



# Installing the Cisco MDS 9220i Switch

This chapter describes how to install the Cisco MDS 9220i switch and its components.

Before you install, operate, or service the system, see the [Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family](#) document for important safety information.



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**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

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**Warning** Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

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Each new switch requires a license. See the [Cisco MDS 9000 Series Licensing Guide, Release 8.x](#) for instructions on installing a license.

- [Preinstallation, on page 1](#)
- [Cisco MDS 9000 Series Telco and EIA Shelf Bracket, on page 2](#)
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## Preinstallation

This section includes the following information:

## Installation Options

A Cisco MDS 9220i Switch can be installed using the following methods:

- In an open EIA rack

- In a perforated EIA cabinet

The rack-mount kit enables you to install the switch into racks of varying depths. You can use the rack-mount kit parts to position the switch with easy access to either the port connections end of the chassis or the end of the chassis with the fan and power supply modules. For instructions on how to install the rack-mount kit, see the [Installing the Switch, on page 7](#) section.

## Cisco MDS 9000 Series Telco and EIA Shelf Bracket

The optional Telco and EIA Shelf Bracket Kit (part number DS-SHELF=) can temporarily or permanently support the Cisco MDS 9220i switch during installation. After the front rack-mount brackets are securely attached to the rack-mounting rails, the shelf bracket can be removed.

The Telco and EIA Shelf Bracket kit supports the following configurations:

- A Cisco MDS 9220i Switch in a two-post Telco rack
- A Cisco MDS 9220i Switch in a four-post EIA rack



**Note** Telco and EIA Shelf Bracket optional kit is not provided with the switch; to order the kit, contact your switch supplier.

This section describes the procedure for installing a Cisco MDS 9220i switch in a rack or cabinet using the optional Telco and EIA Shelf Bracket Kit.

## Rack-Mounting Guidelines



**Caution**

- If the rack is on wheels, ensure that the brakes are engaged or the rack is otherwise stabilized.
- If you are installing this kit in an EIA rack, attach the shelf to all four rack-mounting posts; the EIA posts may not be thick enough to prevent flexing of shelf brackets if only two posts are used.

## Before Installing the Shelf Brackets

Before installing the shelf brackets, inspect the contents of your kit. The following table lists the contents of the shelf bracket kit:

Quantity	Part Description
2	Slider brackets
2	Shelf brackets
1	Crossbar

Quantity	Part Description
2	10-32 x 3/8-in. Phillips pan-head screws
16	12-24 x 3/4-in. Phillips screws
16	10-24 x 3/4-in. Phillips screws

## Required Equipment

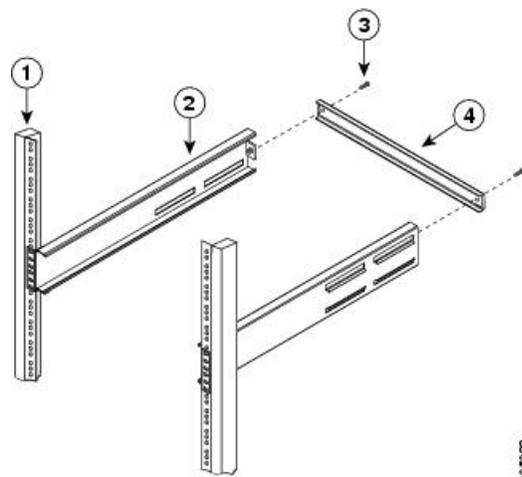
You need the following equipment for this installation:

- Number 2 Phillips screwdriver
- Tape measure and level (to ensure that shelf brackets are at level with each other)
- NEBS plate - If the airflow is port-side intake

## Installing the Shelf Bracket Kit into a Two-Post Telco Rack

The following figure shows the installation of the shelf bracket kit into a two-post Telco rack:

**Figure 1: Installing the Shelf Bracket Kit into a Telco Rack**



1	Rack-mounting post	3	10-32 screws
2	Shelf bracket	4	Crossbar

To install the shelf brackets in a Telco rack, follow these steps:

### Step 1

Position a shelf bracket inside a rack-mounting post as shown in and align the screw holes at the front of the shelf bracket with the holes in the rack-mounting post. Then, attach the shelf bracket to the rack-mounting post using a minimum of four 12-24 or 10-24 screws.

**Note** The bottom hole of the shelf bracket should align with the bottom hole (the hole immediately above the 1/2 in. spacing) of a rack unit on the rack-mounting post.

**Step 2** Repeat Step 1 with the other shelf brackets.

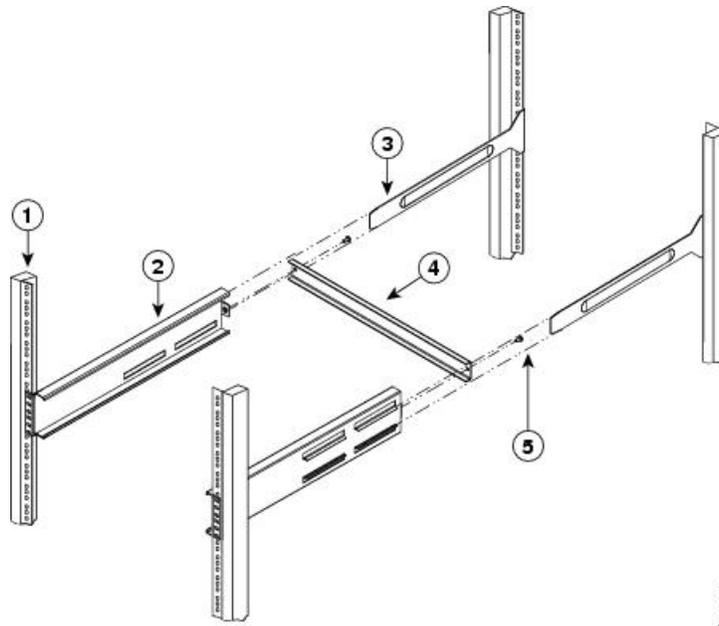
**Step 3** Verify that the shelf brackets are at the same height (using the level or tape measure, as desired).

