Install and Connect the Router

This chapter describes how to install and connect Cisco 8200 Series Secure Routers to LAN and WAN networks.

Unpack the Router

Unpack the router only when you are ready to install it. If the installation site is not ready, to prevent accidental damage, keep the chassis in its shipping container until you are ready to install.

The router, accessory kit, publications, and any optional equipment you order may be shipped in more than one container. When you unpack the containers, check the packing list to ensure that you have received all the listed items.

Set up Router on Desktop, Rack, Wall, Under-desk or DIN-rail mount

After unpacking, based on your requirements, you can set up a Cisco 8200 Series Secure Routers on a desktop, a rack, a wall, a Din-Rail or under a desk.

Note You can install external modules before or after mounting a router. However, if you choose to install the external modules after mounting the router on the rack or wall, ensure that you have optimal access to the back/front panel of the router.

For information on modules and Field Replaceable Units (FRUs), see the Install and Upgrade FRUs section.

The available options for mounting a Cisco 8200 Series Secure Routers are:

Table 1: Models and Mounting Options

Model	Mounting Options
C8231-G2	Desktop, Rack Mount, Wall Mount using Key-hole Slots, Din-Rail, Under-desk
C8235-G2	Desktop, Rack Mount, Wall Mount using Key-hole Slots, Din-Rail, Under-desk

If you choose to setup the router on a desktop, you can place the router on a desktop, bench top or on a shelf.

Mount the router on a desk

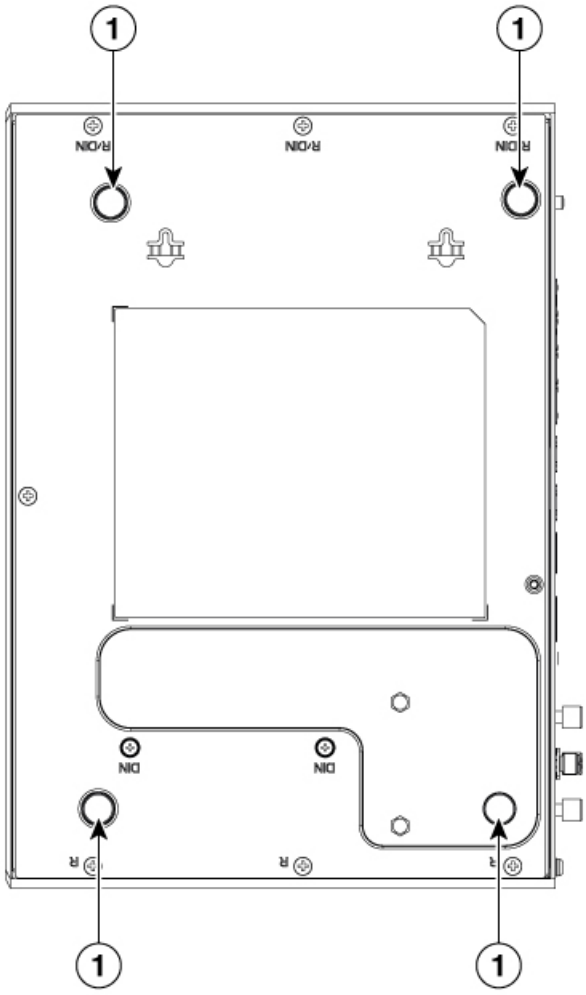
You can mount the chassis on a desktop by placing it on a desk in a horizontal position. Make sure there are no blockages or obstructions within one inch of the top of the chassis or within 0.5 inches of the sides so that nothing interferes with cooling.

Caution Do not stack multiple Cisco 8200 Series Secure Routers when mounting the routers on a table top.

Do not put any object on the sides or on top of the routers ensuring that there is ample space for air circulation and heat removal.

The bottom of the router has four rubber feet that protect the router and the surface. Do not remove the rubber feet included with the chassis. They are needed for proper cooling.

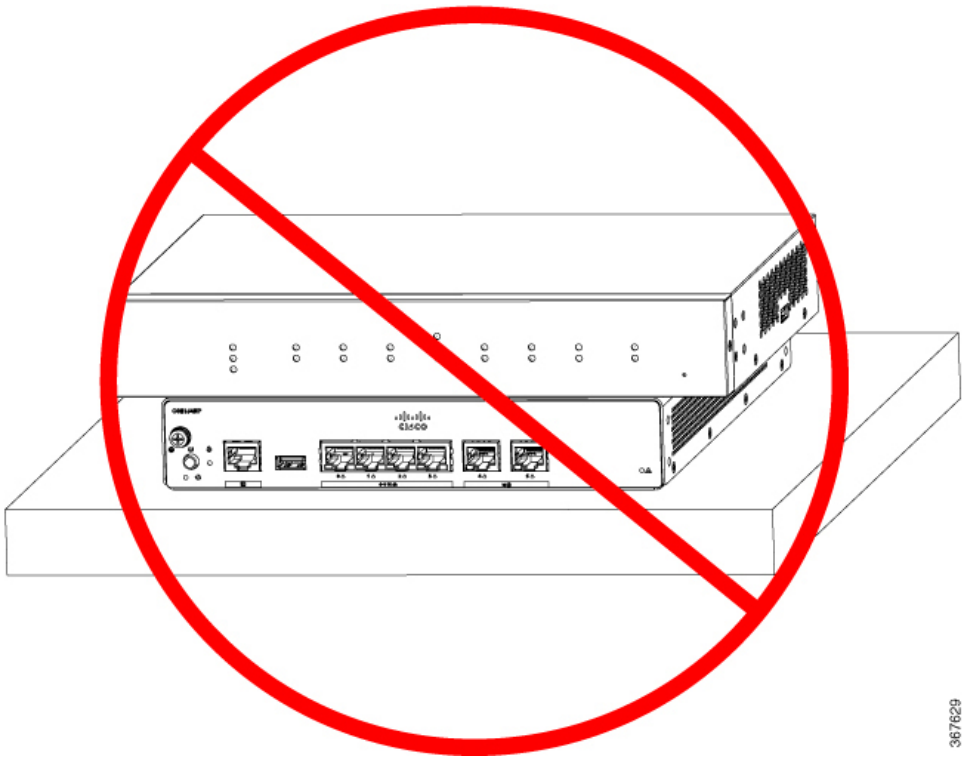
Figure 1: Rubber feet for C8235-G2 Routers



1.	Rubber feet

Note Do not stack routers.

Figure 2:



Rack Mount

Before mounting the router on to the rack, refer to the following safety warning statements:

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.

Important

Periodic Inspection and Cleaning: We recommend that you periodically inspect and clean the external surface of the router. Removing is recommended to minimize the negative impact of environmental dust, debris, and liquid contamination. The frequency of inspection and cleaning is dependent upon the severity of the environmental conditions, but we recommend cleaning the router once every six months. Cleaning involves vacuuming router air intake and exhaust vents.

Note Using the top plate on the chassis significantly helps in preventing any damages that may occur from rodent infestation.

Note Sites with ambient temperatures consistently above 25°C or 77°F and with potentially high levels of dust or debris might require periodic preventative maintenance cleaning.

Note When mounting Cisco 8200 Series Secure Routers on a rack, ensure that there is ample surrounding space. This ensures more heat removal, which in turn helps the surrounding air temperature to stay within the specified operating conditions.

Rack Mount C8231-G2

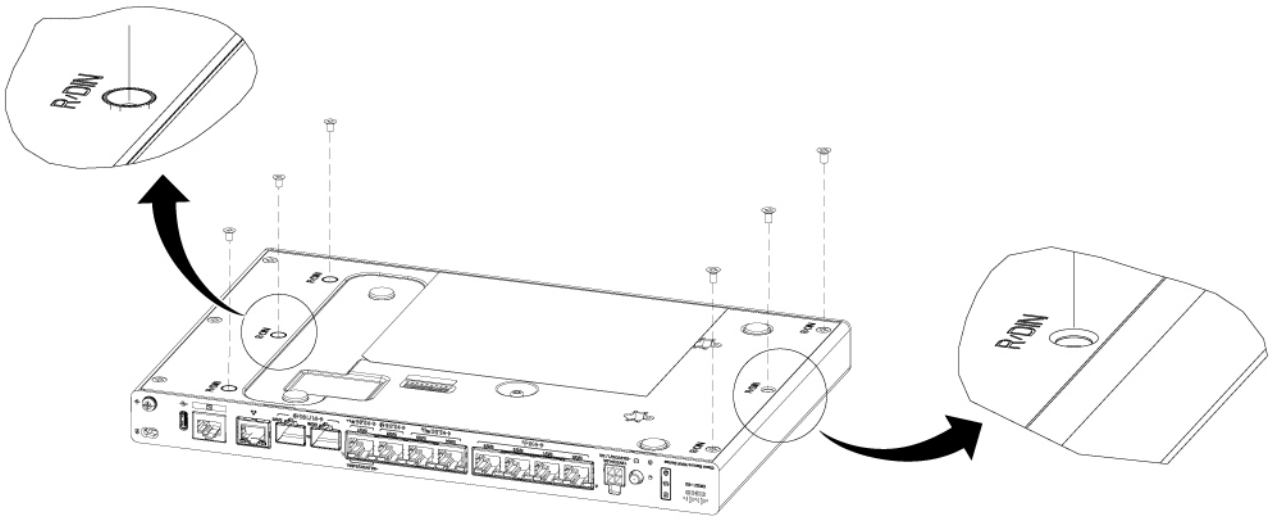
This procedure describes how to rack mount the router:

Procedure

Step 1 Remove six screws from the holes marked with an "R" from bottom of the router. Ensure you keep them as they will be used to secure the router to the rack-tray.

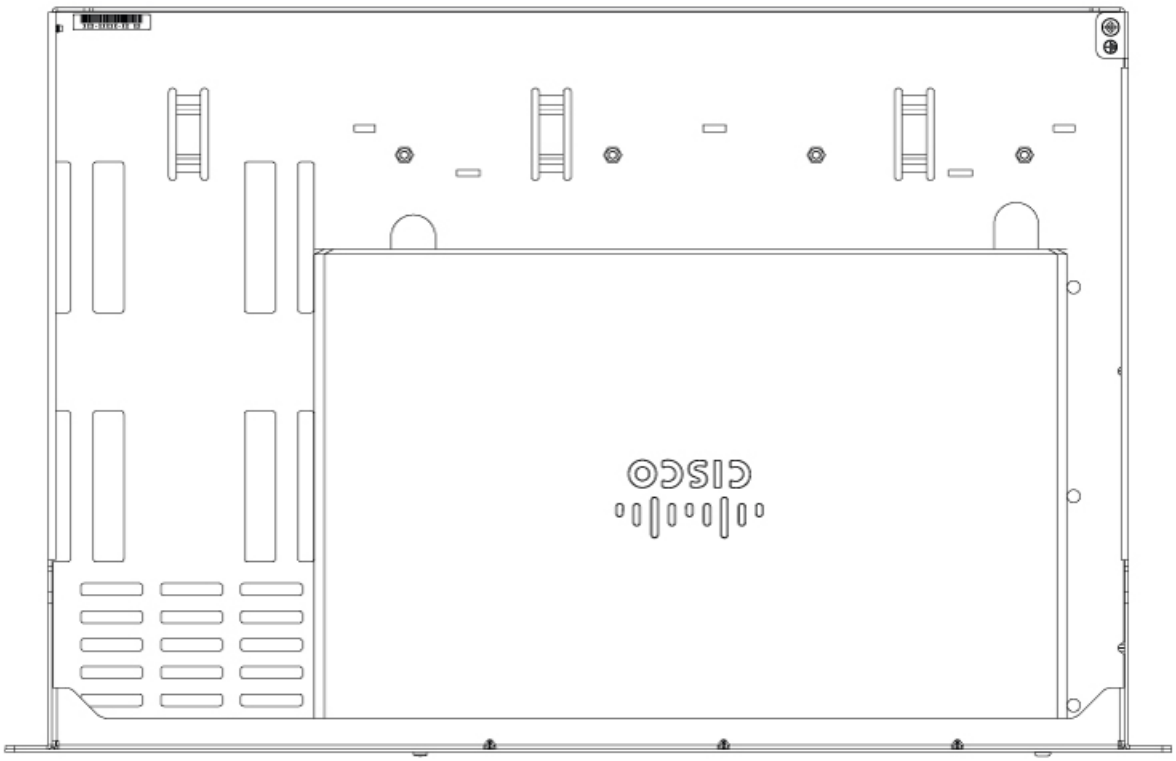
Note
Three of the screws are black in colour and need to be reassembled to the locations where they were removed.

Figure 3:



Step 2 Locate the I/O end of the router and place it facing the front of the rack-tray.

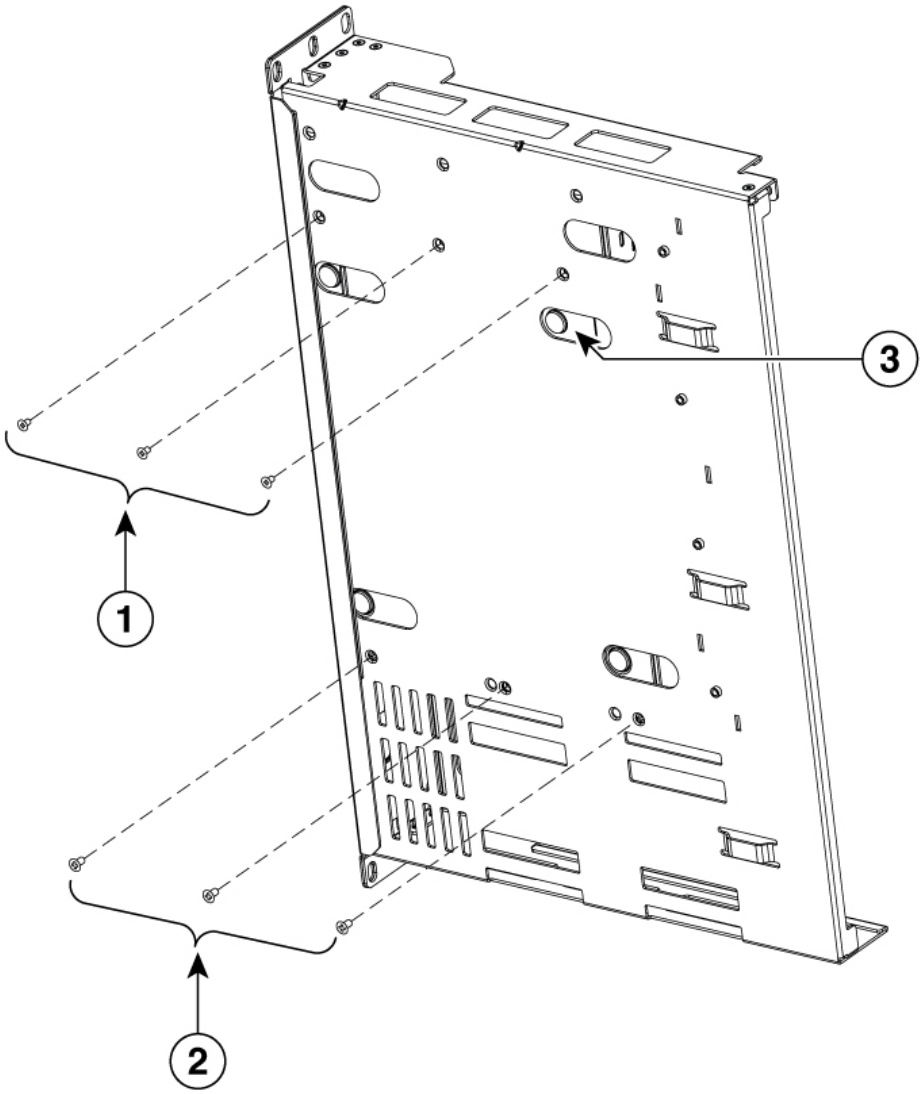
Figure 4: Place the router on the rack-tray



Step 3 Ensure that the rubber mounting feet are contained in the open slots. Retrieve the six screws that were removed from the router base and install them back through the holes in the rack-tray to secure the router to the tray. Ensure that the black screws are back in the same location.

