



Installing the Cisco cBR Series Converged Broadband Routers

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Installing the Cisco cBR Chassis

Installation Methods

The Cisco cBR-8 router can be either mounted on the rack at the front or in the middle. Also, you can mount the router on a standard 19-inch-wide four-post equipment rack unit or a two-post rack unit.



Note The Cisco cBR-8 router is usually shipped fully loaded. The fully configured system weighs approximately 430 lb. You must remove the components from the chassis to make the chassis lighter for the rack installation. Remove all power supplies, supervisor cards, line cards, rear PIC cards, and fan modules, before rack-mounting to reduce the weight to approximately 117 lb. For instructions on how to remove the components, see the monitoring sections.



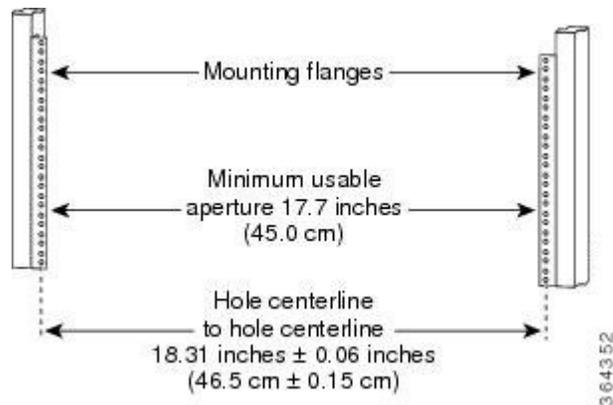
Note Make sure that you place the cards and modules in an anti-static bag until you install the chassis in the rack.

Verifying Rack Dimensions

Before you begin

Before you install the chassis, measure the space between the vertical mounting flanges (rails) on your equipment-rack to verify that the rack conforms to the measurements shown in the following figure.

Figure 1: Equipment Rack Dimensions



Procedure

Step 1 Mark and measure the distance between two holes on the left and right mounting rails.

The distance must measure 18.31 inches \pm 0.06 inches (46.5 cm \pm 0.15 cm).

Note Measure the pairs of holes near the bottom, middle, and top of the equipment-rack to ensure that the rack posts are parallel.

- Step 2** Measure the space between the inner edges of the left front and right front mounting flanges on the equipment rack. The space must be at least 17.7 inches (45 cm) to accommodate the chassis which is 17.45 inches (44.3 cm) wide and fits between the mounting posts on the rack.

What to do next

[Install chassis installation brackets.](#)

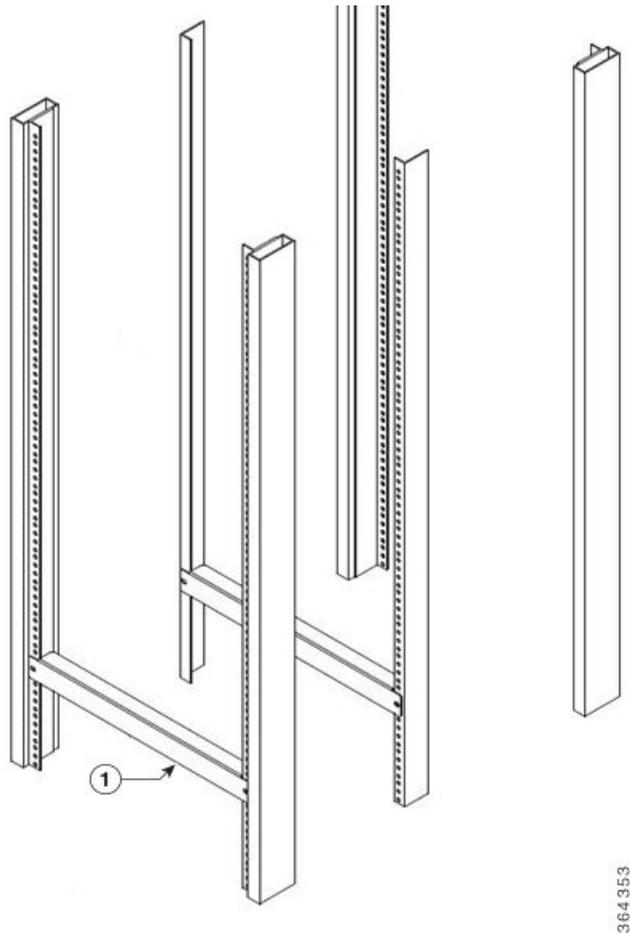
Installing Chassis Installation Brackets

Each chassis is shipped with two chassis installation brackets in the accessory kit. These brackets aid in installing a chassis into a 19-inch rack. These brackets are used as a support base to vertically position and set the chassis before installing the rack mount screws.

