



## Prepare for Installation



---

**Note** The images in this chapter are only for representational purposes, unless specified otherwise. The chassis' actual appearance and size may vary.

---



---

**Warning** **Statement 1071**—Warning Definition

### 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.

### SAVE THESE INSTRUCTIONS

---

- [Safety Guidelines, on page 1](#)
- [Compliance and Safety Information, on page 2](#)
- [Laser Safety, on page 3](#)
- [Energy Hazard, on page 4](#)
- [Preventing Electrostatic Discharge Damage, on page 4](#)
- [Cautions and Regulatory Compliance Statements for NEBS, on page 4](#)
- [Installation Guidelines, on page 5](#)
- [Procure Tools and Equipment, on page 6](#)
- [Prepare Your Location , on page 8](#)
- [Prepare Yourself , on page 8](#)
- [Prepare Rack for Chassis Installation, on page 9](#)
- [Clearance Requirements, on page 11](#)

## Safety Guidelines

Before you perform any procedure in this document, review the safety guidelines in this section to avoid injuring yourself or damaging the equipment. The following guidelines are for your safety and to protect the equipment. Because the guidelines do not include all hazards, be constantly alert.

- Keep the work area clear, smoke and dust-free during and after installation. Do not allow dirt or debris to enter into any laser-based components.
- Do not wear loose clothing, jewelry, or other items that could get caught in the router or other associated components.
- Cisco equipment operates safely when used in accordance with its specifications and product-usage instructions.
- If potentially hazardous conditions exist, do not work alone.
- Take care when connecting multiple units to the supply circuit so that wiring is not overloaded.
- 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 about whether suitable grounding is available.
- When installing or replacing the unit, the ground connection must always be made first and disconnected last.
- 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.
- Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

## Compliance and Safety Information

The Cisco 8000 Series Routers are designed to meet the regulatory compliance and safety approval requirements. For detailed safety information, see [Regulatory Compliance and Safety Information—Cisco 8000 Series Routers](#).




---

**Warning** **Statement 1089**—Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

---




---

**Warning** **Statement 9001**—Product Disposal

Ultimate disposal of this product should be handled according to all national laws and regulations.

---



**Warning Statement 1074**—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.



**Warning Statement 1090**—Installation by Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

There are no serviceable parts inside. To avoid risk of electric shock, do not open.



**Warning Statement 1091**—Installation by an Instructed Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed or skilled person.

There are no serviceable parts inside. To avoid risk of electric shock, do not open.



**Warning Statement 1029**—Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, they contain electromagnetic interference (EMI) that might disrupt other equipment, and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

## Laser Safety



**Warning Statement 1051**—Laser Radiation

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.



**Warning Statement 1055**—Class 1/1M Laser

Invisible laser radiation is present. Do not expose to users of telescopic optics. This applies to Class 1/1M laser products.





---

**Warning** **Statement 1255**—Laser Compliance Statement

Pluggable optical modules comply with IEC 60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 with or without exception for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice No. 56, dated May 8, 2019.

---

## Energy Hazard

The routers can be configured for a DC power source. Do not touch terminals while they are live. Observe the following warning to prevent injury.



---

**Warning** **Statement 1086**—Power Terminals

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

---

## Preventing Electrostatic Discharge Damage

Many router components can be damaged by static electricity. Not exercising the proper electrostatic discharge (ESD) precautions can result in intermittent or complete component failures. To minimize the potential for ESD damage, always use an ESD-preventive antistatic wrist strap (or ankle strap) and ensure that it makes adequate skin contact.



---

**Note** Check the resistance value of the ESD-preventive strap periodically. The measurement should be 1–10 megohms.

---

Before you perform any of the procedures in this guide, attach an ESD-preventive strap to your wrist and connect the leash to the chassis.

## Cautions and Regulatory Compliance Statements for NEBS

The NEBS-GR-1089-CORE regulatory compliance statements and requirements are discussed in this section.