Note
The screw locations will line up, when the rubber mounting feet are correctly placed in their slots.

Figure 5: Secure router to rack tray (C8231-G2)

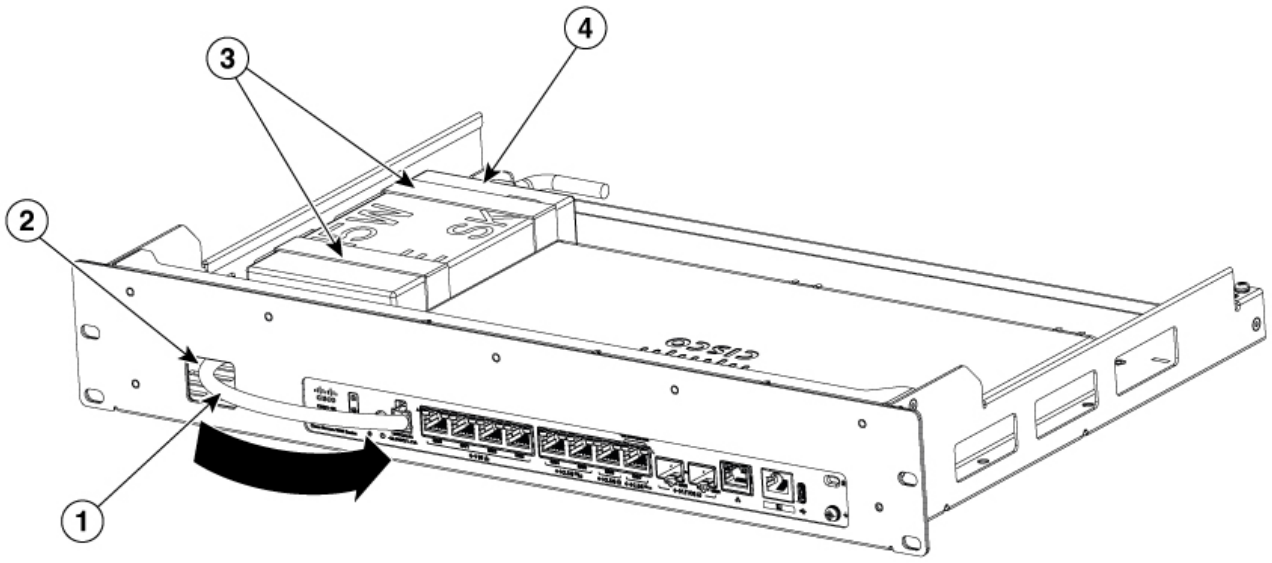


1	Router screws originally removed from the base (black, M3)
2	Router screws originally removed from thr base (silver, #6-32)
3	Rubber mounting feet in rack-tray slots. (one location shown)

Step 4 Route the power supply cable through the cabling-cutout in the front panel. Place the Power Supply Units (PSU) in the tray.

Note
Power Supply Units (PSU) vary in size from small to large. Secure the PSUs to the rack-tray using different sizes of velcro strap pairs by using the slots in the rack-tray. Use a Tywrap to bundle the cabling at the front of the tray and secure it to the tray.

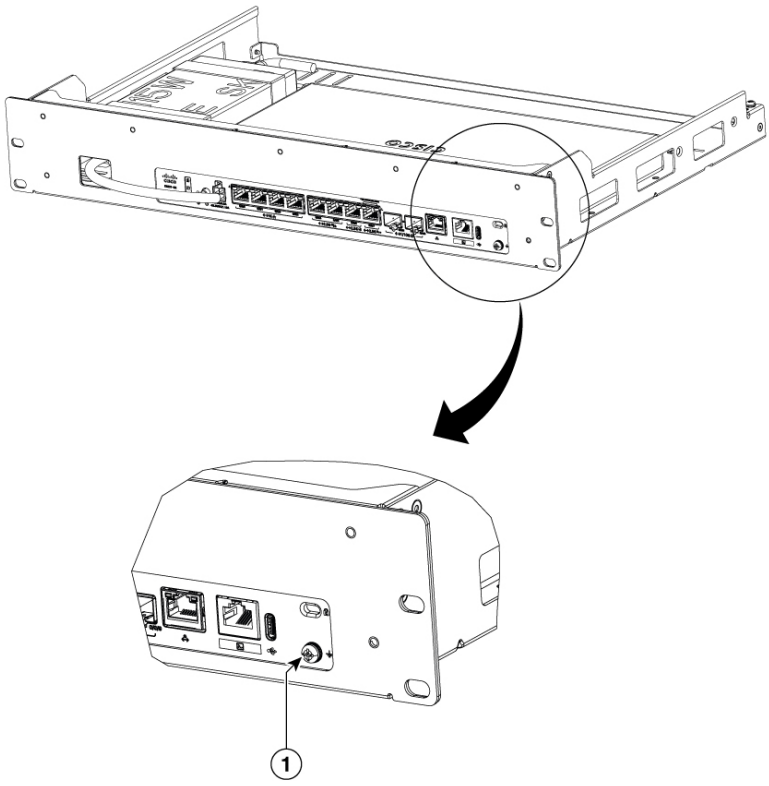
Figure 6: Place the power supply unit in the tray



1	Power supply cable
2	Cabling-cutout in front panel
3	Velcro straps
4	Power supply body

Step 5 The ground location for the router is located on the front face and accessible through the rack-tray panel.

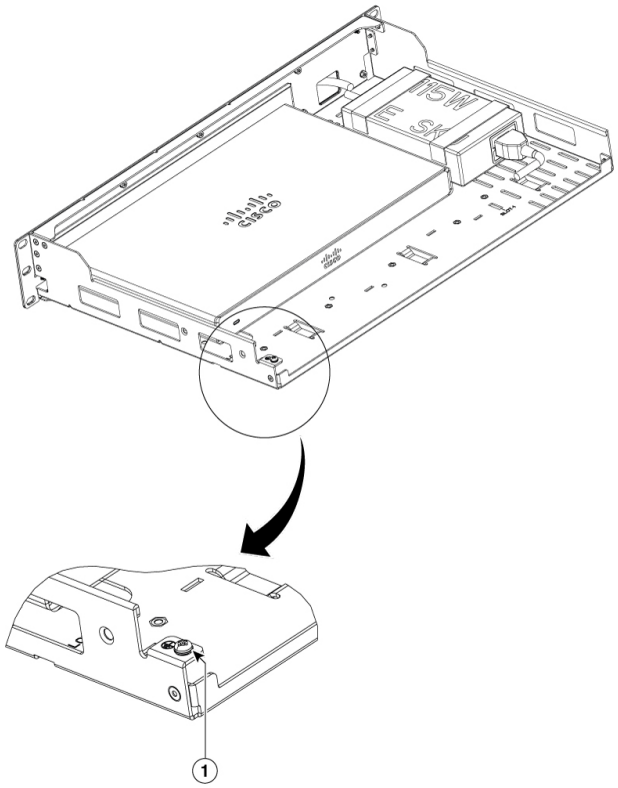
Figure 7: Ground option on the front side of the tray



1	Ground location at front of router

A grounding location of the same screw size is provided on the rear of the rack-tray if it is preferred instead of using the ground location at the front of the router. For more information see, the Chassis Grounding section.

Figure 8: Ground option on the rear end of the tray

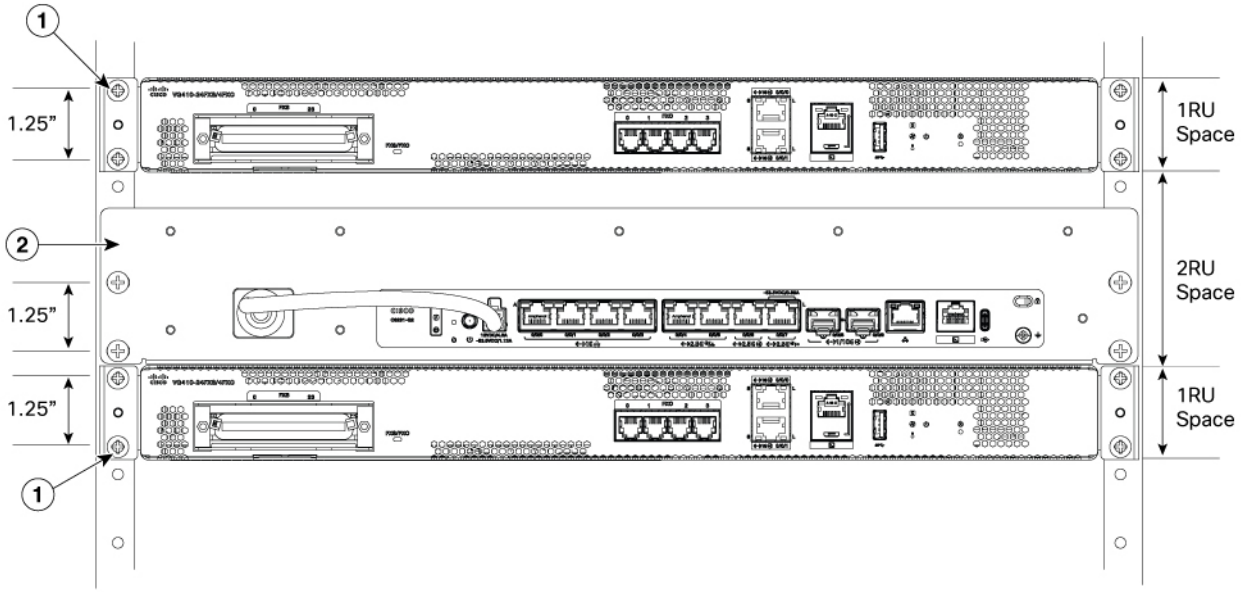


1	Ground location at back of the tray

Step 6 Install the rack-tray assembly into the rack by aligning the bottom of the rack-tray to the bottom of the Equipment Racks Rack-Unit (RU) spacing and secure the screws.

Note
Rack-tray is shorter than 2RU tall, but must be allocated the full 2RU of space.

Figure 9: Rack-tray assembly



1	Typical 1RU product (reference only)
2	Rack-tray installed

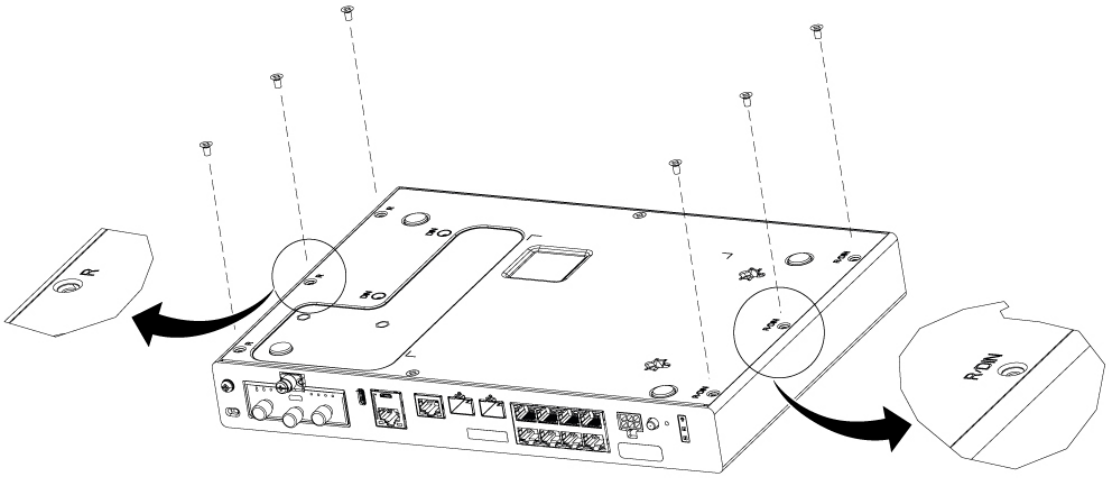
Rack Mount the C8235-G2

This procedure describes how to rack mount the router chassis:

Procedure

Step 1 Remove six screws from the holes marked with an “R” from bottom of the router. Ensure you keep them as they will be used to secure the router to the rack-tray.

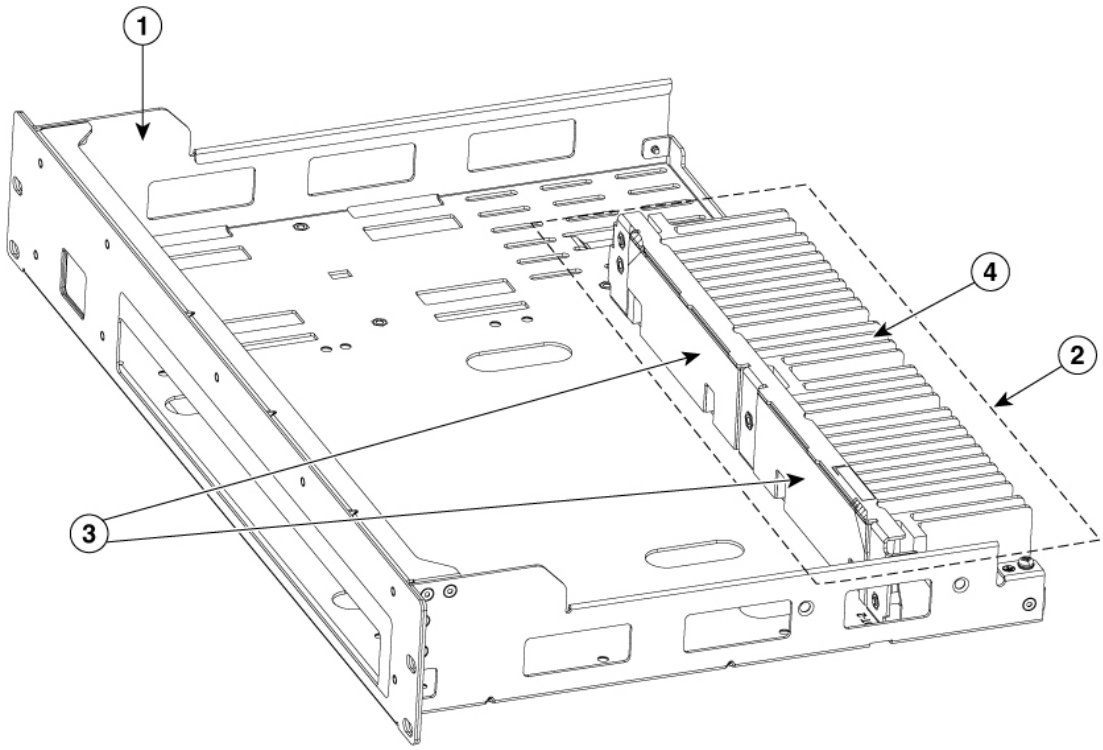
Figure 10: Locate the screws on the router



Step 2 The heatsink-assembly is fixed to the rack-tray. The heatsink is free to move on guide-pins within the heatsink-assembly. This is so the heatsink can be moved out of the way to allow clearance for installing the router and prevent damage to the thermal interface before attaching the heatsink-assembly to the router.

Note
C8235-G2 Rack-trays comes with a heatsink-assembly. This provides required cooling to the router to operate over the full temperature range when installed in a rack.