Procedure

- Step 1** Determine the position in the rack where you want to mount the chassis. If you are mounting more than one chassis in the rack, start from the bottom or the center of the rack. Hold the chassis installation bracket, where the bottom of the chassis will be positioned vertically in the rack.
- Step 2** Secure the chassis installation bracket to the front rails with rack-mount screws. If a second internal rack rail is present which is not more than 23 inches from the front rail, position the second installation bracket to create a rear support for the chassis during installation.

Figure 2: Chassis Installation Bracket



1	Chassis Installation Bracket
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Note After you install the chassis and secure it to the rack, remove the chassis installation brackets from the rack. The chassis does not need these brackets for supporting the weight, after all rack mount screws are secured.

Attaching the Chassis Rack-Mount Brackets

Before installing the chassis in the rack, you must install the rack-mount brackets on each side of the chassis.



Note After you install the chassis rack-mount brackets and mount the chassis in the rack, the rear RF cable-management brackets are installed on the chassis.

Attach the rack-mounting brackets either in the front or the middle of the chassis.

- Front Rack-Mount Bracket Installation—The chassis is shipped with the rack-mount brackets installed in the front. Proceed to [installation of the chassis in the rack](#).
- Middle Rack-Mount Bracket Installation—Install the mounting bracket in the middle of the chassis, so that you can recess the chassis in the rack or install the chassis in a two-post rack unit.



Note If the chassis is mid-mounted, you cannot install the chassis installation handle.

To install the rack-mount brackets in the middle of the chassis, complete the following steps:

Before you begin

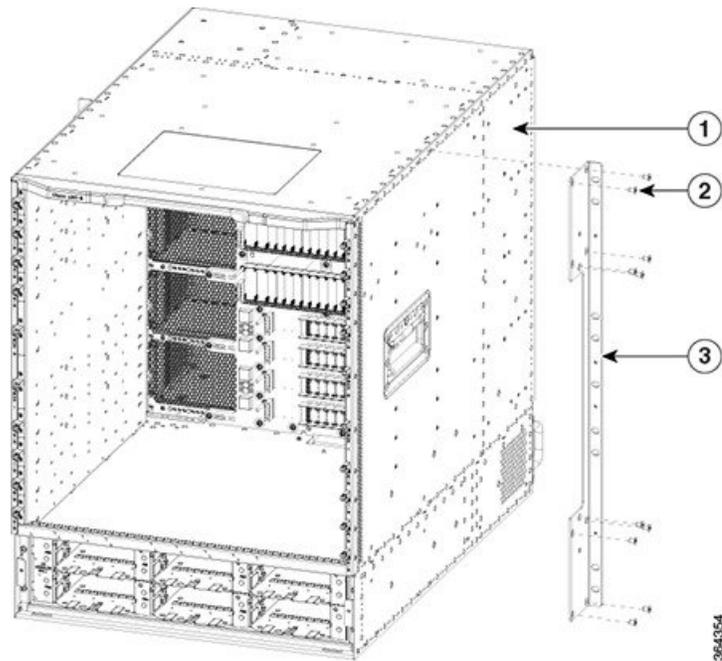
Required Tools and Equipment

- #2 Phillips torque screwdriver

Procedure

- Step 1** Remove the rack-mount brackets installed in the front of the chassis by unscrewing the M5 undercut flat-head screws using a #2 Phillips torque screwdriver.
- Step 2** Locate the threaded holes at the middle on the side of the chassis that align with the holes in the rack-mount bracket.
- Step 3** Install the 10 M5 undercut flat-head screws to secure each rack-mounting bracket to the chassis.
Secure five screws on each end of the rack-mounting bracket.
- Step 4** Repeat the steps 1, 2, and 3 on the other side of the chassis.

Figure 3: Installing Rack-Mount Bracket



1	Chassis	3	Rack-Mount Bracket
2	M5 undercut flat-head screws		

What to do next

[Install the chassis installation handle.](#)

Installing the Chassis Installation Handle (Optional)

Before you begin

Required Tools and Equipment

- #2 Phillips screwdriver

Restrictions

Do not install the chassis installation handle if the chassis must be mid-mounted in the rack.