**Step 4** Attach the crossbar to the rear of the shelf brackets, as shown in , using the 10-32 screws.

## Installing the Shelf Bracket Kit into a Four-Post EIA Rack

The following figure shows the installation of the shelf bracket kit into a four-post EIA rack:

*Figure 2: Installing the Shelf Bracket Kit into an EIA Rack*



1	Rack-mounting post	4	Crossbar
2	Shelf bracket	5	10-32 screws
3	Slider post		

To install the shelf brackets in an EIA rack, follow these steps:

**Step 1** Position a shelf bracket inside the rack-mounting posts, as shown in [Figure 2: Installing the Shelf Bracket Kit into an EIA Rack, on page 4](#). Align the screw holes at the front of the shelf bracket with the holes in the front rack-mounting post. Then, attach the shelf bracket to the front rack-mounting post using a minimum of four 12-24 or 10-24 screws.

**Note** The bottom hole of the shelf bracket should align with the bottom hole (the hole immediately above the 1/2 in. spacing) of a rack unit on the rack-mounting post.

- Step 2** Repeat Step 1 with the other shelf brackets.
- Step 3** Verify that the shelf brackets are at the same height (using the level or tape measure, as desired).
- Step 4** Attach the crossbar to the shelf brackets, as shown in [Figure 2: Installing the Shelf Bracket Kit into an EIA Rack, on page 4](#), using the 10-32 screws.
- Step 5** Insert the slider posts into the shelf brackets, as shown in [Figure 2: Installing the Shelf Bracket Kit into an EIA Rack, on page 4](#). Attach them to the rear rack-mounting posts, using a minimum of four 12-24 or 10-24 screws.
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## Preinstallation Guidelines

### Airflow Considerations

The switch comes with fan modules that have port-side intake or port-side exhaust and power supply units that have port-side intake, port-side exhaust, or bidirectional airflow for cooling the switch. If you are positioning the port-end of the switch in a cold aisle, make sure that the switch has a port-side intake fan and power supply units with red colorings. If you are positioning the fan and power supply units in a cold aisle, make sure that the switch has port-side exhaust fan and power supply units with blue colorings. Bidirectional power supply modules with white coloring can be used with either of these options. All fan modules and power supply units must have the same direction of airflow.

### Connection Guidelines for AC Powered Systems

To connect to the Cisco MDS 9220i switch AC power supply units to the site power source, follow these guidelines:

- Each power supply should have its own dedicated branch circuit.
- The AC power receptacles that are used to plug in the chassis must be the grounding type. The grounding conductors that connect to the receptacles should connect to protective earth ground in the service equipment.

### Installation Guidelines

Follow these guidelines when installing the Cisco MDS 9220i switch:

- Plan your site configuration and prepare the site before installing the switch. The recommended site planning tasks are listed in the section.
- Ensure that there is adequate space around the switch to allow for servicing the switch and for adequate airflow. The airflow requirements are listed the section.
- Ensure that you are positioning the switch in a rack so that it intakes cold air from the cold aisle and exhausts hot air to the hot aisle. For more information, see the section.
- Ensure that the air-conditioning meets the heat-dissipation requirements listed in the section.
- Ensure that the cabinet or rack meets the requirements listed in the section.

- Ensure that the chassis is adequately grounded. If the switch is not mounted in a grounded rack, we recommend that you connect both the system ground on the chassis and the site power ground to an earth ground.
- Ensure that the site power meets the power requirements listed in the section. If available, you can use an uninterruptible power supply (UPS) to protect against power failures.




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**Caution** Avoid UPS types that use ferro-resonant technology. These UPS types can become unstable with systems such as the Cisco MDS 9000 Series, which can in turn have substantial current draw fluctuations because of fluctuating data traffic patterns.

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- Ensure that circuits are sized according to local and national codes.




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**Caution** To prevent loss of input power, ensure that the total maximum loads on the circuits supplying power to the switch are within current ratings for wiring and breakers.

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- As you install and configure the switch, record the information listed in the section.

## Unpacking and Inspecting the Switch




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

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**Tip** Retain the shipping container in case the chassis has to be shipped in the future.

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**Note** The switch is thoroughly inspected before shipment. If any damage occurs during transportation, or if any item is missing, contact your customer representative immediately. If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco, contact [Cisco Technical Support](#).

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To inspect the shipment, follow these steps:

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 and connectors
  - Optional items, if any, ordered
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
  3. Check to be sure that all the power supplies and the fan trays have the expected direction of airflow. Port-side intake airflow modules have a red coloring, port-side exhaust airflow modules have a blue coloring, and bidirectional airflow modules have white coloring. For more information, see the [Power Supplies](#) and [Fan Modules](#) sections.

## Installing the Switch

This section describes how to use the rack-mount kit to install the Cisco MDS 9220i switch into a cabinet or rack that meets the requirements that are described in the [Cabinet and Rack Requirements](#) section.

## Installing the Switch on Shelf Brackets

This section provides general instructions for installing the switch on top of the shelf brackets. Note that this is an optional task.



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**Note** Before you install, operate, or service the system, refer to [Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family](#) for important safety information.

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To install the switch on top of the shelf brackets, follow these steps:

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- Step 1** Verify that the shelf brackets are level and securely attached to the rack-mounting posts, the crossbar is securely attached to the shelf brackets, and the rack is stabilized.
  - Step 2** Slide the switch onto the shelf brackets, ensuring that it is squarely positioned.
  - Step 3** Attach the switch to the rack-mounting posts.

**Caution** We recommend that you ground the chassis 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.

**Note** For switches installing in the USA, the grounding lug must be NRTL listed and compatible with copper conductors. Only copper conductors (wires) must be used and these conductors must comply with National Electrical Code (NEC) for ampacity.