Figure 11: Heatsink-assembly

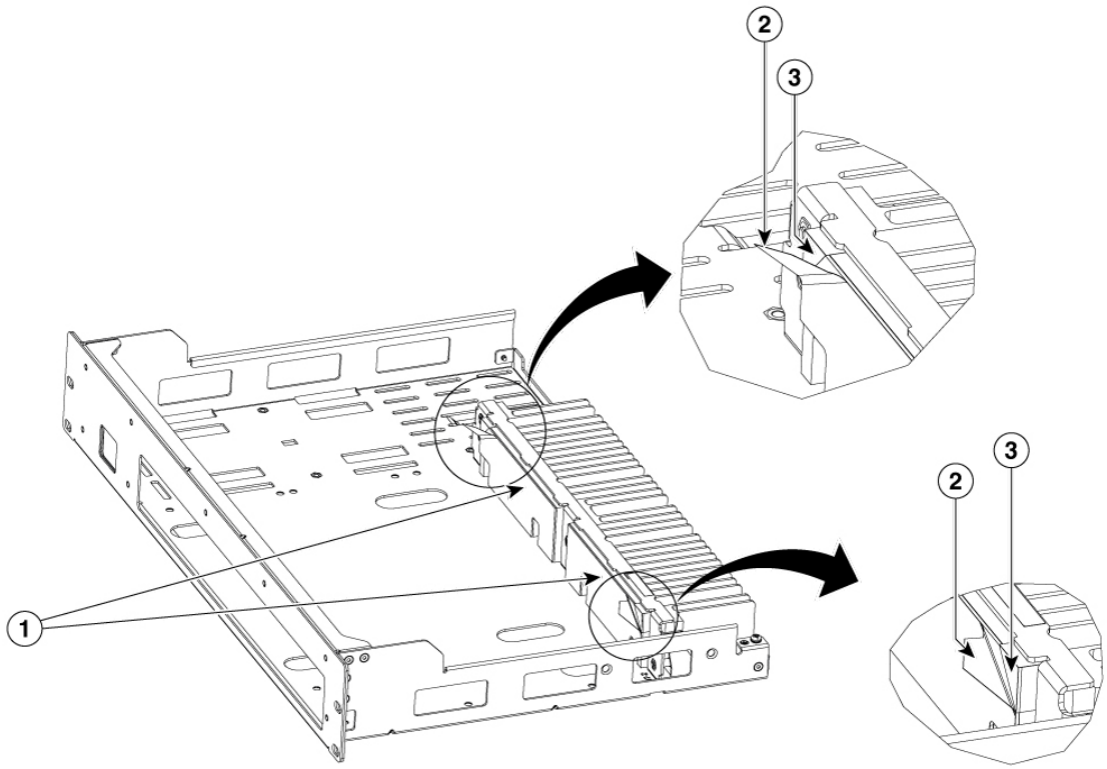


1	Rack-Tray
2	Heatsink assembly
3	2X Thermal interfaces on heatsink
4	Heatsink

Step 3 Peel off the protective-liner from both thermal interfaces on the heatsink, one corner at a time as shown in the figure, so that the thermal interface stays adhered to the heatsink.

Note
Ensure that the heatsink liner is removed for correct functioning of the heatsink.

Figure 12: Protective layer of heatsink-assembly

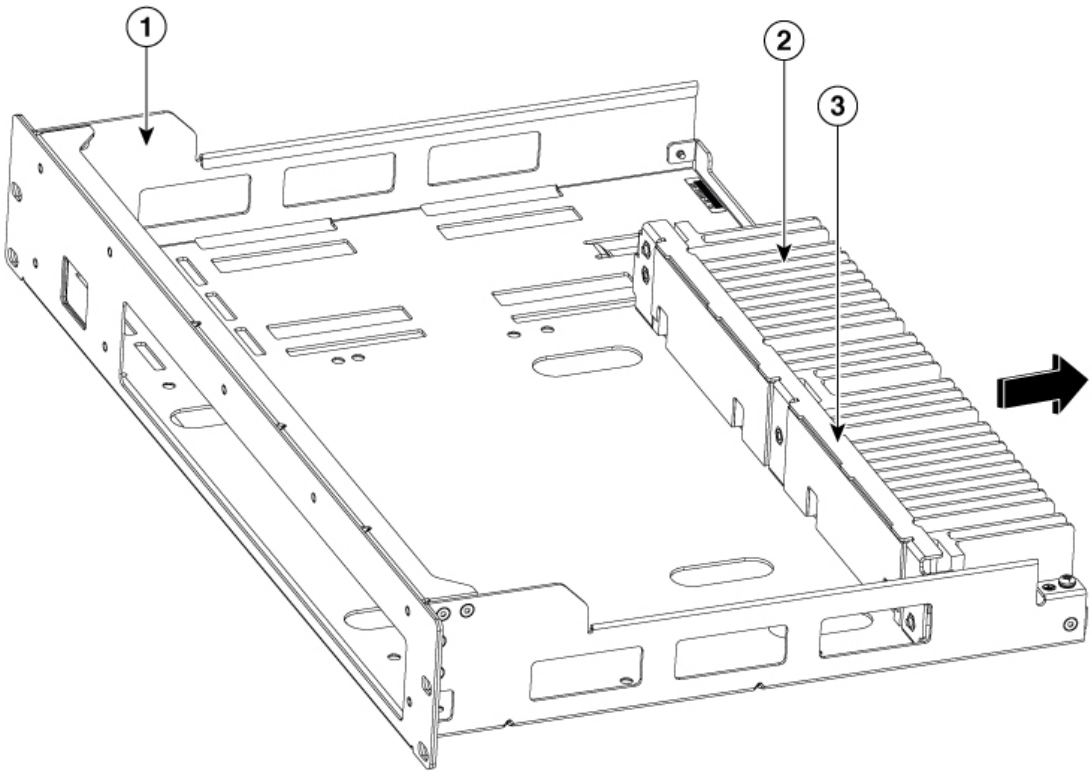


1	2X Thermal Interfaces on heatsink
2	Thermal interface protective liner
3	Thermal interface on heatsink base with liner removed

Step 4 Slide the heatsink back as far as it will go on the guide-pins.

Note
The heatsink metal frame is the part of the heatsink-assembly that remains secured to the rack-tray.

Figure 13: Heatsink metal frame



1	Rack-tray
2	Heatsink
3	Heatsink assembly metal frame

Step 5 Locate the front end (I/O) of the router and place it at an angle at the front of the rack-tray. Lower the rear end of the router down into the rack-tray carefully not to damage the thermal interface on the heatsink base.

Figure 14: Router placement on rack tray

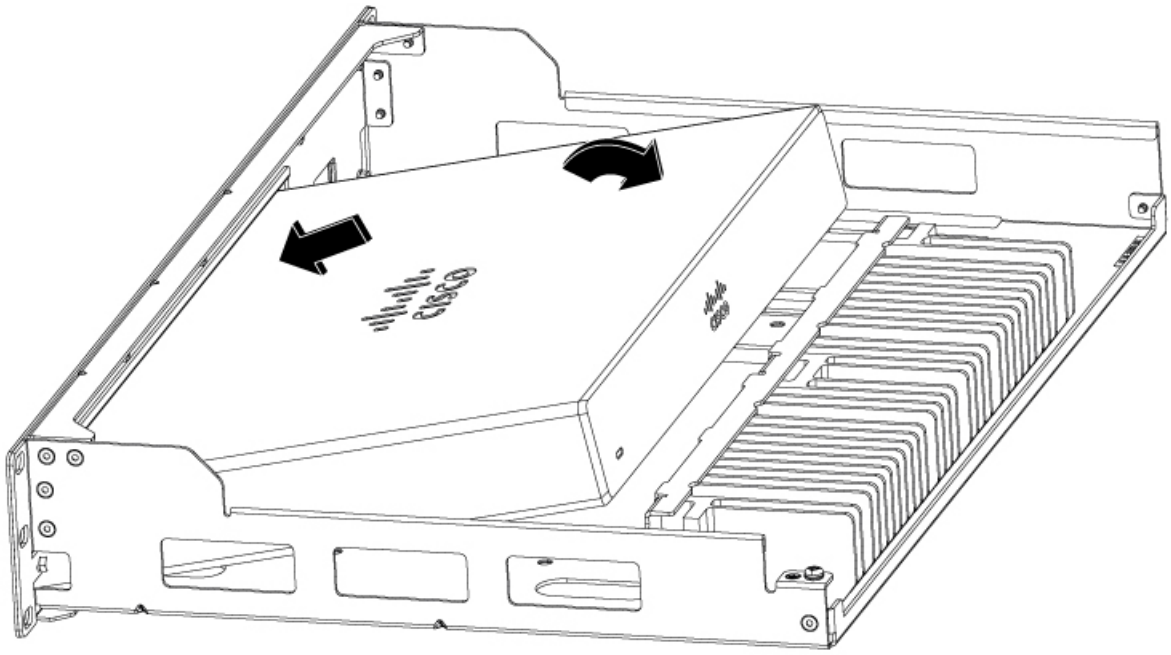
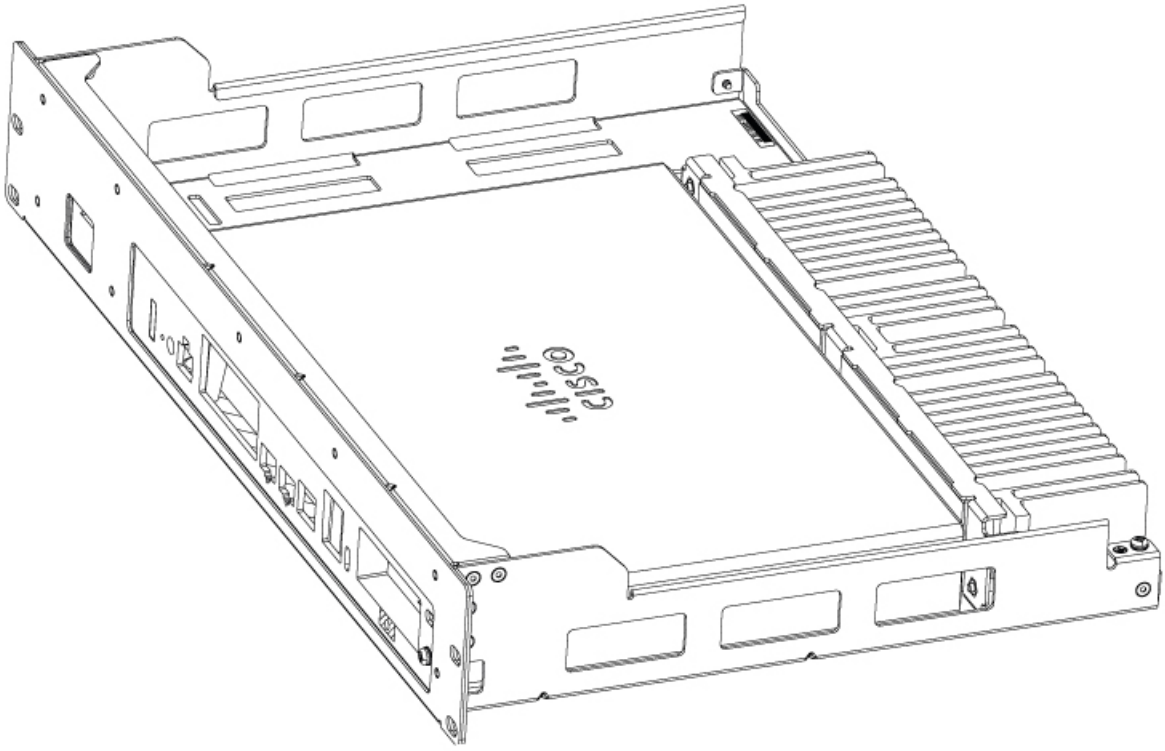


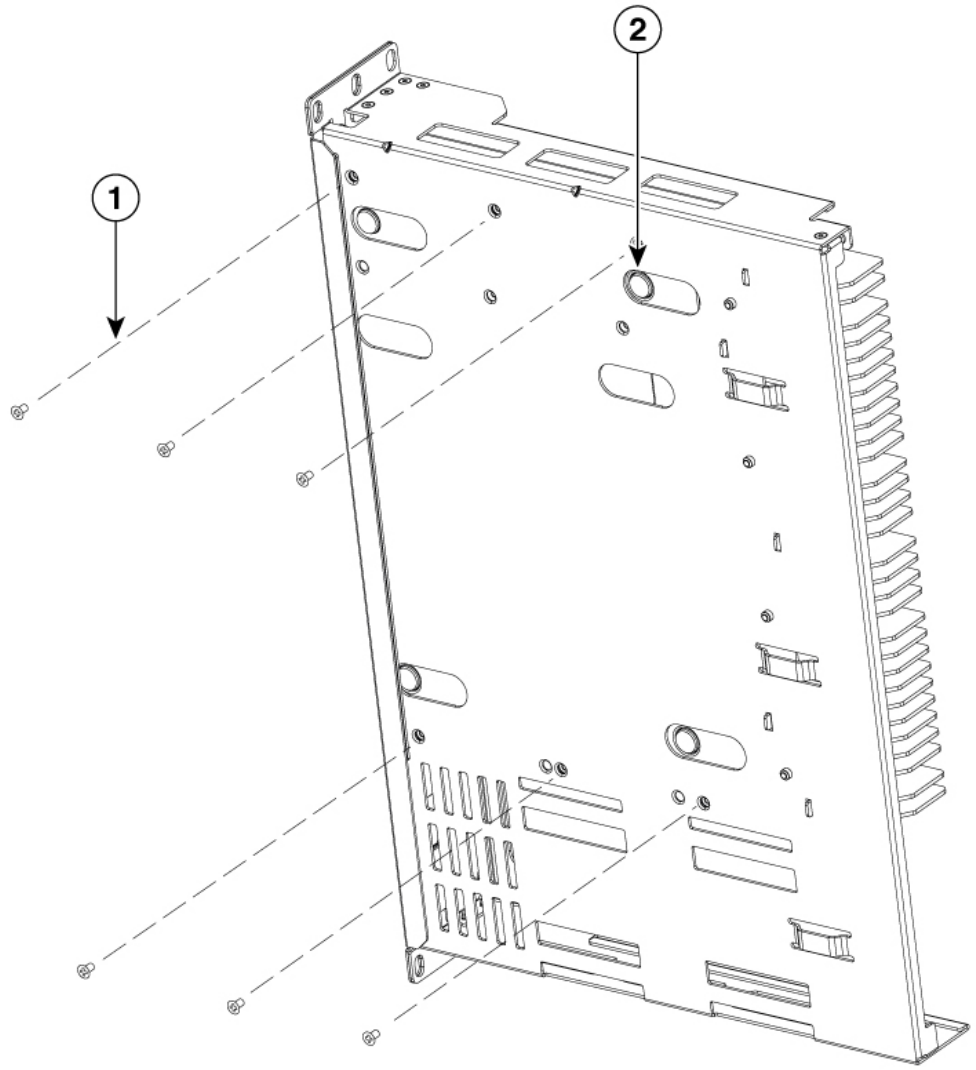
Figure 15: Router placed on the rack tray



Step 6 Ensure that the rubber mounting feet are contained in the open slots. Retrieve the six screws that were removed from the router base and install them back through the holes in the rack-tray to secure the router to the tray.

Note
The screw locations will line when the rubber mounting feet are correctly placed in their slots.

