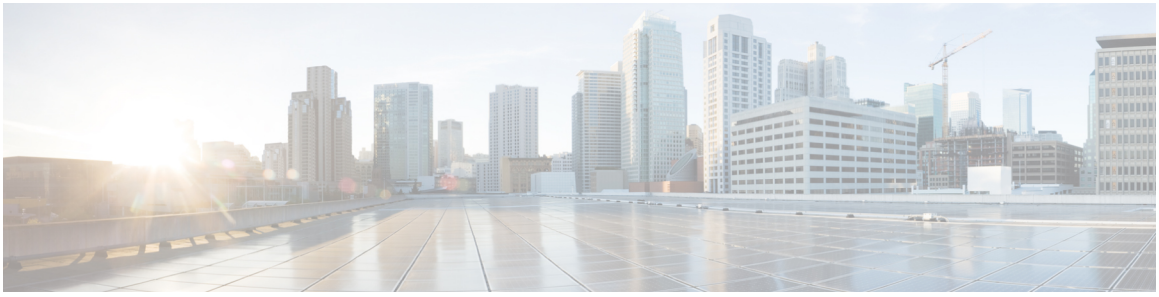


Cisco MDS 9396V Multilayer Fabric Switch Hardware Installation Guide

First Published: 2023-08-18

Last Modified: 2024-06-05

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883



CONTENTS

Full Cisco Trademarks with Hardware License ?

PREFACE

Preface vii

Audience vii

Document Conventions vii

Documentation Feedback ix

Related Documentation ix

Communications, Services, and Additional Information ix

CHAPTER 1

New and Changed Information 1

New and Changed Information 1

CHAPTER 2

Overview 3

Product Overview 3

Chassis Components 4

Switch LEDs 7

Fan Modules 9

Power Supplies 10

Cabinet and Rack Requirements 12

General Requirements 13

Requirements Specific to Perforated Cabinets 13

Requirements Specific to Solid-Walled Cabinets 14

CHAPTER 3

Installing the Cisco MDS 9396V Switch 15

Preinstallation 15

Installing the ESD Grounding Strap 15
Unpacking and Inspecting the Switch 18
Installation Options 20
Cisco MDS 9000 Family Telco and EIA Shelf Bracket 20
Installing the Shelf Bracket Kit into a Four-Post EIA Rack 21
Installing the Switch on the Shelf Brackets 22
Removing the Shelf Bracket Kit (Optional) 23
Preinstallation Guidelines 23
Installing the Switch 25
Attaching the Bottom-Support Rails on the Rack 25
Attaching the Front-Mount Brackets to the Chassis 26
Installing the Switch 27
Grounding the Switch 29

CHAPTER 4 **Installing and Removing Components** 31
Installing Power Supplies 31
Removing Power Supplies 32
Installation and Removal of Fan Modules 33
Installing a Fan Module 33
Removing a Fan Module 34

CHAPTER 5 **Connecting the Cisco MDS 9396V Switch** 35
Preparing for Network Connections 35
Connecting the Console Port 36
Connecting the Console Port to a PC 36
Connecting a Modem to a Console Port before Switch Power On 37
Connecting a Modem to a Console Port after Switch Power On 37
Connecting the Management Port 38
Connecting to a Fibre Channel Port 38
Powering Up the Switch 39

CHAPTER 6 **Technical Specifications** 41
Switch Specifications 41
Power Specifications 42

Component Power Requirements and Heat Dissipation 43

CHAPTER 7 **Cable and Port Specifications 45**

Cables and Adapters 45

Console Port 46

Connecting the Console Port to a Computer Using the DB-9 Adapter 46

Connecting the Console Port to a Computer Using the DB-25 Adapter 47

MGMT 10/100/1000 Ethernet Port 47

Supported AC Power Cords and Plugs 49

Wall Outlet Power Cords 49

Jumper Power Cords 50

APPENDIX A **Site Planning and Maintenance Records 53**

Site Preparation Checklist 53

Contact and Site Information 55

Chassis and Network Information 55

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The following information is for FCC compliance of Class A devices: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

The following information is for FCC compliance of Class B devices: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by using one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications to this product not authorized by Cisco could void the FCC approval and negate your authority to operate the product.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: https://www.cisco.com/c/en/us/about/legal/trademarks.html. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

© 2023 Cisco Systems, Inc. All rights reserved.



Preface

This preface describes the audience, organization of, and conventions used in the Cisco MDS 9000 Series Configuration Guides. It also provides information on how to obtain related documentation, and contains the following sections:

- Audience, on page vii
- Document Conventions, on page vii
- Documentation Feedback, on page ix
- Related Documentation, on page ix
- Communications, Services, and Additional Information, on page ix

Audience

This publication is for network administrators who install, configure, and maintain Cisco MDS 9000 Series Switches.

Document Conventions

Command descriptions use these conventions:

Convention	Description
bold	Bold text indicates the commands and keywords that you enter literally as shown.
Italic	Italic text indicates arguments for which the user supplies the values.
[x]	Square brackets enclose an optional element (keyword or argument).
[x | y]	Square brackets enclosing keywords or arguments separated by a vertical bar indicate an optional choice.
{x | y}	Braces enclosing keywords or arguments separated by a vertical bar indicate a required choice.

Convention	Description
[x {y | z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.
`variable`	Indicates a variable for which you supply values, in context where italics cannot be used.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

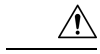
Examples use these conventions:

Convention	Description
`screen font`	Terminal sessions and information the switch displays are in screen font.
`boldface screen font`	Information you must enter is in boldface screen font.
italic screen font	Arguments for which you supply values are in italic screen font.
< >	Nonprinting characters, such as passwords, are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

This document uses the following conventions:



Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.



Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



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.

SAVE THESE INSTRUCTIONS

Documentation Feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to mds-docfeedback@cisco.com. We appreciate your feedback.

Related Documentation

The entire Cisco MDS 9000 Series switches documentation set is available at the following URL:

https://www.cisco.com/c/en/us/support/storage-networking/mds-9000-nx-os-san-os-software/series.html

Documentation Roadmap

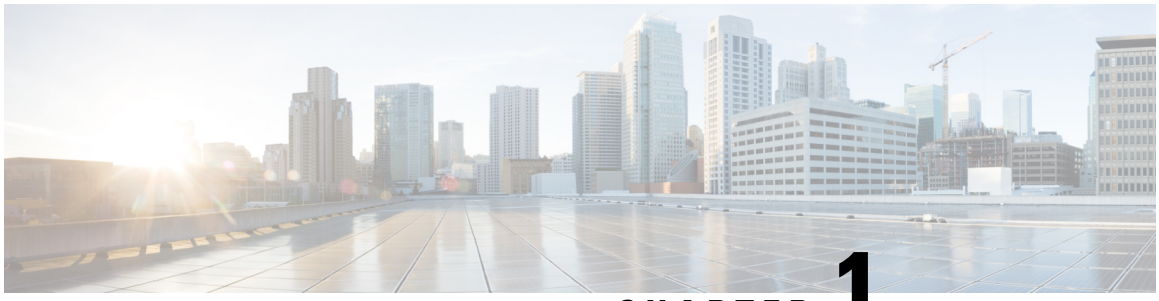
https://www.cisco.com/c/en/us/td/docs/storage/san_switches/mds9000/roadmaps/rel90.html

Communications, Services, and Additional Information

- To receive timely, relevant information from Cisco, sign up at Cisco Profile Manager.
- To get the business results you're looking for with the technologies that matter, visit Cisco Services.
- To submit a service request, visit Cisco Support.
- To discover and browse secure, validated enterprise-class apps, products, solutions and services, visit Cisco DevNet.
- To obtain general networking, training, and certification titles, visit Cisco Press.
- To find warranty information for a specific product or product family, access Cisco Warranty Finder.

Cisco Bug Search Tool

Cisco Bug Search Tool (BST) is a web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.



CHAPTER 1

New and Changed Information

• New and Changed Information, on page 1

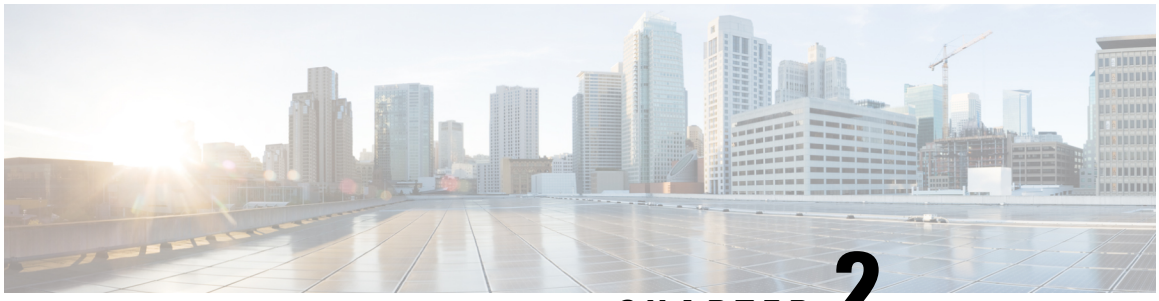
New and Changed Information

The following table lists the new and changed features available with each supported Cisco MDS NX-OS release for the Cisco MDS 9396v Switches, with the latest release first.

