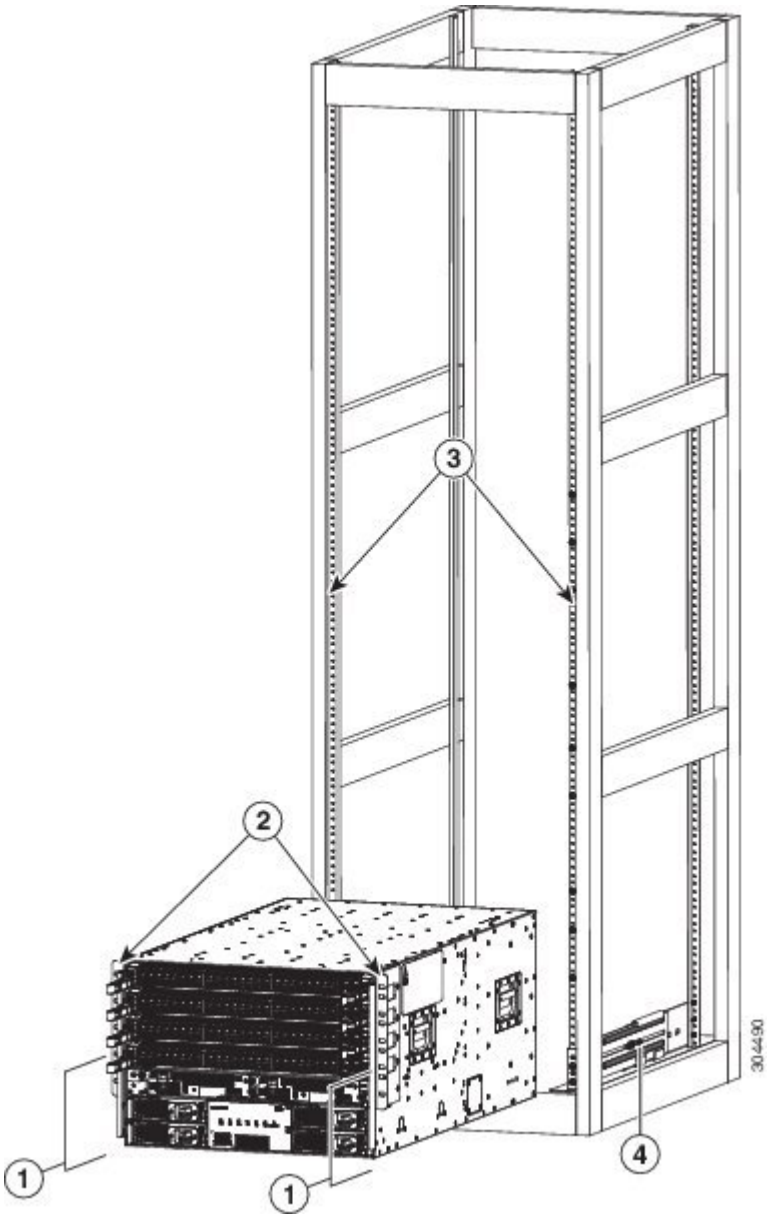
Note To lift the chassis, use a mechanical lift. Do not use the handles on the side of the chassis (the handles are not rated for lifting over 200 pounds [91 kg]). Use the side handles for only repositioning the chassis after it is already on the mechanical lift or in the rack or cabinet.

Step 3 Use the mechanical lift to move and align the rear of the chassis to the front of the four-post rack or cabinet.
Make sure that the bottom of the chassis is elevated to the height of the bottom-support rails or no more than 1/4 inch (0.6 cm) above the bracket.

Step 4 Push the chassis halfway onto the rack or cabinet.
Use at least two persons to push the chassis onto the bottom-support rails and one person to guide the chassis down the center of the rails. Push the lower half of the front side of the chassis so that the back side enters the rack first, and push

until the chassis is halfway onto the rack (see the following figure). Ensure that the chassis does not get caught on any of the expansion edges of the bottom-support rail.

Figure 3: Moving a Chassis onto a Rack or Cabinet



1	Push the sides of the lower half of the front side of the chassis.	3	Rack vertical mounting rails on the rack.
2	Chassis mounting brackets.	4	Bottom support rails

Tip To adjust the placement of the chassis on the bottom-support rails, you can use the chassis handles (see Callout 1 in the following figure).