Figure 16: Secure router to the tray



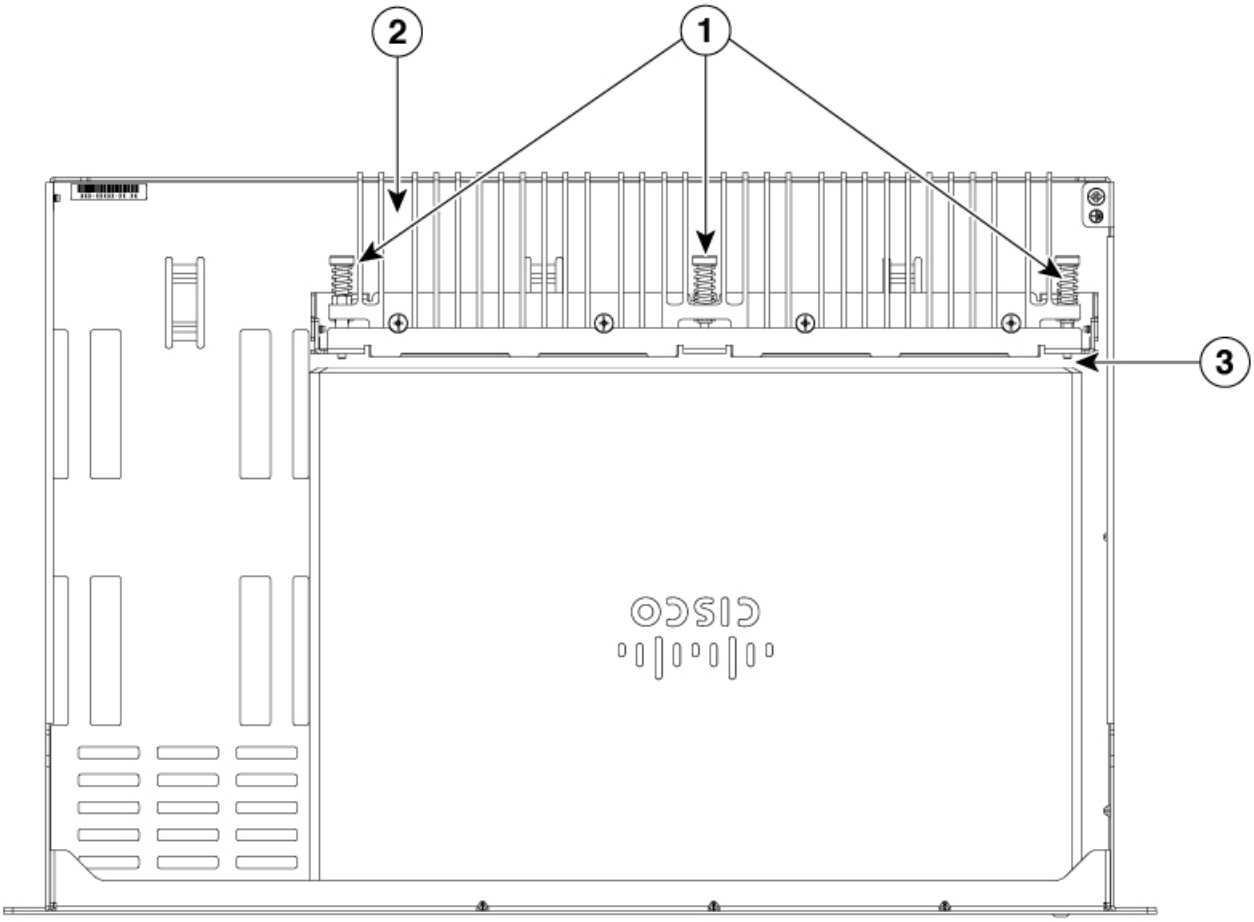
1	Router screws originally removed from the base
2	Rubber mounting feet in rack-tray slots. (one location shown).

Step 7 Secure the heatsink correctly to provide the required cooling for the router. Once the router is secured to the Rack-tray, there will be a gap between the heatsink and the back of the router.

Note

The heatsink does not secure to the router itself. When secured, the clamping pressure of the spring-screws within the heatsink assembly establishes contact of the heatsink to the router.

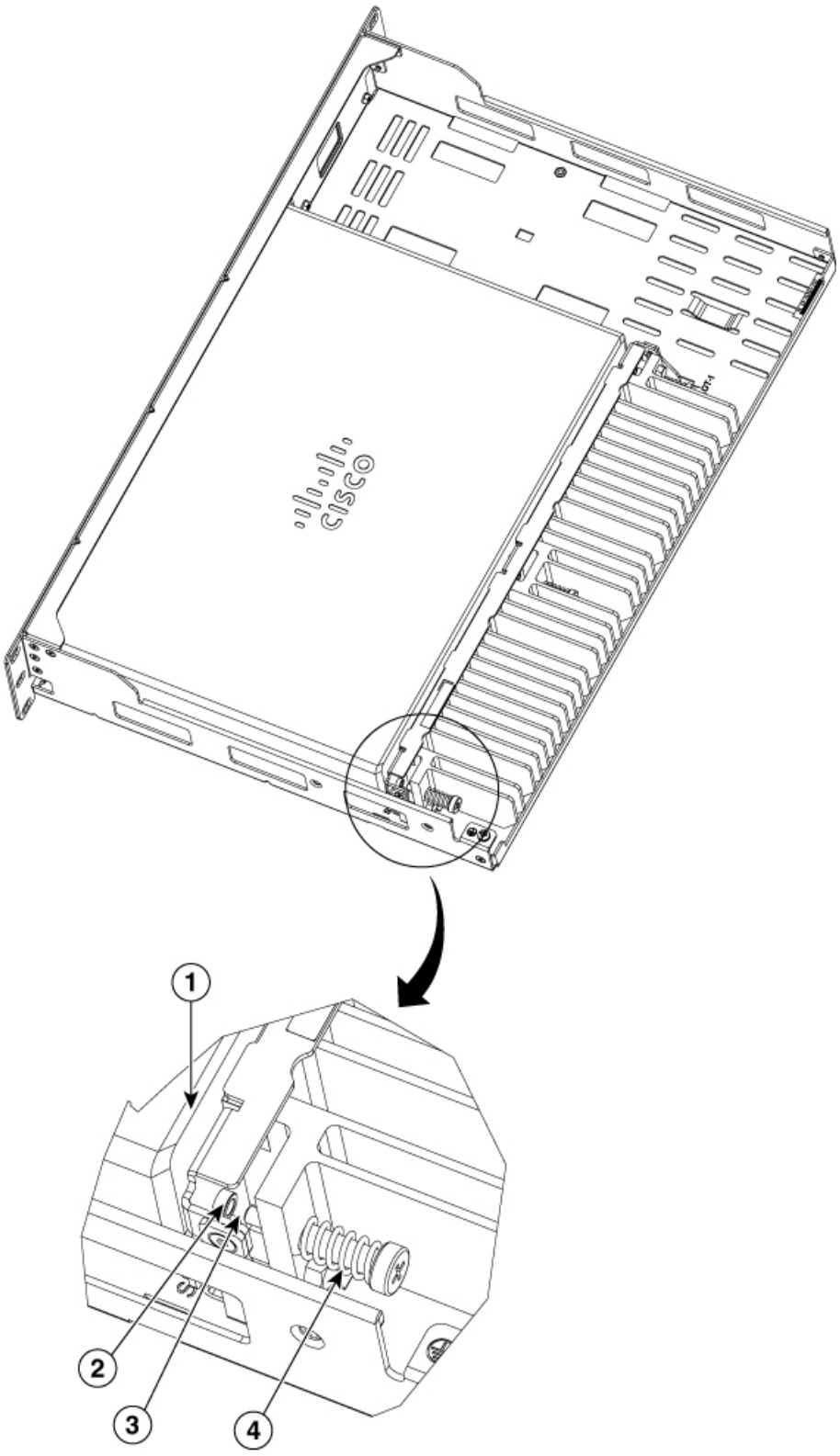
Figure 17: Secure heatsink



1	Spring-screws (3)
2	Heatsink
3	Gap between Heatsink and the router after the router installation

The heatsink has three captive spring-screws that need to secure to the heatsink frame so that the heatsink makes contact with the router. When the heatsink is slid backwards, there is a gap between the (3) spring-screws and the securing nut in the heatsink-assembly.

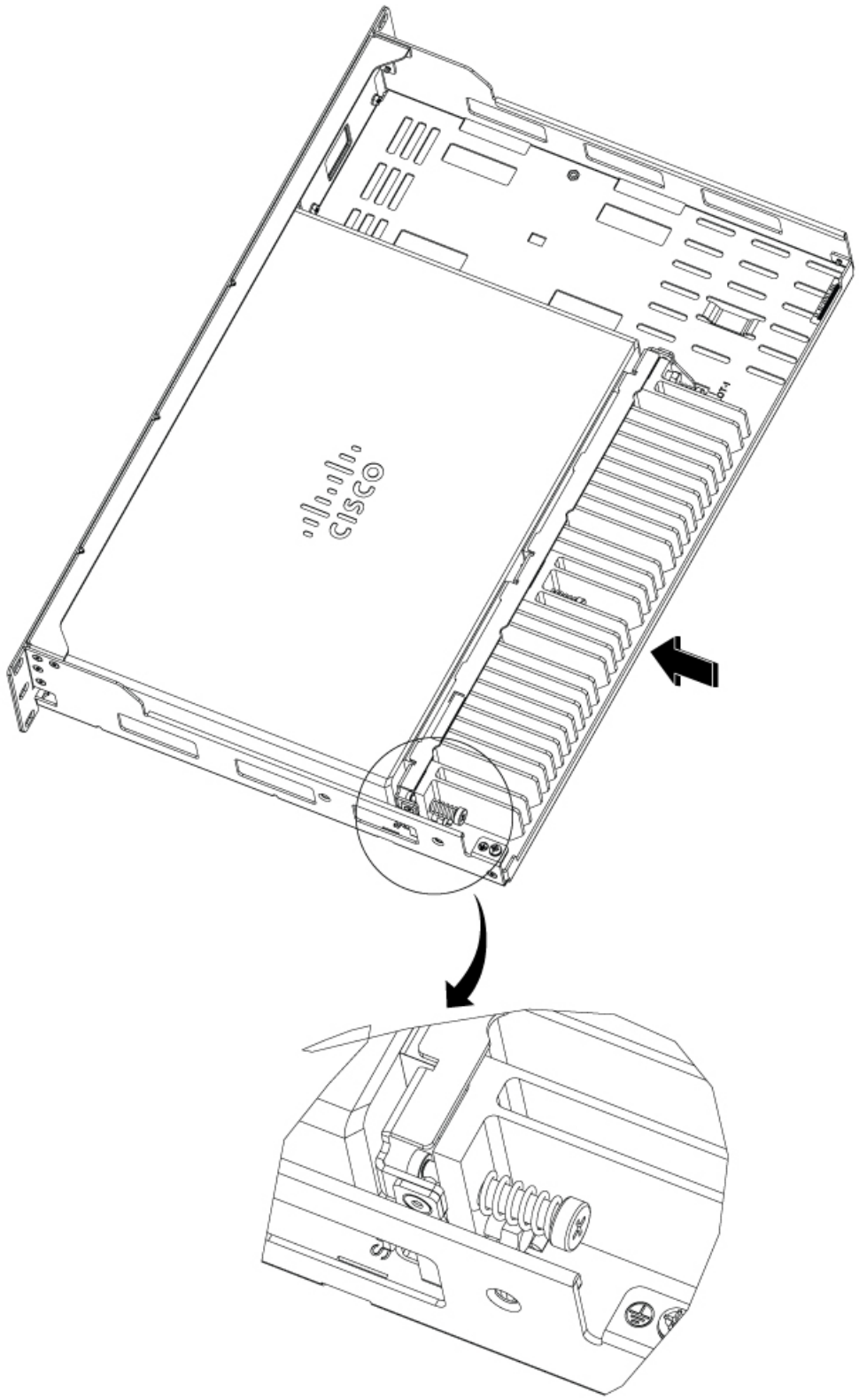
Figure 18:


1
2
3
4

1	Contact of Heatsink to the router
2	Securing nut in heatsink assembly
3	Small gap to spring screw
4	Spring-screw

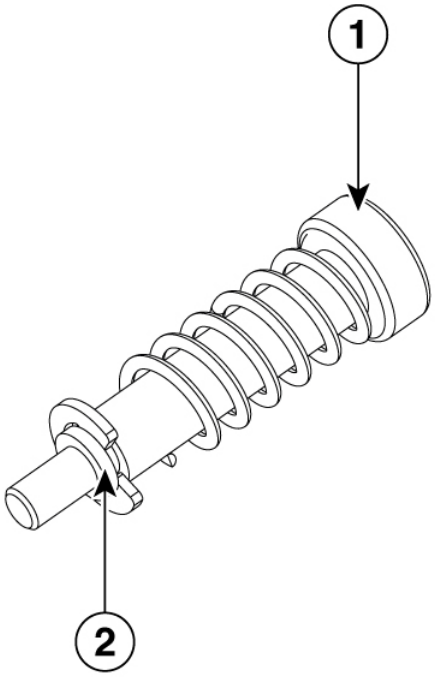
Step 8 Slide the heatsink until it is in contacts the router. There may still be a very small gap between the spring-screw threads and securing nut on the heatsink-assembly.

Figure 19:



Step 9 Tighten the spring-screw until the shoulder of the spring-screw bottoms on the securing nut.

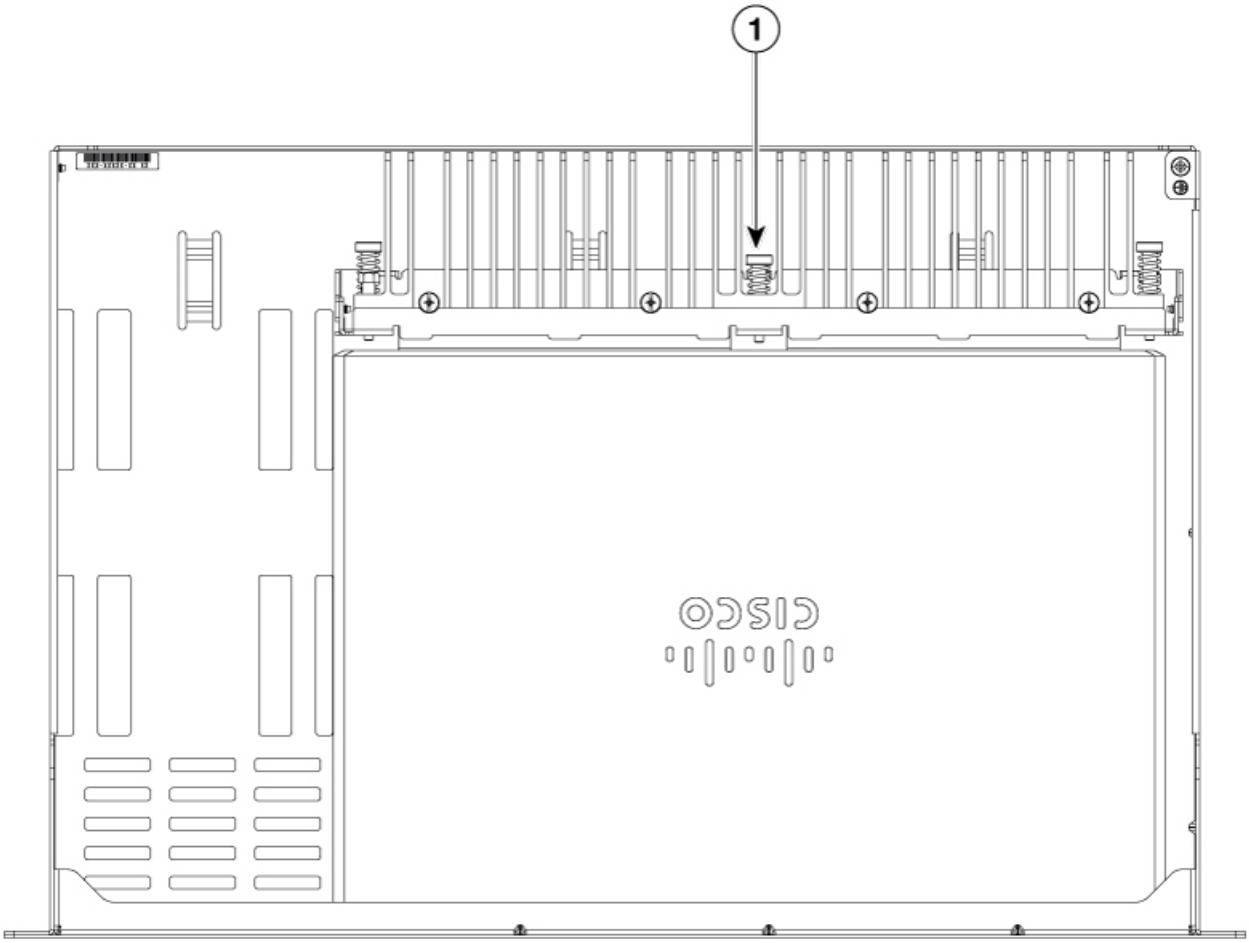
Figure 20: Spring-screw



1	Spring-screw
2	Shoulder of the spring-screw

Secure middle spring-screw.

