



Cabinet and Rack Installation

This appendix provides information on the cabinet and rack installation and includes the following sections:

- [Cabinet and Rack Requirements, page B-1](#)
- [Cisco MDS 9000 Family Telco and EIA Shelf Bracket, page B-6](#)
- [Cisco MDS 9500 Shelf Bracket, page B-13](#)

Cabinet and Rack Requirements

This section provides the Cisco MDS 9000 Family requirements for the following types of cabinets and racks, assuming an external ambient air temperature range of 32 to 104°F (0 to 40°C):

- Standard perforated cabinets
- Solid-walled cabinets with a roof fan tray (bottom to top cooling)
- Standard open racks
- Two-post telco racks



Note

If you are selecting an enclosed cabinet, We recommend one of the thermally validated types: standard perforated or solid-walled with a fan tray.

General Requirements for Cabinets and Racks

The cabinet or rack must be one of the following types:

- Standard 19-inch four-post EIA cabinet or rack, with mounting rails that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992. See the [“Requirements Specific to Perforated Cabinets”](#) section on page B-3 and the [“Requirements Specific to Solid-Walled Cabinets”](#) section on page B-4.
- Standard two-post telco rack, with mounting rails that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992. See the [“Requirements Specific to Two-Post Telco Racks”](#) section on page B-6.

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Cabinet and Rack Requirements for the Cisco MDS 9513 Chassis

The cabinet or rack must also meet the following requirements for the Cisco MDS 9513 chassis:

- The minimum vertical rack space per chassis:
 - Cisco MDS 9513 chassis: 24.5 inches (62.2 cm) or 14 RU, height with required rack mount support is 15 RU.
- The distance between the rack-mounting rails for four-post EIA racks must be at least 26.56 inches (67.46 cm). For more information, see [“Installing the Cisco MDS 9513 Director in a Rack” section on page E-7](#).
- The minimum spacing for four-post EIA cabinets (perforated or solid-walled):
 - To ensure the minimum bend radius for fiber-optic cables, the front mounting rails of the cabinet should be offset from the front door by a minimum of 3 inches (7.6 cm), and a minimum of 5 inches (12.7 cm) if cable management brackets are installed on the front of the chassis.
 - Cisco recommends that you maintain a minimum air space of 6.0 inches (15 cm) between walls and the chassis air vents. A minimum horizontal separation of 12 inches (30.5 cm) has to be maintained between the two chassis to prevent overheating.

**Note**

Optional jumper power cords are available for use in a cabinet. See the [“Jumper Power Cord” section on page ii-11](#).

Cabinet and Rack Requirements for the Cisco MDS 9509 and Cisco MDS 9506 Chassis

The cabinet or rack must also meet the following requirements:

- The minimum vertical rack space per chassis:
 - Cisco MDS 9509 chassis: 24.5 inches (62.2 cm) or 14 RU
 - Cisco MDS 9506 chassis: 12.25 inches (31.1 cm) or 7 RU (rack unit)
- The width between the rack-mounting rails must be at least 17.75 inches (45.1 cm). For four-post EIA racks, this is the distance between the two front rails and rear rails.
- The minimum spacing for four-post EIA cabinets (perforated or solid-walled):
 - To ensure the minimum bend radius for fiber-optic cables, the front mounting rails of the cabinet should be offset from the front door by a minimum of 3 inches (7.6 cm), and a minimum of 5 inches (12.7 cm) if cable management brackets are installed on the front of the chassis.
 - A minimum of 2.5 inches (6.4 cm) of clear space between the side edge of the chassis and the side wall of the cabinet. No sizeable flow obstructions should be immediately in the way of the chassis air intake or exhaust vents.

**Note**

Optional jumper power cords are available for use in a cabinet. See the [“Jumper Power Cord” section on page ii-11](#).

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Requirements Specific to Perforated Cabinets

A perforated cabinet is defined here as a cabinet with perforated front and rear doors and solid side walls. In addition to the requirements listed in the “[General Requirements for Cabinets and Racks](#)” section on [page B-1](#), perforated cabinets must meet the requirements listed under [Perforated Cabinet Requirements for the Cisco MDS 9513 Chassis](#).

Perforated Cabinet Requirements for the Cisco MDS 9513 Chassis

The perforated cabinet requirements for the Cisco MDS 9513 chassis are as follows:

- The front and rear doors must have at least a 60 percent open area (per square inch) perforation pattern, with at least 80 percent perforated.
- Cisco recommends that the roof should be solid.
- Cisco recommends an open cabinet floor to enhance cooling.