Table 1: Documented Features for the Cisco MDS 9396V Multilayer Fabric Switches

Feature	Changed in Release	Where Documented
Cisco MDS 9396V	9.4(1)	Initial Release

New and Changed Information



CHAPTER 2

Overview

- Product Overview, on page 3
- Chassis Components, on page 4
- Switch LEDs, on page 7
- Fan Modules, on page 9
- Power Supplies, on page 10
- Cabinet and Rack Requirements, on page 12

Product Overview

The Cisco MDS 9396V 64 Gbps 96 Port two rack unit (2 RU) Fibre Channel switch provides high-speed Fibre Channel connectivity in the SAN. The switch is built around the Cisco 64 Gbps FC ASIC with integrated analytics and telemetry capabilities. This Non-Volatile Memory Express (NVMe)-ready switch allows seamless transition to Fibre Channel Non-Volatile Memory Express (FC-NVMe) workloads whenever available without any hardware upgrade in the SAN. This high-density, highly reliable, scalable, enterprise-class semi-modular switch is ideal for medium to large departmental SANs.

Read the Regulatory and Compliance Safety Information document before installing the Cisco MDS 9396V Switch.

The Cisco MDS 9396V switch has the following major features:

- 96 x 64/32/16/8 Gbps line rate Enhanced Small Form-Factor Pluggable (SFP+) ports provide an aggregate bandwidth of 6 Tbps per switch for highly scalable designs in hyperscale environments that drive several thousands of virtual machine instances within a rack. This switch provides four ports which can be configured with up to 16000 Buffer-To-Buffer (B2B) credits that can be connected to remote data centers as far as 512 km (318 miles) using native Fibre Channel connectivity at 64 Gbps speeds. These distances become even greater at lower speeds.
- Provides consistent 64 Gbps performance for every Fibre Channel port on the switch.
- Provides higher availability and reliability than the previous generations of Cisco MDS 9000 Series Switches. Additionally, port channel link members can be used across the four 24-port port groups providing additional high availability.
- Provides minimum configuration option of 48 x 64/32/16/8 enabled Fibre Channel ports in the base variant, which can be enabled in increments of 16 ports to up to complete 96 port capacity. This allows four possible configurations of 48, 64, 80, and 96 ports.

- Supports enterprise-class features such as Dynamic Ingress Rate Limiting (DIRL), Virtual SAN (VSAN) domains for traffic segregation, Access Control Lists (ACLs) for hardware-based intelligent frame processing, Smart Zoning, fabric-wide Quality of Service (QoS), IVR, and 1 Tbps multi-member port-channels. Traffic encryption is optionally available to meet stringent security requirements.
- Provides intelligent diagnostics tools such as Inter-Switch Link (ISL) diagnostics, HBA diagnostics compatible with leading HBA vendors, Read Diagnostic Parameters, protocol decoding, network analysis tools, integrated Cisco Call Home, and Online Health Monitoring System (OHMS).
- Supports the Virtual Machine Identifier (VMID) feature that provides visibility into virtual machines that are accessing the storage devices in the fabric.
- Supports Cisco NX-API capabilities.
- Supports Python 3 interpreter. This allows the creation of user-customizable scripts.
- Provides hardware protection from malicious physical attacks by securing access to critical components such as the bootloader, system image loader, and Joint Test Action Group (JTAG) interface.

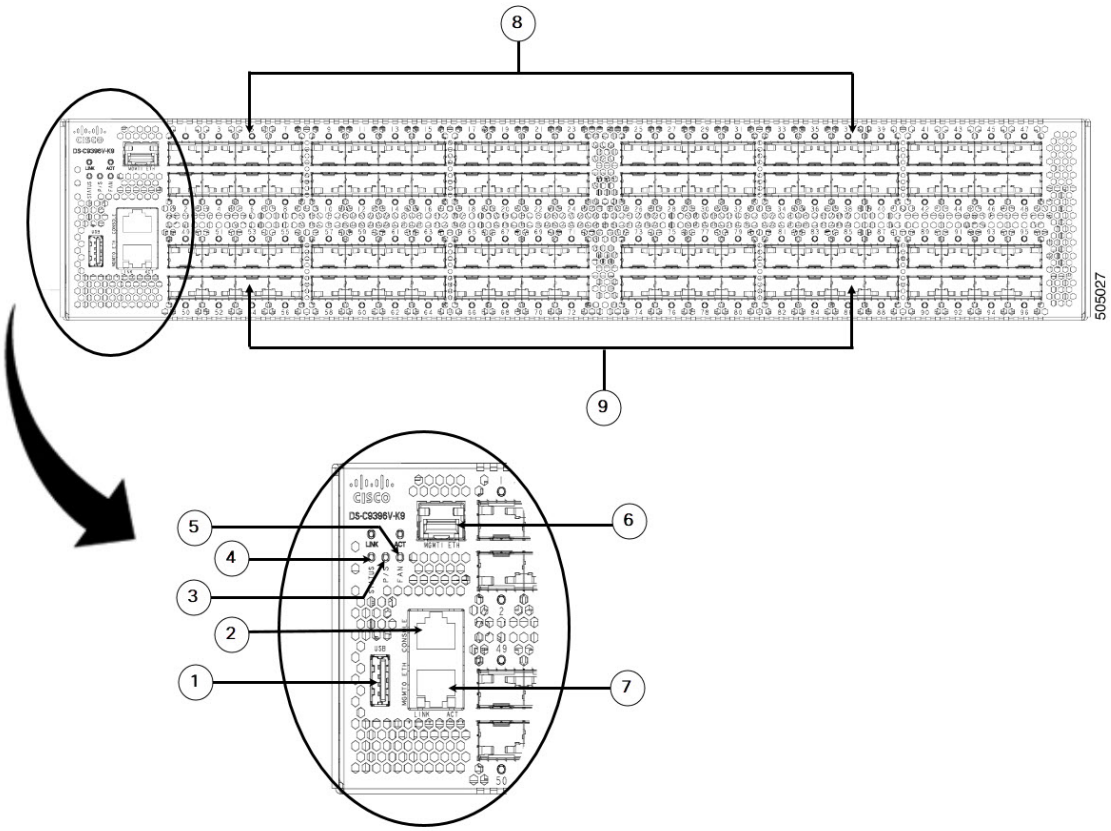
Chassis Components

This section describes the different components of the chassis.

Front View

The following figure shows the front view of a Cisco MDS 9396V Switch:

Figure 1: Front View of the Cisco MDS 9396V Switch

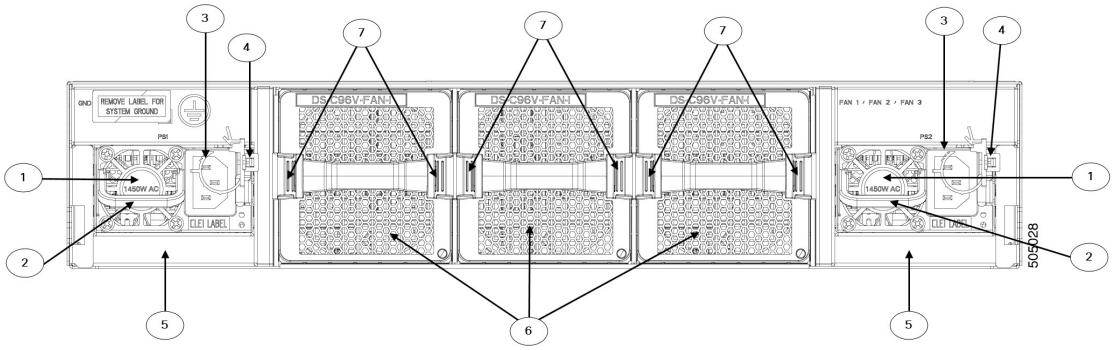


1	USB port	**5**	Fan status LED
2	Serial console port	**6**	MGMT1 Eth port
3	Power supply status LED	**7**	MGMT0 Eth port
4	System status LED	**8, 9**	Base Fibre Channel ports Ports are numbered fc1/1 to fc1/96.