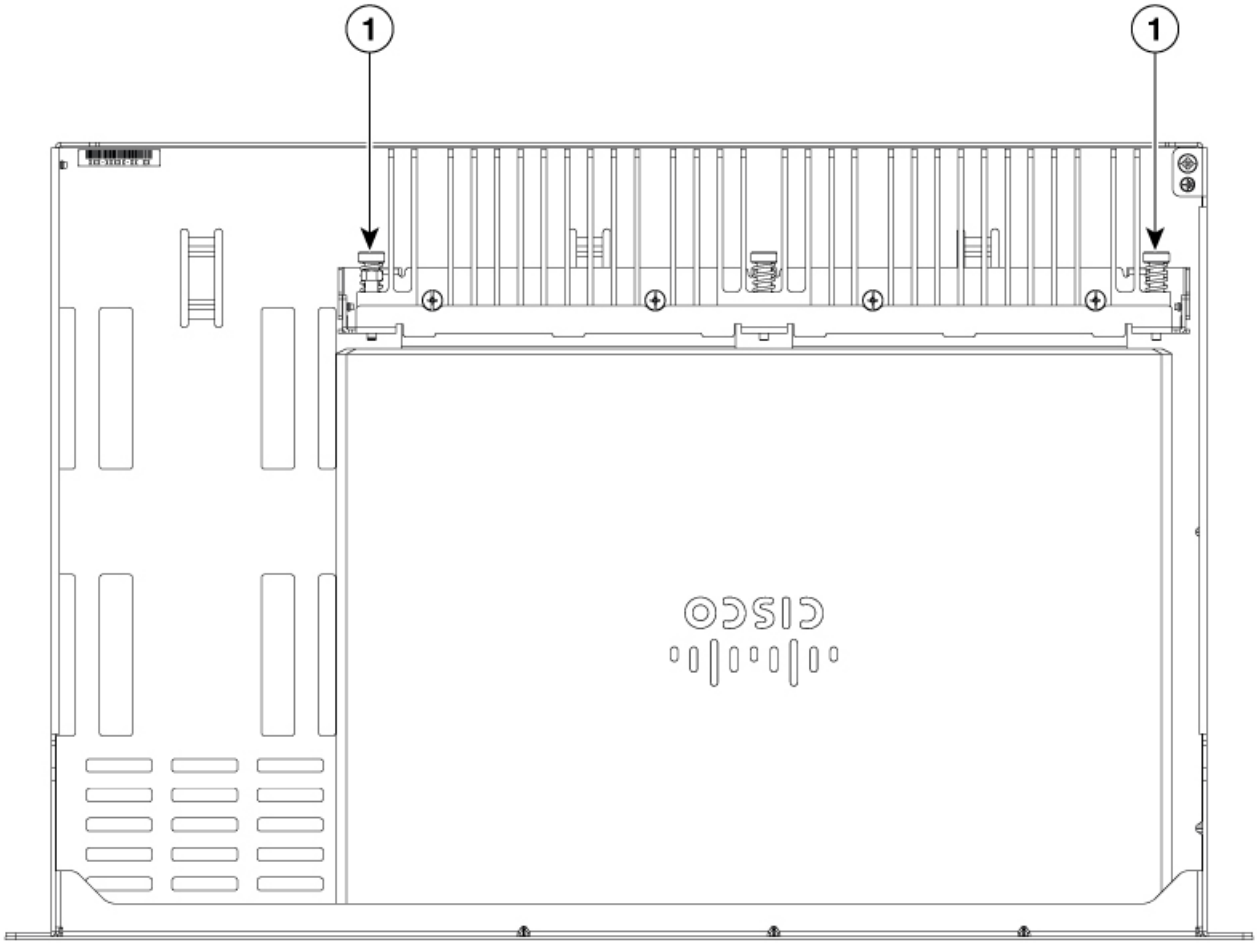
Figure 21: Middle spring-screw



1	Middle spring-screw

Secure outer spring-screws.

Figure 22: Outer spring-screw

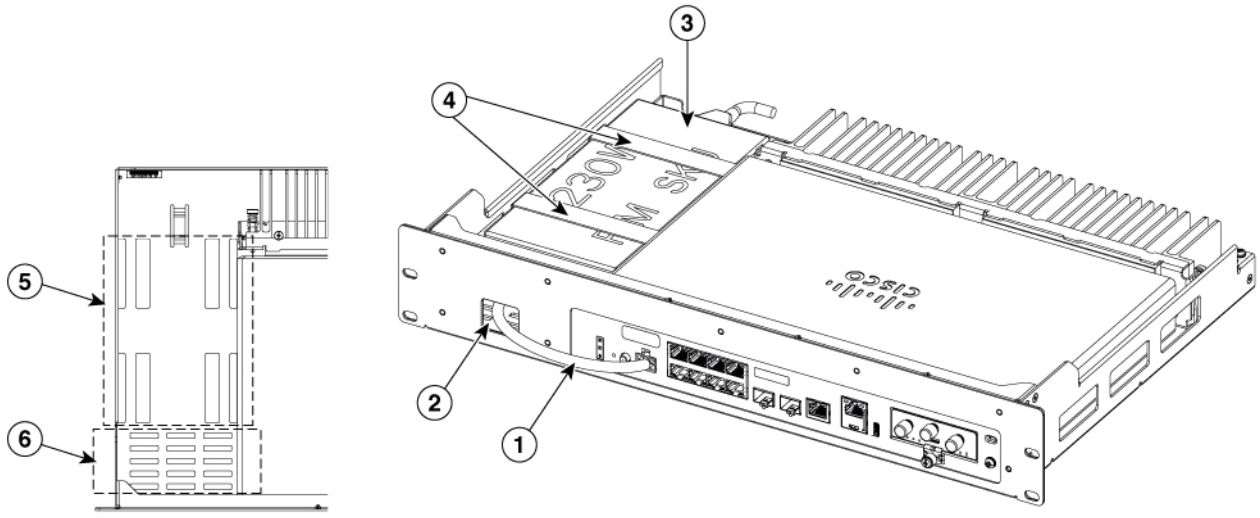


1	Outer spring-screws

Step 10 Route the power supply cable through the cabling-cutout in the front panel. Place the Power Supply Units (PSU) in the tray.

Note
Power Supply Units (PSU) vary in size from small to large. Secure the PSUs to the rack-tray using different sizes of velcro strap pairs by using the slots in the rack-tray. Use a Tywrap to bundle the cabling at the front of the tray and secure it to the tray.

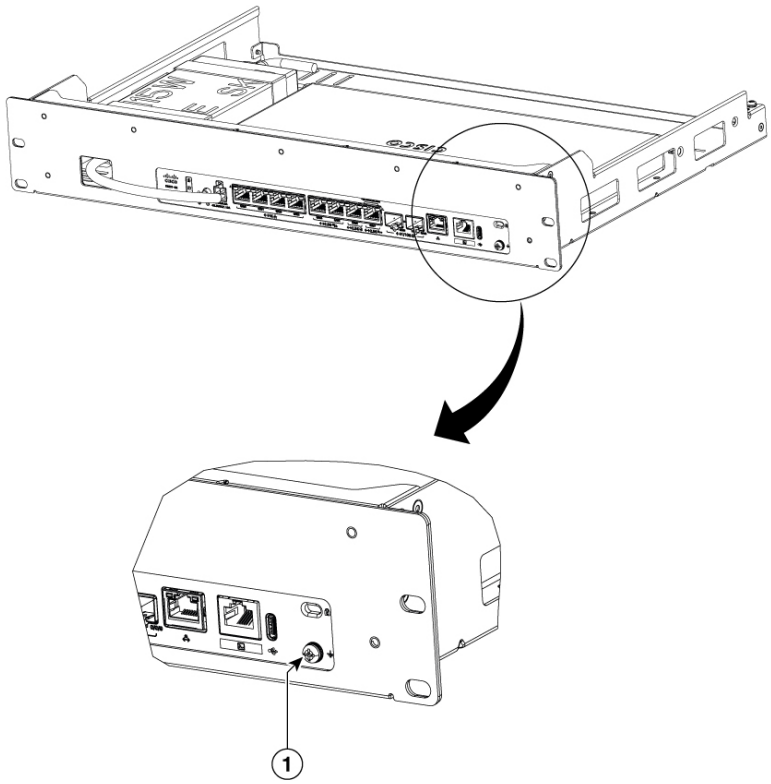
Figure 23: Place the power supply unit in the tray



1	Power supply cable
2	Cabling-cutout in the front panel
3	Power supply unit
4	Velcro straps
5	Slots in the Rack-tray for velcro-strap securing of PSU
6	Slots in the Rack-tray for tywrap securing of excess cable

Step 11 The ground location for the router is located on the front face and accessible through the rack-tray panel.

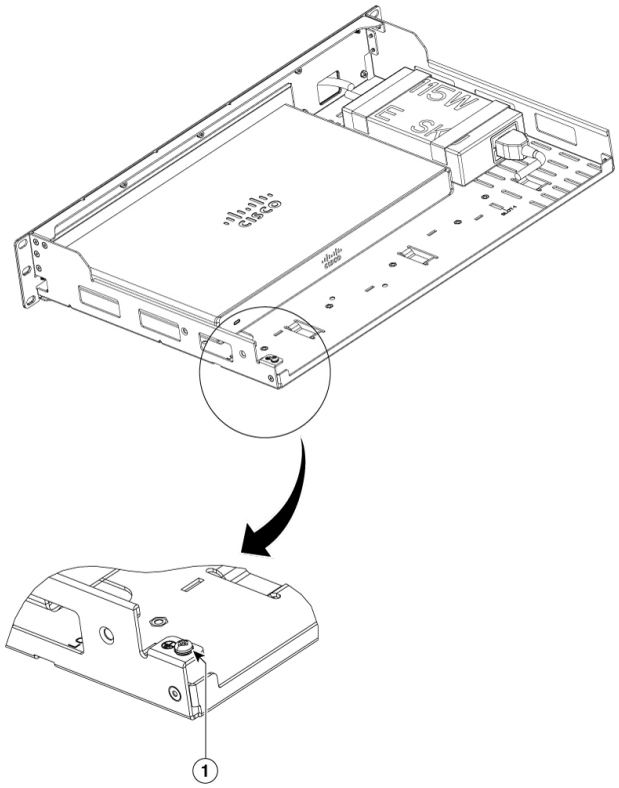
Figure 24: Ground option on the front side of the tray



1	Ground location at front of router

A grounding location of the same screw size is provided on the rear of the rack-tray if it is preferred instead of using the ground location at the front of the router. For more information see, the Chassis Grounding section.

Figure 25: Ground option on the rear end of the tray

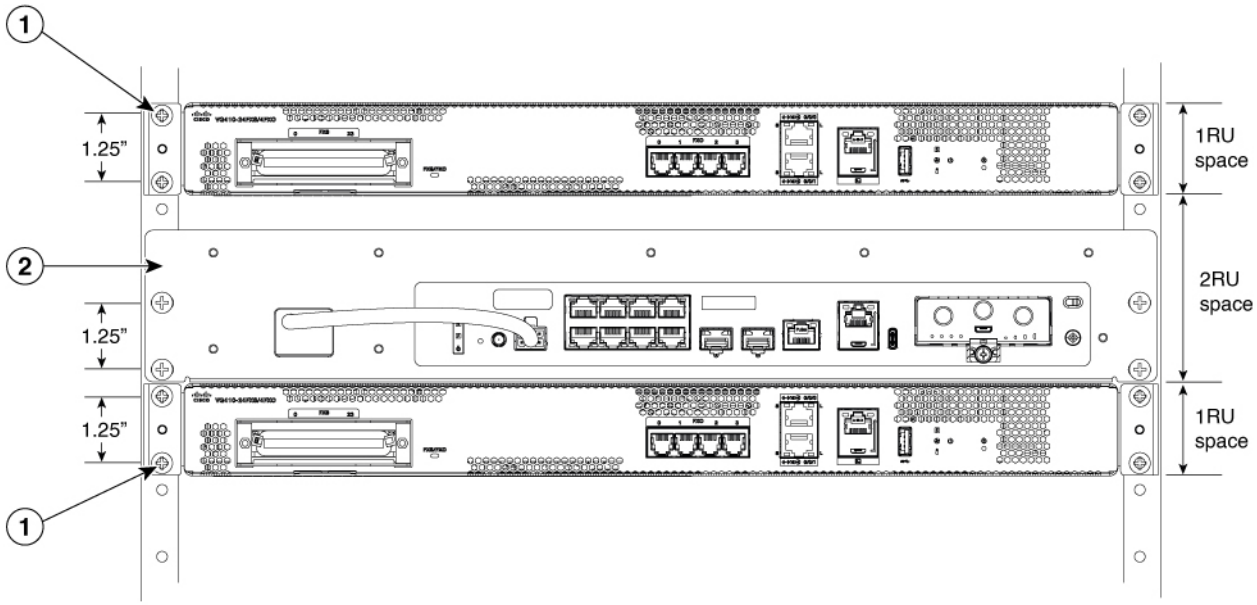


1	Ground location at back of the tray

Step 12 Install the rack-tray assembly into the rack by aligning the bottom of the rack-tray to the bottom of the Equipment Racks Rack-Unit (RU) spacing and secure the screws.

Note
The C8235-G2 Rack-tray is shorter than 2RU tall, but must be allocated the full 2RU of space.

Figure 26: Rack-tray assembly



1	Typical 1RU product (reference only)
2	C8235-G2 Rack-tray installed

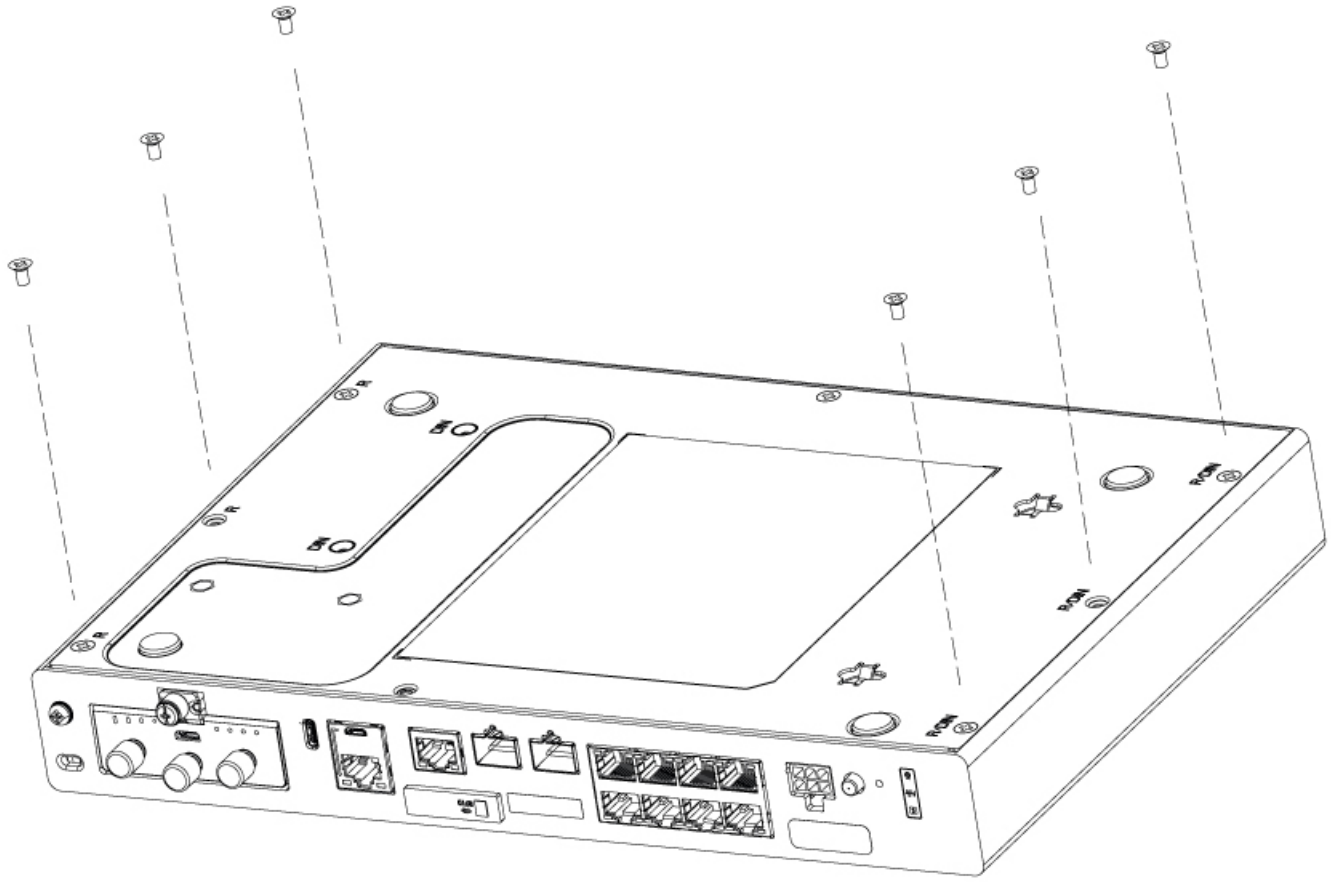
Mount the Router under a Desk or a Shelf

Installing the router under a desk requires an optional bracket kit that is not included with the router. The kit contains the rack-mount brackets and screws to secure the brackets the underside of a wooden desk or shelf. You can order these kits from your Cisco representative. This procedure describes how to mount a router under a desk or a shelf .