A perforated cabinet that conforms to these requirements is available from Panduit Corporation:

Panduit Corporation

17301 South Ridgeland Avenue

Tinley Park, IL 60477

Contact: (708) 532-1800

Cabinet P/N: CN4-2

Cabinet description: Net-Access cabinet, 31.5 in. W X 40 in. D X 84 in. H (800 mm x 1017 mm x 2134 mm), 45 RU cable management on front and rear of front posts.

Panduit cabinet part number CN1 may be upgraded to MDS 9513-compatible cabinet CN4-2 by purchasing additional Panduit parts. Contact Panduit Corporation for more information.

A new cabinet that conforms to these requirements is available from Chatsworth Products:

Chatsworth Products, Inc.

31425 Agoura Road

Westlake Village, CA 91361

Customer Service and Technical Support phone number 800 834-4969

Cabinet: P/N: NF3K-113C-C42

Cabinet description: The N-Series TeraFrame Network Cabinet, 31.4 in. W X 40.4 in. D X 83.4 in. H (798 mm x 1025 mm x 2118 mm), 45 RU

For more information see <http://www.chatsworth.com/ciscoteraframe>

Perforated Cabinet Requirements for the Cisco MDS 9509 and the Cisco MDS 9506 Chassis

The perforated cabinet requirements for the Cisco MDS 9506 and MDS 9509 chassis are as follows:

- The front and rear doors must have at least a 60 percent open area perforation pattern, with at least 15 square inches of open area per rack unit of door height.
- Cisco recommends that the roof should be perforated with at least a 20 percent open area.
- Cisco recommends an open or perforated cabinet floor to enhance cooling.

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A perforated cabinet that conforms to these requirements is available from Rittal Corporation:

Rittal Corporation

One Rittal Place

Springfield, OH 45504

Contact: (800) 477-4220

Cabinet P/N: Rittal 9969427

Cabinet description: PS-DK/OEM Cabinet Assembly, 78.7 in. (1998 mm) x 23.6 in. (600 mm) x 39.4 in. (1000 mm) (H x W x D) (42RU)

A new cabinet that conforms to these requirements is available from Panduit Corporation:

Panduit Corporation

17301 South Ridgeland Avenue

Tinley Park, IL 60477

Customer Service and Technical Support phone number: 800 777-3300.

Cabinet P/N: CN4-1

Cabinet description: Net-Access cabinet, 31.5 in. W X 40 in. D X 84 in. H (800 mm x 1017 mm x 2134 mm), 45 RU cable management on front and rear of front posts

For more information see <http://www.panduit.com/index.htm>.

A new cabinet that conforms to these requirements is available from Chatsworth Products:

Chatsworth Products, Inc.

31425 Agoura Road

Westlake Village, CA 91361

Customer Service and Technical Support phone number 800 834-4969

Cabinet: P/N: NF2K-113C-C42

Cabinet description: The N-Series TeraFrame Network Cabinet, 31.4 in. W X 40.4 in. D X 83.4 in. H (798 mm x 1025 mm x 2118 mm), 45 RU

For more information see: <http://www.chatsworth.com/ciscoteraframe>



Note

Do not use the perforated cabinet from Rittal Corporation with the Cisco MDS 9513 Director.

Requirements Specific to Solid-Walled Cabinets

A solid-walled cabinet is defined here as a cabinet with solid (nonperforated) front and rear doors and solid side walls. In addition to the requirements listed in the “[General Requirements for Cabinets and Racks](#)” section on page B-1, solid-walled cabinets must meet the following requirements:

Solid-Walled Cabinet Requirements for the Cisco MDS 9513 Chassis

The solid-walled cabinet requirements for the Cisco MDS 9513 chassis are as follows:

- Perforated front and back doors and solid or open side panels.

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- A recommended cabinet depth of 36 to 42 inches (91.4 to 106.7 cm) to allow the doors to close and adequate airflow.
- Bottom of cabinet should be open to enhance airflow.
- The lowest piece of equipment should be installed a minimum of 1.75 inches (4.4 cm) above the floor openings to prevent blocking the floor intake.