## NEBS Compliance

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 must use shielded intrabuilding cabling/wiring that is grounded at both ends. Statement 7003

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**Warning** To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the copper-based RJ-45, T1/E1 RJ-48, and T3/E3 ports only to intra-building or unexposed wiring or cable. The intrabuilding cable must be shielded and the shield must be grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metalically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building 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 metalically to OSP wiring. Statement 7003

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**Warning** The intrabuilding port(s) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding port(s) of the equipment or subassembly **MUST NOT** be metalically connected to interfaces that connect to the OSP or its wiring for more than 6 meters (approximately 20 feet). These interfaces are designed for use as intrabuilding interfaces only (Type 2, 4, or 4a ports as described in GR-1089) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metalically to an OSP wiring system. Statement 7005

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**Warning** Connect this equipment to AC mains that are provided with a surge protective device (SPD) at the service equipment that complies with NFPA 70, the National Electrical Code (NEC). Statement 7012

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

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**Warning** The battery return conductor of this equipment shall be treated as (DC- I). Statement 7016

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

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

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Network Equipment Building System (NEBS) is a USA standard for telecommunications equipment safety and reliability. In the case of port-side intake airflow the system must be NEBS compliant. To be NEBS compliant, install the NEBS kit by following these steps:

1. Install two front rack-mount brackets onto the switch.
  - a. Determine which end of the chassis is to be located in the cold aisle as follows:
    - If the switch has port-side intake modules (fan modules with red coloring), position the switch so that its ports are in the cold aisle.
    - If the switch has port-side exhaust modules (fan modules with blue coloring), position the switch so that its fan and power-supply modules are in the cold aisle.
  - b. Position a front-mount bracket so that four of its screw holes are aligned to the screw holes on the side of the chassis.



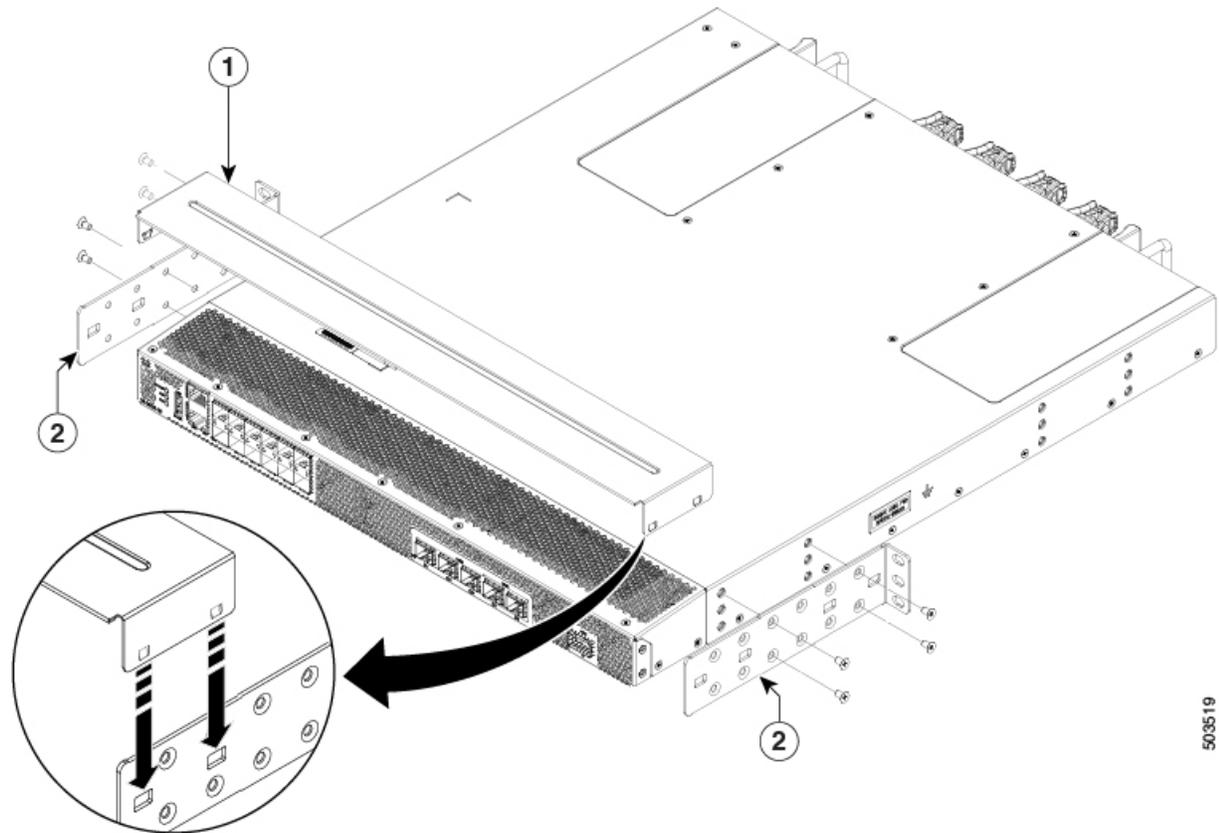
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**Note** You can align any four of the holes in the front rack-mount bracket to four of the six screw holes on the side of the chassis. The holes that you use depend on the requirements of your rack and the amount of clearance required for interface cables (3 in. [76 mm] minimum) and module handles (1 in. [25 mm] minimum).