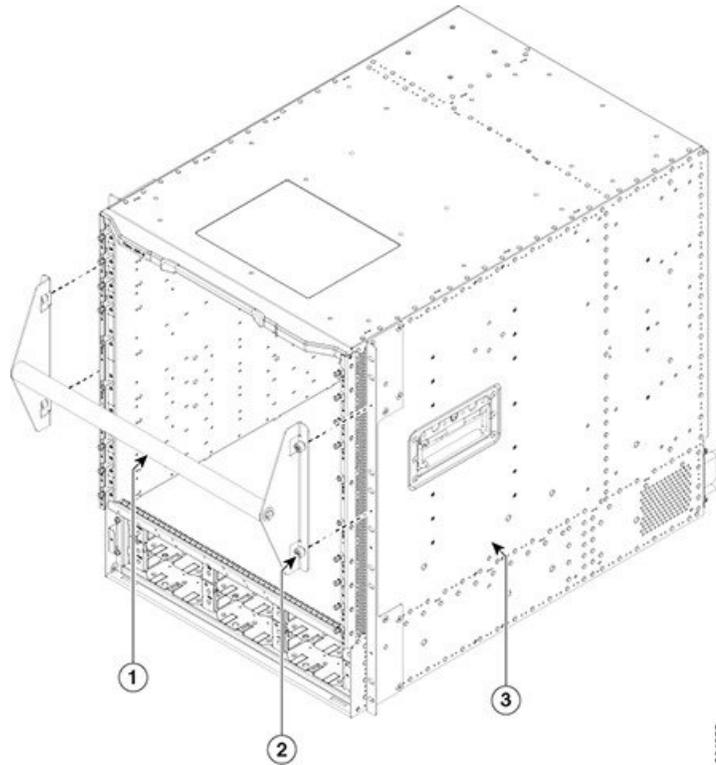
Procedure

Step 1 Locate two M5 threaded holes on each chassis rack mount bracket that align with the chassis lifting handle captive screw holes.

Step 2 Align and hold the chassis lifting handle screw holes with the M5 threaded holes. Insert the captive screws and tighten them using a #2 Phillips screwdriver.

Caution Ensure that the captive screws are tightly secured, before loading the handles, to prevent injury or damage to the chassis.

Figure 4: Attaching the Chassis Installation Handles to the Cisco CBR-8 Router



1	Chassis Installation Handle	3	Chassis
2	Captive Screw		—

The rack mount brackets support both low and high installation of the handles. It facilitates low or high chassis installation in the rack.

What to do next

[Install the Cisco cBR-8 router in the rack.](#)

Installing the Cisco cBR-8 in a Rack

You can install the chassis in either a [four-post rack unit](#) or a [two-post rack unit](#).

Before you begin

1. [Verify rack dimensions.](#)
2. [Install chassis installation brackets.](#)
3. [Attach the chassis rack-mount brackets.](#)
4. [Install the chassis installation handle](#) (optional).



- Warning** To prevent physical 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:
- If you have to mount only one unit in the rack, mount it at the bottom of 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.

Procedure

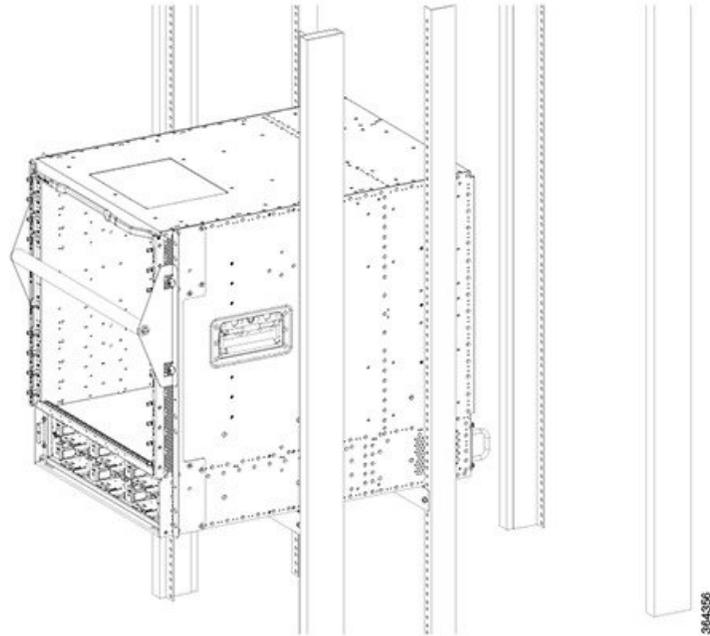
	Command or Action	Purpose
Step 1	Rack mount the chassis by securing the rack-mount brackets to two posts or mounting strips in the rack.	Use at least four rack-mount screws on each side to fasten the two rack-mount brackets to the rack posts because the rack-mount brackets support the weight of the entire chassis.