---

**Warning** The intrabuilding port(s) of the equipment or subassembly, which is the management Ethernet port, must use shielded intrabuilding cabling/wiring that is grounded at both ends. Statement 7003

**Warning**

The intrabuilding port(s) of the equipment or subassembly, which is the management Ethernet port, must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring. Statement 7005

**Warning**

This equipment shall be connected to AC mains provided with a surge protective device (SPD) at the service equipment complying with NFPA 70, the National Electrical Code (NEC). Statement 7012

**Warning**

This equipment is suitable for installations utilizing the Common Bonding Network (CBN). Statement 7013

**Warning**

This equipment is suitable for installation in Network Telecommunications Facilities. Statement 8015

**Warning**

This equipment is suitable for installation in locations where the NEC applies. Statement 8016

## Installation Guidelines

Before installing the chassis, ensure that the following guidelines are met:

- Site is properly prepared so that there is sufficient room for installation and maintenance.
- Operating environment is within the ranges that are listed in Environment and Physical specifications. For more details on environmental requirements, see [Cisco 8000 Series Routers Data Sheet](#).
- Chassis is mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting the chassis 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 chassis in the rack.
- Airflow around the chassis and through the vents is unrestricted.
- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.
- Each port must match the wave-length specifications on each end of the cable, and the cable must not exceed the stipulated cable length.



**Note** Cisco 8000 Series Routers function in operating temperatures of up to 40°C at sea level. For every 300 meters (1000 ft), the maximum temperature is reduced by 1°C. For more details on environmental requirements, see [Cisco 8000 Series Routers Data Sheet](#).



**Note** For fixed-port routers that support port side exhaust fans and power supplies, the maximum temperature is reduced by 5°C (for example, 35°C at sea level or 30°C at 1500 meters).

## Procure Tools and Equipment

Obtain these necessary tools and equipment for installing the chassis:

- Number 1 and number 2 Phillips screwdrivers with torque capability to rack-mount the chassis.
- 3/16-inch flat-blade screwdriver.
- Tape measure and level.
- ESD wrist strap or other grounding device.
- Antistatic mat or antistatic foam.
- Two-hole ground lug (1).
- Grounding cable sized according to local and national installation requirements; the required length depends on the proximity of the switch to proper grounding facilities. Cisco provides a 6 AWG lug.
- Crimping tool for lug.
- Wire-stripping tool.
- M4 screws to fix brackets (16).
- M4 screws to fix a ground lug (2).

## Router Accessory Kit

The following table contains the router accessory kit PIDs. The router accessory kit contains the rack mount kit and the ground lug kit. The rack mount kit present in the accessory kit contains the screws and brackets required for installation.

**Table 1: Router Accessory Kit**

Router	Accessory Kit	Rack Depth Range
Cisco 8201 Router	8200-1RU-KIT	For rack depths between 25.82 in. (655.82 mm) and 32 in. (812.8 mm).

Router	Accessory Kit	Rack Depth Range
Cisco 8202 Router	8200-2RU-KIT	For rack depths between 25.30 in. (642.62 mm) and 34.30 in. (871.22 mm).
Cisco 8201-32FH and Cisco 8201-24H8FH Routers	8K-1RU-KIT-S	For rack depths between 23 in. (584.2 mm) and 32.29 in. (820.16 mm)
	8K-1RU-KIT-L	For rack depths between 32.40 in. (822.96 mm) and 42 in. (1066.8 mm)
Cisco 8202-32FH-M Router	8K-2RU-KIT-S	For rack depths between 23 in. (584.2 mm) and 32.29 in. (820.16 mm)
	8K-2RU-KIT-L	For rack depths between 32.40 in. (822.96 mm) and 42 in. (1066.8 mm)

## Router Air Filter Kit



**Note** Air filters are for single time use only.

The following table contains the air filter PIDs and the items description for the Cisco 8202 series chassis:

**Table 2: Router Air Filter Kits**

Router	Air Filter Accessory Kit	Description
Cisco 8202 Router	8202-FILTER-PI	Port side air filter assembly for Port-Side-Intake configuration.
Cisco 8202 Router	FILTER-2RU-PE	Fan side air filter assembly for Port-Side-Exhaust configuration.
Cisco 8202-32FH-M Router	8K-2RU-FILTER	Port side air filter assembly for Port-Side-Intake configuration.