Solid-Walled Cabinet Requirements for the Cisco MDS 9509 and the Cisco MDS 9506 Chassis

The solid-walled cabinet requirements for the Cisco MDS 9509 and the Cisco MDS 9506 chassis are as follows:

- A roof-mounted fan tray and an air cooling scheme in which the fan tray pulls air in at the bottom of the cabinet and exhausts it out the top, with a minimum of 500 cfm of airflow exiting the cabinet roof through the fan tray.
- Nonperforated (solid and sealed) front and back doors and side panels so that air travels predictably from bottom to top.
- A recommended cabinet depth of 36 to 42 inches (91.4 to 106.7 cm) to allow the doors to close and adequate airflow.
- A minimum of 150 square inches (968 sq. cm) of open area at the floor air intake of the cabinet.
- The lowest piece of equipment should be installed a minimum of 1.75 inches (4.4 cm) above the floor openings to prevent blocking the floor intake.

Requirements Specific to Standard Open Racks

In addition to the requirements listed in the [“General Requirements for Cabinets and Racks”](#) section on [page B-1](#), if mounting the chassis in an open rack (no side panels or doors), ensure that the rack meets the following requirements:

- The minimum width between two front mounting rails must be 17.75 inches (45.1 cm).
- The minimum vertical rack space per chassis:
 - Cisco MDS 9513 chassis: 24.5 inches (62.2 cm) or 14 RU.
 - Cisco MDS 9509 chassis: 24.5 inches (62.2 cm) or 14 RU.
 - Cisco MDS 9506 chassis: 12.25 inches (31.1 cm) or 7 RU.

**Note**

The rack-mount support brackets provided with the Cisco MDS 9513 Director require an additional height of 0.75 inches (1.9 cm). They are required during the installation of the Cisco MDS 9513 Director and cannot be removed.

**Note**

The side rail-mount brackets provided with the Cisco MDS 9509 Director require an additional height of 0.75 inches (1.9 cm). They are required during the installation of the Cisco MDS 9509 Director only, and can be removed or left installed once the front rack-mount brackets are securely fastened to the rack-mounting rails.

**Note**

The Cisco MDS 9506 Director does not require shelf brackets.

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- The horizontal distance between the chassis and any adjacent chassis should be 6 inches (15.2 cm), and the distance between the chassis air vents and any walls should be 2.5 inches (6.4 cm).

Requirements Specific to Two-Post Telco Racks

In addition to the requirements listed in the “[General Requirements for Cabinets and Racks](#)” section on [page B-1](#), two-post telco racks must meet the following requirements:

- The minimum width between the two rack-mounting rails must be at least 17.75 inches (45.1 cm).
- The distance between the chassis air vents and any walls should be 2.5 inches (6.4 cm).



Note

Two-post telco racks are not intended for use with the Cisco MDS 9513 Director.

Cisco MDS 9000 Family Telco and EIA Shelf Bracket

The optional telco and EIA shelf bracket kit (DS-SHELF) can temporarily or permanently support the Cisco MDS 9200 Series during installation. After the front rack-mount brackets are securely attached to the rack-mounting rails, the shelf bracket can be removed. This kit supports the following configurations:

- A Cisco MDS 9506 Director in a two-post telco rack
- A Cisco MDS 9506 Director in a four-post EIA rack



Note

This kit is not intended for use with a Cisco MDS 9509 Director in a two-post telco rack nor with a Cisco MDS 9513 Director in any rack.

This section describes the procedure for installing a Cisco MDS 9000 Family switch in a rack or a cabinet using the optional telco and EIA shelf bracket kit. It includes the following information:

- [Rack-Mounting Guidelines, page B-7](#)
- [Before Installing the Rack-Mount Support Brackets, page B-7](#)
- [Before Installing the Shelf Brackets, page B-8](#)
- [Installing the Shelf Bracket Kit into a Two-Post Telco Rack, page B-9](#)
- [Installing the Shelf Bracket Kit into a Four-Post EIA Rack, page B-10](#)
- [Installing the Switch on the Rack-Mount Support Brackets, page B-11](#)
- [Installing the Switch on the Shelf Brackets, page B-12](#)
- [Removing the Shelf Bracket Kit \(Optional\), page B-12](#)



Note

This optional kit is not provided with the switch; to order the kit, contact your switch supplier.

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Rack-Mounting Guidelines



Caution

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



Caution

If installing this kit in an EIA rack, attach the switch to all four rack-mounting rails; the EIA rails may not be thick enough to prevent flexing of the shelf brackets if only two rails are used.