Installing the Cisco cBR in a Four-Post Rack

Procedure

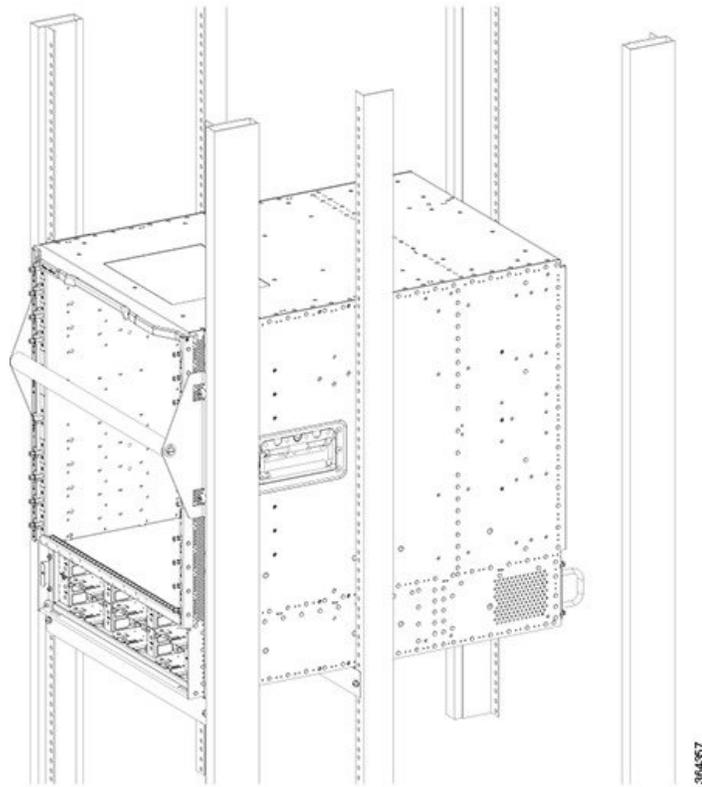
- Step 1** Ensure that all screw-fasteners on the installed components are securely tightened on the chassis.
- Step 2** Ensure that your path to the rack is unobstructed.
- If the rack is on wheels, ensure that the brakes are engaged or the rack is stabilized.
- Step 3** With two or more people, lift the chassis (partially unloaded) into position between the rack posts and rest it on the chassis installation bracket.
- The chassis can be lifted using the installation handle, the two large side handles, the handles at the rear Power entry area, or by placing your hands under the bottom of the chassis. With the installation handle installed, you can tilt up the chassis in the front to get your hands underneath the chassis.

Figure 5: Lifting the Chassis into Position



- Step 4** After the rear weight of the chassis is resting on the installation bracket, one person can hold it in place when the second person moves to the rear of the rack to slide it into place and hold the weight while the rack mount screws are tightened.
- Step 5** Position the chassis until the rack-mounting flanges are flush against the mounting rails on the rack.

Figure 6: Flushing Against Mounting Rails



- Step 6** Hold the chassis in position against the mounting rails and do the following:
- Insert a bottom screw into the rack mount ear on each side and use a hand-held screwdriver to tighten the screw to the rack rail.
 - Insert a top screw into each side rack mount bracket and tighten the screw to the rack rail.
- Insert a minimum of four screws per bracket on both sides of the chassis.
- Note** Remove the chassis installation handle before installing the fourth screw.

What to do next

- If necessary, remove the chassis installation brackets after ensuring that all screws are tightly secured to the rack unit.
- [Attach the cable management bracket.](#)

Installing the Cisco cBR in a Two-Post Rack

You can install the Cisco cBR chassis in a two-post 19-inch (48.26 cm) rack either as a front mount or a mid-mount.

The procedure for front mounting a chassis in a two-post rack is similar to the procedure for front mounting in a four-post rack, except that you cannot use the second chassis installation bracket.