Rear View

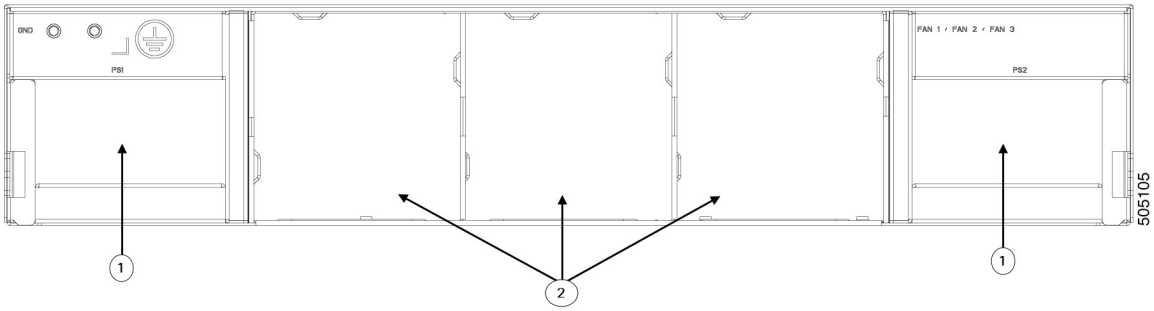
The following figure shows the rear view of a Cisco MDS 9396V Switch:

Figure 2: Rear View of the Cisco MDS 9396V Switch



1	Power supply unit fan	**5**	Power supply units (2)
2	Power supply unit handle	**6**	Chassis fan modules (3)
3	Power receptacle	**7**	Fan module locking latch
4	Power supply unit locking latch		

Figure 3: Rear Panel Slot Numbering of Cisco MDS 9396V Switch

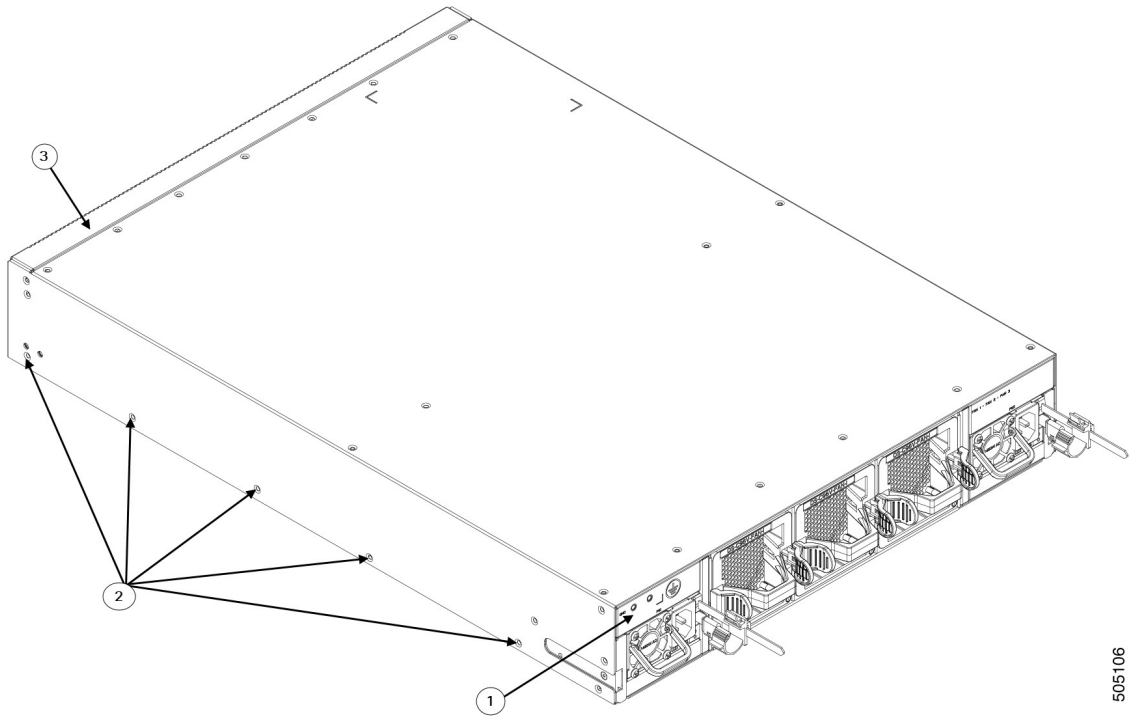


1	Power supply unit slot	**2**	Chassis fan module slot

Grounding Point

The rear of the Cisco MDS 9396V switch also contains the grounding point which is located under a label.

Figure 4: Grounding Point



1	Grounding point	**3**	Port side of the switch
2	Rack mount holes		

Switch LEDs

The following table describes the chassis LEDs for Cisco MDS 9396V switches:

Indicator	Location	Function	Color	Status	State
Power LED	Front panel of chassis	Chassis power/Health	Off	Off	Either of the following conditions exists: • The system is not receiving sufficient power from the PSUs. • The operating system is not running.
			Green	Solid On	Both PSUs are installed and operating
			Red	Solid On	Either of the following conditions exists: • A PSU has failed. • A PSU has been removed.

Indicator	Location	Function	Color	Status	State
Status LED	Front panel of chassis	System Status	Green	Solid On	All diagnostics have passed, Cisco NX-OS is running and the system is operational.
			Orange	Solid On	Any of the following conditions exist: • The system is running bootup diagnostics. • The system is booting. • A minor temperature threshold is currently exceeded.
			Red	Blinking	Mismatched airflow direction was observed in one of the following modules: • Fan modules—The switch will shut down in 20 seconds. • PSUs—The switch will power down after 10 minutes.
				Solid On	One of the following conditions exists: • A diagnostic test failed or another fault occurred during bootup. • A major temperature threshold is currently exceeded.
Fan Status	On the front panel	Fan health	Green	Solid On	Fan is operating normally
			Red	Solid On	Fan has failed or Fan has been removed.
	Faceplate of each fan module	Fan tray health	Green	Solid on	Fan module is operating normally.
			Red	Solid on	The fan in the fan module has failed.

Indicator	Location	Function	Color	Status	State
PSU Status	Faceplate of each PSU	PSU input/output	Green	Off	No input to the PSU.
				Solid on	PSU output is OK.
				Blinking	PSU output is not OK, but input is OK.
		PSU Operation	Amber	Solid on	One of the following conditions exists in the PSU: • Over voltage • Over current • Over temperature Fan failure.
				Blinking	PSU has a fault but is still operational.
				Off	PSU is operating normally.

The following table describes the Ethernet port LEDs for Cisco MDS 9396V switches.

LED Position	Status	
Left	Off	T
	Solid Green	I
Right	Off	T
	Blinking Green	I

The following table describes the Fibre Channel port LEDs for Cisco MDS 9396V switches.

Status	
Solid Green	The link is up.
Regular Blinking Green	The port beacon is active.
Intermittent Blinking Green	The link is up (indicates that t
Solid Orange	SFP is absent or the port is di
Blinking Orange	A fault condition exists.
Off	No link.

Fan Modules

The Cisco MDS 9396V Multilayer Fabric switch supports three hot-swappable fan modules in N+1 mode. Each fan module includes two counter rotating impellers, maximizing reliability, performance and cooling efficiency. For normal operation, the switch requires two fan modules. This allows the switch to continue to operate nondisruptively if a single fan module is removed or fails, provided that the preset temperature thresholds are not exceeded.

Temperature control within the Cisco MDS 9396V switch is dependent on airflow created by the fan modules. The switch has internal temperature sensors that can shut down the system if the temperature at different

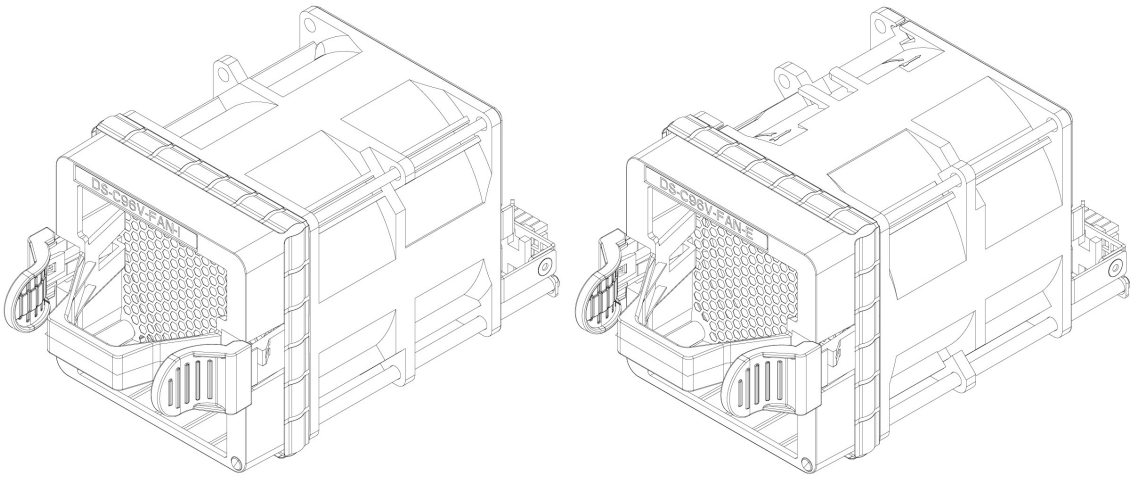
points within the chassis exceeds safety thresholds. If one fan module is removed from the switch or fails, the remaining two fan modules will immediately run at full speed. If two fan modules are removed from the switch or fail, the switch will shut down after 80 seconds to prevent potential undetectable overheating. To display temperature threshold values, use the **show environment temperature** command.

The direction of the airflow of all fan modules installed in a switch must be the same. If all fan modules do not have the same airflow direction, then the switch is powered down after 20 seconds. Airflow direction through a fan module is denoted by a color on the module faceplate:

- Red – indicates port-side intake airflow (DS-C96V-FAN-I)
- Blue – indicates port-side exhaust airflow (DS-C96V-FAN-E)

To display the current status of the fan modules in the switch through the CLI, use the **show inventory fan** command.