Before rack-mounting the chassis, ensure that the cabinet or the rack meets the following requirements:

- The specifications listed in the “[Cabinet and Rack Requirements](#)” section on page B-1.
- The depth of the rack between the front-mounting and rear-mounting rails is at least 18 in. (45.7 cm) but less than or equal to 30 in. (76.2 cm). This is specific to four-post EIA cabinets or racks.
- The airflow and cooling are adequate and there is sufficient clearance around the air vents on the switch, as described in [Appendix C, “Technical Specifications.”](#) This is particularly important to verify if you are installing the switch in an enclosed cabinet.
- The rack has sufficient vertical clearance for the chassis plus 2 RU for the shelf brackets, and any desired clearance for the installation process.
- The rack meets the minimum rack load ratings per rack unit listed in the following table:

Rack Type	MDS 9513	MDS 9509	MDS 9506	MDS 9222i MDS 9216i MDS 9216A	MDS 9100
EIA (4-Post)	45 lb (20.41 kg)	45 lb (20.41 kg)	30 lb (13.61 kg)	15 lb (6.8 kg)	7.5 lb (3.4 kg)
Telco (2-Post)	Do not use.	Do not use.	60 lb (27.22 kg)	30 lb (13.61 kg)	15 lb (6.8 kg)

Before Installing the Rack-Mount Support Brackets

Before installing the rack-mount support brackets for the Cisco MDS 9513 Director, check the contents of your kit. [Table B-1](#) lists the contents of the optional shelf bracket kit.

Table B-1 Contents of Shelf Bracket Kit

Quantity	Part Description
2	Support rack-mount bracket
2	Rack-mount support brace
20	12-24 x 3/4-in. Phillips screws
20	10-32 x 3/4-in. Phillips screws

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Before Installing the Shelf Brackets

Before installing the shelf brackets, check the contents of your kit. [Table B-2](#) lists the contents of the optional shelf bracket kit.

Table B-2 ***Contents of Shelf Bracket Kit***

Quantity	Part Description
2	Slider brackets
2	Shelf brackets
1	Crossbar
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:

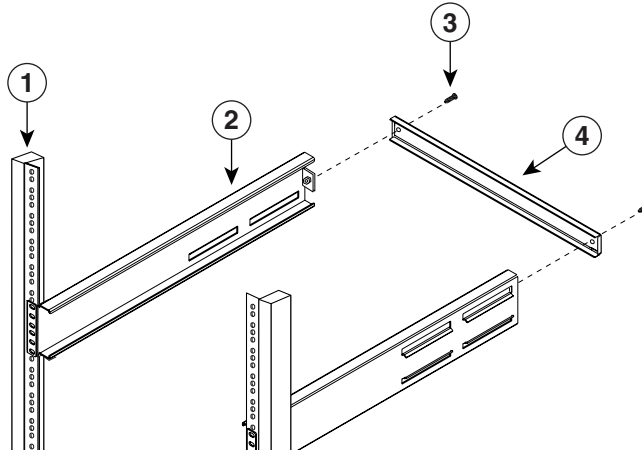
- Number 2 Phillips screwdriver
- Tape measure and level (to ensure shelf brackets are level)

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

Figure B-1 shows the installation of the shelf bracket kit into a two-post telco rack.

Figure B-1 Installing the Shelf Bracket Kit into a Two-Post Telco Rack



1	Rack-mounting rail (2x)	3	10-32 screws (2x)
2	Shelf bracket (2x)	4	Crossbar

To install the shelf brackets in a two-post telco rack, follow these steps:

- Step 1** Position a shelf bracket inside a rack-mounting rail as shown in [Figure B-1](#). Align the screw holes at the front of the shelf bracket with the holes in the rack-mounting rail. Then attach the shelf bracket to the rack-mounting rail 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 of a rack unit on the rack-mounting rail (the hole immediately above the 1/2-in. spacing).