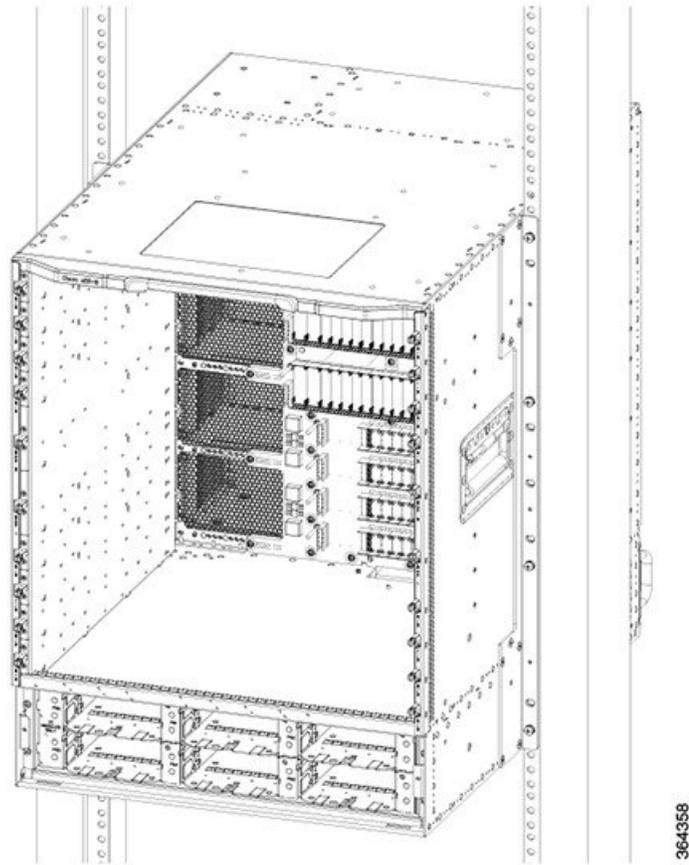
Caution If you are using a two-post rack, secure the rack to the floor surface to prevent tipping and physical injury, and avoid damage to the component.

To mid-mount the chassis, follow these steps:

Procedure

- Step 1** Ensure that all screw fasteners on the installed components are securely tightened on the chassis.
- Step 2** Ensure that your path to the rack is unobstructed.
- If the rack is on wheels, ensure that the brakes are engaged or the rack is otherwise stabilized.
- Step 3** (Optional) Install the chassis installation bracket into the rack to support the chassis during installation when you secure it to the rack.
- Step 4** With two or more people, lift the chassis (partially unloaded) into position between the rack posts and rest it on the chassis installation bracket.
- The chassis can be lifted using the two large side handles. You can also use the handles at the rear Power entry area or by placing your hands under the chassis.
- Step 5** After the rear weight of the chassis is resting on the installation bracket, one person can hold it in place while the second person moves to the rear of the rack to help slide it into place and hold the weight while the rack mount screws are tightened.
- Step 6** Position the chassis until the rack-mounting flanges are flush against the mounting rails on the rack.
- Step 7** Hold the chassis in position against the mounting rails and do the following:
- Insert a bottom screw into the rack mount ear on each side and use a hand-held screwdriver to tighten the screw to the rack rail.
 - Insert a top screw into each side rack mount bracket and tighten the screw to the rack rail.
 - Insert a minimum of four screws per bracket on both sides of the chassis.
- Step 8** Ensure that all screws on each of the side rack-mount brackets are tightened to the equipment rack before the chassis installation bracket is removed from the rack.

Figure 7: Two-Post Rack Mounting



What to do next

[Attach the cable management bracket.](#)

Attaching the Cable-Management Brackets

The rear RF cable-management brackets mount to the right rear side of the chassis to provide cable-management to coaxial cables exiting the RF PIC modules. These brackets provide a reference configuration that allows installation and removal of cables and modules in the rear of the chassis.

Each RF cable-management bracket for the Cisco cBR chassis contains four independent U-type cable-management provisions, with two captive screws for attaching to the chassis, and provides cable dressing of each RF PIC cardslot.