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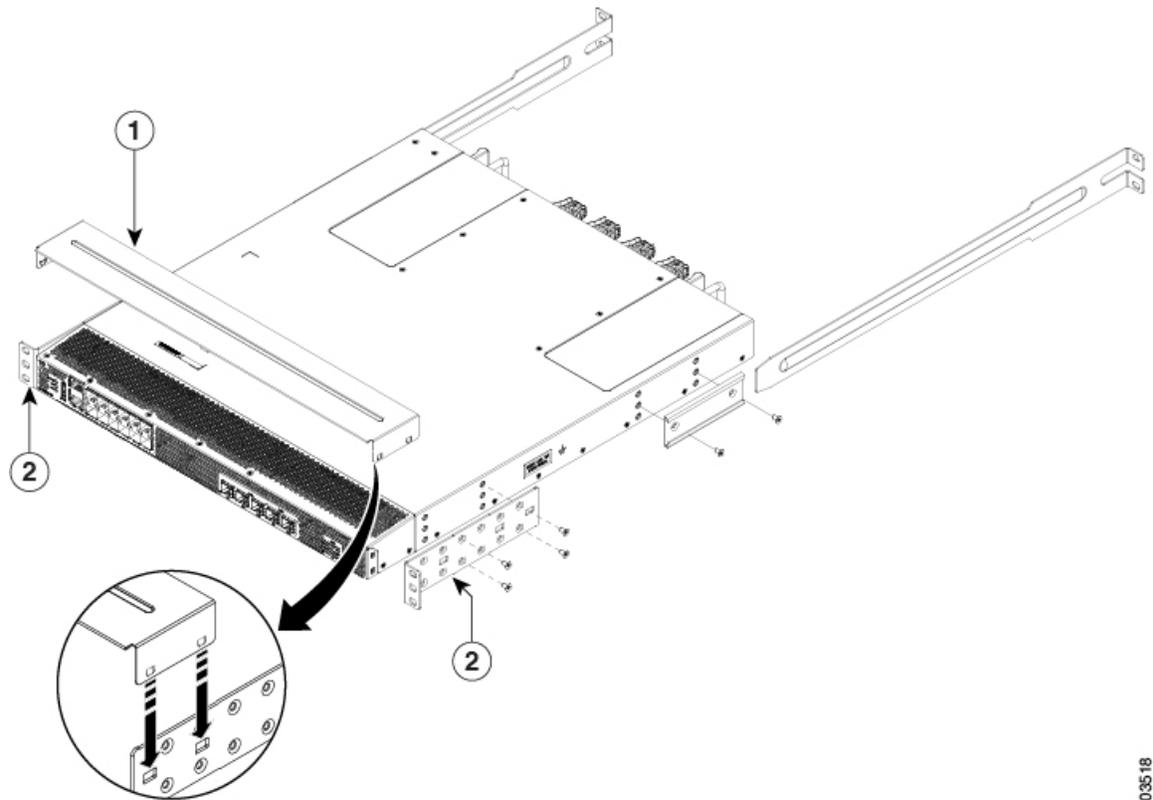
- c. Secure the front-mount bracket to the chassis using the four M4 screws and tighten each screw to 12 in-lb (1.36 N·m) of torque.
    - d. Repeat Step 1 for the other front rack-mount bracket on the other side of the switch, and be sure to position that bracket the same distance from the front of the switch.
2. Align the tabs on the NEBS air baffle on the slots on the front rack-mount bracket and snap the NEBS air baffle into place as shown in [Figure 3: NEBS Kit for 2-Post installation, on page 10](#) or [Figure 4: NEBS Kit for 4-Post installation, on page 11](#).

Figure 3: NEBS Kit for 2-Post installation



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Figure 4: NEBS Kit for 4-Post installation



1.	NEBS air baffle	2.	Front rack-mount bracket
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For more information on how to install the switch, see the [Installing the Switch in a 4-Post Rack, on page 11](#) and [Installing the Switch into a 2-Post Rack, on page 15](#).

## Installing the Switch in a 4-Post Rack

To install the switch, you must attach the front and rear mounting brackets to the switch, install the slider rails on the rear of the rack, slide the switch into the slider rails, and secure the switch to the front of the rack. Typically, the front of the rack is the side that is easiest to access for maintenance.

### Before you begin

- Inspect the switch shipment to ensure that you have everything you ordered.
- Make sure that the switch rack-mount kit includes the following parts:
  - Front rack-mount brackets (2)
  - Rear rack-mount brackets (2)
  - Slider rails (2)
  - M4 x 0.7 x 8-mm Phillips countersink screws (12)

- The rack is installed and secured to its location.

**Step 1** Install two front-mount brackets to the switch as follows:

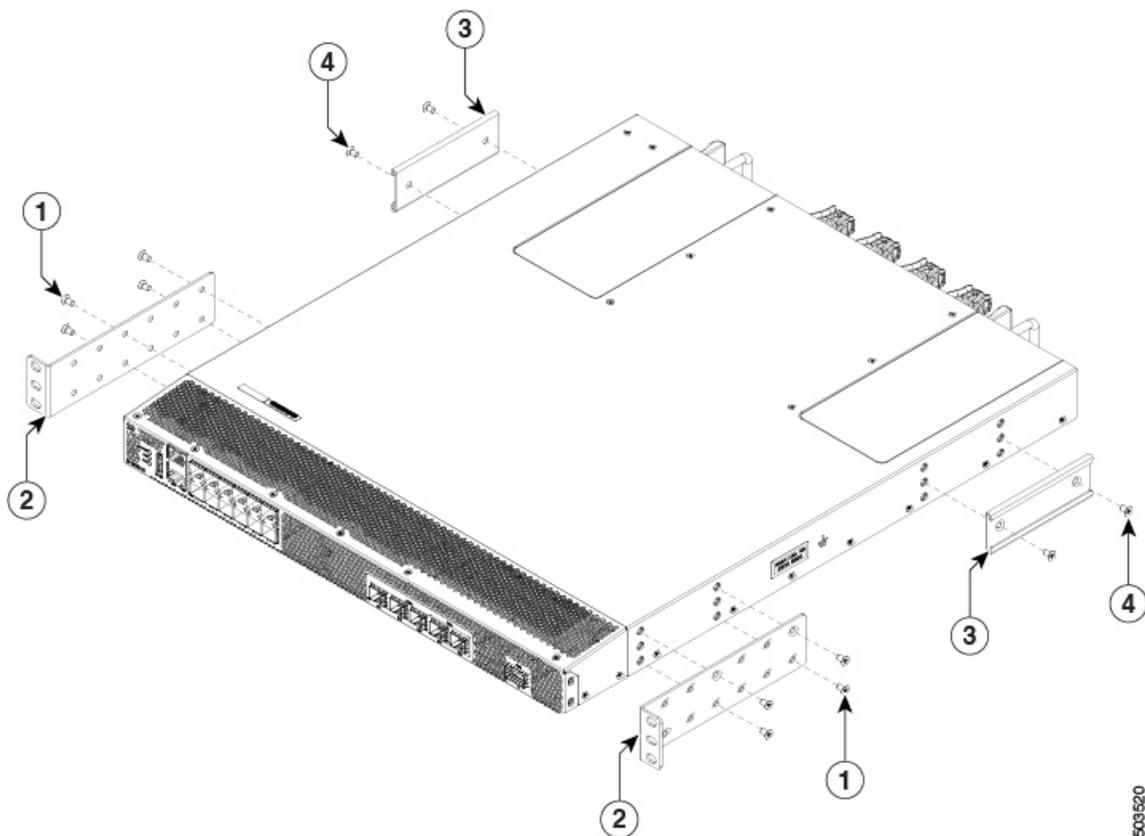
a. Determine which end of the chassis is to be located in the cold aisle as follows:

- If the switch has port-side intake modules (fan modules with red coloring), position the switch so that its ports are in the cold aisle.
- If the switch has port-side exhaust modules (fan modules with blue coloring), position the switch so that its fan and power-supply modules are in the cold aisle.

b. Position a front-mount bracket so that four of its screw holes are aligned to the screw holes on the side of the chassis.