**Note** Only port-side intake air filter is available for the Cisco 8202-32FH-M chassis.

# Prepare Your Location

This section illustrates how the building that houses the chassis must be properly grounded to the earth ground.

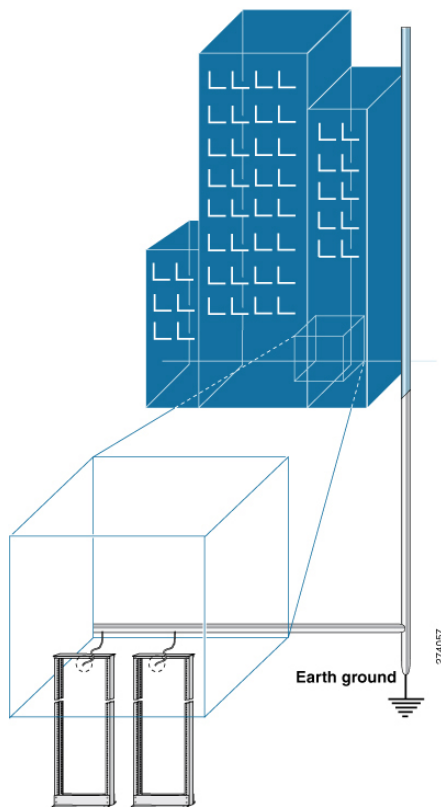


**Note** Unless specified otherwise, the image is only for representational purposes. The rack's actual appearance and size may vary.



