



CHAPTER 2

Installing the Cisco MDS 9100 Series

This chapter describes how to install the Cisco MDS 9100 Series and its components, and it includes the following information:

- [Preinstallation, page 2-2](#)
- [Installing the Switch in a Cabinet or Rack, page 2-5](#)
- [Installing the Switch in a Cabinet with Insufficient Front Clearance, page 2-11](#)
- [Installing Cisco MDS 9134 48-Port and 64-Port Stackable Bundles, page 2-21](#)
- [Grounding the Switch, page 2-23](#)
- [Starting Up the Switch, page 2-24](#)
- [Removing and Installing Components, page 2-26](#)



Note

Before you install, operate, or service the system, read the *Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family* for important safety information.

**Warning****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.
Statement 1071

SAVE THESE INSTRUCTIONS**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

**Warning**

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

**Note**

Each new switch requires a license; see the *Cisco MDS 9000 Family Fabric Manager Configuration Guide* and the *Cisco MDS 9000 Family CLI Configuration Guide* for instructions on installing a license.

Preinstallation

This section includes the following information:

- [Installation Options, page 2-2](#)
- [Installation Guidelines, page 2-3](#)
- [Required Equipment, page 2-4](#)
- [Unpacking and Inspecting the Switch, page 2-4](#)

Installation Options

The Cisco MDS 9100 Series can be installed using the following methods:

- In an open EIA rack, using:
 - The rack-mount kit shipped with the switch
 - The telco and EIA Shelf Bracket Kit (an optional kit, purchased separately) in addition to the rack-mount kit shipped with the switch
- In a perforated or solid-walled EIA cabinet, using:
 - The rack-mount kit shipped with the switch
 - The telco and EIA Shelf Bracket Kit (an optional kit, purchased separately) in addition to the rack-mount kit shipped with the switch

- In a two-post telco rack, using:
 - The telco and EIA Shelf Bracket Kit (an optional kit, purchased separately) in addition to the front brackets shipped with the switch

For instructions on installing the switch using the rack-mount kit shipped with the switch, see the [“Installing the Switch in a Cabinet or Rack”](#) section on page 2-5.

For instructions on installing the switch using the optional, separately purchased telco and EIA Shelf Bracket Kit, see the [“Cisco MDS 9000 Family Telco and EIA Shelf Bracket”](#) section on page A-3.

**Note**

The telco and EIA Shelf Bracket Kit is optional and is not provided with the switch. To order the kit, contact your switch provider.

Installation Guidelines

Follow these guidelines when installing the Cisco MDS 9100 Series:

- Plan your site configuration and prepare the site before installing the switch. The recommended site planning tasks are listed in [Appendix D, “Site Planning and Maintenance Records.”](#)
- Ensure there is adequate space around the switch to allow for servicing the switch and for adequate airflow (airflow requirements are listed in [Appendix B, “Technical Specifications.”](#))
- Ensure the air-conditioning meets the heat dissipation requirements listed in [Appendix B, “Technical Specifications.”](#)
- Ensure the cabinet or rack meets the requirements listed in [Appendix A, “Cabinet and Rack Installation.”](#)

**Note**

If the front cabinet mounting rails are not offset from the front door or bezel panel by a minimum of 3 in. (7.6 cm), and a minimum of 5 in. (12.7 cm) if cable management brackets are installed on the front of the chassis, the chassis should be mounted rear-facing to ensure the minimum bend radius for fiber-optic cables. See the [“Installing the Switch in a Cabinet with Insufficient Front Clearance”](#) section on page 2-11.

**Note**

Jumper power cords are available for use in a cabinet. For more information, see the [“Jumper Power Cord”](#) section on page C-5.

- Ensure the chassis is adequately grounded. If the switch is not mounted in a grounded rack, we recommend connecting both the system ground on the chassis and the power supply ground to an earth ground.
- Ensure the site power meets the power requirements listed in [Appendix B, “Technical Specifications.”](#) If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

**Caution**

Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco MDS 9000 Family, which can have substantial current draw fluctuations because of fluctuating data traffic patterns.

- Ensure that circuits are sized according to local and national codes. For North America, the 300-W power supplies require a 20-A circuit. If you are using a 200- or 240-VAC power source in North America, the circuit must be protected by a two-pole circuit breaker.

**Caution**

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

- As you install and configure the switch, record the information listed in the [“Site Planning and Maintenance Records”](#) section on page D-1.
- Use the following screw torques when installing the switch:
 - Captive screws: 4 in-lb
 - M3 screws: 4 in-lb
 - M4 screws: 12 in-lb
 - 10-32 screws: 20 in-lb
 - 12-24 screws: 30 in-lb

Required Equipment

Gather the following tools before beginning the installation:

- Number 1 Phillips screwdriver with torque capability
- 3/16-in. flat-blade screwdriver
- Tape measure and level
- ESD wrist strap or other grounding device
- Antistatic mat or antistatic foam

The following additional items (not found in the accessory kit) are required to ground the chassis:

- Grounding cable (6 AWG recommended), sized according to local and national installation requirements; the required length depends on the proximity of the switch to proper grounding facilities
- Crimping tool large enough to accommodate girth of lug
- Wire-stripping tool

Unpacking and Inspecting the Switch

**Caution**

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

**Tip**

Keep the shipping container in case the chassis requires shipping in the future.

**Note**

If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco, contact Cisco Technical Support at this URL:
<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtm>

**Note**

The switch is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer representative immediately.

To inspect the shipment, follow these steps:

- Step 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:
- Print documentation and CD-ROMs
 - Grounding lug kit
 - Rack-mount kit
 - ESD wrist strap
 - Cables and connectors
 - Any optional items ordered
- Step 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

Installing the Switch in a Cabinet or Rack

This section describes how to use the rack-mount kit provided with the switch to install the Cisco MDS 9100 Series into a cabinet or rack that meets the requirements described in [Appendix A, “Cabinet and Rack Installation.”](#)

**Caution**

If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized.

The rack-mount kit provided with the switch contains the items listed in [Table 2-1](#).

Table 2-1 Cisco MDS 9134 and Cisco MDS 9124 Fabric Switch Rack-Mount Kit

Description	Quantity
30- to 36-inch slider rails	2 per kit
24- to 30-inch slider rails	2 per kit

Table 2-1 *Cisco MDS 9134 and Cisco MDS 9124 Fabric Switch Rack-Mount Kit (continued)*

Description	Quantity
18- to 24-inch slider rails	2 per kit
Front rack-mount brackets	2 per kit
12-24 x 3/4-inch Phillips binder-head screws	10 per kit
10-32 x 3/4-inch Phillips binder-head screws	10 per kit
M4 x 6-mm Phillips flat-head screws	6 per kit
12-24 Cage nuts	10 per kit

Front-Facing Installation

To install the switch in a cabinet or rack using the rack-mount kit provided with the switch, follow these steps:

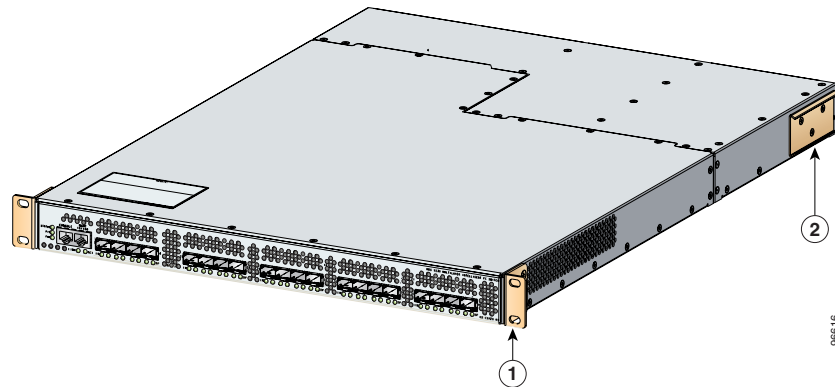
- Step 1** Install the front rack-mount bracket as follows.
- Position one of the front rack-mount brackets against the side of the switch and align the screw holes as shown in [Figure 2-1](#). Then attach the bracket to the switch with the three M4 screws originally provided with the bracket.
 - Repeat with the other front rack-mount bracket on the other side of the switch.

- Step 2** Install the C brackets as follows:



Note Two C brackets are shipped preinstalled on the switch, using three M3 screws per bracket. This installation step is only necessary if the C brackets were removed.

- Position one of the C brackets against the side of the switch and align the screw holes as shown in [Figure 2-1](#). Then attach the bracket to the switch with the three M3 screws originally provided with the bracket.
- Repeat with the other C bracket on the other side of the switch.

Figure 2-1 Front Rack-Mount Brackets and C Brackets Installed on the Cisco MDS 9100 Series

1	Front rack-mount bracket	2	C bracket
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Step 3 Install the slider rails in the rack. Position one of the slider rails against the rack mounting rails and align the screw holes as shown in [Figure 2-2](#). If you are using the notched slider rails for the Cisco MDS 9134 or the Cisco MDS 9124 Switch, see [Figure 2-3](#).



Note Depending on when you purchased your Cisco MDS 9124 Switch, you may have straight slider rails like those shown in [Figure 2-2](#), or you may have the notched slider rails like those shown in [Figure 2-3](#). Refer to the illustrations that show the type of rails that came with your switch.