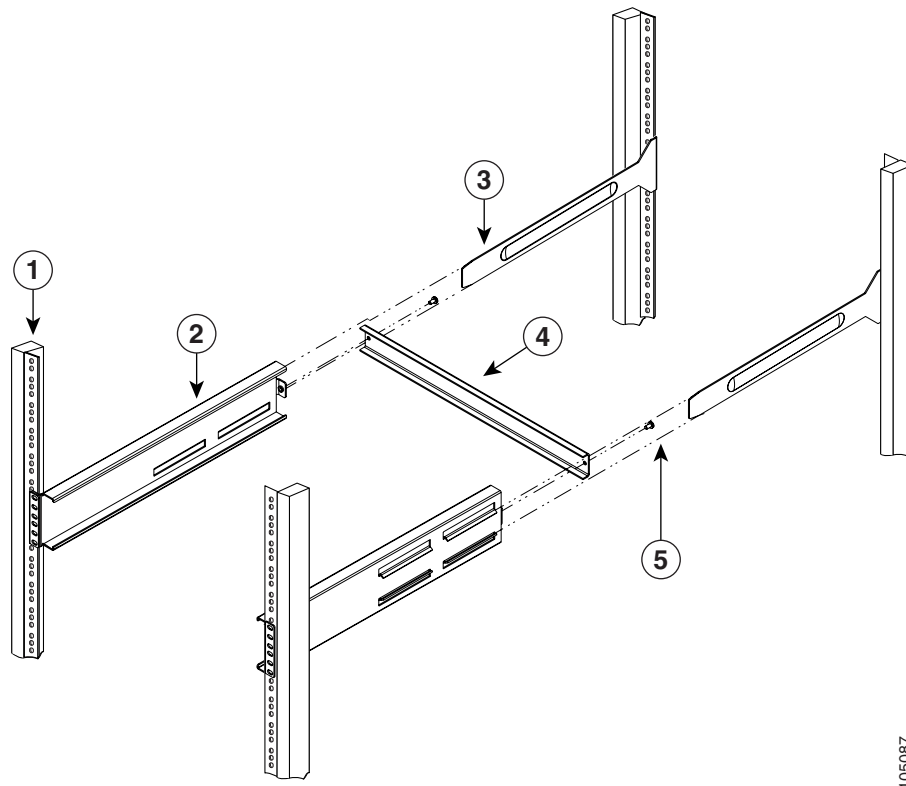
- Step 2** Repeat with the other shelf bracket.
- Step 3** Verify that the shelf brackets are at the same height (using the level or tape measure as desired).
- Step 4** Attach the crossbar to the rear of the shelf brackets as shown in [Figure B-1](#), using the 10-32 screws.

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

Figure B-2 shows the installation of the shelf bracket kit into a four-post EIA rack.

Figure B-2 Installing the Shelf Bracket Kit into an EIA Rack



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1	Rack-mounting rail (4x)	4	Crossbar
2	Shelf bracket (2x)	5	10-32 screws (2x)
3	Slider rail (2)		

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

- Step 1** Position a shelf bracket inside the rack-mounting rails as shown in [Figure B-2](#). Align the screw holes at the front of the shelf bracket with the holes in the front rack-mounting rail. Then attach the shelf bracket to the front rack-mounting rail 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 of a rack unit on the rack-mounting rail (the hole immediately above the 1/2-in. spacing).

- Step 2** Repeat with the other shelf bracket.
- Step 3** Verify that the shelf brackets are at the same height (using the level or tape measure as desired).

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- Step 4** Attach the crossbar to the shelf brackets as shown in [Figure B-2](#), using the 10-32 screws.
- Step 5** Insert the slider rails into the shelf brackets as shown in [Figure B-2](#). Then attach them to the rear rack-mounting rails using a minimum of four 12-24 or 10-24 screws.
-

Installing the Switch on the Rack-Mount Support Brackets

This section provides general instructions for installing the switch on top of the rack-mount support brackets. For detailed installation instructions, see the [“Installing the Chassis in a Cabinet or Rack” section on page E-6](#).

**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**

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

To install the switch on top of the rack-mount support brackets, follow these steps:

- Step 1** Verify that the rack-mount support brackets are level and securely attached to the rack-mounting rails, the support rack mount support brace is securely attached to the brackets, and the rack is stabilized.
- Step 2** Slide a mechanical lift under the switch and lift the switch up onto the rack-mount support brackets, ensuring it is squarely positioned.
- Step 3** Attach the switch to the rack-mounting rails. See the [“Installing the Chassis in a Cabinet or Rack” section on page E-6](#).

**Caution**

We recommend grounding the chassis, even if the rack is already grounded. There is a grounding pad with two threaded M4 holes on the chassis for attaching a grounding lug.