**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 (3 in. [76 mm] minimum) and module handles (1 in. [25 mm] minimum).

**Figure 5: Installing the Switch in a 4-Post Rack**



1	Four M4 screws	3	Rack-mount guide
2	Rack-mount bracket	4	Two M4 screws

- c. Secure the front-mount bracket to the chassis using the four M4 screws and tighten each screw to 12 in-lb (1.36 N·m) of torque.
- d. Repeat Step 1 for the other front rack-mount bracket on the other side of the switch, and be sure to position that bracket the same distance from the front of the switch.

**Note** Install the NEBS air-baffle onto the switch in case of port-side intake. For more information, see [NEBS Compliance, on page 8](#).

**Step 2** Install the two rear rack-mount brackets on the chassis, as follows:

- a. 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 guide to holes that are near the port connections end of the chassis.
- b. Attach the guide to the chassis using two M4 screws. Tighten the screws to 12 in-lb (1.36 N·m) of torque.
- c. Repeat Step 2 for the other rear rack-mount bracket on the other side of the switch.

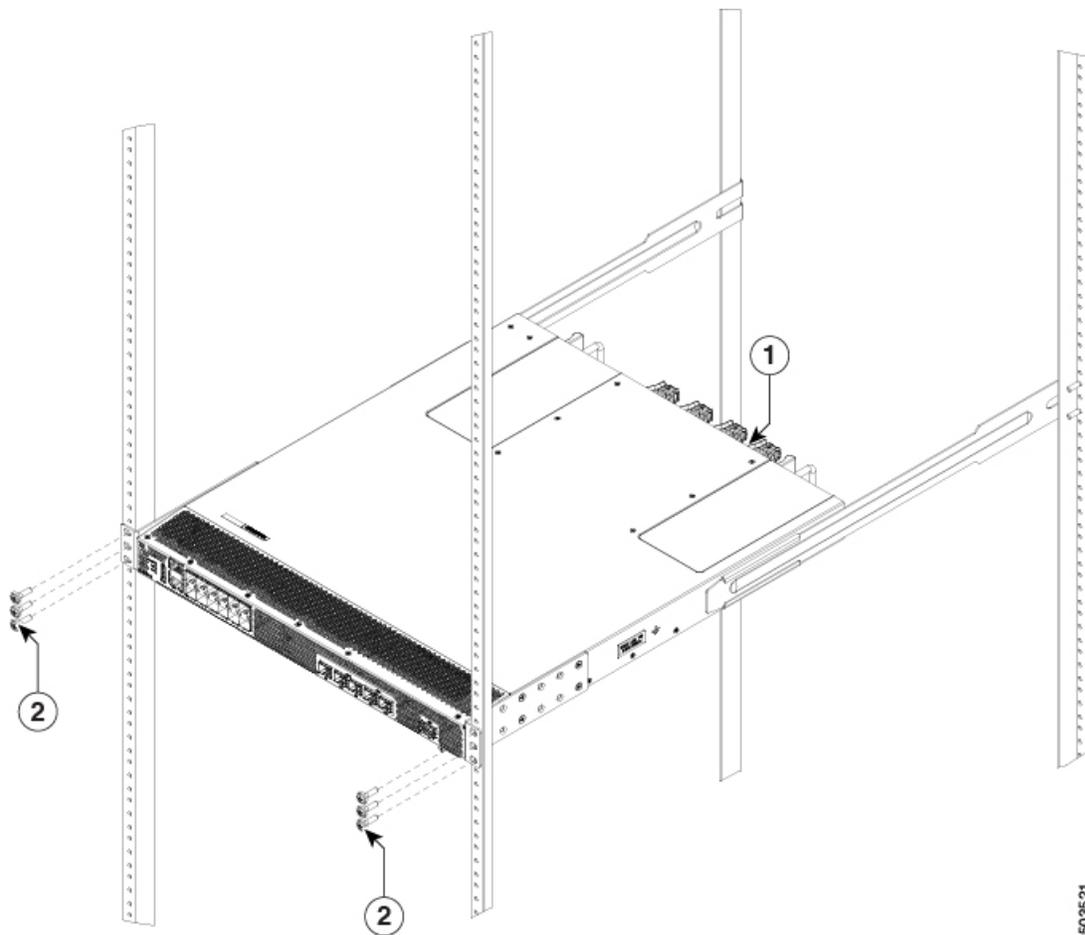
**Step 3** If you are not installing the chassis into a grounded rack, you must attach a customer-supplied grounding wire to the chassis, as explained in [Grounding the Switch, on page 18](#). However, if you are installing the chassis into a grounded rack, you can skip this step.

**Step 4** Install the slider rails into the rack or cabinet, as follows:

- a. Determine which two posts of the rack or cabinet you should use for the slider rails. Of the four vertical posts in the rack or cabinet, two will be used for the front-mount brackets attached to the easiest-accessed end of the chassis, and the other two posts will have the slider rails.
- b. Position a slider rail at the desired level on the back side of the rack and use two 12-24 screws or two 10-32 screws, depending on the rack thread type, to attach the posts to the rack. Tighten the 12-24 screws to 30 in-lb (3.39 N·m) of torque, and tighten the 10-32 screws to 20 in-lb (2.26 N·m) of torque.
- c. Repeat Step 3 to attach the other slider rail to the other side of the rack.