Step 4 Attach the slider rail using two 12-24 screws or two 10-32 screws, depending on the rack rail thread type. For racks with square holes, insert the 12-24 cage nuts in position behind the mounting holes in the slider rails.

- a. Repeat with the other slider rail on the other side of the rack.

- b. Use the tape measure and level to verify that the rails are horizontal and at the same height.

Figure 2-2 *Installing the Slider Rails*

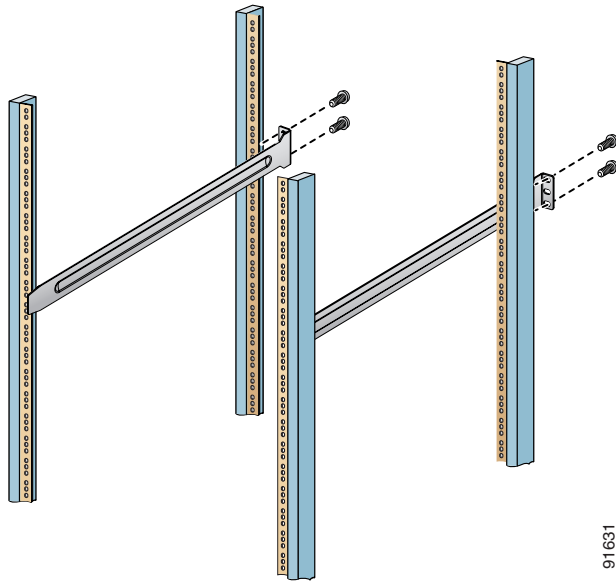
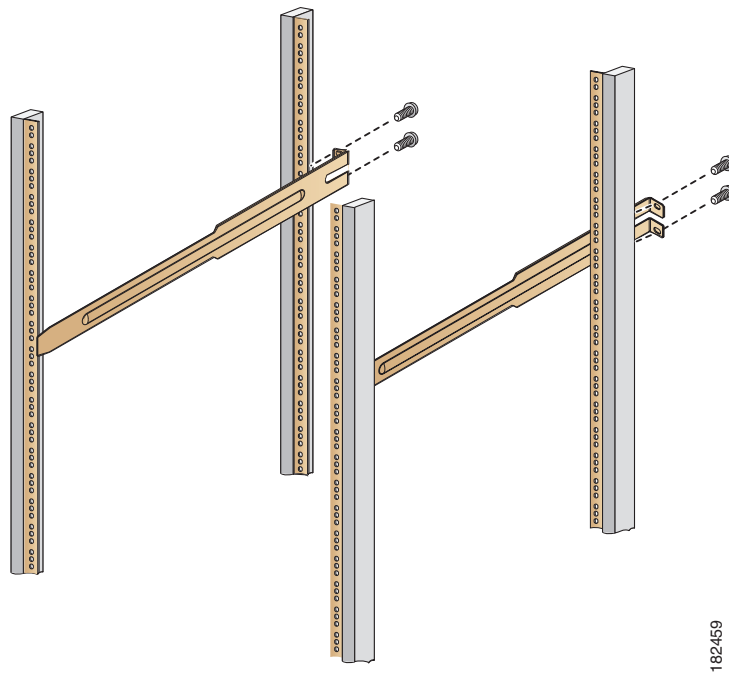


Figure 2-3 *Installing the Notched Slider Rails*



Step 5 Insert the switch into the rack:

- a. By using both hands, position the switch with the back of the switch between the front rack-mounting rails as shown in [Figure 2-4](#). If you are using the notched rails, for the Cisco MDS 9134 Switch or the Cisco MDS 9124 Switch, see [Figure 2-5](#).
- b. Align the two C brackets on either side of the switch with the slider rails installed in the rack. Slide the C brackets onto the slider rails, and then gently slide the switch all the way into the rack. If the switch does not slide easily, try realigning the C brackets on the slider rails.

Figure 2-4 *Sliding the Cisco MDS 9100 Series onto the Slider Rails*

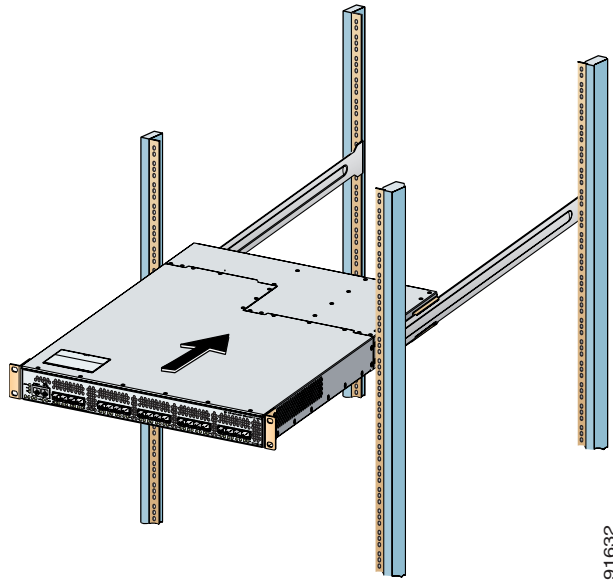
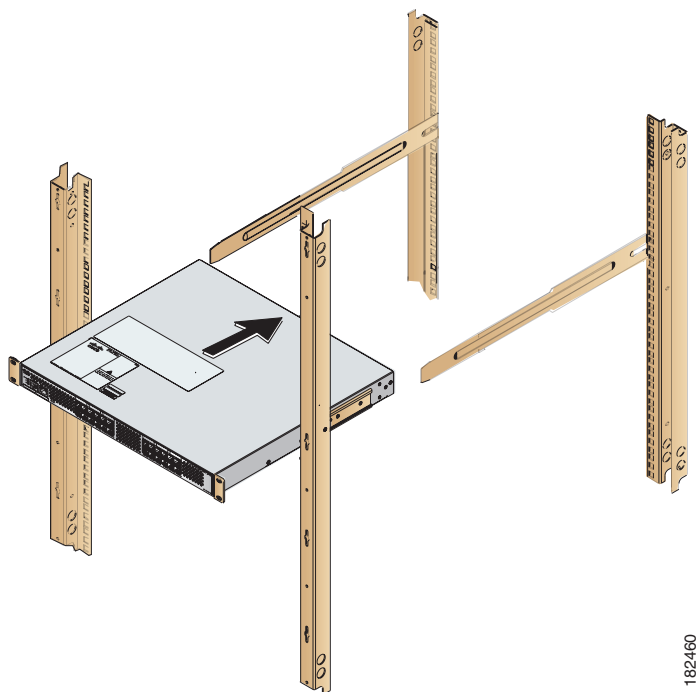


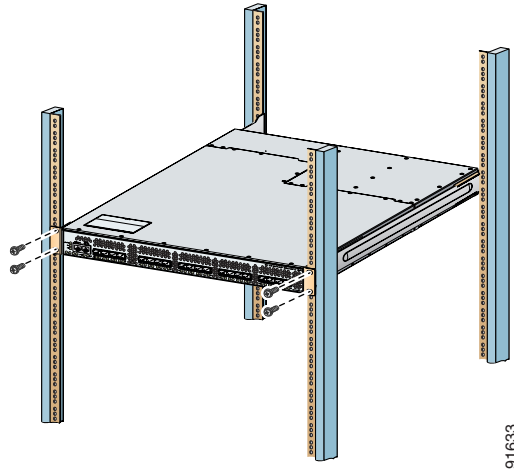
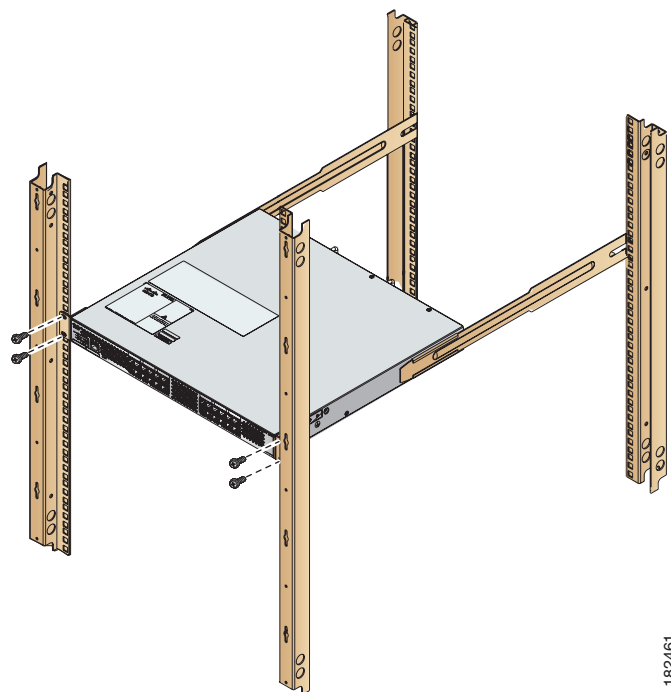
Figure 2-5 *Sliding the Cisco MDS 9134 Switch or the Cisco MDS 9124 Switch onto the Notched Slider Rails*



Step 6 Stabilize the switch in the rack by attaching the front rack-mount brackets to the front rack-mounting rails:

- a. Insert two screws (12-24 or 10-32, depending on rack type) and through the cage nuts and the holes in one of the front rack-mount brackets and into the threaded holes in the rack-mounting rail (see [Figure 2-6](#) or [Figure 2-7](#)).
- b. Repeat for the front rack-mount bracket on the other side of the switch.