Procedure

Step 1 Remove qty (6) screws from the bottom side of the router. Keep the screws as they will be used later.

Figure 27: Remove the outer screws from the Router (C8235-G2 shown)



Step 2 Align one side of the bracket to the base and secure with 3 of the the flat-head screws that was removed. Follow the same steps to attach the second bracket to the opposite side.

Figure 28: Attaching Brackets to the Router

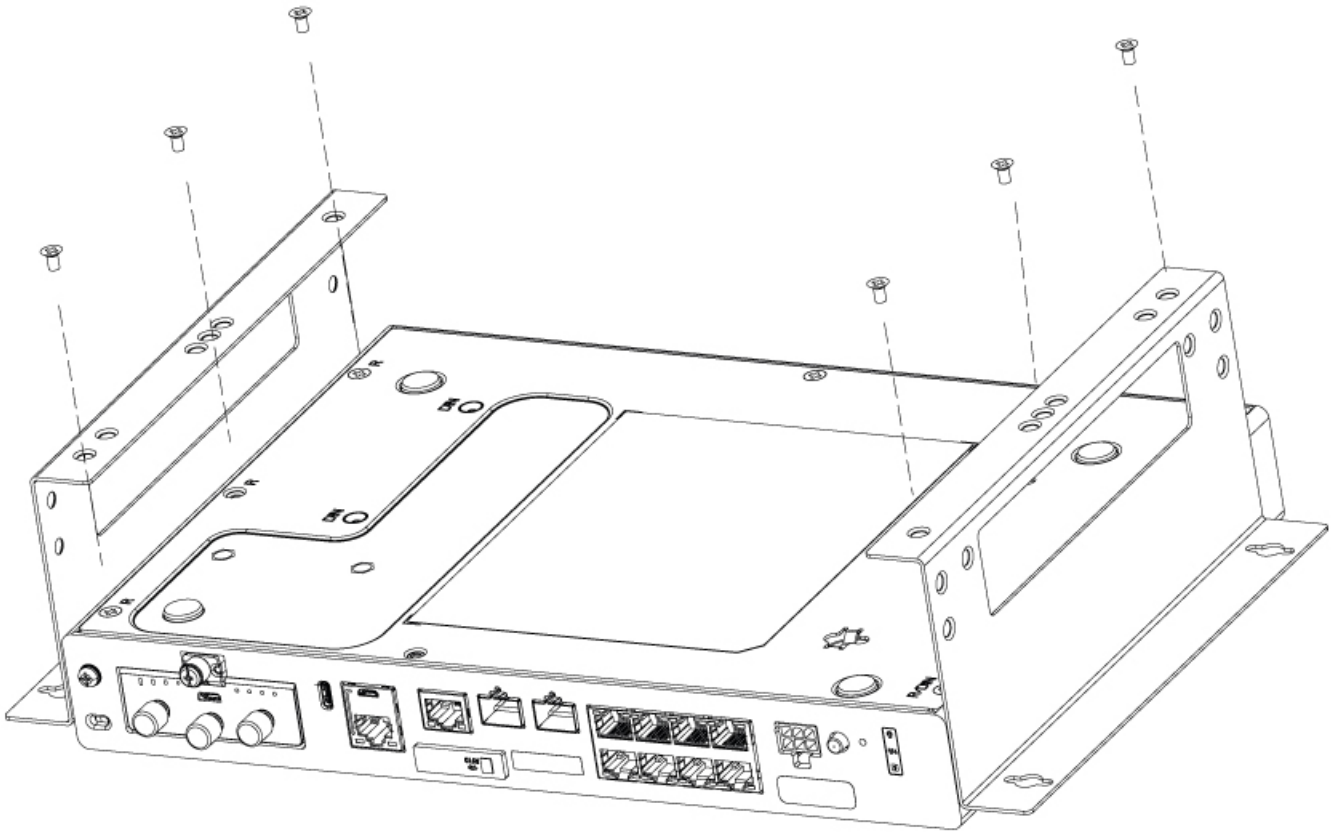
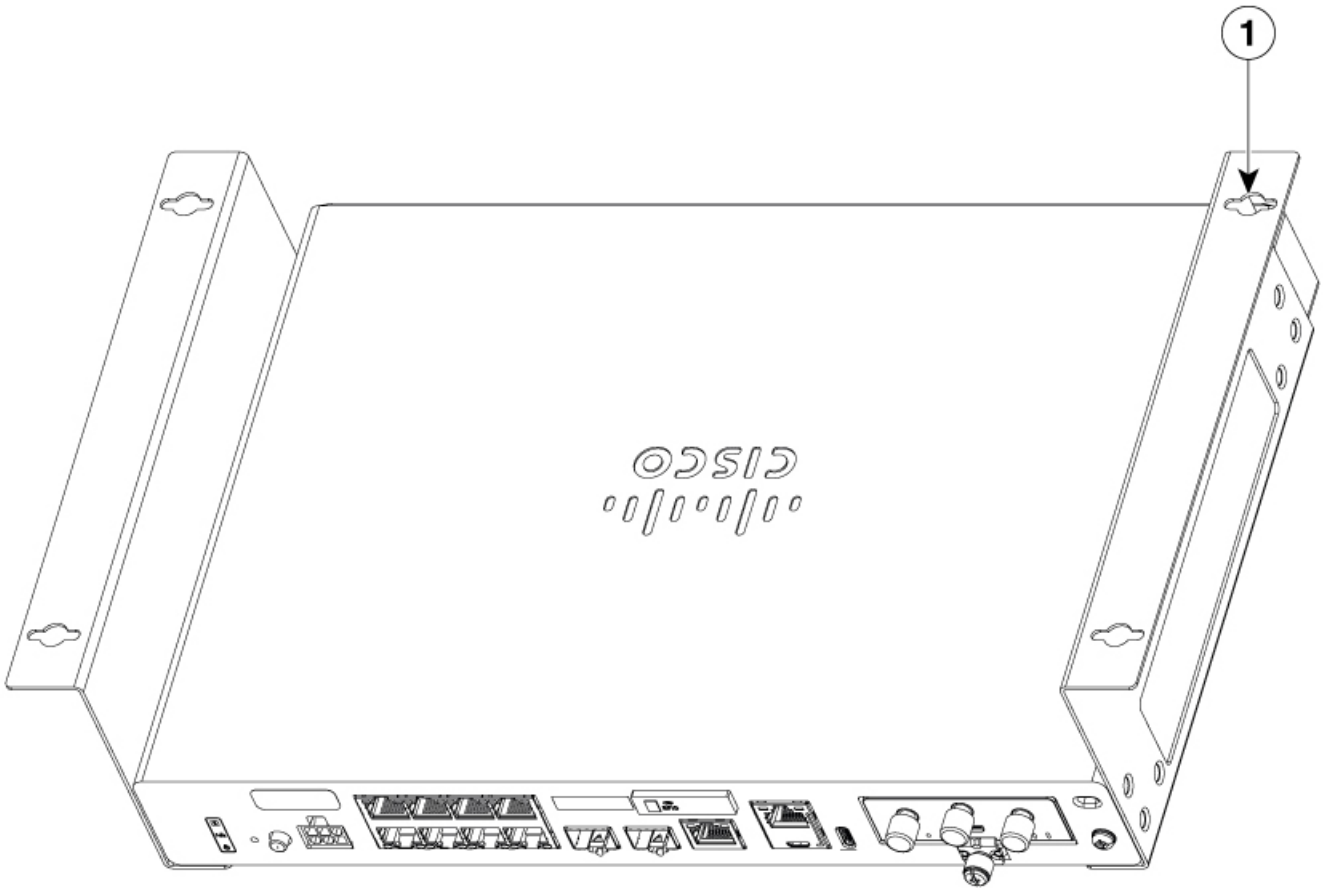


Figure 29: Router with the Brackets Attached (C8235-G2 shown)



Step 3 The router with the brackets attached can be used as a template to mark the screw locations to drill the pilot holes.

Figure 30: Mounting hole pattern for C8231-G2

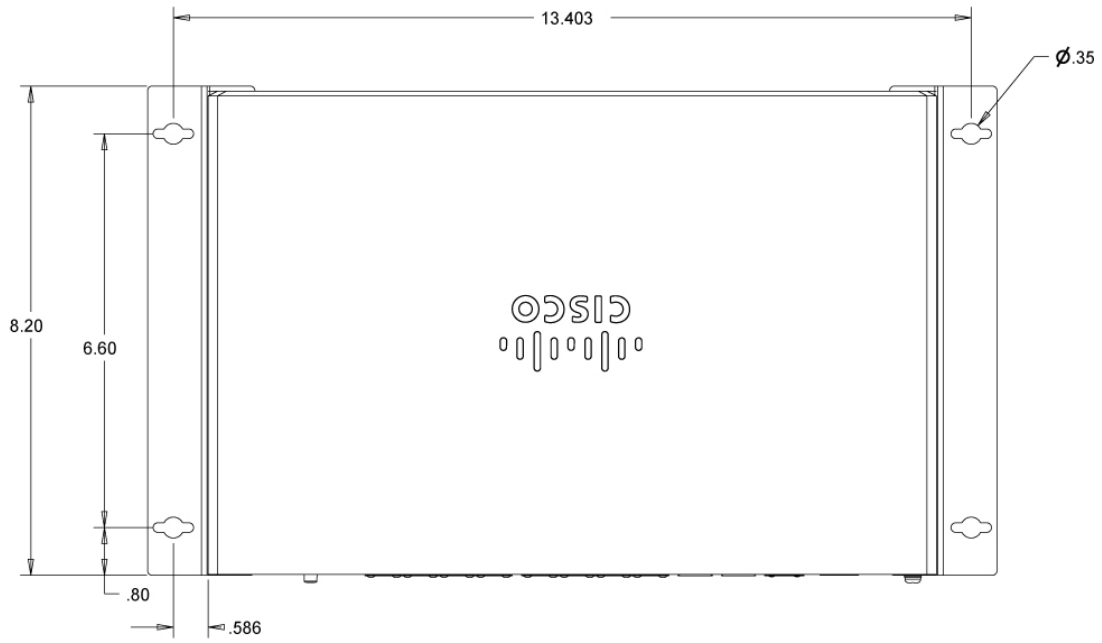
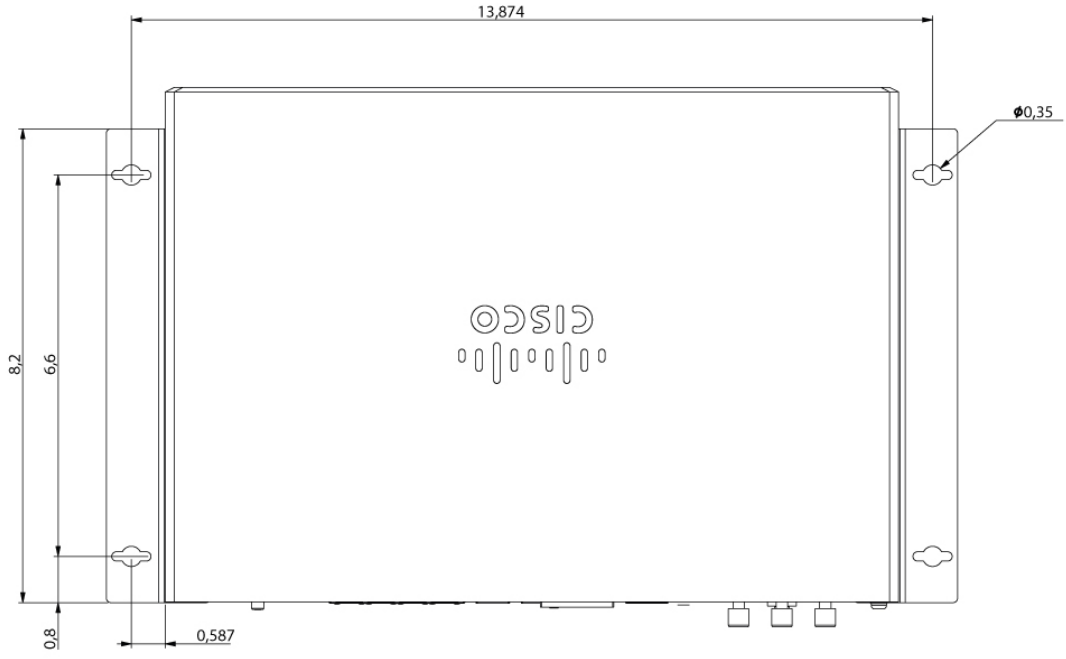


Figure 31: Mounting hole pattern for C8235-G2

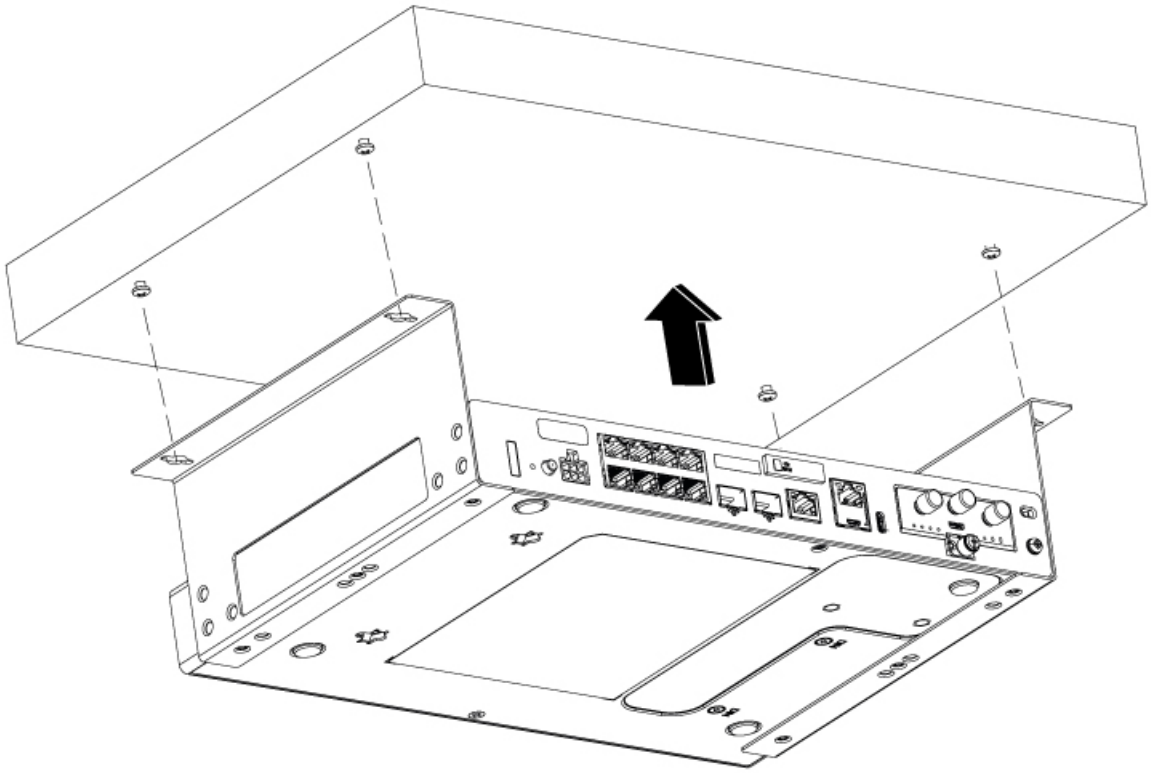


Note
Screws provided are size #8. It is recommended to drill a 1/8” pilot hole before installing the screws.