Figure 5: Cisco MDS 9396T Fan Modules



The following table describes the status LED located on each fan module.

LED	Status
Green	Fan is operating normally
Red	One or more fans in the module is faulty

The airflow direction of the PSUs must match the direction of the fan modules. If the airflow of a newly inserted power supply unit is different from that of the fan modules, the newly inserted incompatible PSU will be disabled to avoid affecting system thermal performance.

For information about replacing and installing fan modules, see Installing and Removing Components, on page 31.

Power Supplies

The Cisco MDS 9396V Multilayer Fabric switch supports two hot-swappable power supply units (PSUs). Each unit has a power receptacle, a status LED on the faceplate, and a handle for inserting and removing the unit from the chassis. The Cisco MDS 9396V switch requires a minimum of 1 PSU for normal operation and

2 PSUs for normal operation with PSU redundancy. In the event of a PSU or AC supply (in grid redundant mode) failure, the system will continue to run. PSUs are hot-swappable and can be individually replaced without shutting down the system.

The three types of PSUs supported with Cisco MDS 9396V are:

- Blue: 1.4 KW AC port-side exhaust power supply (DS-CAC-1400W-E)
- Red: 1.4 KW AC port-side intake power supply (DS-CAC-1400W-I)
- Red: 2 KW HVAC/HVDC port-side intake power supply (DS-CHV-2000W-I)

Figure 6: Cisco MDS 9396V AC PSU

1.4 KW AC port-side exhaust power supply (DS-CAC-1400W-E)
1.4 KW AC port-side intake power supply (DS-CAC-1400W-I)

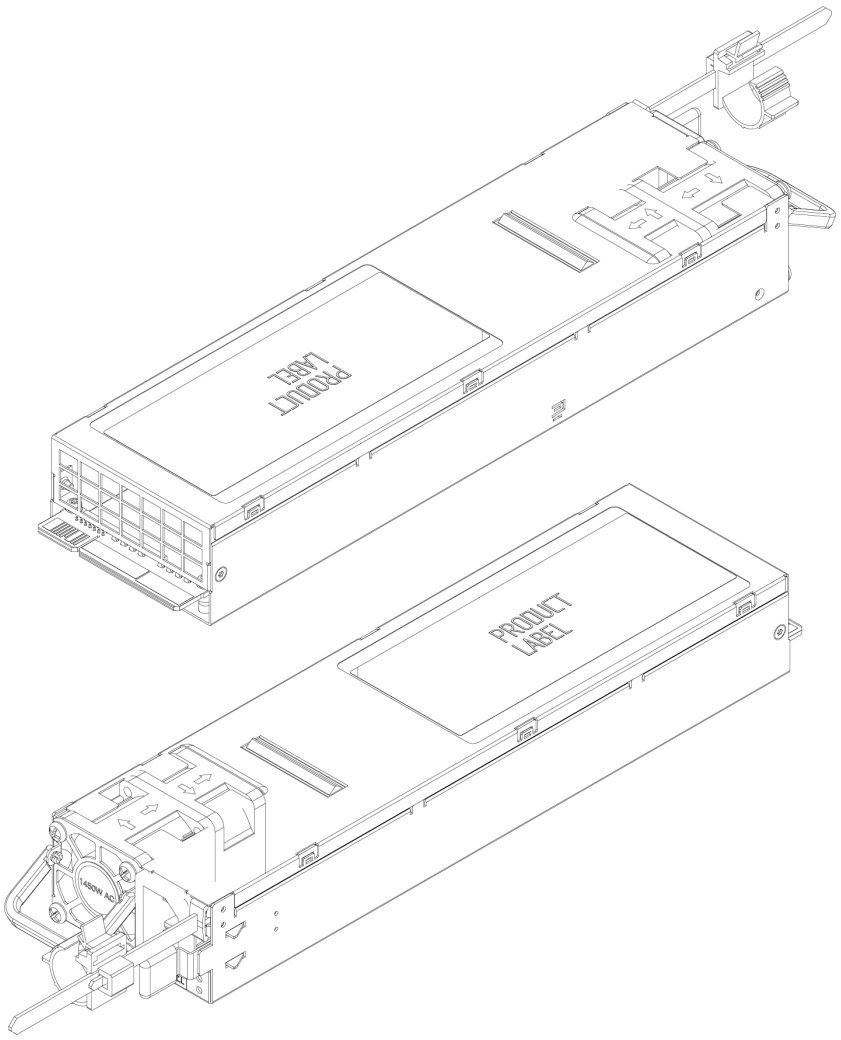
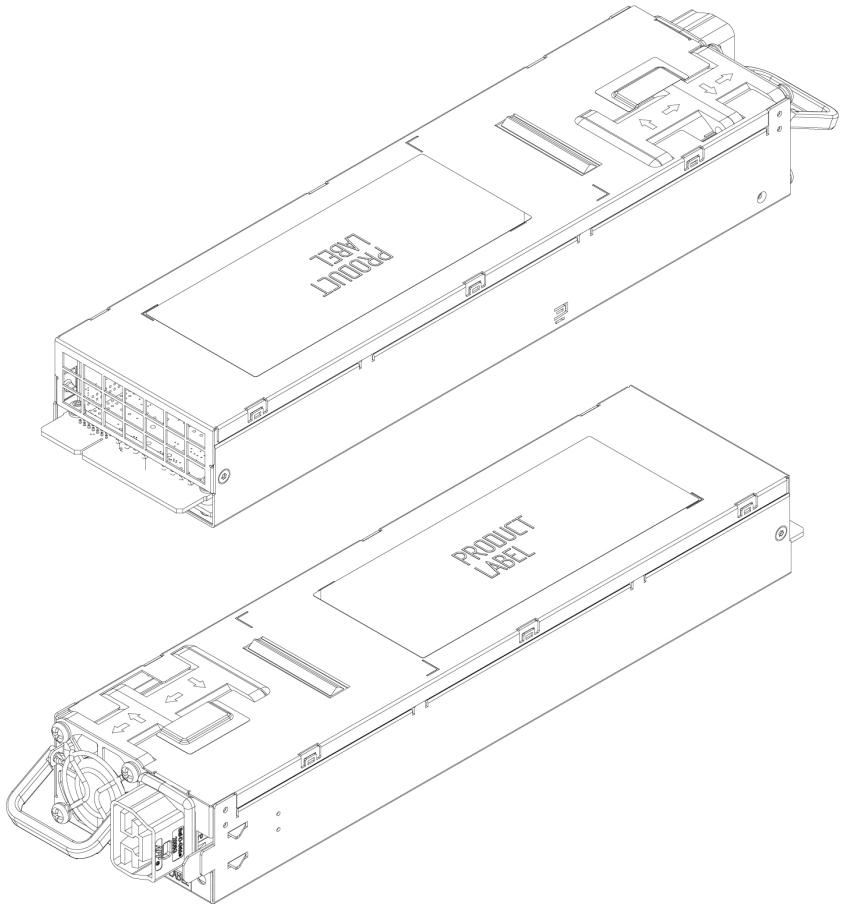


Figure 7: Cisco MDS 9396V DC PSU

2 KW HVAC/HVDC port-side intake power supply (DS-CHV-2000W-I)



For information about replacing and installing power supply units, see Installing and Removing Components, on page 31.

Cabinet and Rack Requirements

This section provides the Cisco MDS 9000 Series switches requirements for the following types of cabinets and racks in an external ambient air temperature range of 0 to 40°C:

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

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

General Requirements

The cabinet or rack must be a standard 19-in. four-post EIA cabinet or rack, with mounting posts that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992. See the Requirements Specific to Perforated Cabinets, on page 13 and Requirements Specific to Solid-Walled Cabinets, on page 14.

The cabinet or rack must also meet the following requirements:

- The minimum vertical rack space per chassis should be 2 RU (rack unit), equal to 1.75 in. (4.4 cm).
- The width between the rack-mounting rails must be at least 17.75 in. (45.1 cm). This is the distance between the two front rails.
- For four-post EIA cabinets (perforated or solid-walled):
  - The distance between the front door and front mounting posts should be a minimum of 3 in. (7.6 cm) to allow for the bend radius of FC port fibre-optic patch cables.
  - The distance between the outside face of the front mounting rail and the outside face of the back mounting rail should be 23.5 to 34.0 in. (59.7 to 86.4 cm) to allow for installation with the Cisco rack mounting kit.
  - There should be a minimum of 2.5 in. (6.4 cm) of clear space between the side edge of the chassis and the side wall of the cabinet. No sizable flow obstructions should be immediately in the way of the chassis air intake or exhaust vents.
  - The distance between the rear of the chassis and the perforated rear door of the cabinet (required for airflow in the cabinet, if used) should be a minimum of 3.0 in. (7.6 cm).
  - The airflow and cooling are adequate and there is sufficient clearance around the air vents on the switch, as described in Technical Specifications. This is particularly important to verify if you are installing the switch in an enclosed cabinet.
  - No clearance is required between the chassis and the sides of the rack or cabinet (no side airflow).
  - The rack meets the minimum rack load ratings per rack unit (RU) listed in the following table.