If you are installing the optional cable guides, place the cable guides in front of the front rack-mount brackets, and then pass the screws through the cable guides, front rack-mount brackets, and mounting rail. You can install one or both cable guides; if installing a single cable guide, it can be installed on either side.

Figure 2-6 Attaching the Switch to the Rack**Figure 2-7 Attaching the Cisco MDS 9134 Switch or the Cisco MDS 9124 Switch to the Rack (Notched Rails)**

Installing the Switch in a Cabinet with Insufficient Front Clearance

This section describes how to use the rack-mount kit provided with the switch to install the Cisco MDS 9100 Series switch into a cabinet with insufficient front-facing clearance. The Cisco MDS 9100 Series switch is installed rear-facing to provide adequate clearance for the fibre-optic cables. This cabinet meets the requirements described in [Appendix A, “Cabinet and Rack Requirements,”](#) except the cabinet has

less than three-inch clearance between the inside of the front door or bezel panel and the front cabinet mounting rails. This rear-facing installation is necessary to ensure that the minimum bend radius for the fiber-optic cables is maintained. In these cabinets, the Cisco MDS 9100 Series switch is mounted backwards, with the fiber optic cables facing toward the rear of the cabinet and the power supplies facing the front of the cabinet.

**Caution**

If the rack is on wheels, ensure that the brakes are engaged or that the rack is otherwise stabilized.

The rack-mount kit provided with the switch contains the items listed in [Table 2-1](#).

Installing Front Rack-Mount Brackets for Cabinets with 26 Inches or Greater of Rail Spacings

The front rack-mount brackets for the Cisco MDS 9100 Series switch must be installed onto the switch prior to installing the switch into the cabinet. Follow these steps for cabinets with front-mounting rail to rear-mounting rail spacings greater or equal to 26 inches.

- Step 1

Install the front rack-mount brackets as follows:

 - Position one of the front rack-mount brackets against the side of the switch and align the screw holes as shown in [Figure 2-8](#). Then attach the bracket to the switch with the three M4 screws originally provided with the bracket.
 - Repeat with the other front-rack mount bracket on the other side of the switch.

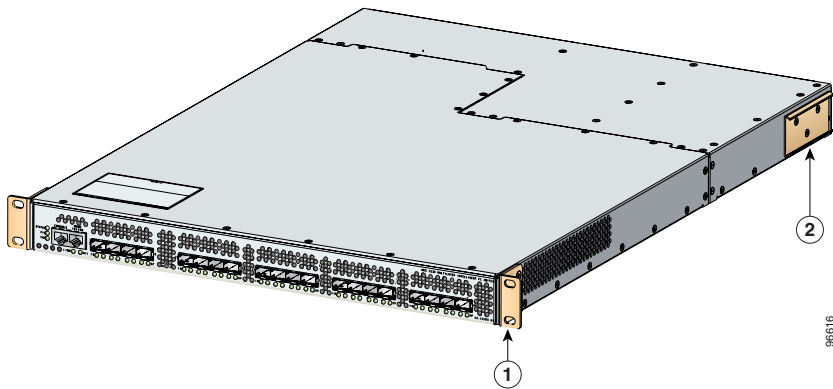
Step 2 Install the C brackets as follows:



Note Two C brackets are shipped preinstalled on the switch, using three M3 screws per bracket. This installation step is only necessary if the C brackets were removed.

- Position one of the C brackets against the side of the switch and align the screw holes as shown in [Figure 2-8](#). Then attach the bracket to the switch with the three M3 screws originally provided with the bracket.
- Repeat with the other C bracket on the other side of the switch.

Figure 2-8 Front Rack-Mount Brackets and C Brackets Installed on the Cisco MDS 9100 Series



1	Front rack-mount bracket	2	C bracket
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Installing Front Rack-Mount Brackets for Cabinets with Less Than 26 Inches of Rail Spacings

The front rack-mount brackets for the Cisco MDS 9100 Series switches must be installed onto the switch prior to installing the switch into the cabinet. For cabinets with less than 26-inch rail-to-rail spacing, the front rack-mount bracket must be installed 180 degrees from normal.

To install brackets for cabinets with front-mounting rail to rear-mounting rail spacings less than 26 inches that need to be mounted backwards to maintain adequate fiber-optic clearances, follow these steps:

- Step 1** Install the front-rack mount brackets for cabinets with rail-to-rail spacings less than 26 inches as follows:
- Position one of the front rack-mount brackets against the side of the switch and align the screw holes as shown in [Figure 2-9](#). Then attach the bracket to the switch with two of the three M4 screws originally provided with the bracket.
 - Repeat with the other front rack-mount bracket on the other side of the switch.

**Note**

The front rack-mount bracket does not align with all three holes in the Cisco MDS 9100 Series switch in this configuration. The two screws are adequate to hold the weight of the Cisco MDS 9100 Series switch.

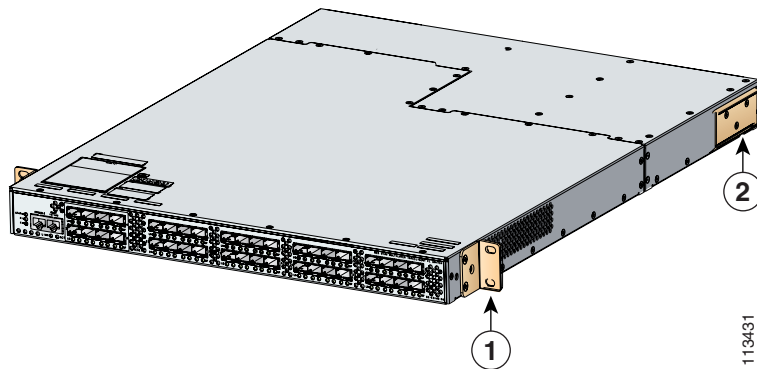
- Step 2** Install the C brackets as follows:

**Note**

Two C brackets are shipped preinstalled on the switch, using three M3 screws per bracket. This installation step is only necessary if the C brackets were removed.

- Position one of the C brackets against the side of the switch and align the screw holes as shown in [Figure 2-9](#). Then attach the bracket to the switch with the three M3 screws originally provided with the bracket.
- Repeat with the other C bracket on the other side of the switch.

Figure 2-9 *Front Rack-Mount Brackets (Rotated) and C Brackets Installed on the Cisco MDS 9100 Series*



1	Front rack-mount bracket	2	C bracket
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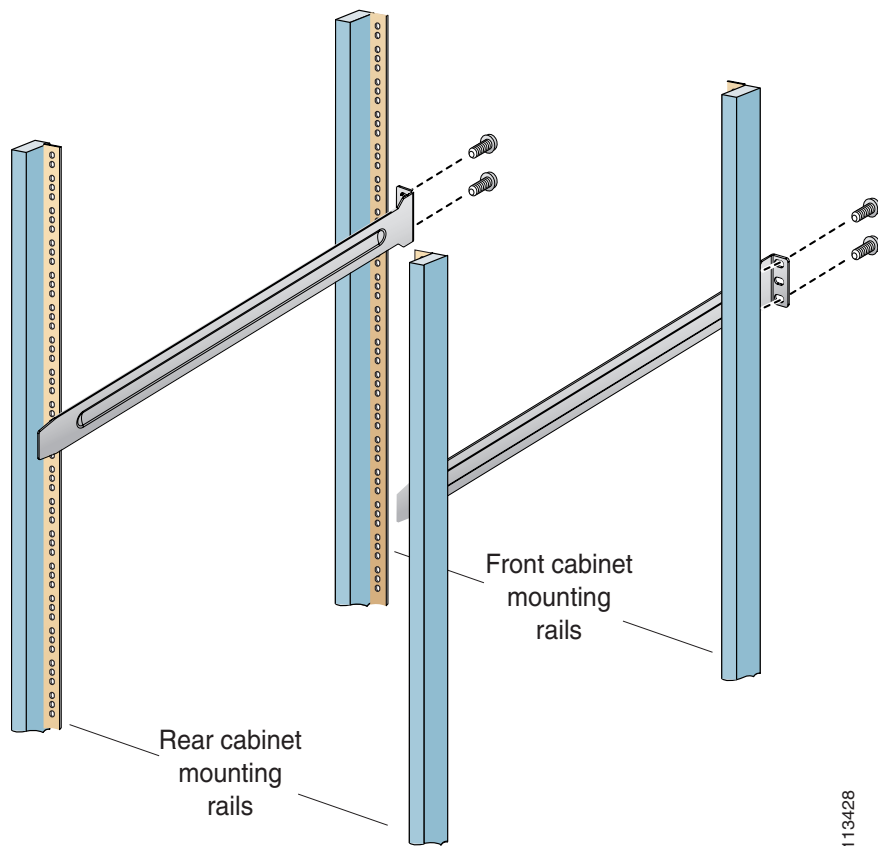
Installing Cisco MDS 9100 Series Switch Rear-Facing into Cabinet

To install a Cisco MDS 9120 or 9140 Switch rear-facing into a cabinet using the rack-mount kit provided with the switch (for cabinets with insufficient front-facing clearance), follow the steps in this section. If you are installing a Cisco MDS 9134 Switch or a Cisco MDS 9124 Switch rear-facing into a cabinet using the rack-mount kit provided, see [“Installing a Cisco MDS 9134 Switch or a Cisco MDS 9124 Switch Rear-Facing into Cabinet”](#) section on page 2-17.