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Installing the Switch on the Shelf Brackets

This section provides general instructions for installing the switch on top of the shelf brackets. For detailed installation instructions, see the [“Installing the Chassis in a Cabinet or Rack”](#) section on page E-6.

**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**

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

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

- Step 1** Verify that the shelf brackets are level and securely attached to the rack-mounting rails, the crossbar is securely attached to the shelf brackets, and the rack is stabilized.
- Step 2** Slide the switch onto the shelf brackets, ensuring it is squarely positioned.
- Step 3** Attach the switch to the rack-mounting rails. See the [“Installing the Chassis in a Cabinet or Rack”](#) section on page E-6.

**Caution**

Cisco recommends grounding the chassis, even if the rack is already grounded. There is a grounding pad with two threaded M4 holes on the chassis for attaching a grounding lug.

Removing the Shelf Bracket Kit (Optional)

The shelf bracket kit can be removed once the Cisco MDS 9500 Series has been installed in a two-post telco or four-post EIA rack, and the front rack-mount brackets are securely attached to the rack-mounting rails. For additional support in an EIA rack, ensure that the C brackets on the Cisco MDS 9500 Series are attached to the rear rack-mounting rails.

To remove the shelf bracket kit, follow these steps:

- Step 1** Remove the screws fastening the slider brackets to the rear rack-mounting rails. Then slide the slider brackets out of the shelf brackets.
- Step 2** Remove the screws fastening the crossbar to the shelf brackets and remove the crossbar.

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Step 3 Remove the screws fastening the shelf brackets to the front rack-mounting rails. Then remove the shelf brackets from the rack.



Note This does not apply to the Cisco MDS 9513 Director.

Cisco MDS 9500 Shelf Bracket



Note This kit is optional and is not provided with the switch. To order the kit, contact your switch supplier.

The optional Cisco MDS 9500 Shelf Bracket Kit (DS-SHELF-9500) can be used to support the Cisco MDS 9509 Director in a nonthreaded cabinet or rack with an 18-inch (45.7 cm) front to rear fixed rail spacing. This shelf bracket kit can be used as a permanent support when installing a Cisco MDS 9509 Director in a cabinet or rack that meets the requirements listed in the [“Cabinet and Rack Requirements”](#) section on page B-1.



Note Do not use this shelf bracket with the Cisco MDS 9513 Director.



Note Do not use this shelf bracket with the Cisco MDS 9506 Director.



Note This kit is not intended for use with a Cisco MDS 9509 Director in a two-post telco rack. This kit is also not intended for use with any other product in the Cisco MDS 9000 Family.

This section describes the procedure for installing a Cisco MDS 9509 Director in a nonthreaded rack or cabinet using the optional Cisco MDS 9500 Shelf Bracket Kit. It includes the following information:

- [Rack-Mounting Guidelines, page B-14](#)
- [Before Installing the Shelf Brackets, page B-14](#)
- [Installing the Cisco MDS 9500 Shelf Bracket Kit into a Cabinet or Rack, page B-15](#)
- [Installing the Switch on the Shelf Brackets, page B-16](#)

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Rack-Mounting Guidelines



Caution

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

Before rack-mounting the chassis, ensure that the cabinet or the rack meets the following requirements:

- The specifications listed in the “[Cabinet and Rack Requirements](#)” section on [page B-1](#).
- The depth of the rack between the front-mounting and rear-mounting rails is fixed at 18 inches (45.7 cm).
- The depth of the rack between the front-mounting and rear-mounting rails is fixed at 26.56 inches (67.4 cm) for a Cisco MDS 9513 Director.
- The cabinet or rack-mounting rails are nonthreaded.
- The airflow and cooling are adequate and there is sufficient clearance around the air vents on the Cisco MDS 9509 Director, as described in [Appendix C, “Technical Specifications.”](#) This is particularly important to verify if you are installing the switch in an enclosed cabinet.
- The rack has sufficient vertical clearance for the chassis and any desired clearance for the installation process. The Cisco MDS 9500 Shelf Bracket Kit does not consume any RU when installed.
- The rack meets the minimum rack load ratings of 45 lb (20.41 kg) per rack unit (RU) for the Cisco MDS 9509 Director.

Before Installing the Shelf Brackets

Before installing the shelf brackets, check the contents of your kit. [Table B-3](#) lists the contents of the optional shelf bracket kit.