To make sure that the slider rails are at the same level, you should use a level tool or tape measure, or carefully count the screw holes in the vertical mounting posts.

**Step 5** Insert the switch into the rack and attach it as follows:



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1	Fan-tray end of the chassis	2	Customer-supplied rack-mount screw
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- a. Holding the switch with both hands, position the two rear rack-mount brackets on the switch between the rack or cabinet posts that do not have slider rails attached to them.
- b. Align the two rear rack-mount guides on either side of the switch with the slider rails installed in the rack. Slide the rack-mount guides onto the slider rails, and then gently slide the switch all the way into the rack until the front rack-mount brackets come in contact with two rack or cabinet posts.

**Note** If you attached a grounding cable to the chassis, you will need to bend one of the rack-mount posts slightly to allow the grounding lug to go behind the post.

- c. Holding the chassis level, insert two screws (12-24 or 10-32, depending on the rack type) into each of the two front rack-mount brackets (using a total of four screws), and into the cage nuts or threaded holes in the vertical rack-mounting posts.
- d. Tighten the 10-32 screws to 20 in-lb (2.26 N·m), or tighten the 12-24 screws to 30 in-lb (3.39 N·m).

**Step 6** If you have attached a grounding wire to the chassis grounding pad, connect the other end of the wire to the facility ground.

## Installing the Switch into a 2-Post Rack

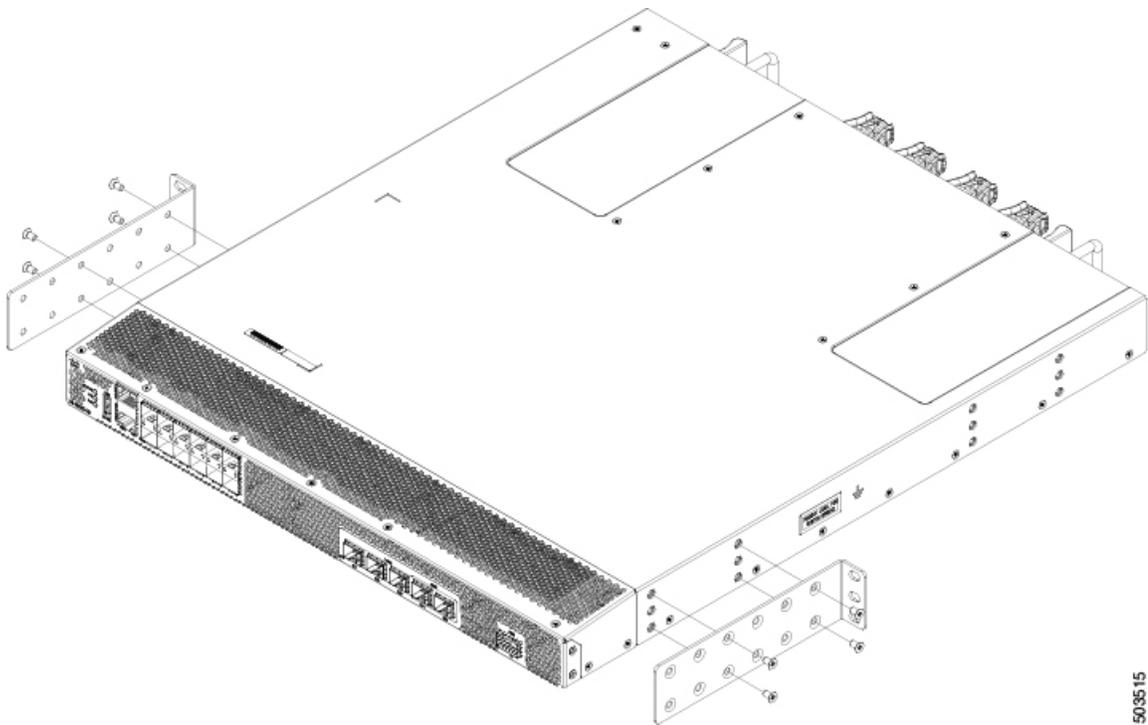
### Step 1

Install two rack-mount brackets onto the switch as follows:

- a) Determine which end of the chassis is to be located in the cold aisle as follows:
  - If the switch has port-side intake modules (fan modules with red coloring), position the switch so that its ports is in the cold aisle.
  - If the switch has port-side exhaust modules (fan modules with blue coloring), position the switch so that its fan and power supply modules is in the cold aisle.
- b) Position a rack-mount bracket so that four of its screw holes are aligned to the screw holes on the side of the chassis. Then, secure the front-mount bracket to the chassis using four M4 screws.

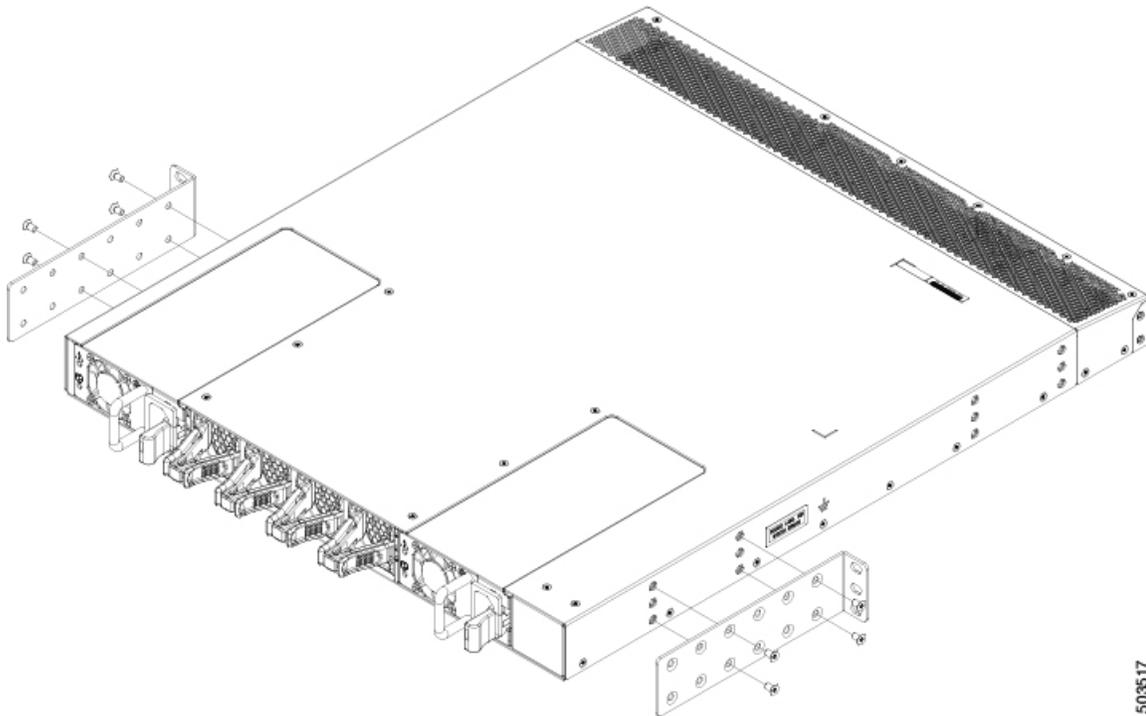
**Note** You can align four of the holes in the front rack-mount bracket to four of the screw holes on the front side of chassis or four of the screw holes on the rear side of the chassis. The holes that you use depend on which side of your chassis needs to be put in the cold aisle.