Step 1 Install the slider rails in the rack:

- Position one of the slider rails against the front rack-mounting rails and align the screw holes as shown in [Figure 2-10](#). Then attach them using two 12-24 screws or two 10-32 screws, depending on the rack rail thread type. For racks with square holes, first install the 12-24 cage nuts.
- Repeat with the other slider rail on the other front side of the rack.
- Use the tape measure and level to verify that the rails are horizontal and at the same height.

Figure 2-10 Installing the Slider Rails to the Front Rack-Mounting Rails



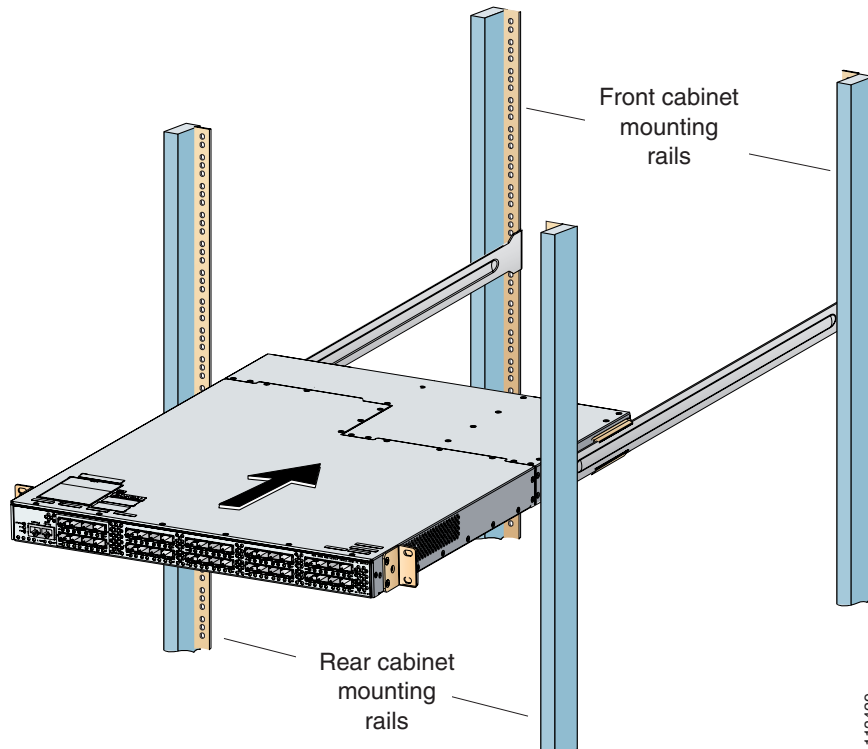
Step 2 Insert the switch into the rack:

- a. By using both hands, position the switch with the back of the switch between the rear rack-mounting rails as shown in [Figure 2-11](#).



Note [Figure 2-11](#) shows the front rack-mount brackets in a 180 degree position. Your front rack-mount brackets may look different if you kept them in the normal position.

Figure 2-11 *Sliding the Cisco MDS 9100 Series Switch (Rear-Facing) onto the Slider Rails*



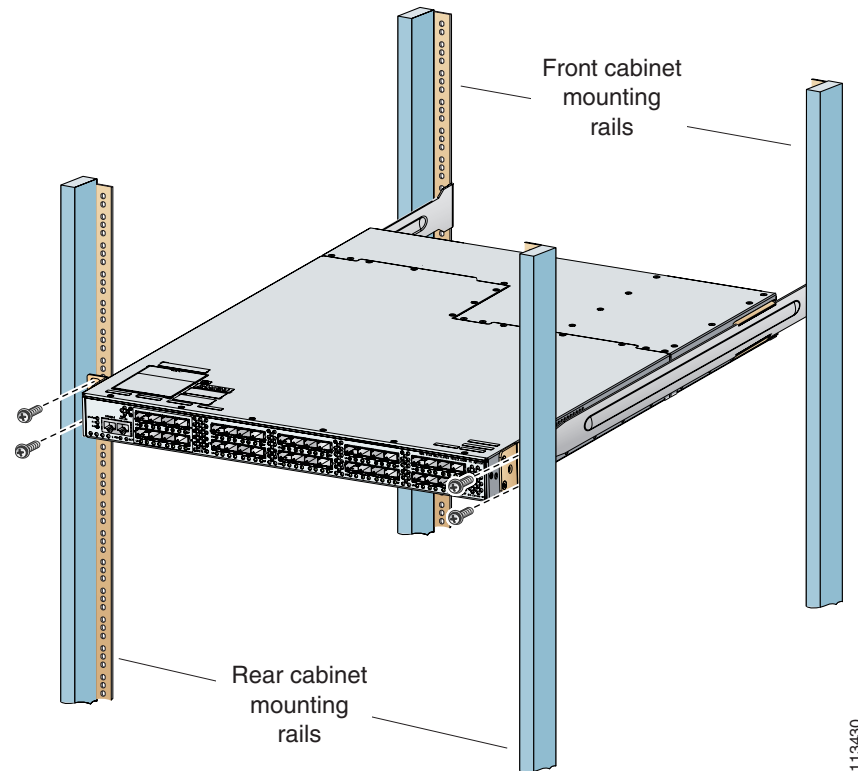
- b. Align the two C brackets on either side of the switch with the slider rails installed in the rack. Slide the C brackets onto the slider rails and then gently slide the switch all the way into the rack. If the switch does not slide easily, try realigning the C brackets on the slider rails.

Step 3 Stabilize the switch in the rack by attaching the front rack-mount brackets to the rear rack-mounting rails:

- a. Insert two screws (12-24 or 10-32, depending on rack type) through the holes in one of the front rack-mount brackets and into the threaded holes in the back rack-mounting rail (see [Figure 2-12](#).) For racks with square holes, first install the 12-24 cage nuts.



Note [Figure 2-12](#) shows the front rack-mount brackets in 180 degree position. Your front rack-mount brackets may look different if you kept them in the normal position.

Figure 2-12 Attaching the Cisco MDS 9100 Series Switch (Rear-Facing) to the Cabinet

- a.
- b. Repeat for the front rack-mount bracket on the other side of the switch.

If you are installing the optional cable guides, place the cable guides in front of the front rack-mount brackets, and then pass the screws through the cable guides, front rack-mount brackets, and rear mounting rail. You can install one or both cable guides; if installing a single cable guide, it can be installed on either side.

Installing a Cisco MDS 9134 Switch or a Cisco MDS 9124 Switch Rear-Facing into Cabinet

To install a Cisco MDS 9134 Switch or a Cisco MDS 9124 Switch rear-facing into a cabinet using the rack-mount kit provided with the switch (for cabinets with insufficient front-facing clearance), follow these steps:

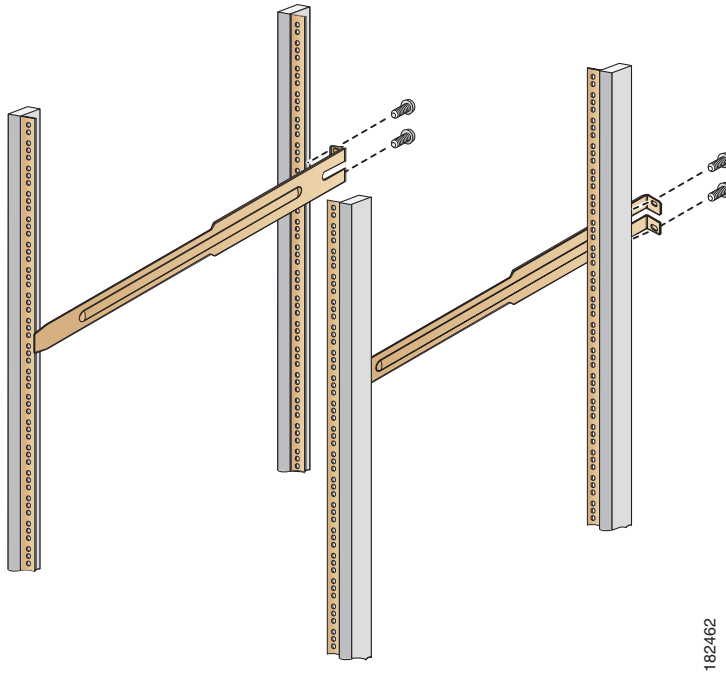
- Step 1** Install the notched slider rails in the rack:

**Note**

When installing the Cisco MDS 9134 Switch or the Cisco MDS 9124 Switch rear-facing into a cabinet, do not install it higher than RU-30.