**Note** This image is only for representational purposes. Your grounding requirement depends on your building.

*Figure 1: Building with Rack Room Connected to Earth Ground*

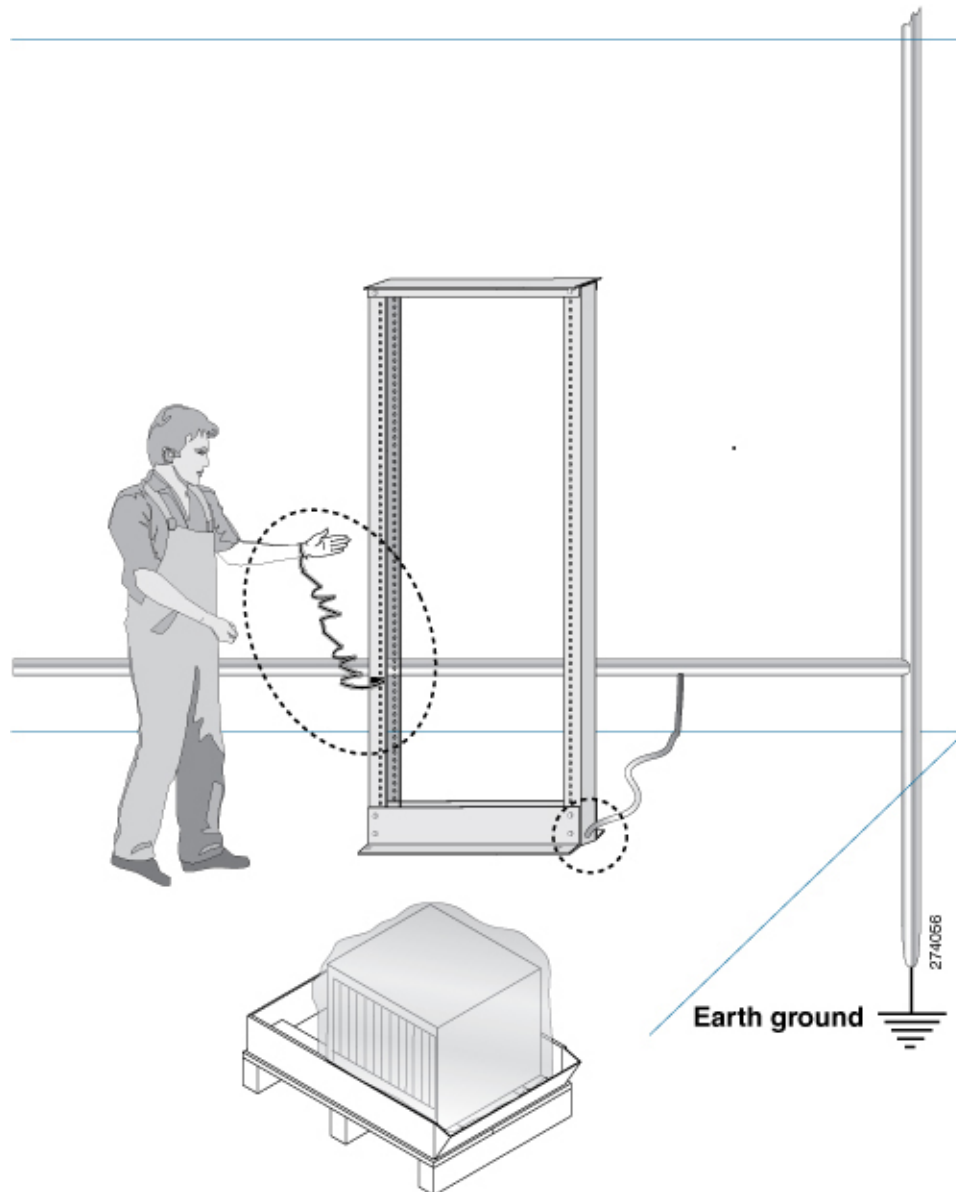


# Prepare Yourself

This section illustrates how to prepare yourself before removing the chassis from the sealed antistatic bag. The figures show how to cuff the ESD strap around the wrist and the ground cord that connects the cuff to the ground. ESD wrist straps are the primary means of controlling static charge on personnel.



*Figure 2: Wearing the ESD Strap*



## Prepare Rack for Chassis Installation

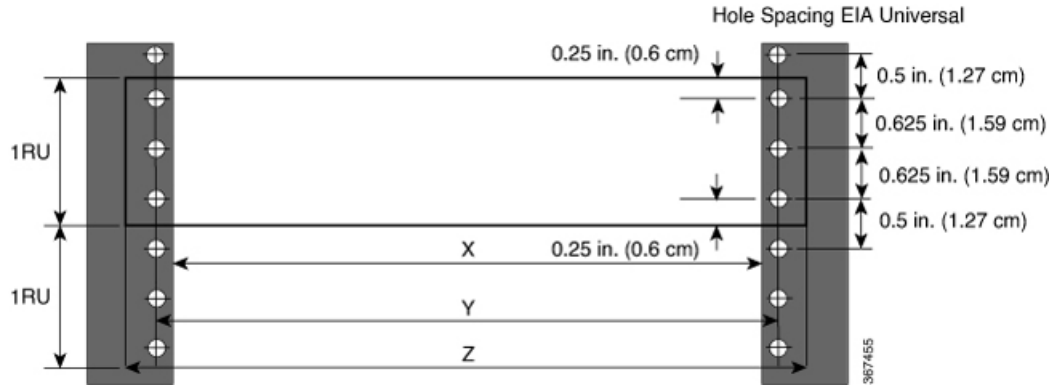
Install the Cisco 8200 Series Routers on a standard 19 inch, Electronic Industries Alliance (EIA) rack with mounting rails that conform to English universal hole spacing according to Section 1 of the ANSI/EIA-310-D-1992 standard.