Rack Type	MDS 9396V
EIA (4-post)	7.5 lb

- Cisco MDS 9396V switches are compatible with Cisco racks (such as Cisco R42612) and PDUs. Optional jumper power cords are available for use in a cabinet.

Requirements Specific to Perforated Cabinets

In addition to the requirements listed in the General Requirements for Cabinets and Racks section, perforated cabinets must meet the following requirements:

- The front and rear doors must have at least a 60 percent open area perforation pattern, with at least 15 sq. in. of open area per rack unit of door height.
- We recommend that the roof be perforated with at least 20 percent open area, unless the cabinet only contains Cisco MDS 9396V switch, in which case the roof does not have to be perforated.
- We recommend an open or perforated cabinet floor to enhance cooling but it is not required.

Reference Perforated Cabinet

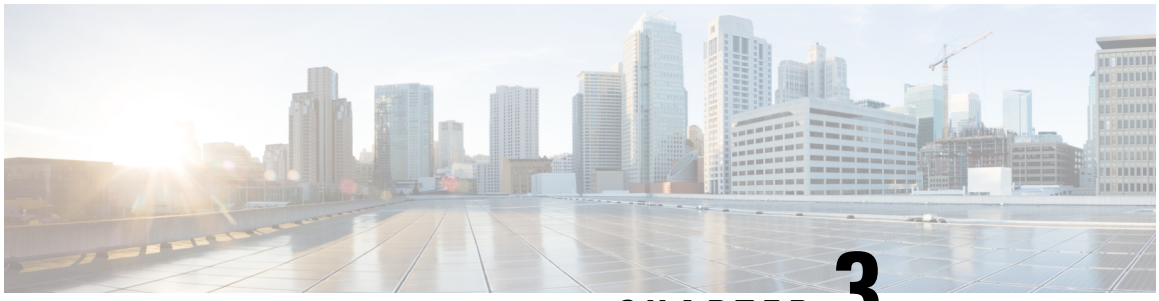
A perforated cabinet that conforms to the above requirements is available from Rittal Corporation:

```
Rittal Corporation One Rittal Place Springfield, OH 45504
Phone: (800) 477-4000
Cabinet P/N: Rittal 9969427
Cabinet description: PS-DK/OEM Cabinet Assembly, 1998 x 600 x 1000 (H x W x D) (42U)
```

Requirements Specific to Solid-Walled Cabinets

In addition to the requirements listed in the General Requirements for Cabinets and Racks section, solid-walled cabinets must meet the following requirements:

- The rack must have 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 sends it out from the top, with a minimum airflow of 849.5 m^3/h exiting the cabinet roof through the fan tray, should be available.
- The front and rear doors, and side panels, must be installed and nonperforated so that air flows predictably from bottom to top.
- The overall cabinet depth should be 36 to 42 in. (91.4 to 106.7 cm) to allow the doors to close and to facilitate adequate airflow.
- The open area of the floor air intake must be a minimum of 150 sq. in. (968 sq. cm).
- The lowest piece of equipment should be installed at a minimum of 1.75 in. (4.4 cm) above the floor openings to prevent blocking the floor intake.



CHAPTER 3

Installing the Cisco MDS 9396V Switch

This chapter describes how to install the Cisco MDS 9396V switch and its components.

- Preinstallation, on page 15
- Installing the Switch, on page 25

Preinstallation

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.

Warning 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

Installing the ESD Grounding Strap

This section illustrates how to prepare yourself before removing the chassis from the sealed antistatic bag.

The figures show how to cuff the ESD strap around the wrist and the ground cord that connects the cuff to the ground. ESD wrist straps are the primary means of controlling static charge on personnel.



Note These images are for only representation purposes. The chassis' actual appearance and size may vary.

Figure 8: Wearing the ESD Strap

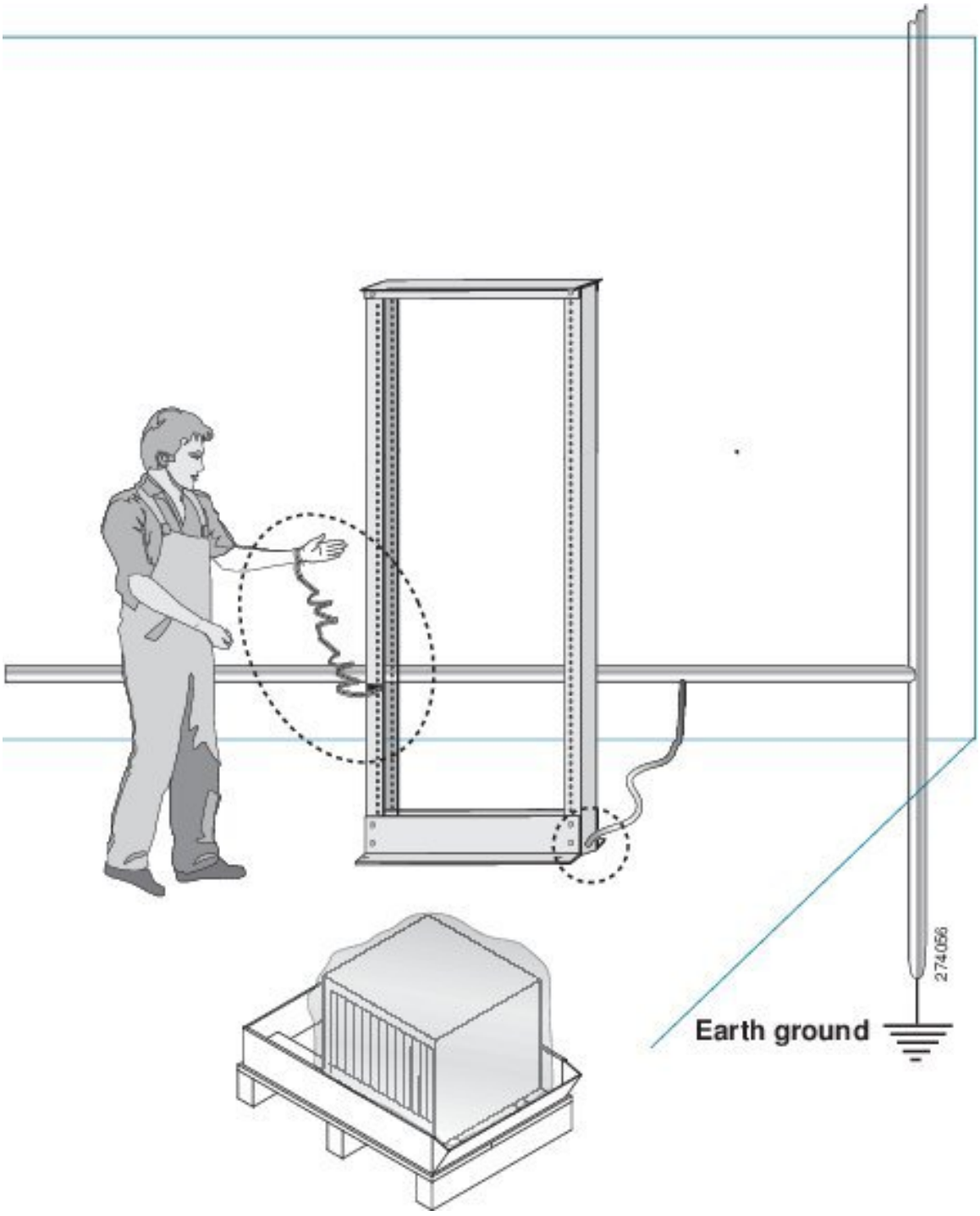
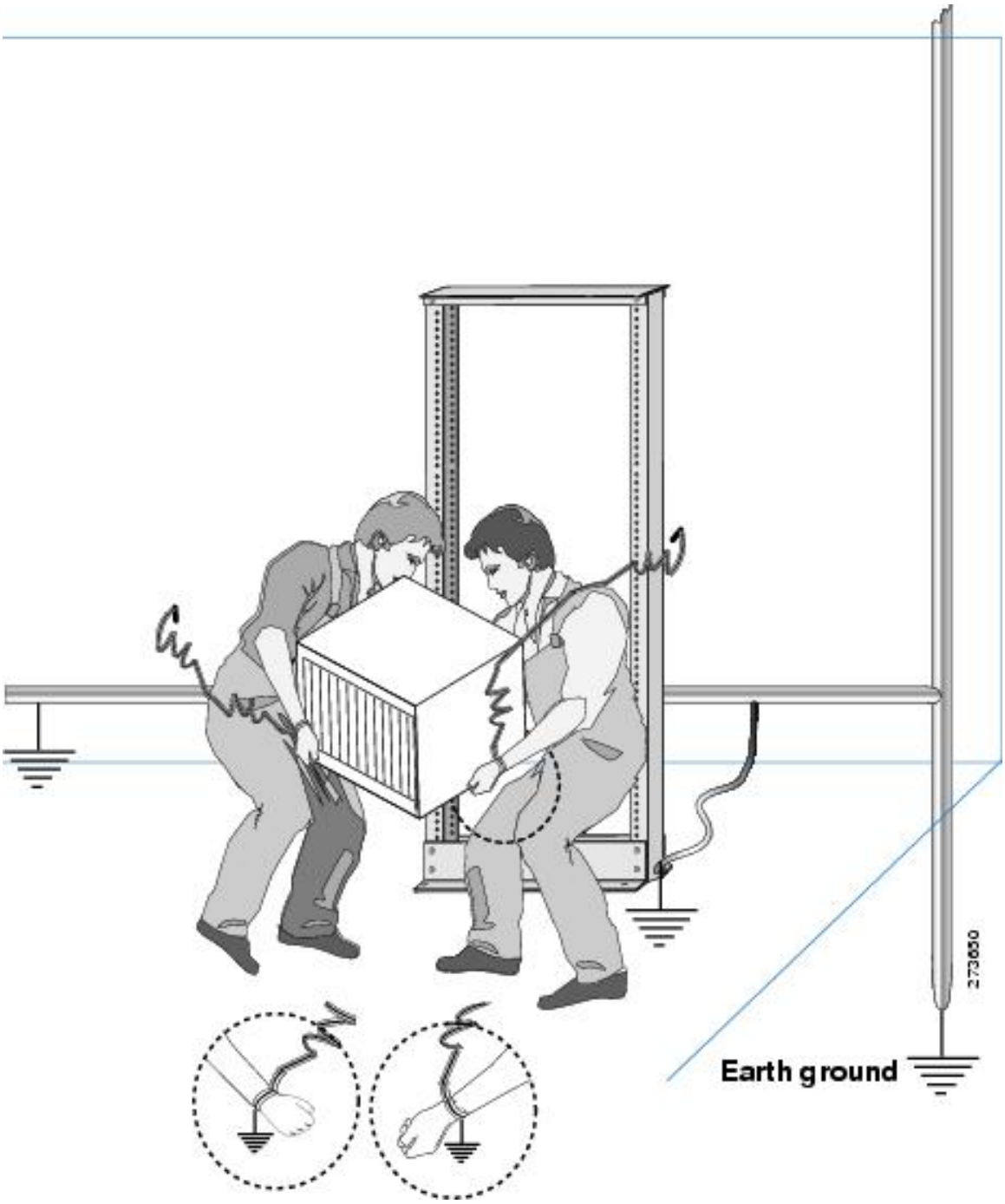