- a. Route the power cord through the open cutout at the end of one of the slider rails, and then let the cord dangle while you proceed with the next steps. [Figure 2-15](#) shows a power cord correctly routed through the open cutout in the slider rail.
- b. Position one of the slider rails against the front rack-mounting rails and align the screw holes as shown in [Figure 2-13](#). Then attach them using two 12-24 screws or two 10-32 screws, depending on the rack rail thread type. For racks with square holes, first install the 12-24 cage nuts.
- c. Repeat with the other slider rail on the other front side of the rack.
- d. Use the tape measure and level to verify that the rails are horizontal and at the same height.

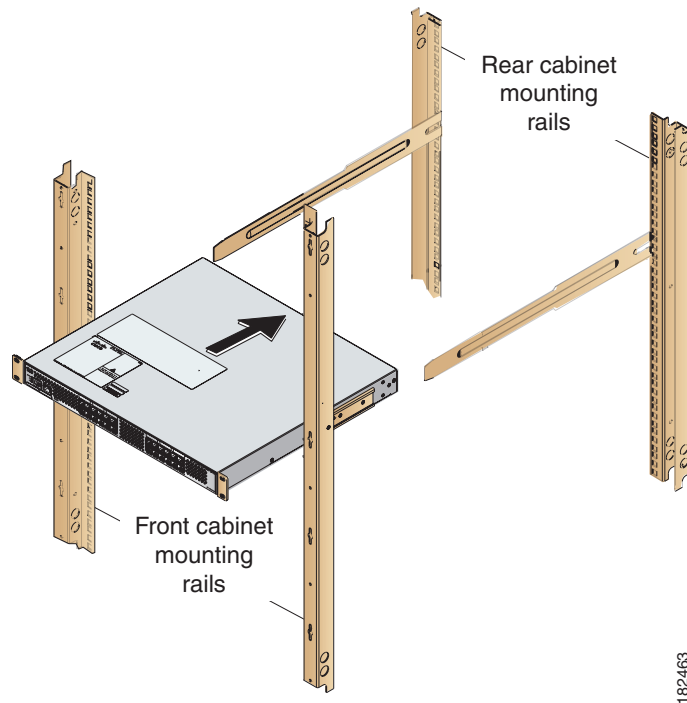
Figure 2-13 *Installing the Notched Slider Rails to the Front Rack-Mounting Rails*



Step 2 Insert the switch into the rack:

- a. Using both hands, position the switch with the back of the switch between the rear rack-mounting rails as shown in [Figure 2-14](#).

Figure 2-14 *Sliding the Cisco MDS 9134 Switch or the Cisco MDS 9124 Switch (Rear-Facing) on the Notched Slider Rails*



- b. Align the two C brackets on either side of the switch with the slider rails installed in the rack. Slide the C brackets onto the slider rails and then gently slide the switch all the way into the rack. If the switch does not slide easily, try realigning the C brackets on the slider rails.

Step 3 Connect the power cord that you previously routed through the open cutout of the slider rail to the switch, as shown in [Figure 2-15](#). Limit the length of the power cord between the back of the chassis and the rail opening.

**Note**

If you failed to route the power cord through the open cutout of the slider rail as directed in Step 1, remove the switch and rails and remount the rails using the correct method. Do not connect the power cord by routing it over the top of the slider rail, as shown in [Figure 2-16](#). This type of installation is hazardous.

Figure 2-15 *Correct Position of Power Cord Routed Through Notched Slider Rail*

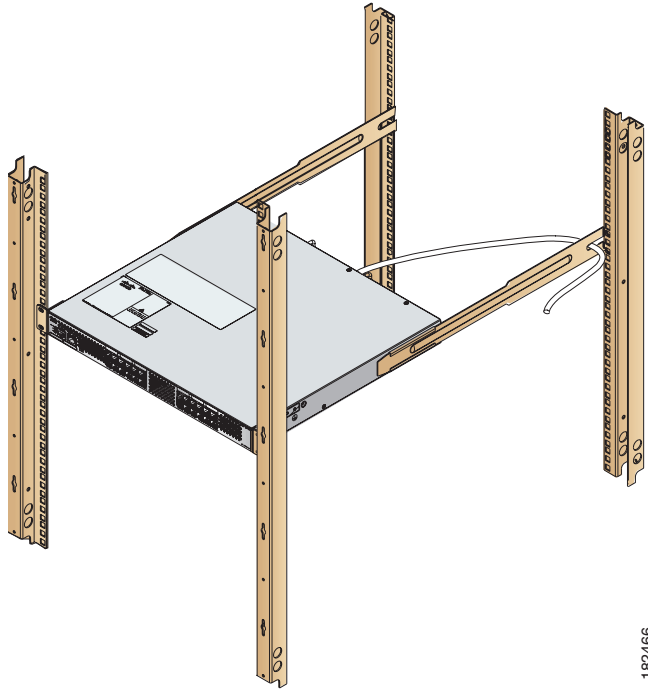
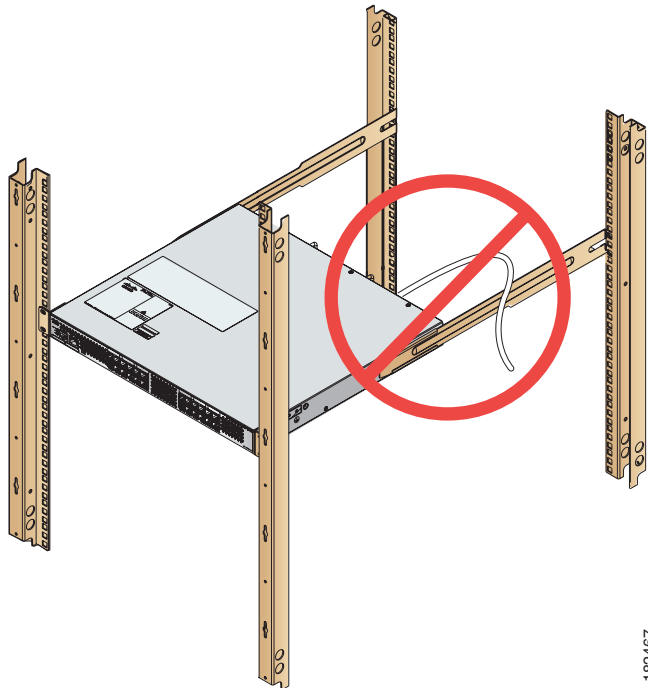
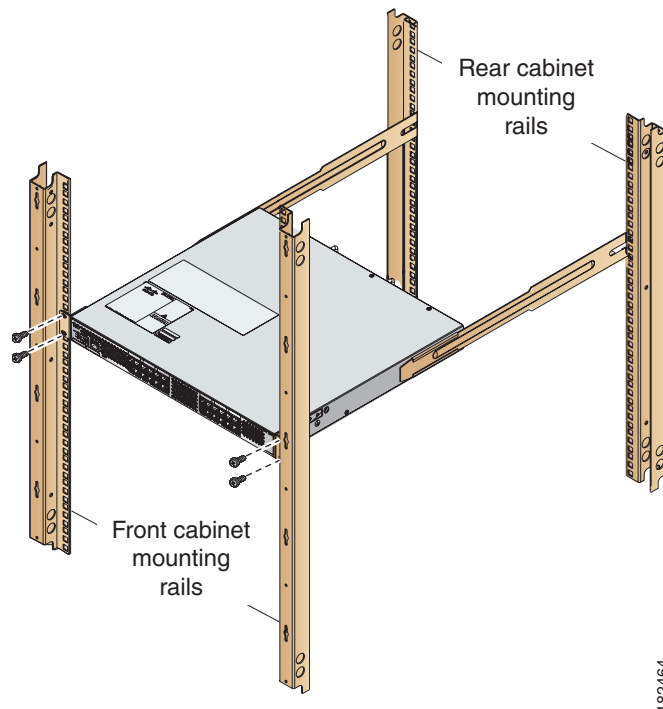


Figure 2-16 *Incorrect Position of Power Cord Routed Over the Notched Slider Rail*



- Step 4** Stabilize the switch in the rack by attaching the front rack-mount brackets to the rear rack-mounting rails:
- Insert two screws (12-24 or 10-32, depending on rack type) through the holes in one of the front rack-mount brackets and into the threaded holes in the back rack-mounting rail (see [Figure 2-17](#)). For racks with square holes, first install the 12-24 cage nuts.

Figure 2-17 Attaching the Cisco MDS 9134 Switch or the Cisco MDS 9124 Switch (Rear-Facing) to the Cabinet



- Repeat for the front rack-mount bracket on the other side of the switch.



If the chassis exceeds the 1-RU space on the low side of the rack, you may have difficulty installing other equipment. In this situation, loosen the screws on the front and back rails of the chassis and raise it to the top of the RU space by pushing the chassis up until it cannot go any further. Then retighten the screws while keeping the chassis in the elevated position.