**Figure 6: Installing Rack-mount Brackets on the Front Side of the Chassis**



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**Figure 7: Installing Rack-mount Brackets on the Rear Side of the Chassis**



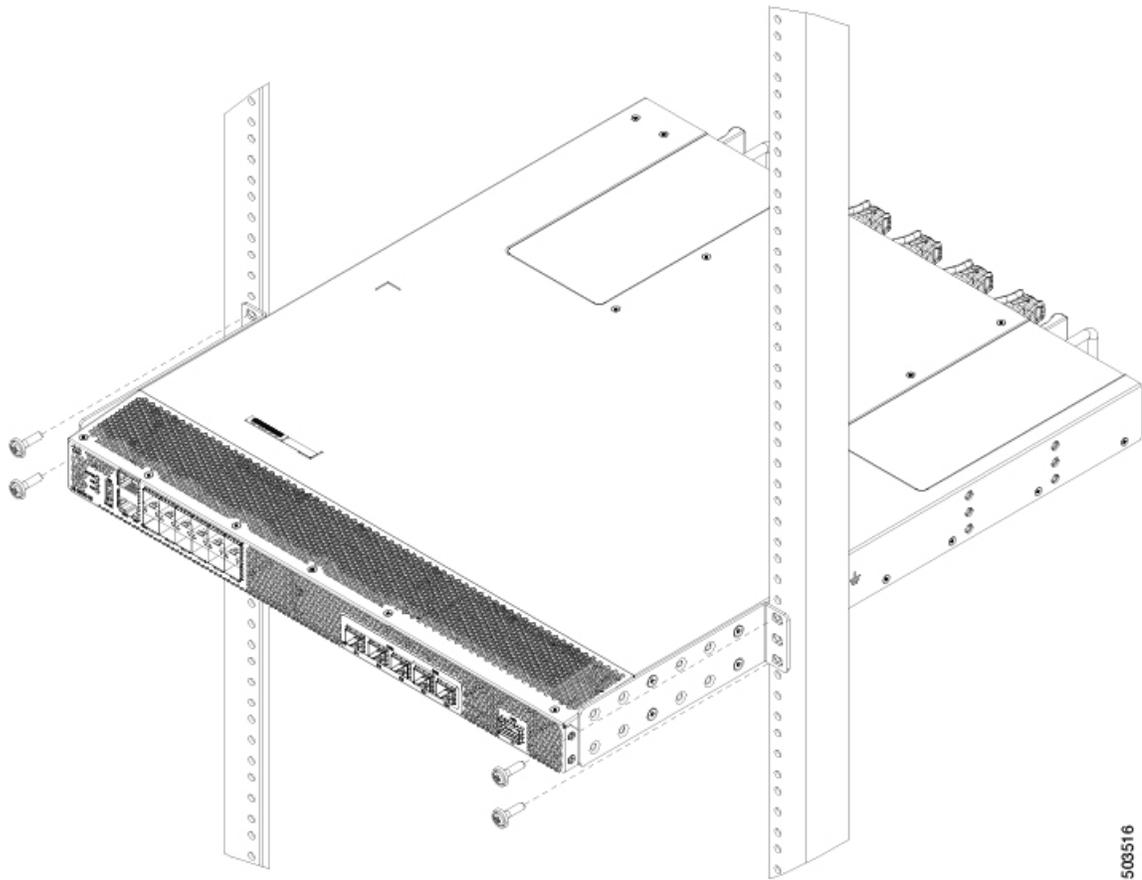
- c) Repeat Step 1b, for the other front rack-mount bracket on the other side of the switch and be sure to position that bracket the same distance from the front of the switch.

**Note** Install the NEBS air-baffle onto the switch in case of port-side intake. For more information, see [NEBS Compliance, on page 8](#).

**Step 2** Install the switch onto the 2-post rack:

- a) Holding the switch with both hands, position the back of the switch between the two posts of the rack. Then gently move the switch until the front rack-mount brackets come in contact with two rack posts.
- b) Holding the chassis level, insert two screws (12-24 or 10-32, depending on the rack type) into each of the two front rack-mount brackets (using a total of four screws) and into the cage nuts or threaded holes in the vertical rack-mounting posts.

*Figure 8: Installing the Switch onto the 2-post Rack*



- c) Tighten the 10-32 screws to 20 in-lb (2.26 N.m) or tighten the 12-24 screws to 30 in-lb (3.39 N.m).

## Removing the Shelf Bracket Kit (Optional)

If it was previously installed, the shelf bracket kit can be removed after the Cisco MDS 9220i switch has been installed in a four-post EIA rack, and the front rack-mount brackets and the rack-mount guide are securely attached to the rack-mounting posts.