Before you begin

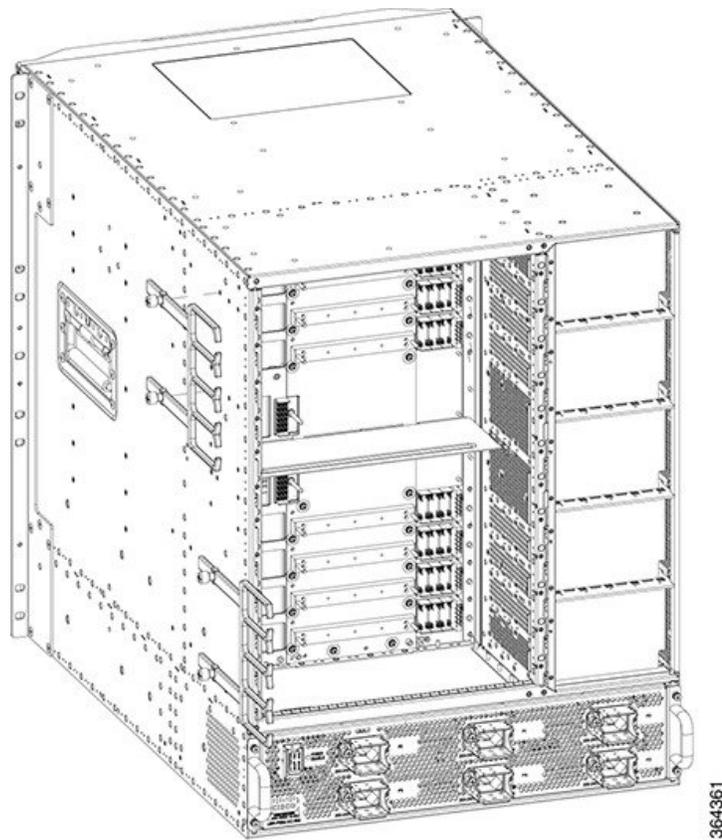
Required Tools and Equipment

- #2 Phillips torque screwdriver

Procedure

- Step 1** Align the cable-management bracket captive screws to the captive nuts on the right rear side panel of the chassis. There are multiple positions that allow you to determine the position of the bracket that best suits your installation.
- Step 2** If the captive screws are accessible, use a #2 Phillips torque screwdriver to secure them to the chassis. Else, tighten the knurled captive screws using your fingers.
- Note** Do not over tighten the cable-management captive screws when using a #2 Phillips torque screwdriver. Torque must not exceed 7 in-lb.

Figure 8: Installing the Cable-Management Brackets



Attaching the Fiber or Cable Routing Guide on Chassis

The fiber or cable routing accessories are made up of the following components:

- 2 strap-down clips
- 4 snap-on plastic fiber or cable routing guides—With upper-slot for fiber and lower slot for copper cables

The strap-down clips have multiple uses. They can be used for the following purposes:

- Strap down cable bundles or conduit (there are multiple tie-down points on each strap-down clip).
- A base for two snap-on plastic fiber or cable routing guides.

Before you begin

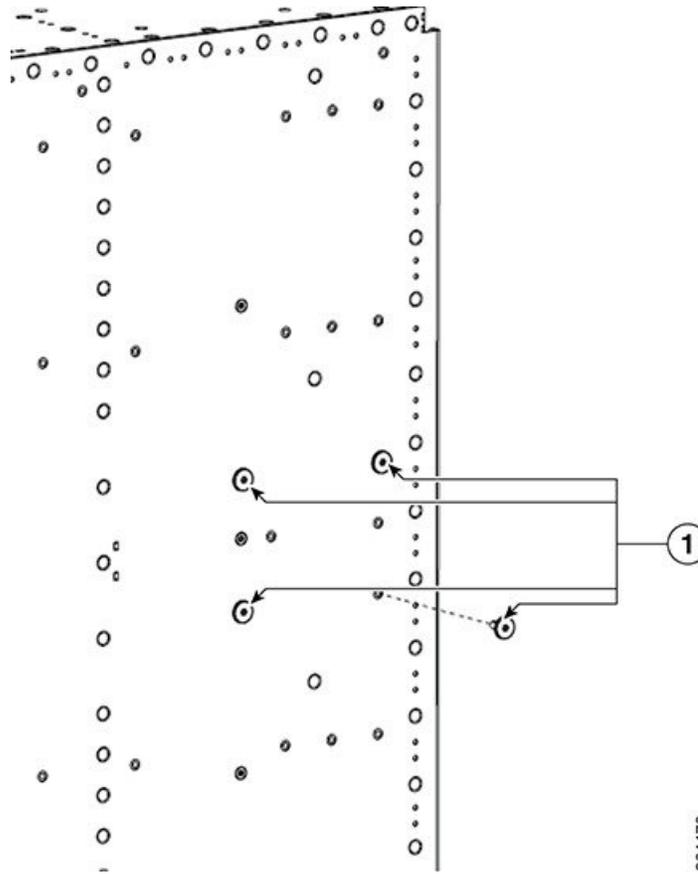
Required Tools and Equipment

- 4 knurled retaining screws
- T15 Torx driver (optional)
- 2 strap-down clips
- 4 snap-on plastic cable routing guides

Procedure

Step 1 Insert the four knurled retaining screws on the side of the chassis and tighten them using a T15 Torx driver (up to a torque of 6 to 8 in-lb).