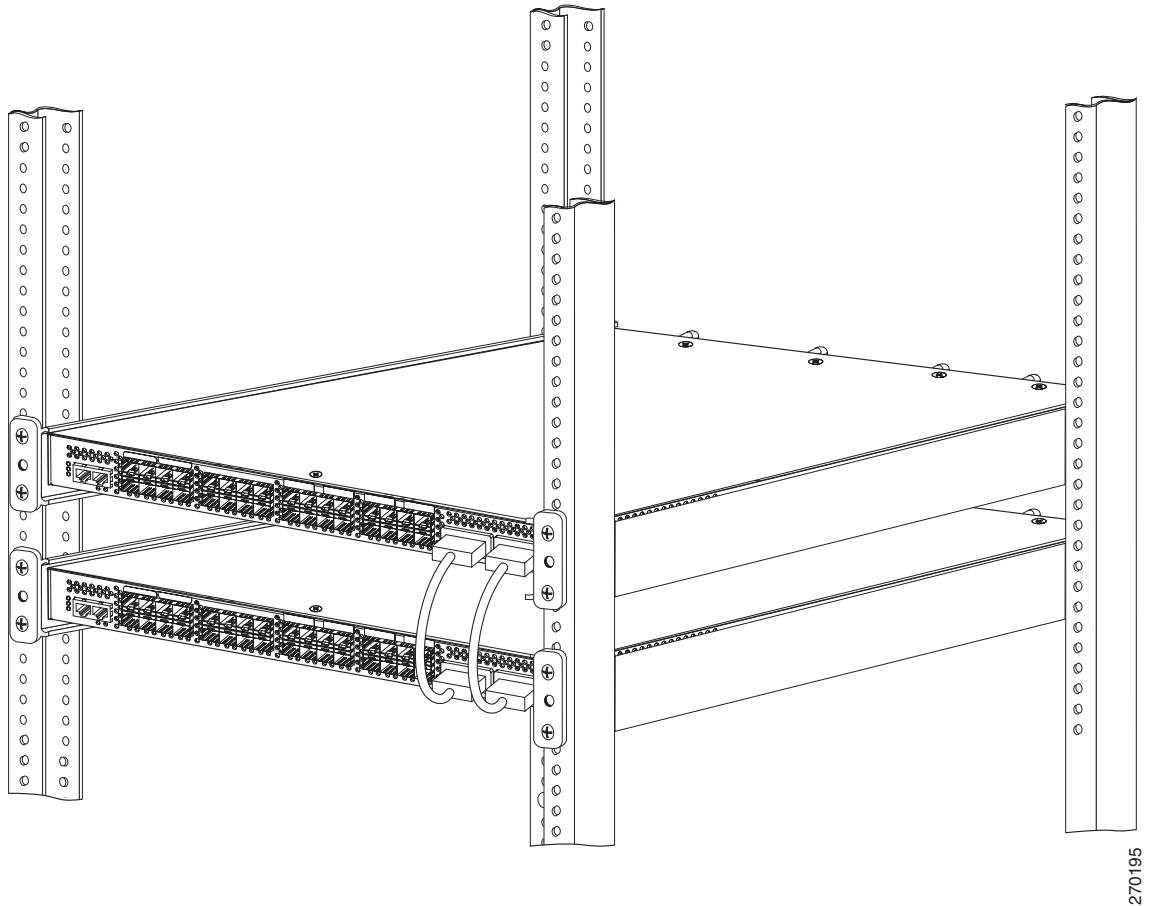
Installing Cisco MDS 9134 48-Port and 64-Port Stackable Bundles

To install two Cisco MDS 9134 Switches to stack and expand up to 48 ports and/or 64 ports, follow these steps:

- Step 1** Ensure that two boxes each consisting of a Cisco MDS 9134 Switch with a 10-Gbps transceiver plugged in and a copper cable are received.

- Step 2** Install two MDS 9134 switches placing one on top of the other (recommended) or side-by-side. In a stacked switch configuration, the distance between the 10-Gbps ports of the two switches can be maximum of 1 metre. Currently, only one-metre cables are shipped with the boxes.
- Step 3** Ensure that a copper X2 CX4 transceiver is plugged into the 10-Gbps port of each switch.
- Step 4** Plug in one end of the copper cable to the 10-Gbps transceiver of the MDS 9134 switch that is supplied in the same box and the other end to the 10-Gbps transceiver of the MDS 9134 switch of the second box so as to connect two MDS 9134 switches.

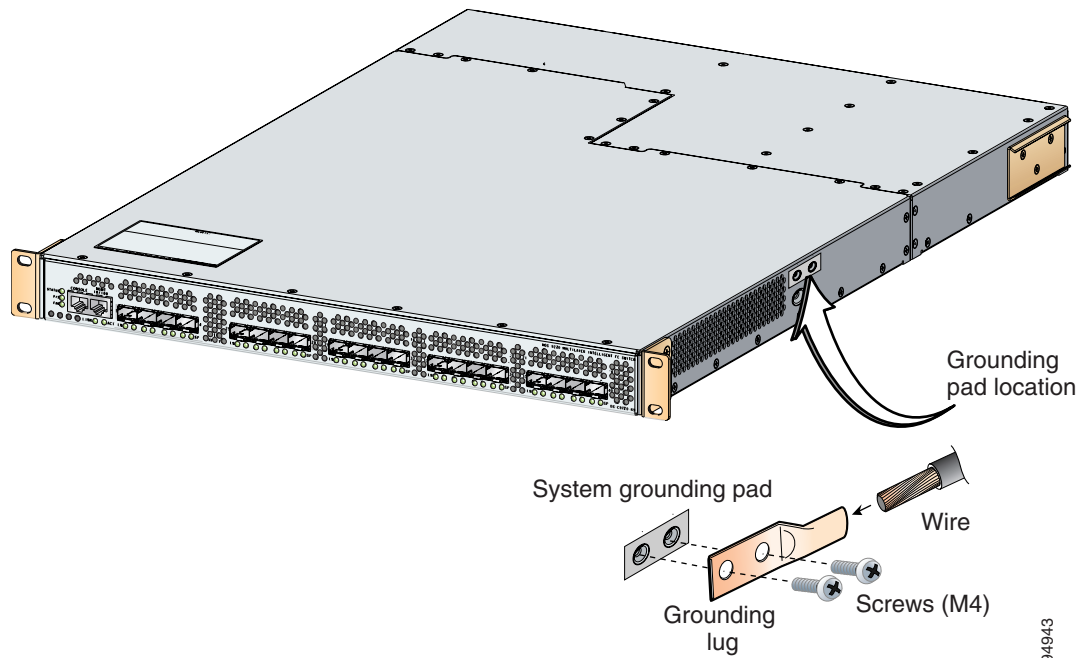
Figure 2-18 Installing the MDS 9134 48-port and 64-port Stackable Bundles



Grounding the Switch

A grounding pad with two threaded M4 holes is provided on the chassis for attaching a grounding lug. [Figure 2-19](#) shows the system ground location on the Cisco MDS 9100 Series.

Figure 2-19 Location of Switch Ground on the Cisco MDS 9100 Series



Warning

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

Caution

We recommend grounding the chassis, even if the rack is already grounded.

Note

If the rack is less than 25-in. (635 mm) deep, the slider rails will cover the grounding hole. Therefore, the rack must either be grounded or at least 25-in. (635 mm) deep.

Caution

All power supplies must be grounded. The receptacles of the AC power cables used to provide power to the chassis must be the grounding type, and the grounding conductors should connect to protective earth ground at the service equipment.

Note

The grounding lug must be NRTL listed and compatible with copper conductors. Only copper conductors (wires) must be used and the copper conductor must comply with National Electrical Code (NEC) for ampacity.

**Note**

Customers who require compliance to GR-1089-CORE bonding and grounding requirements, must use the ground conductor.

To attach the grounding lug and cable to the chassis, follow these steps:

-
- Step 1** Use a wire-stripping tool to remove approximately 0.75 in. (19 mm) of the covering from the end of the grounding cable.
 - Step 2** Insert the stripped end of grounding cable into the open end of the grounding lug.
 - Step 3** Use the crimping tool to secure the grounding cable in the grounding lug.
 - Step 4** Remove the adhesive label from the grounding pad on the chassis.
 - Step 5** Place the grounding lug against the grounding pad so that there is solid metal-to-metal contact, and insert the two M4 screws with washers through the holes in the grounding lug and into the grounding pad.
 - Step 6** Ensure that the lug and cable do not interfere with other equipment.
 - Step 7** Prepare the other end of the grounding cable and connect it to an appropriate grounding point in your site to ensure adequate earth ground.
-

Starting Up the Switch

This section provides instructions for powering up the switch and verifying component installation.

**Caution**

During this procedure, wear grounding wrist straps to avoid ESD damage to the switch.

**Note**

Do not connect the MGMT 10/100 Ethernet port to the LAN until the initial switch configuration has been performed. For instructions on configuring the switch, see the *Cisco MDS 9000 Family CLI Configuration Guide*. For instructions on connecting to this port, see the [“Connecting the Console Port” section on page 3-1](#).

To power up the switch and verify hardware operation, follow these steps:

-
- Step 1** Verify that both power supplies and fan modules are installed and tighten any loose captive screws.
 - Step 2** Verify that the power switches on both power supplies are off. Then plug the power cables into the power supplies and arrange the cables so that they cannot be accidentally pulled out.