Table B-3 Contents of Cisco MDS 9500 Shelf Bracket Kit

Quantity	Part Description
2	Shelf brackets
16	1/4-20 x 3/4 in. Phillips pan-head screws with lock washers
12	10-32 x 1/3 in. Phillips pan-head screws with lock washers
12	10-32 clip nuts

Required Equipment

You need the following equipment for this installation:

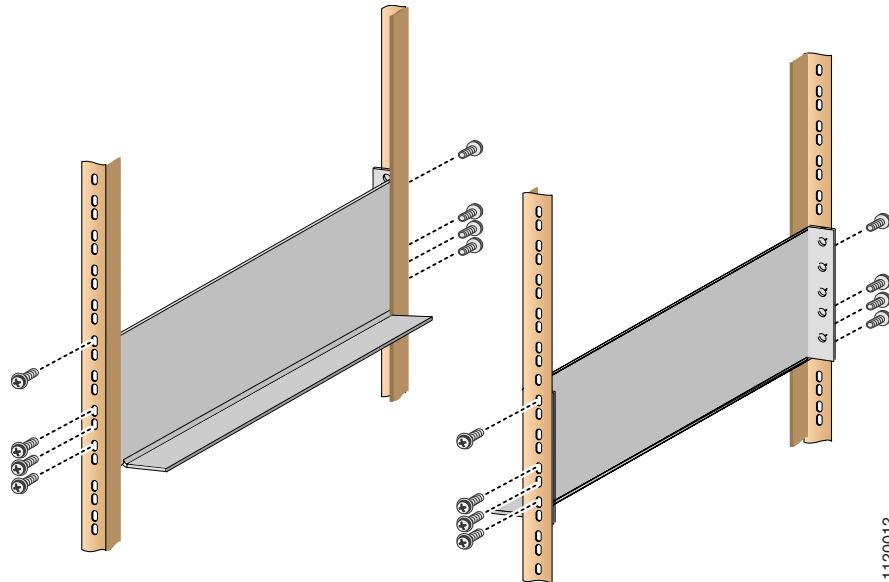
- Number 2 Phillips screwdriver
- Tape measure and level (to ensure shelf brackets are level)

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Installing the Cisco MDS 9500 Shelf Bracket Kit into a Cabinet or Rack

Figure B-3 shows the installation of the Cisco MDS 9500 Shelf Bracket Kit into a four-post rack.

Figure B-3 Installing the Shelf Bracket Kit into a Rack



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

- Step 1** Position a shelf bracket inside the rack-mounting rails as shown in [Figure B-3](#). Align the screw holes at the front of the shelf bracket with the holes in the front rack-mounting rail, and then attach the shelf bracket to the front rack-mounting rail using a minimum of four 1/4-20 screws.



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

- Step 2** Align the screw holes at the back of the shelf bracket with the holes in the back rack-mounting rail, and then attach the shelf bracket to the back rack-mounting rail using a minimum of four 1/4-20 screws.
- Step 3** Repeat Step 1 and Step 2 with the other shelf bracket.
- Step 4** Verify that the shelf brackets are at the same height (using the level or tape measure as desired).

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Installing the Switch on the Shelf Brackets

This section provides general instructions for installing the Cisco MDS 9509 Director on top of the shelf brackets. For detailed installation instructions, see [“Installing the Chassis in a Cabinet or Rack” section on page E-6](#).

**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**

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

To install the Cisco MDS 9509 Director on top of the shelf brackets, follow these steps:

-
- Step 1** Verify that the shelf brackets are level and securely attached to the rack-mounting rails, and the rack is stabilized.
 - Step 2** Slide the Cisco MDS 9509 Director onto the shelf brackets, ensuring it is squarely positioned.
 - Step 3** Attach the Cisco MDS 9509 Director to the rack-mounting rails. Slide the clip nuts over the holes on the nonthreaded rails on the cabinet or rack. These clip nuts provide the threading for the screws that will secure the chassis to the cabinet or rack. Use the 10-32 x 1/2 inch screws provided in this shelf bracket kit to secure the chassis to the cabinet or rack. See [“Installing the Chassis in a Cabinet or Rack” section on page E-6](#).

**Caution**

We recommend grounding the chassis, although the rack is already grounded. There is a grounding pad with two threaded M4 holes on the chassis for attaching a grounding lug.