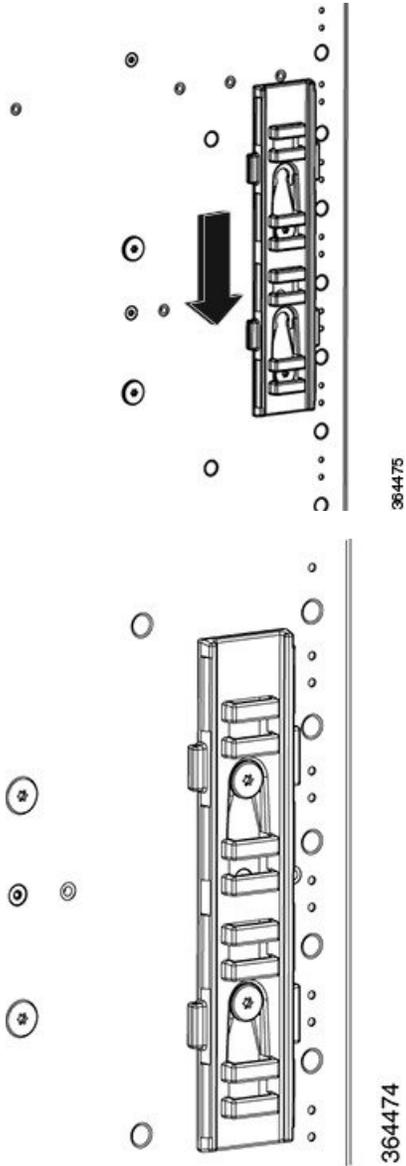
If the screw location is not accessible for a driver, you can tighten the knurled screws by hand.



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1	Knurled retaining screws		—
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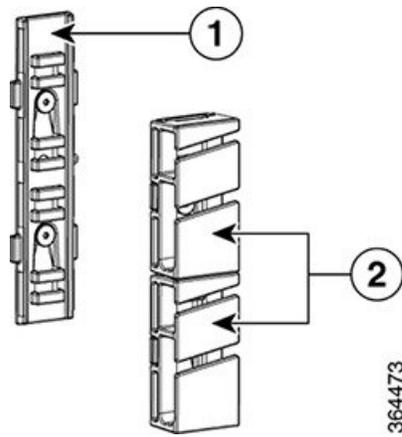
Step 2 Align the slots on the strap-down clip with the knurled screws installed on the chassis and push down until it snaps in place.



Step 3 Repeat [Step 2, on page 15](#) for the other strap-down clip.

Step 4 Attach the snap-on plastic guides on the strap-down clip, as necessary.

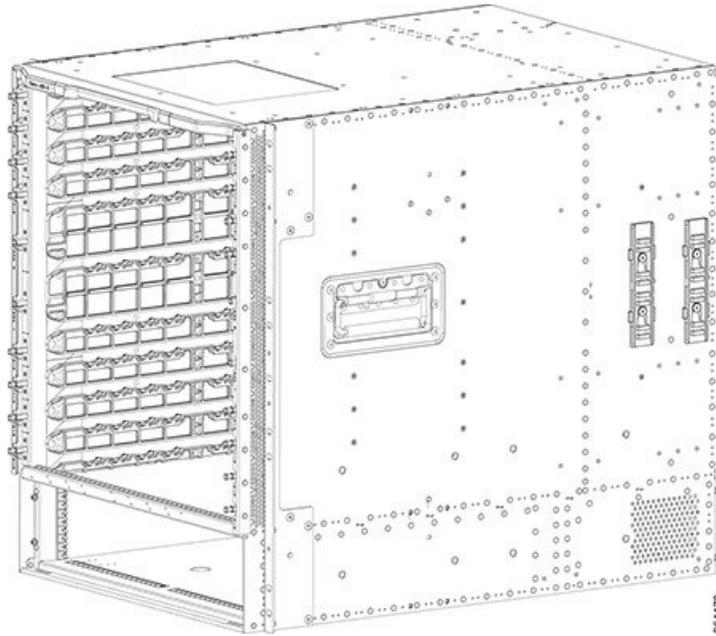
Note Ensure that the orientation of the fiber or cable routing guide is proper by placing the smaller slot used for fiber on the top.