**Note** The Cisco 8201, Cisco 8202, Cisco 8201-32FH, Cisco 8201-24H8FH, Cisco 8202-32FH-M, router rack mount kit contains the rack mounting brackets for 19-inch rack. To install the chassis in a 23-inch rack or an ETSI rack, you need adapter plates to accommodate the 19-inch rack mount brackets.

The spacing between the posts of the rack must be (EIA-310-D-1992 19-inch rack compatible) wide enough to accommodate the width of the chassis.

**Figure 3: Rack Specification EIA (19 and 23 inches)**



**Table 3: Rack Specification EIA (19 and 23 inches)**

Post Type	Rack Type	Rack Front Opening (X)	Rack Mounting Hole Center-Center (Y)	Mounting Flange Dimension (Z)
4 Post	19 inches (48.3 centimeters)	450.8mm (17.75")	465mm (18.312")	482.6mm (19")
2 Post				
4 Post	23 inches (58.4 centimeters)	552.45mm (21.75")	566.7mm (22.312")	584.2mm (23")
2 Post				

Before you move the chassis or mount the chassis into the rack, we recommend that you do the following:

**Step 1** Place the rack at the location where you plan to install the chassis.

**Step 2** (Optional) Secure the rack to the floor.

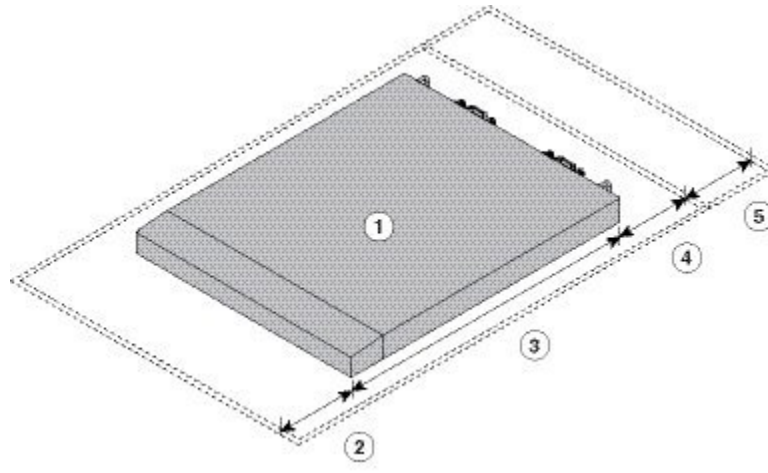
To bolt the rack to the floor, a floor bolt kit (also called an anchor embedment kit) is required. For information on bolting the rack to the floor, consult a company that specializes in floor mounting kits (such as Hilti; see [Hilti.com](http://Hilti.com) for details). Make sure that floor mounting bolts are accessible, especially if annual retorquing of bolts is required.

**Note** Ensure that the rack in which the chassis is being installed is grounded to earth ground.

# Clearance Requirements

The chassis requires front-to-back airflow. Leave at least 6.0 in. (15.24 cm) front and rear clearance for air intake or exhaust. We recommend that you have at least 6.0 in. (15.24 cm) of space in front of the chassis to provide room to maneuver the cables to make the required connections. Leave an extra 6.0 in. (15.24 cm) rear clearance for removal and installation of power supplies and fan modules.

**Figure 4: Clearances Required Around the Chassis**



1	Chassis	4	6.0 in. (15.24 cm) rear clearance for air intake/exhaust.
2	6.0 in. (15.24 cm) front clearance for air intake/exhaust.	5	Additional 6.0 in. (15.24 cm) rear clearance for removal and installation of power supplies and fan modules.
3	(8201-32FH and 8021-24H8FH routers) 23.6 in. (59.94 cm) Chassis depth. (Other routers) 20.01 in. (50.82 cm) Chassis depth.		