Step 4 Install the screws to the under the desk surface. Ensure to leave a gap between the screw-head and the desk surface. Align the large holes of each key-slot to each screw and push the router towards the desk.

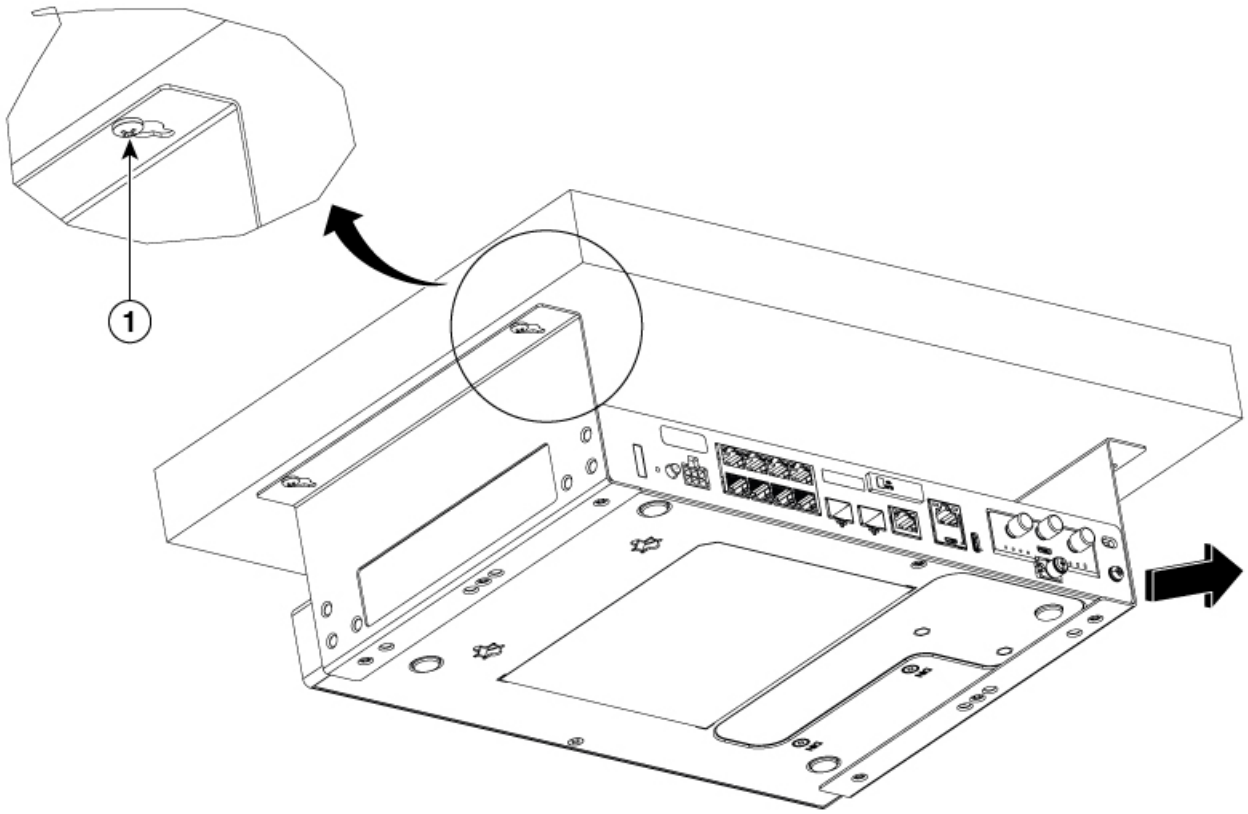
Figure 32: Pan-head Wood Screws

Figure 33: Mounting the Router under a Desk or Shelf



Step 5 When the bracket holes are past the screw heads, slide the assembly left or right to the thinner section of the key slot. Tighten the screws to secure the brackets.

Figure 34: Router mounted under the desk



Mount Router using DIN-Rail Brackets

Installing the router on a DIN-Rail requires an optional bracket kit not included with the router. Your chassis installation must allow unrestricted airflow for chassis cooling.

Attach Din-Rail Bracket on C8231-G2

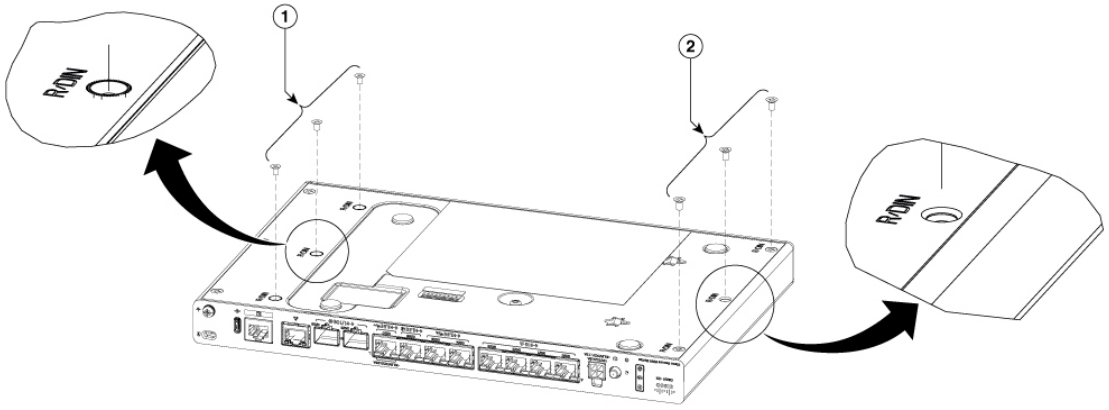
This procedure describes how to attach the bracket on the C8231-G2 router chassis:

Procedure

Step 1 Remove the six screws marked from the location with DIN from the bottom of the chassis.

Note
Three of the screws are black and need to be reassembled to the locations where they were removed.

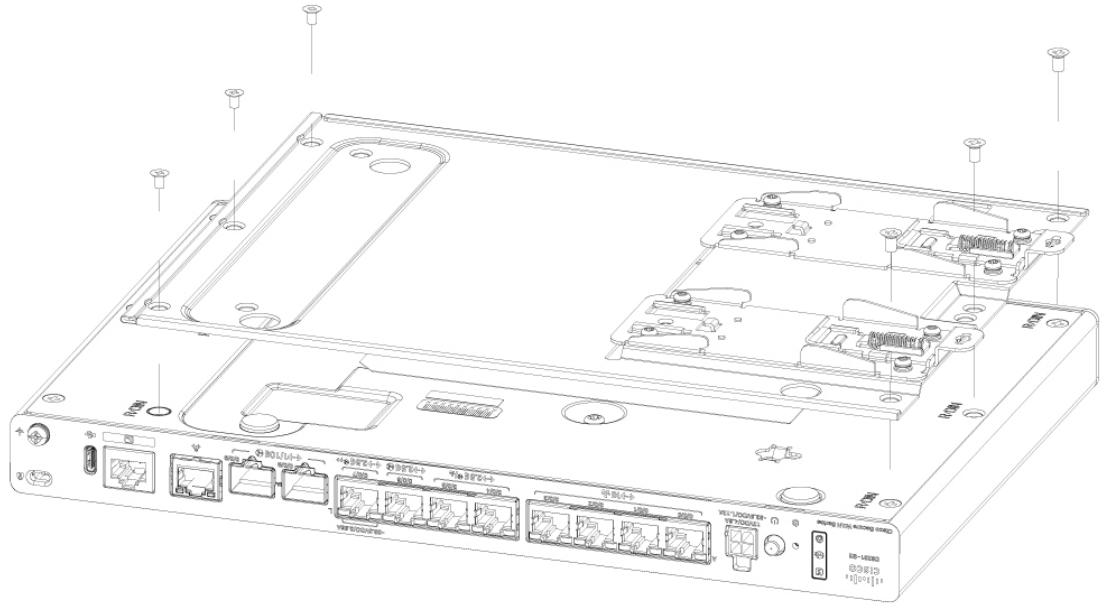
Figure 35: Attach the Din-Rail Brackets for C8231-G2



1	Router screws on the base of the router (black, M3)
2	Router screws on the base of the router (silver, #6-32)

Step 2 Place the din-rail bracket on the chassis and position the bracket over the six mounting holes. Secure the bracket by inserting the screws through the bracket. Ensure the black screws are secured in the same location.

Figure 36: Secure the Din-Rail Brackets for C8231-G2



Step 3 Once the bracket is attached to the router, it can be mounted onto the DIN rail.

Attach Din-Rail Bracket on C8235-G2

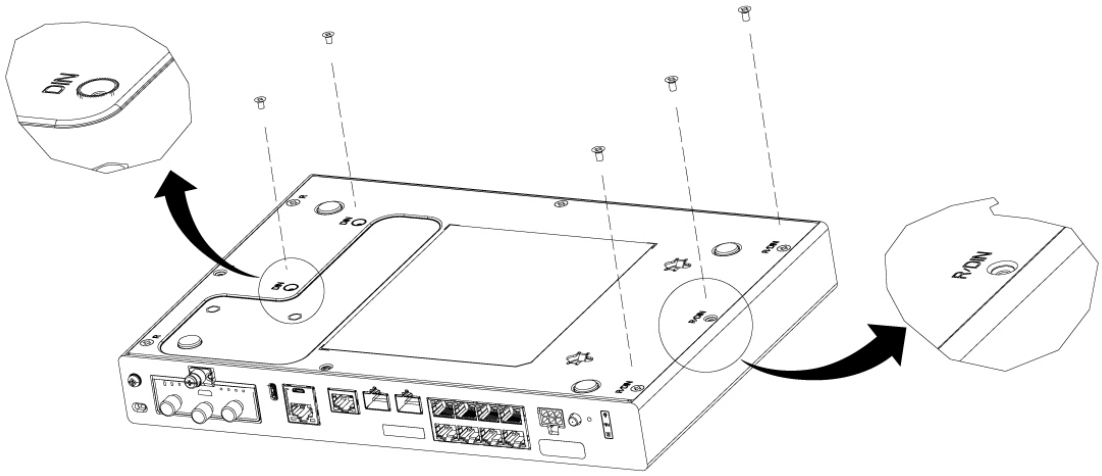
This procedure describes how to attach the bracket on the C8235-G2 router chassis:

Procedure

Step 1 Remove the five screws from location marked with DIN from the bottom of the chassis.

Example:

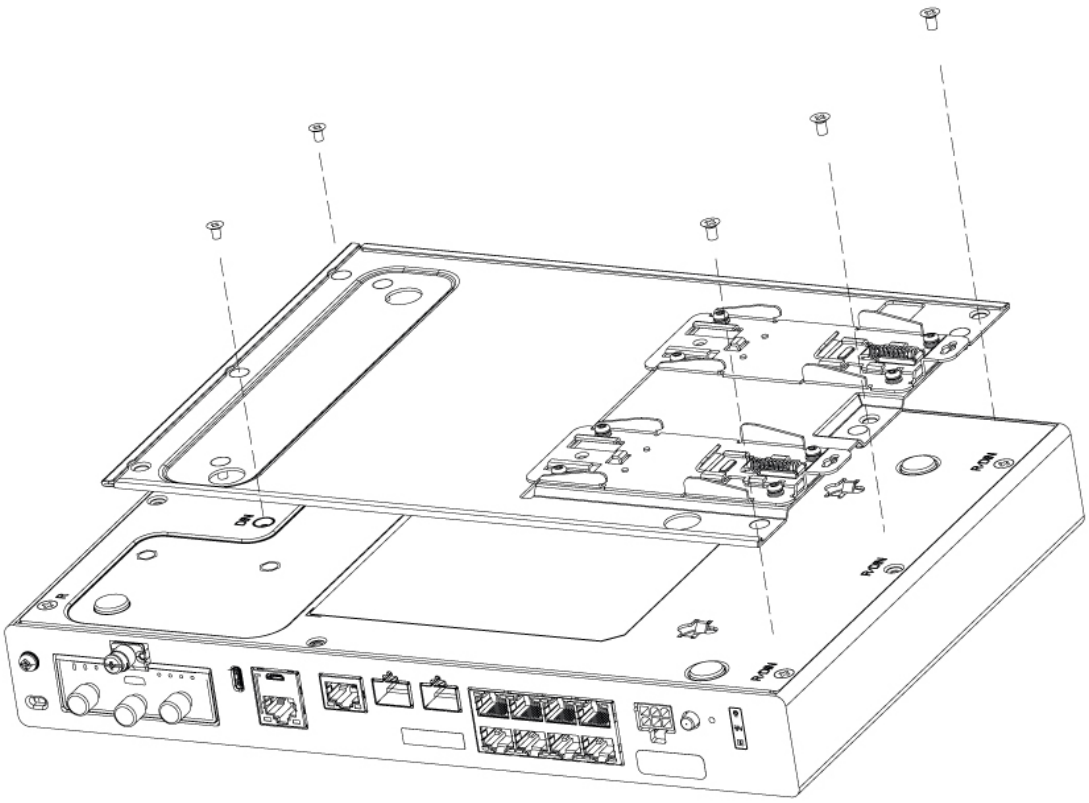
Figure 37: Attach the Din-Rail Brackets for C8235-G2



Step 2 Place the din-rail bracket on the chassis and position the bracket over the five mounting holes. Secure the bracket by inserting the screws through the bracket.

Example:

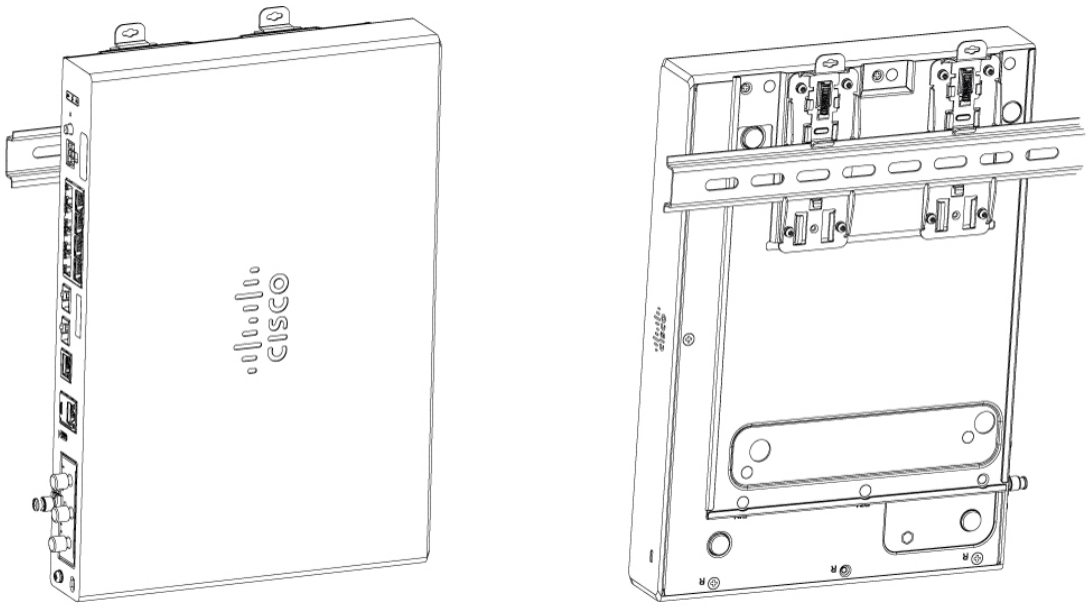
Figure 38: Secure the Din-Rail Brackets for C8235-G2



Step 3 Once the bracket is attached to the router, it can be mounted onto the DIN rail.