Step 5 If the mechanical lift is raised above the height of the bottom-support rails, gently lower it to the level of the rails or no more than 1/4 inch (0.6 cm) below the rails.
This action helps to prevent the bottom of the chassis from getting caught on the expansion edges of the bottom-support rail.

Step 6 Push the chassis all the way onto the rack so that the vertical mounting brackets on the front of the chassis come in contact with the vertical mounting rails on the rack.

Step 7 Use six M6 x 19 mm or 24 x 3/4-inch screws to attach each of the two chassis vertical mounting brackets to the two rack vertical mounting rails (total of 12 screws).

What to Do Next

After you have secured the chassis to the rack, you can connect the chassis to the data center ground.

Grounding the Chassis

The switch is grounded when you connect the chassis and the power supplies to the earth ground in the following ways:

- You connect the chassis (at its grounding pad) to either the data center ground or to a fully-bonded and grounded rack.

Note The chassis ground connection is active even when the AC power cables are not connected to the system.

- You connect the AC power supplies to the earth ground automatically when you connect an AC power supply to an AC power source.

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

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

Before You Begin

Before you can ground the chassis, you must have a connection to the earth ground for the data center building. If you installed the switch chassis into a bonded rack (see the rack manufacturer's instructions for more information) that now has a connection to the data center earth ground, you can ground the chassis by connecting its grounding pad to the rack. Otherwise, you must connect the chassis grounding pad directly to the data center ground.

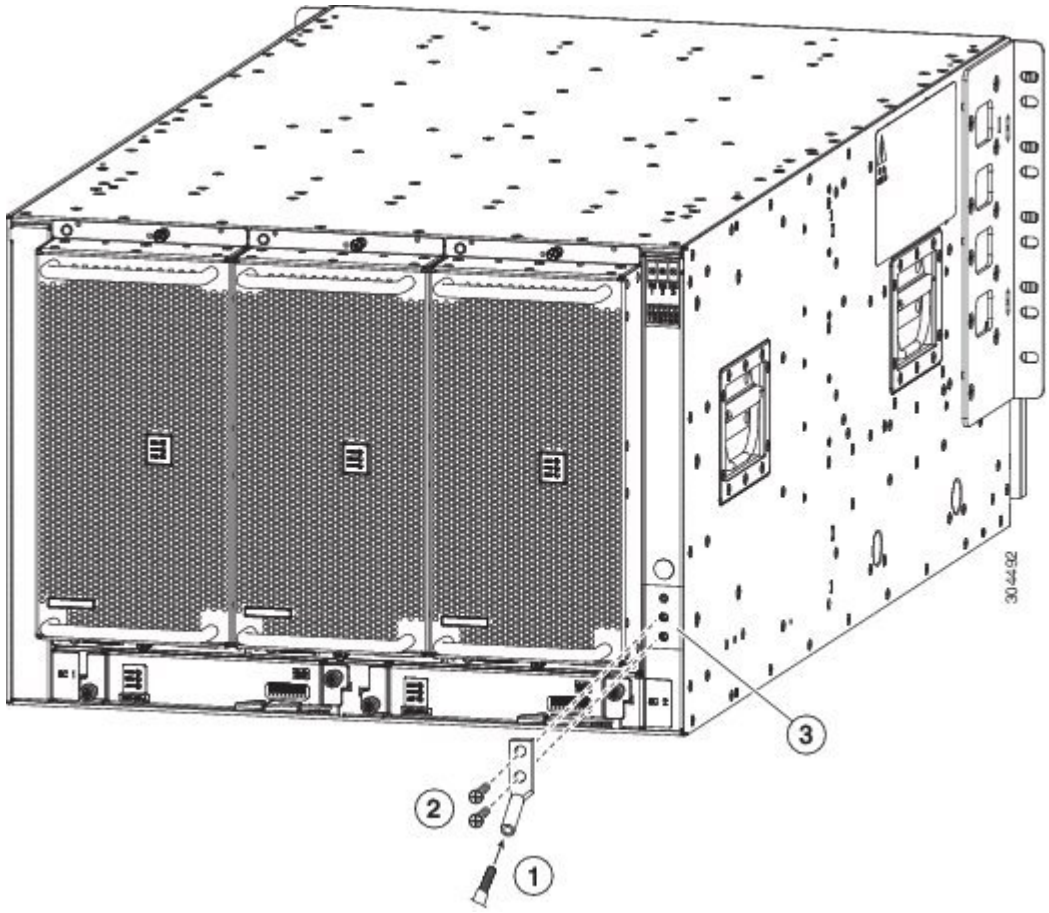
To connect the switch chassis to the data center ground, you need the following tools and materials:

- Grounding lug—A two-holed standard barrel lug that supports up to 6 AWG wire. This lug is supplied with the accessory kit.
- Grounding screws—Two M4 x 8 mm (metric) pan-head screws. These screws are shipped with the accessory kit.
- Grounding wire—Not supplied with the accessory kit. This wire should be sized to meet 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. We recommend that you use commercially available 6 AWG wire. The length of the grounding wire depends on the proximity of the switch to proper grounding facilities.
- Number 1 Phillips-head torque screwdriver.
- Crimping tool to crimp the grounding wire to the grounding lug.
- Wire-stripping tool to remove the insulation from the grounding wire.

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.

Step 2 Insert the stripped end of the grounding wire into the open end of the grounding lug, and use a crimping tool to crimp the lug to the wire (see Callout 2 in 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.

Figure 4: Grounding a Cisco Nexus 9504 Chassis



1	Chassis grounding pad	3	Two M4 screws used to secure the grounding lug to the chassis
2	Grounding cable, with 0.75 in. (19 mm) of insulation stripped from one end, inserted into the grounding lug and crimped in place		

Step 3 Secure the grounding lug to the chassis grounding pad with two M4 screws (see Callouts 1 and 3 in the previous figure), and tighten the screws to 12 in-lb (1.36 N·m) of torque.

Step 4 Prepare the other end of the grounding wire and connect it to an appropriate grounding point in your site to ensure an adequate earth ground for the switch. If the rack is fully bonded and grounded, connect the grounding wire as explained in the documentation provided by the vendor for the rack.

Connecting the Switch to an AC Power Source

You turn on the switch as soon as you connect its AC power supplies to one or two AC power sources.

Warning **Statement 1004—**Installation Instructions

Read the installation instructions before connecting the system to the power source.

Warning **Statement 1018—**Supply Circuit

Take care when connecting units to the supply circuit so that wiring is not overloaded.

Before You Begin

Before you can turn on the switch, you must ensure the following:

- The switch has enough power supplies to output the power required for all of the modules installed in the switch. Depending on the power mode that you use for the switch, you need to consider the following:
  - For combined power mode (no power redundancy), there must be enough power supplies to power all of the modules in the chassis (no extra power supplies are needed for redundancy). A maximum of two power supplies are needed.
  - For power supply redundancy (*n*+1) mode, there must be enough power supplies to power all of the modules in the chassis and there must be one extra power supply to provide redundancy if one power supply goes down or is replaced. The maximum number of power supplies needed is the number used for combined power mode plus one (*n*+1) for redundancy.
  - For input-source redundancy (*n*+*n*) mode, there must be two equal sets of power supplies, each of which can power all of the modules in the chassis and is connected to a separate power source. If one power source goes down, the power supplies connected to the other power source can power the switch. The maximum number of power supplies is the number of power supplies required for combined power plus the same number of power supplies (*n*+*n*) for redundancy.
- The power supplies are installed in the appropriate chassis slots as follows:
  - For combined power mode or power-supply redundancy mode, the power supplies can be installed in any power supply slot in the chassis.
  - For input-source redundancy mode, the power supplies must be divided into two equal sets and installed as follows:

- Slots 33 and 34 (labeled as PS 1 and PS 2) must be connected to one grid (Grid A)
- Slots 35 and 36 (labeled as PS 3 and PS 4)must be connected to another grid (Grid B)

Step 1 For each power supply, connect an AC power cable to the AC power source and to the power receptacle on the power supply.

Step 2 Verify that the Output Power LED turns on and becomes green.

What to Do Next

When the power supplies are operating and the switch is fully powered, you are ready to connect the switch to the network.