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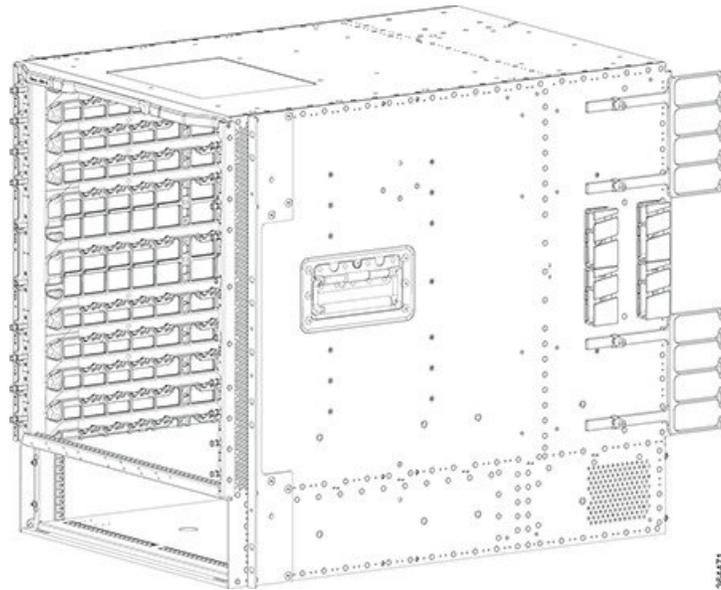
1	Strap-Down Clip	2	Snap-on Plastic Fiber or Cable Routing Guide
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Figure 9: Chassis with Strap-Down Clips



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Figure 10: Chassis with Fiber or Cable Routing Guides and RF Cable Management Brackets



Attaching a Chassis Ground Connection

Before you begin



Warning This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. **Statement 1024**

Before you connect the power or turn on the power to the chassis, you must provide an adequate chassis ground (earth) connection for the chassis. A chassis ground connector is available on each Cisco CBR-8 chassis.



Caution The grounding wire is always the first to be installed or connected and the last to be removed or disconnected.

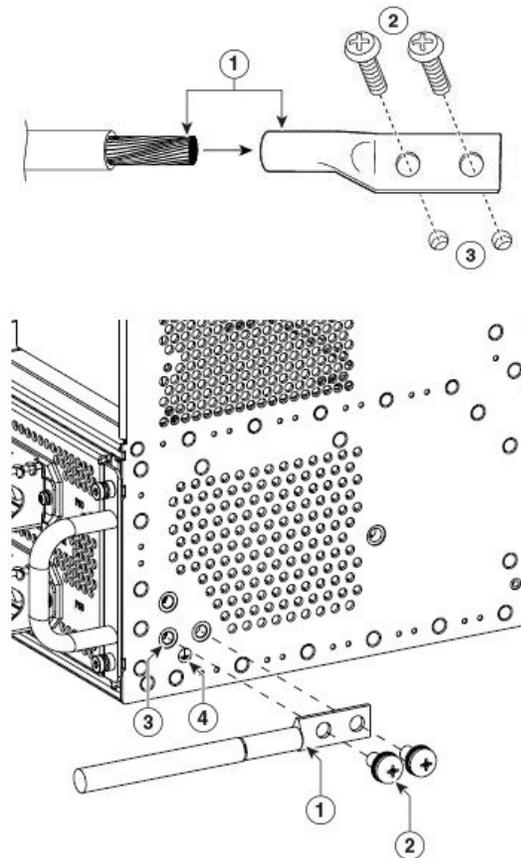
Required Tools and Equipment

- Phillips Screwdriver
- ¼-20 Phillips pan head with a square cone lock washer (available in the accessory kit)
- 2 hole 4-AWG dual crimp compression lug (available in the accessory kit)
- 4 or 2 AWG grounding wire—The ground wire and lug must be always as large as the input gauge. For example, to use 2 AWG for the DC inputs, the ground lug and wire must be 2 AWG or bigger.
- Crimping tool for the ground lug

Procedure

- Step 1** Use the wire stripper to strip one end of the AWG #4 wire approximately 1.12 inches (28.4 mm).
- Step 2** Insert the AWG #4 wire into the wire receptacle on the grounding lug.
- Step 3** Use the crimping tool to carefully crimp the wire receptacle around the wire; this step is required to ensure a proper mechanical connection.
- Step 4** Locate the chassis ground area on the rear lower left-side panel of your chassis.
- Step 5** Insert the two ¼-20 screws (available in the accessory kit) through the holes in the grounding lug, and tighten until the grounding lug is held firmly to the chassis.
- Note** The captive nuts are available on the rear lower left side of the chassis for attaching a two-hole ground lug. In addition, three nuts are available for attaching, so that you can mount the lug horizontally or vertically depending on the wire routing preferences.
- Step 6** Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

Figure 11: Chassis Ground Connection



1	Chassis earth ground lug and lead wire	3	Earth ground lug holes on the chassis
2	¼-20 Grounding screws	4	Earth ground symbol

You can mount the grounding lug horizontally (as in the figure) or vertically depending on the site preference.



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