Example:

Figure 39: Mount the router using the DIN rail



Wall Mount the Router

The Cisco 8200 Series Secure Routers can be mounted using the Key-hole slots on the chassis base.

Warning **Statement 1094—**Read Wall-Mounting Instructions Before Installation

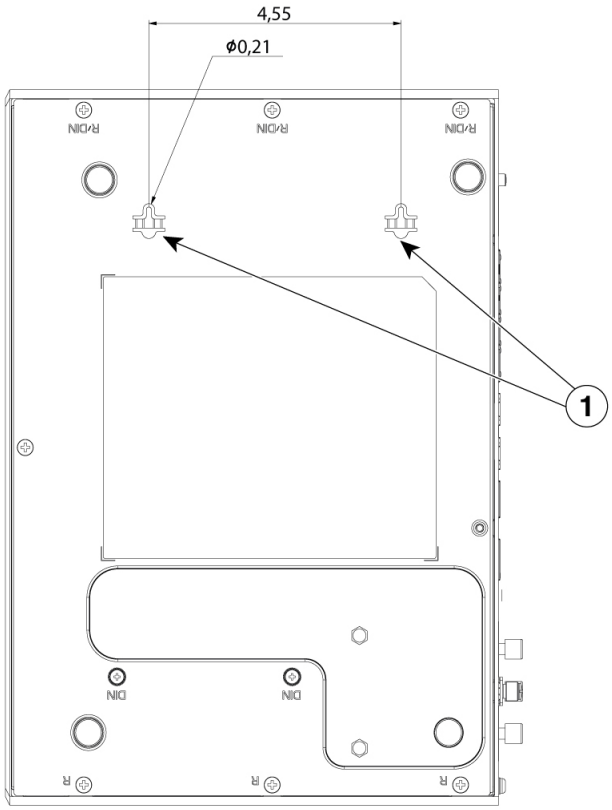
Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system.

Wall Mount Using Key-hole Slots

The Cisco 8200 Series Secure Routers have key-hole slots at the bottom of the chassis for mounting on a wall or other vertical surface.

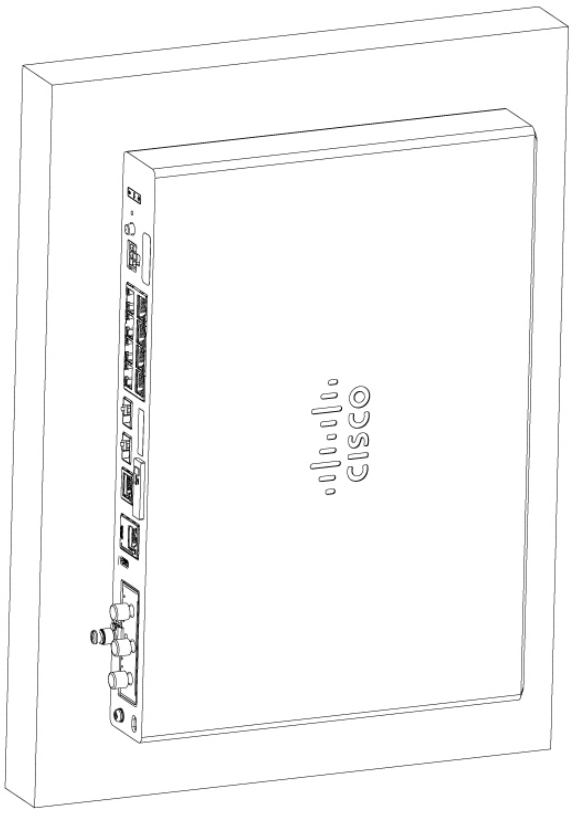
Note When choosing a location for wall mounting the router, consider cable limitations and wall structure.

Figure 40: Wall Mount Using Key-hole Slots - C8235-G2



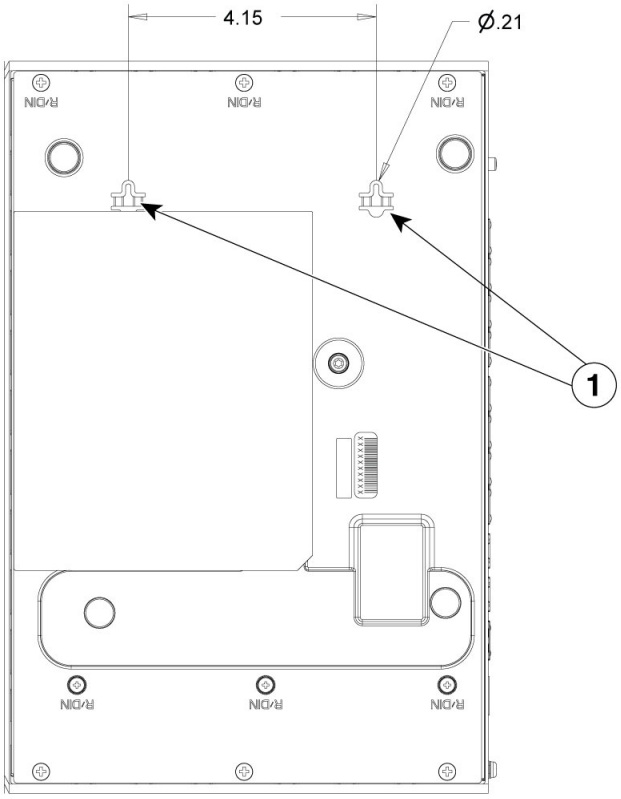
1	Key-hole slots

Figure 41: Wall Mount Orientation



1	Key-hole slots

Figure 42: Wall Mount Using Key-hole Slots - C8231-G2



1	Key-hole slots

Chassis Grounding

Warning Only trained and qualified personnel should be allowed to install or replace this equipment.

After you set up the router, connect the chassis to a reliable earth ground. The ground wire must be installed in accordance with local electrical safety standards. For safety information on grounding the chassis, refer to the chassis ground connection procedures.

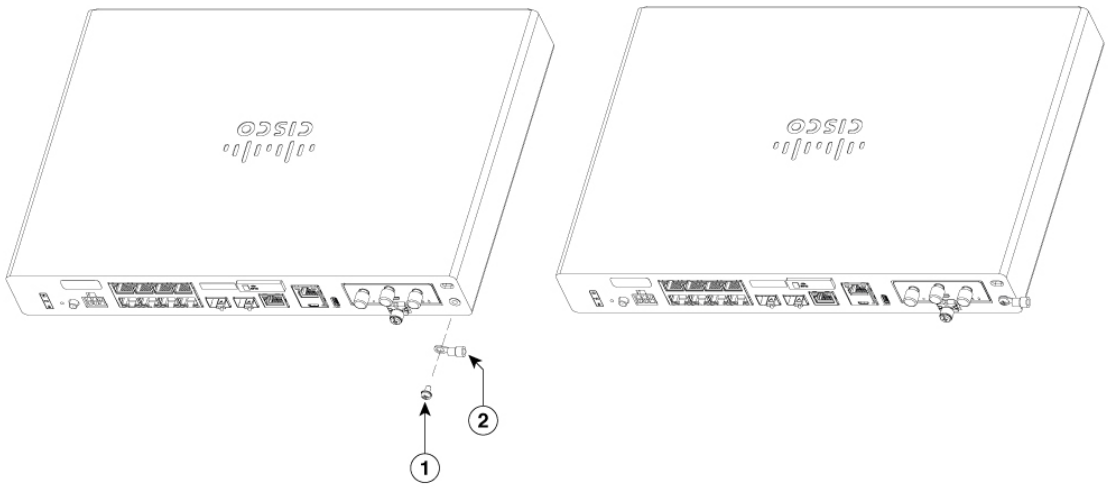
1. For grounding the chassis, use a copper wire of size of 14 AWG (2 mm²) and a ground lug. These are not provided with the router.
2. Use the UNC 6-32 screw, which has a length of about 0.25 inches.

To install the ground connection for your router, perform these steps:

1. Strip one end of the ground wire to the length required for the ground lug or terminal.
2. Crimp the ground wire to the ground lug or ring terminal, using a crimp tool of the appropriate size.

3. Attach the ground lug or ring terminal to the chassis as shown in the figures using the screw for the ground lug on the front of the router. Tighten the screw; the recommended torque is 8 to 10 inch-lbf (0.9 to 1.1 N-m).

Figure 43: Chassis Ground Connection Cisco 8200 Series Secure Routers

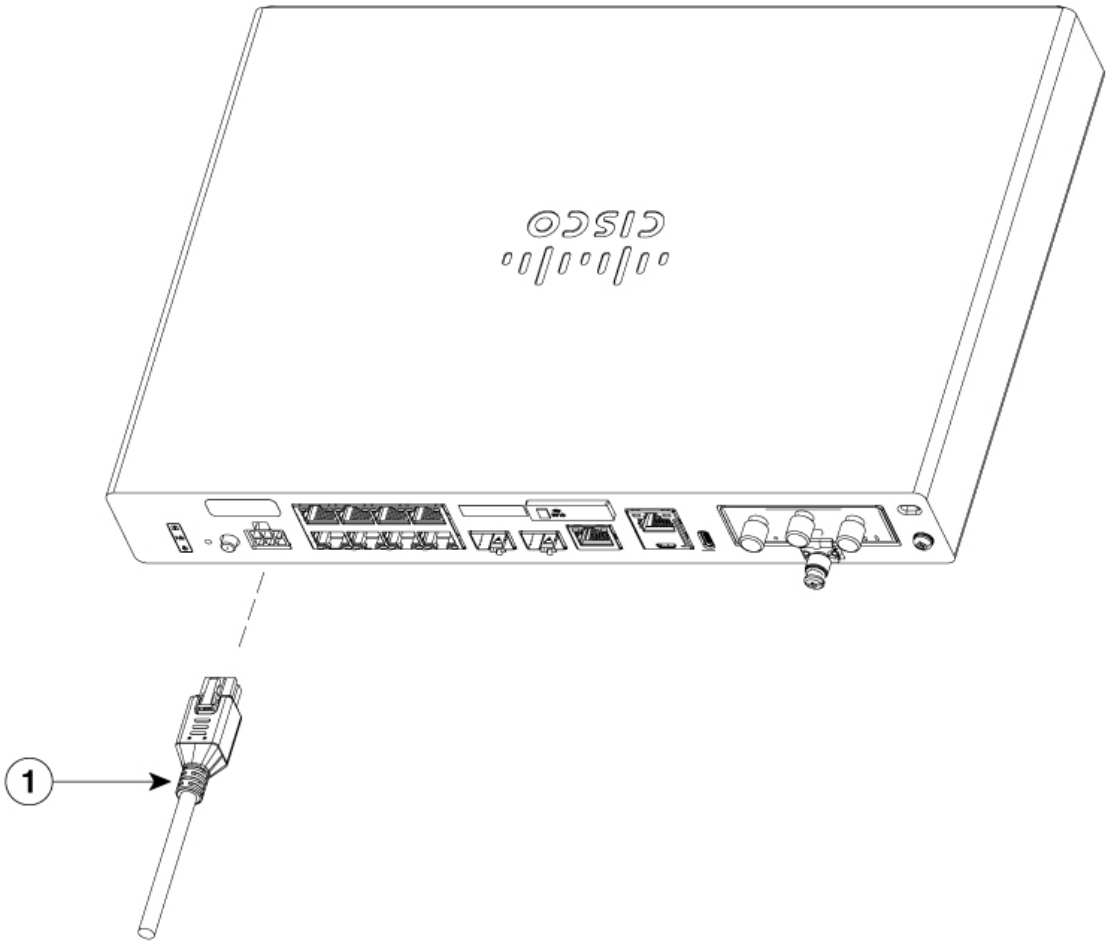


1	Screw (UNC 6-32)
2	Ground Lug (Customer provided)

Connect Power Cable

Power supply of the Cisco 8200 Series Secure Routers is an external AC to DC power adapter. The external DC power connector plugs into the router's 4 points power connector.

Figure 44: Power Cable for Cisco 8200 Series Secure Routers



1.	Power Cable

Install the Silicon Labs USB Device Driver

This section contains the following topics:

Install the Silicon Labs Windows USB Device Driver

Procedure

Step 1 Go to the Silicon Labs website (www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads), and click **CP210x Universal Windows Driver**.

Step 2 Unzip the downloaded folder, and select the installer for your system configuration. The Device Driver Installation Wizard begins.

Step 3 Click**Next** on the Installation Wizard, then click **Finish** to complete installation.

Step 4 Open the **Device Manager** on your system and click the **Ports (COM & LPT)** dropdown.

Step 5 Insert the USB console cable and power into your system. The **Device Manager** refreshes and indicates the newly-detected COM port.

Step 6 Open a terminal emulator and click the **Serial** connection type. Input values for the **Serial Line** and **Speed** (or **Baud Rate**).

Step 7 Click **Open**.

Step 8 The terminal emulator opens. Click **Enter** to view the console output response.

Install the Silicon Labs Mac USB Device Driver

Procedure

Step 1 Go to the Silicon Labs website (www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads), and click **CP210x VCP Mac OSX Driver**.

Step 2 Click the **Downloads** folder, then click **macOS_VCP_Driver** folder, and double-click the **SiLabsUSBDriverDisk.dmg** program.

Step 3 Click **Install CP210x VCP Driver**, and then click **Open.** The Driver Installer begins.

Step 4 Follow installer instructions. Click **Continue**, scroll all the way down, then click **Continue**, and click **Agree**.

Step 5 Click **Continue**, and enter your password. Then click **Install Helper**, and click **Close**.

Step 6 Insert the USB console cable and power into your system.

Step 7 Open a terminal and type **cd/dev**, and then type **ls-ltr**. Serial port **tty.SLAB_USBtoUART** appears.

Step 8 Type **screen /dev/tty.SLAB_USBtoUART <baudrate>** to see console output. Console shows response upon first **Enter** key if there is no output.

Connect WAN and LAN Interfaces

This section describes how to connect WAN and LAN interface cables. Before you connect the interface cables, refer to the following warning statements:

Ports and Cabling

This section summarizes typical WAN and LAN connections for Cisco 8200 Series Secure Routers. The connections summarized here are described in detail in the Cisco Modular Access Router Cable Specifications document on cisco.com.

Table 2: WAN and LAN Connections

Port or Connection	Port Type, Color[1]	Connection	Cable
Ethernet	RJ-45	Ethernet hub or Ethernet switch	Category 5 or higher Ethernet
Gigabit Ethernet SFP, optical	LC, color according to optical wavelength	1000BASE-SX, -LX, -LH, -ZX, -CWDM	Optical fiber as specified on applicable data sheet
Gigabit Ethernet SFP, copper	RJ-45	1000BASE-T	Category 5, 5e, 6 UTP

[1] Cable color codes are specific to Cisco cables.

Connection Procedures and Precautions

After you have installed the router chassis, perform these steps to connect the WAN and LAN interfaces:

- Connect each WAN and LAN to the appropriate connector on the chassis.
- Position the cables carefully so that you do not strain the connectors.
- Organize cables in bundles so that cables do not intertwine.
- Inspect the cables to make sure that the routing and bend radius is satisfactory. If necessary, reposition the cables.
- Install cable ties in accordance with site requirements.

Configure the Router at Startup

After installing the router and connecting the cables, you can configure the router with basic configurations. For more information on how to configure the router, see the Cisco 8200 Series Secure Software Configuration Guide.