Figure 9: Handling the Chassis



Unpacking and Inspecting the Switch

To inspect the shipment, follow these steps:

Before you begin

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/c/en/us/support/web/tsd-cisco-worldwide-contacts.html.

Procedure

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:

- Grounding lug kit
- Rack-mount kit
- Preinstalled LEMs (3 units) with LEM screws tightened
- 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

Step 3 Check if all the power supplies and the fan trays have the expected direction of airflow.

Port-side-intake airflow modules have a burgundy coloring, and port-side exhaust airflow modules have blue coloring. The airflow direction must be the same for all modules.

Installation Options

The Cisco MDS 9396V Switch can be installed using the following methods:

- In an open EIA rack.
- In a perforated or solid-walled 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 the port connections end of the chassis and 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 25.

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

Cisco MDS 9000 Family Telco and EIA Shelf Bracket

The optional EIA Shelf Bracket Kit (part number DS-SHELF=) can temporarily or permanently support the Cisco MDS 9396V switch during installation. Once the front rack-mount brackets are securely attached to the rack-mounting rails, the shelf bracket can be removed.

This kit supports a Cisco MDS 9396V Switch in a four-post EIA rack.

Note This 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 9396V switch in a rack or cabinet using the optional EIA Shelf Bracket Kit.

Shelf Installation Guidelines

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

Caution 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 rack-mounting the chassis, ensure that the cabinet or rack meets the requirements listed in the General Requirements, on page 13 section.

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	Slider 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

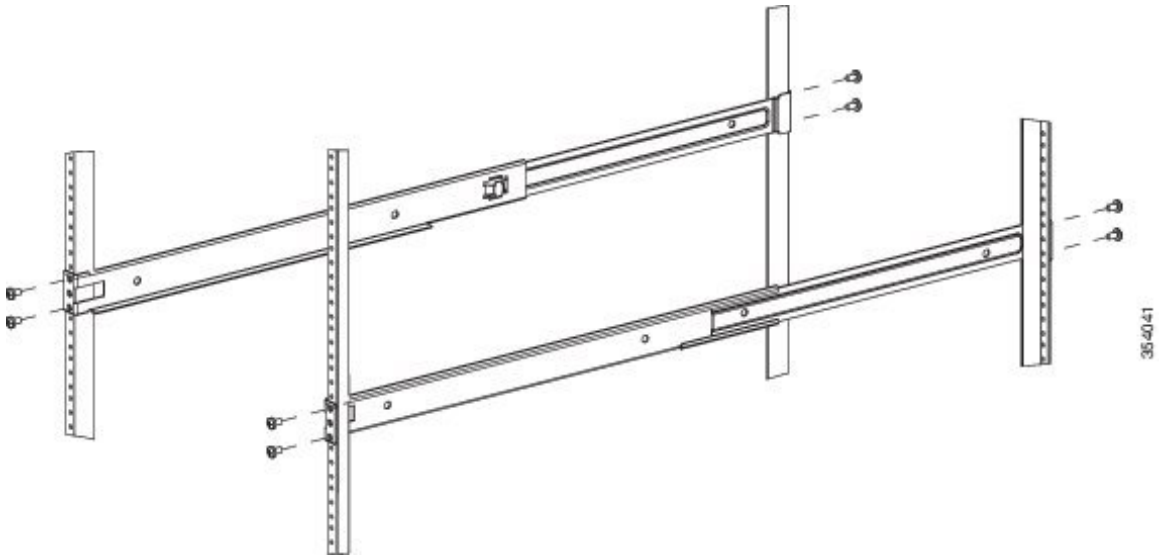
You need the following equipment for this installation:

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

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 10: Installing the Shelf Bracket Kit into an EIA Rack



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

Procedure

Step 1 Position a shelf bracket inside the rack-mounting rails as shown in the above figure. 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).

Step 4 Attach the crossbar to the shelf brackets as shown in the above figure, using the 10-32 screws.

Step 5 Insert the slider rails into the shelf brackets as shown in the above figure. Attach them to the rear rack-mounting rails using a minimum of four 12-24 or 10-24 screws.

Installing the Switch on the Shelf Brackets

This section provides general instructions for installing the switch on top of the shelf brackets.

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, refer to 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:

Procedure

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 that it is squarely positioned.

Step 3 Attach the switch to the rack-mounting rails.

Caution
We recommend grounding 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
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.

Removing the Shelf Bracket Kit (Optional)

To remove the shelf bracket kit, follow these steps:

Before you begin

The shelf bracket kit can be removed after the Cisco MDS 9396V switch is installed in a four-post EIA rack, and both front rack-mount brackets and both C brackets are securely attached to the rack-mounting rails.

Procedure

Step 1 Remove the screws fastening the slider brackets to the rear rack-mounting rails, 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 rails and remove the shelf brackets from the rack.

Preinstallation Guidelines

Airflow Considerations

The switch comes with fan modules and power supply units that have either port-side intake or port-side exhaust airflow for cooling the switch. If you are orienting the switch with the FC ports facing a cold aisle, make sure that the switch has a port-side intake fan and power supply modules with red colorings. If you are orienting the switch with the fan and power supply modules facing a cold aisle, make sure that the switch has port-side exhaust fan and power supply units with blue colorings. All fan modules and power-supply modules must have the same direction of airflow.

Connection Guidelines for AC-Powered Systems

To connect to the Cisco MDS 9396V switch AC power supply units to the site power source, follow these guidelines:

- For power redundancy, each power supply should be connected to a separate power feed (at a minimum, separate branch circuits).
- Circuits should be sized according to local and national codes.
- The AC power receptacles that are used to power 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 9396V Switch:

- Plan your site configuration and prepare the site before installing the switch.

- Each new switch requires a license; see the Cisco MDS 9000 Series Licensing Guide for instructions on installing a license.
- Ensure there is adequate space around the switch to allow for servicing the switch and for adequate airflow (airflow requirements are listed the Technical Specifications, on page 41 section).
- Ensure the air-conditioning meets the heat dissipation requirements listed the Technical Specifications, on page 41 section.
- Ensure that the cabinet or rack meets the requirements listed in the Cabinet and Rack Requirements, on page 12 section.

Note If the front cabinet mounting rails are not offset from the front door or bezel panel by a minimum of 3 inch (7.6 cm), and a minimum of 5 inch. (12.7 cm), respectively, and 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.

Note Jumper power cords are available for use in a cabinet.

- 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 the Technical Specifications section. If available, you can use an uninterrupted power supply (UPS) to protect against power failures.

Caution Avoid UPS types that use ferro-resonant 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 electrical 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 the electrical current ratings for circuit wiring and breakers.