To remove the shelf bracket kit, follow these steps:

- Step 1** Remove the screws fastening the slider brackets to the rear rack-mounting posts, and then slide the slider brackets out of the shelf brackets.
- Step 2** Remove the screws fastening the crossbar to the shelf brackets, and then remove the crossbar.
- Step 3** Remove the screws fastening the shelf brackets to the front rack-mounting posts and remove the shelf brackets from the rack.

# Grounding the Switch

The switch chassis is automatically grounded when you install the switch properly in a grounded rack with metal-to-metal connections between the switch and rack.

Alternatively, you can ground the chassis (this is required if the rack is not grounded) by attaching a customer-supplied grounding cable to the chassis grounding pad and the facility ground.




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**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**

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

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To connect the switch chassis to the facility 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 the USA 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 manual 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.

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- Step 1** Use a wire stripping tool to remove approximately 0.75 in. (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. Verify that the ground wire is securely attached to the grounding lug by attempting to pull the wire out of the crimped lug.
- Step 3** Secure the grounding lug to the chassis grounding pad with two M4 screws, and tighten each screw to 11.5 to 15 in-lb (1.3 to 1.7 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 from whom you bought the rack.
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# Installing and Removing Power Supply Units

This section provides instructions for installing and removing the power supply units in the Cisco MDS 9220i switch.

## Installing Power Supply Units

You can replace one power supply unit while the other one provides power to the switch.

### Before you begin

If the PSU blank module is inserted, remove it as follows:

1. Grasp both the power supply unit handle and release latch with one hand and squeeze the release latch towards the handle.
2. Gently pull the power supply unit blank module out of the bay.

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**Step 1** Holding the power supply unit with one hand underneath it and the other hand holding the handle, turn the power supply unit so that its release latch is on the right side, and align the back end of the power supply unit (the end with the electrical connections) to the open power supply unit slot. Carefully slide the power supply unit all the way into the slot until it clicks into place.

**Note** If the power supply unit does not fit into the slot opening, turn the unit over and try again.

**Step 2** Test the installation by trying to pull the power supply unit out of the slot by the handle, without using the release latch. If the power supply unit does not move out of place, it is secured in the slot. If the power supply unit moves, carefully press it all the way into the slot until it clicks in place.

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## Removing Power Supply Units

You can remove one faulty power supply unit, while the other one provides enough power to the switch. Install a new power supply unit or a power supply unit blank module in the open slot.

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**Step 1** Disconnect the power cable. For more information, see [Connecting Power Supply Units](#).

**Note** If you need to remove an Anderson's Saf-D-Grid power cable connector from a high voltage power supply unit, press the tab at the top of the connector and pull the connector out of the power supply unit.

**Step 2** Grasp the power supply unit handle and release latch with one hand and squeeze the release latch towards the handle.

**Step 3** Place your other hand under the power supply unit to support it while you slide it out of the chassis.

**Caution** Do not touch the electrical connectors on the back side of the unit and prevent anything else from coming into contact with and damaging the connectors.

**Step 4** Insert a power supply unit blank module:

- a) Grasp the power supply unit blank module handle and release latch with one hand and squeeze the release latch towards the handle.
- b) Carefully slide the power supply unit all the way into the slot until it clicks into place.
- c) Test the installation by trying to pull the power supply blank module out of the slot by the handle, without using the release latch.

If the power supply blank module does not move out of place, it is secured in the slot. If the power supply blank module moves, carefully press it all the way into the slot until it clicks in place.

## Installing and Removing Fan Modules

This section provides instructions for installing and removing the fan modules for the Cisco MDS 9220i switch.



**Caution** If you are changing the airflow direction of all the modules in the chassis, you must shut down the switch before replacing all the fan and power supply modules with modules using the other airflow direction. During operations, all the modules must have the same direction of airflow.

### Installing a Fan Module

To install a new fan module, follow these steps:

#### Before you begin

If a fan blank module is installed, remove it as follows:

- Grasp the fan module release latches with one hand and squeeze the release latch towards the each other.
- Holding the release latches, pull the module out of the chassis.
- A fan slot must be open and ready for the new fan module to be installed.
- You must have a new fan module on hand and ready to install within one minute of removing the original fan module if the switch is operating.
- The new fan module must have the same airflow direction as the other fan and power supply modules installed in the switch. All of these modules must have red coloring (port-side intake airflow) or blue coloring (port-side exhaust airflow).

**Step 1** Holding the fan module by its handle, align the back of the fan module (the side with the electrical connectors) to the open fan slot in the chassis.

**Step 2** Slide the fan module into the fan module slot until it clicks into place.

**Step 3** Test the installation by trying to pull the fan module out of the slot without using the release latch.

If the fan module does not move out of place, it is secured in the slot. If the fan module moves, carefully press it all the way into the slot until it clicks in place.

**Step 4** If the switch is running, verify that the Status LED turns on and becomes green.

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## Removing a Fan Module

The fan module is designed to be removed and replaced while the system is operating without presenting an electrical hazard or damaging the system.



**Caution** Cisco MDS 9000 Series Switches have internal temperature sensors that can shut down the system if the temperature within the chassis exceed certain safety thresholds. To accurately monitor the system temperature, the temperature sensors require sufficient airflow through the chassis. In the event that a fan module is removed from the chassis and the airflow is reduced, the system will bypass the temperature sensor information and shut down after five minutes to prevent undetected overheating. However, the switches will shut down sooner if the major temperature threshold is exceeded.

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**Warning** **While removing the fan module, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan module.** Statement 258

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To remove an existing fan module, follow these steps:

**Step 1** On the fan module that you are removing, press the two sides of the fan module handle next to where it connects to the fan module and pull on the handles enough to unseat it from its connectors.

**Step 2** Holding the handle, pull the module out of the chassis.

**Caution** Do not touch the electrical connectors on the back side of the module and prevent anything else from coming into contact with and damaging the connectors.

**Step 3** Insert a fan blank module:

- a) Grasp the fan blank module release latches with one hand and squeeze the release latch towards the each other.
- b) Holding the release latches, pull the module out of the chassis.
- c) Test the installation by trying to pull the fan blank module out of the slot, without using the release latch.

If the fan blank module does not move out of place, it is secured in the slot. If the fan blank module moves, carefully press it all the way into the slot until it clicks in place.

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