**Note**

Depending on the outlet receptacle on your power distribution unit, you may need the optional jumper power cord to connect the Cisco MDS 9100 Series Switch switch to your outlet receptacle. See the [“Jumper Power Cord” section on page C-5](#).

-
- Step 3** Connect the other end of the power cables to an AC power source.

- Step 4** Ensure that the switch is adequately grounded as described in the “[Installing the Switch in a Cabinet with Insufficient Front Clearance](#)” section on page 2-11, and that the power cables are connected to outlets that have the required AC power voltages (provided in the “[Power Specifications](#)” section on page B-2).
- Step 5** Flip the power switches on the power supplies to the on (I) position. The switch boots automatically.
- Step 6** Listen for the fans; they should begin operating as soon as the switch is powered on.

**Caution**

Do not operate the switch without a functioning fan module except for during the brief fan module replacement procedure. The Cisco MDS 9000 Family switches can operate for only a few minutes without any functioning fan modules before they begin to overheat.

- Step 7** Verify that the LED behavior is as follows when the switch has finished booting:
- Fan status LED is green.
 - Each power supply LED is green.
 - The Switch status LED is green. If this LED is orange or red, then one or more environmental monitors is reporting a problem.
 - The Ethernet port Link LEDs should not be on unless the cable is connected.

**Note**

The LEDs for the Fibre Channel ports remain orange until the ports are enabled, and the LED for the MGMT 10/100 Ethernet port remains off until the port is connected.

If any LEDs other than the Fibre Channel port LEDs are orange or red after the initial boot processes are complete, see the *Cisco MDS 9000 Family Troubleshooting Guide*.

- Step 8** Try removing and reinstalling a component that is not operating properly. If it still does not operate correctly, contact your customer service representative for a replacement.

**Note**

If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco, contact Cisco Technical Support at this URL: <http://www.cisco.com/warp/public/687/Directory/DirTAC.shtm>

- Step 9** Verify that the system software has booted and the switch has initialized without error messages. If any problems occur, see the *Cisco MDS 9000 Family Troubleshooting Guide* or the *Cisco MDS 9000 Family System Messages Guide*. If you cannot resolve an issue, contact your customer service representative.
- Step 10** Complete the worksheets provided in [Appendix D, “Site Planning and Maintenance Records”](#) for future reference.

**Note**

A setup utility automatically launches the first time you access the switch and guides you through the basic configuration. For instructions about how to configure the switch and check module connectivity, see the *Cisco MDS 9000 Family CLI Configuration Guide*.

Removing and Installing Components

The Cisco MDS 9140 Switch and the Cisco MDS 9120 Switch is shipped with two field-replaceable power supplies. Each power supply includes a fixed fan. The Cisco MDS 9140 Switch and the Cisco MDS 9120 Switch also have two field-replaceable fan modules. The Cisco MDS 9134 Switch has two hot-swappable power supplies and two hot-swappable fan modules. The Cisco MDS 9124 Switch is shipped with one field-replaceable power supply and three fixed fans.

This section provides the following information:

- [Removing and Installing Power Supplies, page 2-29](#)
- [Removing and Installing Fan Modules, page 2-30](#)

**Warning**

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034

**Caution**

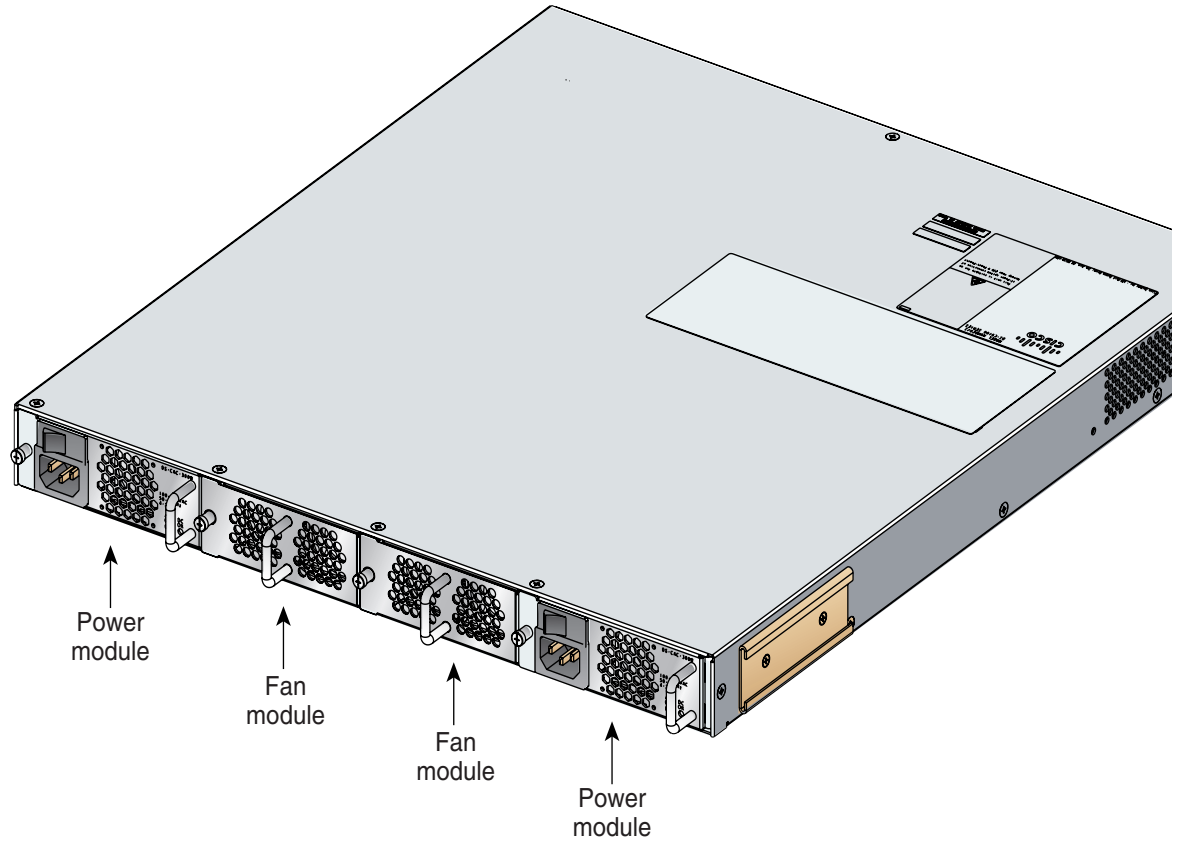
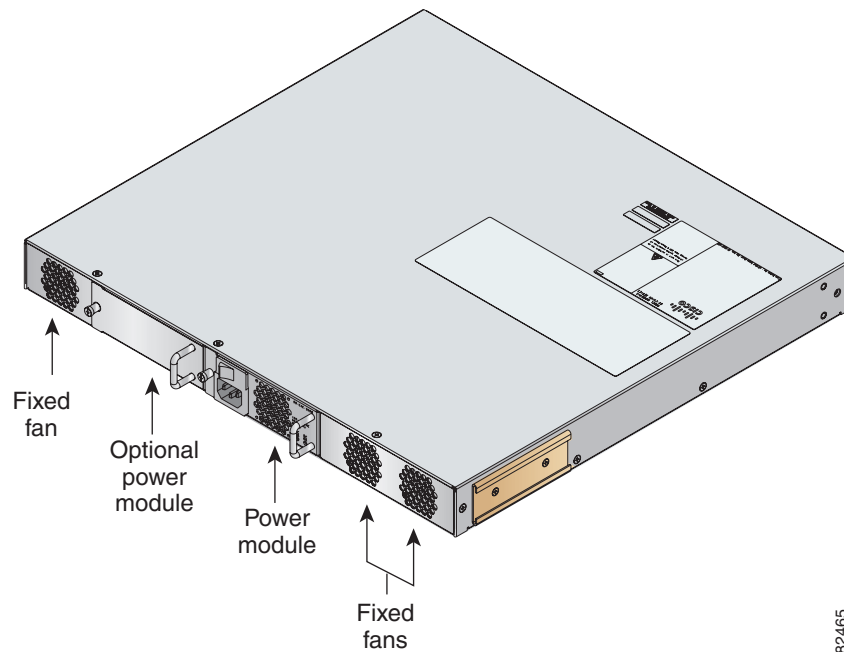
During this procedure, wear grounding wrist straps to avoid ESD damage to the switch.

**Note**

The Cisco MDS 9100 Series is only supported for operation with both power supplies and both fan modules installed, with all fans working.

With two power supplies installed, if one power supply fails, the system can continue to function normally on a single healthy power supply. However, the failed power supply should be replaced as soon as possible to provide redundancy.