- Use the following screw torques when installing the switch:
  - Captive screws: 4 in-lb (0.45 N·m)
  - M3 screws: 4 in-lb (0.45 N·m)
  - M4 screws: 12 in-lb (1.36 N·m)

- M6 screws: 40 in-lb (4.5 N·m)
- 10-32 screws: 20 in-lb (2.26 N·m)
- 12-24 screws: 30 in-lb (3.39 N·m)

Installing the Switch

This section describes how to use the rack-mount kit to install the Cisco MDS 9396V switch into a cabinet or rack that meets the requirements described in the Cabinet and Rack Requirements, on page 12 section.

Attaching the Bottom-Support Rails on the Rack

The switch chassis that you are installing ships with two adjustable bottom-support rails that you can attach to a four-post rack to hold the chassis. Each of these bottom-support rails has two pieces—one that slides into the other so that you can adjust them to fit racks with front and rear mounting posts that are spaced less than 36 inches (91 cm). On each bottom-support rail, the rail half that slides into the other rail includes a chassis stop that fits into the module end of the chassis. With the air intake on the port side of the chassis, you must position the bottom-support rail piece with the chassis stop on the hot aisle side of the rack.

To attach the bottom support rails on the rack, perform the following steps:

Before you begin

- Verify that a four-post rack or cabinet is installed.
- If any other devices are stored in the rack or cabinet, verify that the heavier devices are installed below lighter devices and that there is at least 2 RU open to install the switch.
- Verify that the bottom-support rails kit is included in the switch accessory kit.
- Verify that you have 8 screws for attaching the bottom-support rails to the racks (typically M6 x 10 mm screws or the screws appropriate for the vertical mounting rails on the rack.

Procedure

Step 1 Look at the fan trays and power supplies installed in the chassis to determine how you must position the bottom-support rails on the rack.

- If the modules have burgundy coloring (port-side-intake airflow), you must position the bottom-support rails so that their chassis stops are positioned in the hot aisle.
- If the modules have blue coloring (port-side-exhaust airflow), you must position the bottom-support rails so that their chassis stops are positioned in the cold aisle.

Step 2 Separate the two sliders that make up one bottom-support rail and position the half with the chassis stop in the hot aisle of the rack. Make sure there is at least 2 RU open above the bottom-support rails so that you can easily install the chassis.

Step 3 Use two customer-supplied screws (typically M6 x 10 mm screws) to attach the bottom-support rail half to the vertical mounting rails on the rack post. Tighten each screw to the appropriate torque setting for the screws (for M6 screws, use 40 in-lb [4.5 N·m] of torque).

Step 4 Slide the other half of the bottom-support rail onto the attached half of the rail set and use two customer supplied screws (typically M6 x 10 mm screws) to secure that portion to the vertical mounting rails on the rack. Tighten each screw to the appropriate torque setting for the screws (for M6 x 10 mm screws, use 40 in-lb [4.5 N·m] of torque).

Step 5 Repeat Steps **2** and **3** to attach the other expanding bottom-support rails to the other side of the rack.

Step 6 Check the two installed bottom support rails to be sure that both rails are level and level with each other. If they are not level, adjust the higher rail down to the level of the lower rail.

What to do next

You are ready to install two front-mount brackets on the chassis.

Attaching the Front-Mount Brackets to the Chassis

To attach the front mounting brackets to the chassis, perform the following steps:

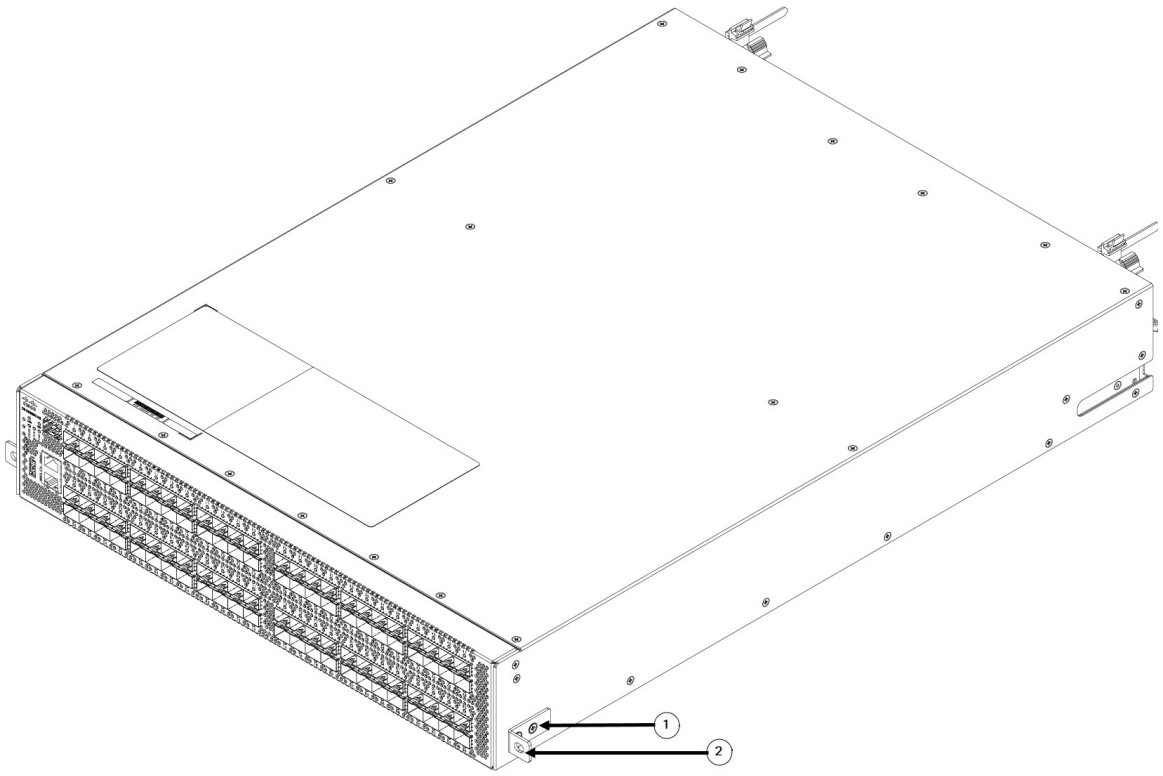
Before you begin

- You need to attach a right-angled bracket to each side of the chassis. This bracket holds the chassis in place on a four-post rack.
- You must have a Phillips-head torque screwdriver.

Procedure

Step 1 Align the two holes in one side of one of two front-mount brackets to two holes on the left or right side of the chassis (see the following figure). Be sure that the other side of the bracket is facing towards the front (port end) of the chassis.

Figure 11: Aligning and Attaching Front-Mount Brackets to the Sides of the Chassis



1	Two M4 x 6 mm screws used to fasten the bracket to the chassis.	**2**	Front-mount bracket with two screw holes aligned to two screw holes in the chassis and one screw hole facing the port side of the chassis.

Step 2 Step 2. Use two M4 x 6 mm screws to attach the bracket to the chassis. Tighten each screw to 11 to 15 in-lb (1.2 to1.7 N·m).

Step 3 Repeat Steps 1 and 2 to attach the second front-mount bracket to the other side of the chassis.

What to do next

You are ready to mount the chassis to the four-post rack.

Installing the Switch

To install the switch, perform the following steps:

Before you begin

- You need to slide the chassis onto the bottom-support rails so that the end with the fan trays and power supplies locks onto the chassis stops at the end of the rails and so that the front-mount brackets on the chassis come into contact with the front-mount rails on the rack.

- Make sure that the four-post rack is properly installed and secured to the concrete floor.
- Make sure that the bottom-support rails are installed so that the power supplies and fan trays will be in the appropriate aisle.
- The color of the stripe on fan trays and the color of the latch on power supplies determines which end of the switch must be positioned in the cold aisle as follows:
  - If the modules have burgundy coloring, position the port end of the chassis in the cold aisle.
  - If the modules have blue coloring, position the fan trays and power supply end of the chassis in the cold aisle.
- Make sure that two front-mount brackets are securely fastened to the sides of the chassis at the port end.
- Make sure that you have two customer-supplied rack-mount screws (M6 x 10 mm or appropriate screw for the vertical mounting rails on the rack).