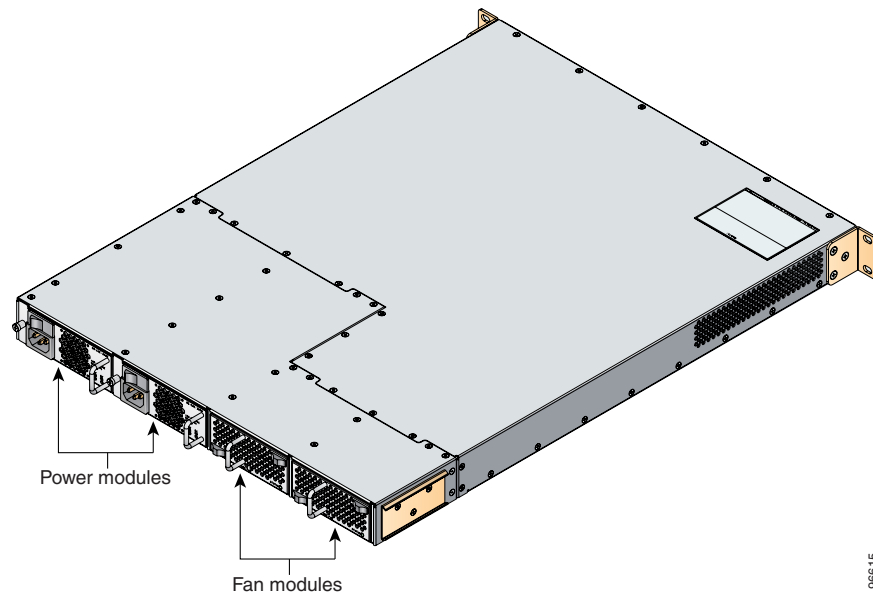
The fan modules are required to ensure proper cooling of the switches. See [Figure 2-20](#), [Figure 2-21](#), and [Figure 2-22](#).

Figure 2-20 *Rear View of the Cisco MDS9134 Switch***Figure 2-21** *Rear View of the Cisco MDS 9124 Switch*

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For the Cisco MDS 9140 Switch and the Cisco MDS 9120 Switch, the fans should not be removed for prolonged periods of time during operation. If one fan module fails, a single healthy fan module can temporarily provide sufficient cooling to maintain switch operation under normal conditions, but the failed fan module should be replaced as soon as possible. See [Figure 2-22](#).

Figure 2-22 *Rear View of the Cisco MDS 9140 Switch and the Cisco MDS 9120 Switch*



Removing and Installing Power Supplies

This section provides instructions for removing and installing the power supplies for the Cisco MDS 9100 Series.

**Caution**

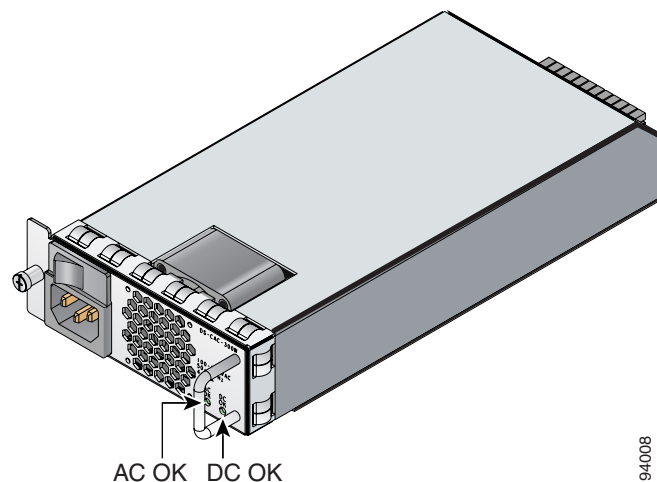
Power supplies for the Cisco 9100 Series look similar but they differ slightly. Be sure to use the correct power supply designated for your Cisco 9100 Series switch. Using an incorrect power supply will not provide redundant power in the case of a power supply failure.

Removing Power Supplies

To remove a power supply, follow these steps:

- Step 1** Turn the power switch to the off (0) position on the power supply you are removing.
- Step 2** Disconnect the power cord from the power source.
- Step 3** Loosen the captive screw.
- Step 4** Grasp the power supply handle and slide the power supply out of the switch. See [Figure 2-23](#).

Figure 2-23 Cisco MDS 9100 Series Power Supply



Installing Power Supplies

To install the dual 300-W AC-input power supplies, follow these steps:

- Step 1** Ensure that the system (earth) ground connection has been made.
- Step 2** Make sure the power cord is disconnected before installing the power supply.
- Step 3** Verify that the power switch is in the off (0) position on the power supply you are installing.

- Step 4** Slide the power supply into the power supply bay. Make sure that the power supply is fully seated in the bay.
- Step 5** Tighten the power supply captive screw.
- Step 6** Plug the power cord into the power supply.
- Step 7** Connect the other end of the power cord to an AC-input power source.



Note Depending on the outlet receptacle on your power distribution unit, you may need the optional jumper power cord to connect the Cisco MDS 9100 Series Switch to your outlet receptacle. See the [“Jumper Power Cord”](#) section on page C-5.

- Step 8** Turn the power switch to the on (I) position on the power supply.
- Step 9** Verify power supply operation by checking that the power supply (P/S) LED in the front panel is green. If the LED is not green, see the *Cisco MDS 9000 Family Troubleshooting Guide*.

Removing and Installing Fan Modules

This section provides instructions for removing and installing the fan modules for the Cisco MDS 9140 Switch and the Cisco MDS 9120 Switch. The Cisco MDS 9124 Switch does not have field-replaceable fan modules.

Removing a Fan Module on the Cisco MDS 9140 Switch, the Cisco MDS 9120 Switch, and the Cisco MDS 9134 Switch

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

The Cisco MDS 9000 Family has internal temperature sensors that are capable of shutting down the system if the temperature at different points within the chassis exceed certain safety thresholds. To be effective, the temperature sensors require the presence of airflow; therefore, in the event a fan module is removed from the chassis, the Cisco MDS 9000 Family will be shut down after five minutes to prevent potentially undetectable overheating. However, the switches will shut down sooner if the higher-level temperature threshold is exceeded.



Warning

When removing the fan tray, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan tray. Statement 258

To remove the existing fan module, follow these steps:

- Step 1** Locate the fan module in the back of the switch.
- Step 2** Slide the seating tabs toward the center of the fan module.
- Step 3** Grasp the fan module handle and pull it outward.

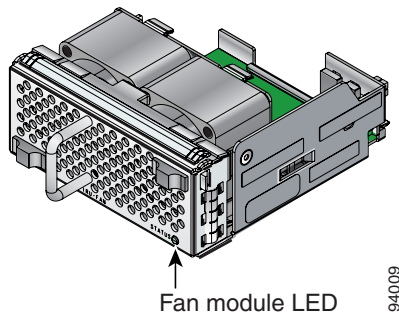
Step 4 Pull the fan module out of the switch and put it in a safe place.

Installing a Fan Module

To install a new fan module, follow these steps:

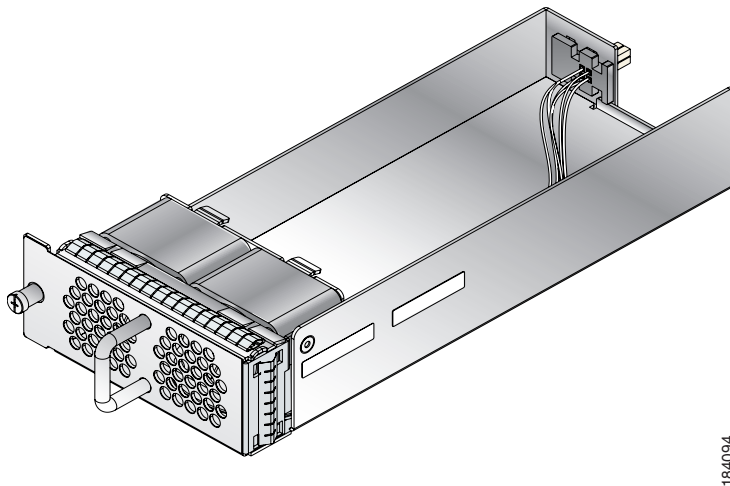
- Step 1** Position the fan module with the LED oriented away from the back of the switch. [Figure 2-24](#) shows the fan module for the Cisco MDS 9120 Switch and the Cisco MDS 9140 Switch. [Figure 2-25](#) shows the fan module for the Cisco MDS 9134 Switch.
- Step 2** Slide the fan module into the switch until it clicks into place.

Figure 2-24 Cisco MDS 9100 Series Fan Module



[Figure 2-25](#) shows the Cisco MDS 9134 fan module.

Figure 2-25 Cisco MDS 9134 Fan Module



Verifying the Fan Module

To verify that the new fan module is installed correctly, follow these steps:

- Step 1** Listen for the fans; you should immediately hear them operating. If you do not hear them, ensure that the fan module is inserted completely in the switch and the faceplate is flush with the switch back panel.
- Step 2** Verify that the Fan module LED is green. If the LED is orange then one fan has failed in this fan module; if the LED is red, then both fans have failed in this fan module.
- Step 3** Contact your customer service representative for assistance if, after several attempts, the fans do not operate or you experience trouble with the installation.



Note Verify that the transceiver and cable type both have LC connectors and are the required type for longwave or shortwave transmission and the required distances. The transceiver label generally lists the model and wavelength.



Note If you purchased this product through a Cisco reseller, contact the reseller directly for technical support. If you purchased this product directly from Cisco, contact Cisco Technical Support at this URL: <http://www.cisco.com/warp/public/687/Directory/DirTAC.shtm>