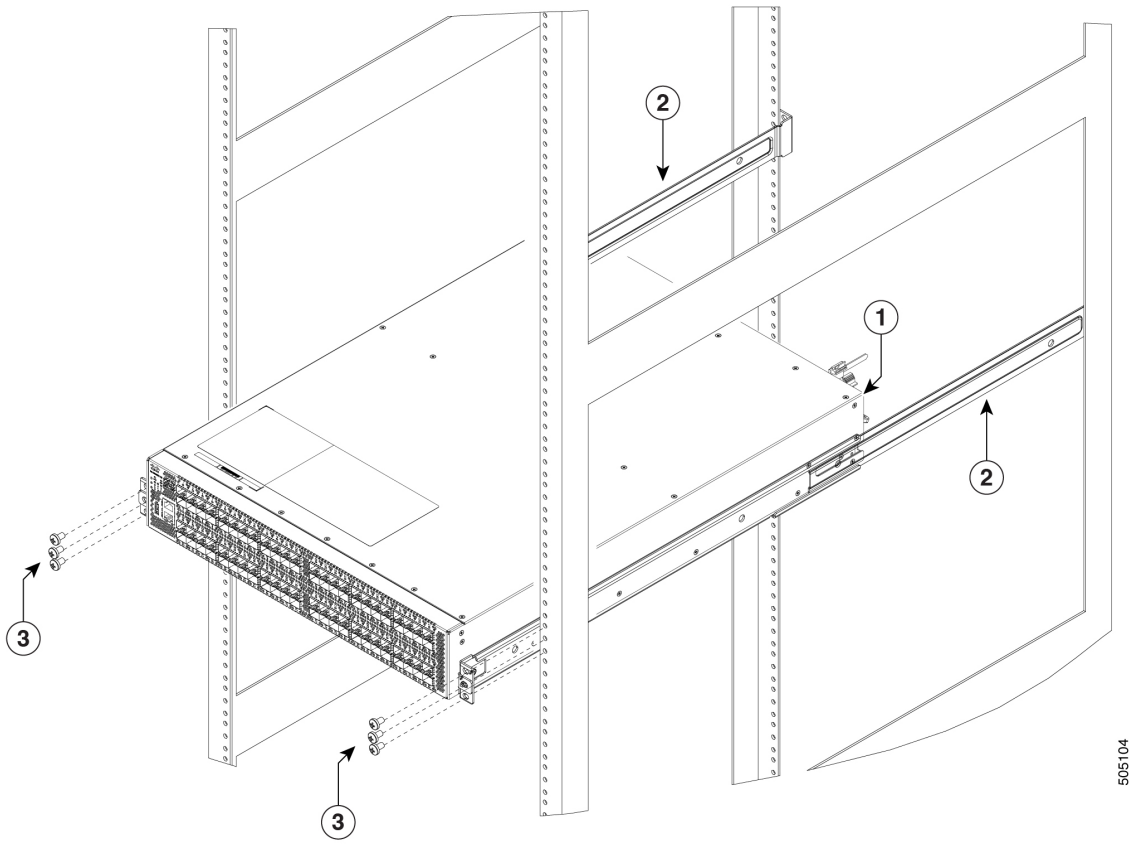
Procedure

Step 1 Slide the power supply and fan tray end of the chassis onto the bottom support rails that are installed on the rack.

Be sure that the sides of the chassis by the fan trays and power supplies clips onto the chassis stops on the bottom support rails and the front mounting brackets come in contact with the rack (see the following figure).

If the bottom support rails are extended a long distance, they can bend outwards slightly when you install the chassis, and the chassis stops at the far end of the rails might not fit into the end of the chassis. If this happens, press the side rails toward the sides of the chassis so that the chassis stops can go inside the chassis and hold it in place on the rack.

Figure 12: Sliding the Chassis onto the Bottom-Support Rails



1	Slide the fan-tray end of the chassis onto the bottom-support rails so that the chassis locks onto the chassis stops at the end of the rails.
2	Chassis stops for holding the chassis (installed by the hot aisle)
3	Customer-supplied rack-mount screw (M6 x 10 mm screw or other appropriate screw) used to secure each side of the chassis to the rack.

Step 2 Use a customer-supplied rack-mount screw (an M6 x 10 mm screw or other appropriate screw for the rack) to attach each of the two mounting brackets on the chassis to the rack and tighten each screw to the appropriate torque setting for the screw (for M6 x 10 mm screws, use 40 in-lb [4.5 N·m] of torque).

Grounding the Switch

The switch is grounded when you connect the chassis and the power supplies to the earth ground in the following ways:

- You connect the chassis (at its grounding pad) to either the data center ground or to a fully bonded and grounded rack.

Note The chassis ground connection is active even when the AC power cables are not connected to the system.

- You connect an AC power supply to the earth ground automatically when you connect the power supply to an AC power source.

To ground the switch, perform the following steps:

Before you begin

- Before you can ground the chassis, you must have a connection to the earth ground for the data center building. If you installed the switch chassis into a bonded rack (see the rack manufacturer's instructions for more information) that now has a connection to the data center earth ground, you can ground the chassis by connecting its grounding pad to the rack. Otherwise, you must connect the chassis grounding pad directly to the data center ground.
- To connect the switch chassis to the data center ground, you need the following tools and equipment:
  - 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 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 U.S. 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 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.

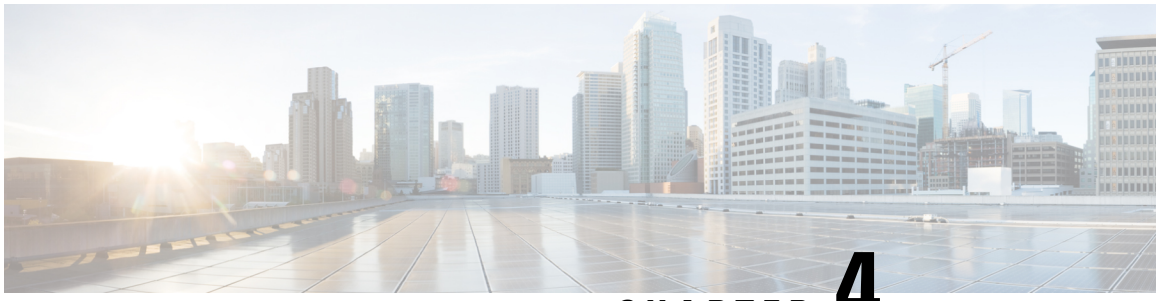
Procedure

Step 1 Use a wire stripping tool to remove approximately 0.75 inch (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 for the rack.



CHAPTER 4

Installing and Removing Components

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.

- Installing Power Supplies, on page 31
- Removing Power Supplies, on page 32
- Installation and Removal of Fan Modules, on page 33
- Installing a Fan Module, on page 33
- Removing a Fan Module, on page 34

Installing Power Supplies

To install a power supply, follow these steps:

Before you begin

- To implement n+n redundancy, each PSU must be connected to a separate power grid. Otherwise, only one power grid is required.
- There must be an earth ground connection to the chassis to which you are installing the replacement module. Typically, the chassis is grounded by its metal-to-metal connection with a grounded rack. If you need to ground the chassis, see Grounding the Switch, on page 29.

Procedure

Step 1 Holding the power supply unit with one hand underneath it and the other hand holding the handle, turn the power supply so that its release latch is on the right side, and align the back end of the power supply (the end with the electrical connections) to the open power supply 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 out of the slot without using the release latch.

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

Step 3 Attach the power cable to the electrical outlet in the front of the power supply.

Make sure that the other end of the power cable is attached to the appropriate power source for the power supply. If the power source has a switch, set it to the **ON** position.

Step 4 Verify that the power supply is operational by making sure that the power supply LED is green. For information on what the power supply LEDs indicate, see the Switch LEDs, on page 7.

Removing Power Supplies

You can remove one power supply, while the other one provides enough power to the switch. To removing power supplies, perform the following steps:

Procedure

Step 1 For AC and HVAC power supplies, if the power source has a switch set it to Off, then set the PSU switch to Off. Grasp the plug of the power cord and pull it out of the power receptacle on the PSU.

Step 2 Holding the plug for the power cable, pull the plug out from the power receptacle on the AC PSU, and verify that both the power supply LEDs are off.

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

Step 3 Grasp the power supply handle while pressing the release latch towards the power supply handle.

Step 4 Place your other hand under the power supply to support it while you slide it 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.

Note
The two PSUs in one chassis must be of same in both air direction and power type. If the newly inserted PUS is different from current working PSU in chassis, the newly inserted incompatible PSU will be disabled for system long term stability.

Note

If the switch must be operated for more than a few minutes with the PSU removed, install a PSU blank plate in the PSU bay. This will ensure proper airflow and temperature within the chassis.

Installation and Removal of Fan Modules

This section provides instructions for installing and removing the fan modules for the Cisco MDS 9396V switch. You can replace one of the three fan modules even when the switch is operating so long as you perform the replacement within five minutes of removing the old fan module. If you cannot perform the replacement within five minutes, leave the original fan module in the chassis to maintain the designed airflow until you have the replacement fan module on hand and can perform the replacement.

Caution If you are replacing a module during operation, be sure that the replacement fan module has the correct direction of airflow, which means that it has the same airflow direction as the other fans in the chassis. Also, be sure that the airflow direction takes in air from a cold aisle and sends it out to a hot aisle. Otherwise, the switch can overheat and shut down.

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.

Note Fan modules are color coded indicating their airflow direction. Ensure the replacement fan module is of the same color as the remaining fan module in the chassis.

Installing a Fan Module

To install a new fan module, follow these steps:

Before you begin

- 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 five minutes 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 either red coloring (port-side intake airflow) or they must all have blue coloring (port-side exhaust airflow).

Procedure

Step 1 Slide the fan module into the fan module bay.

Step 2 Pinch the colored tab with two fingers and push the fan module tab to get it fully inserted.

Step 3 Verify that the Status LED turns on and becomes green.

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 The Cisco MDS 9000 Family has internal temperature sensors that can shut down the system if the temperature at different points 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 increase the speed of the other two fan trays to full speed immediately to prevent undetected overheating. However, the switches will shut down sooner if the major temperature threshold is exceeded.

Note 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

To remove the existing fan module, follow these steps:

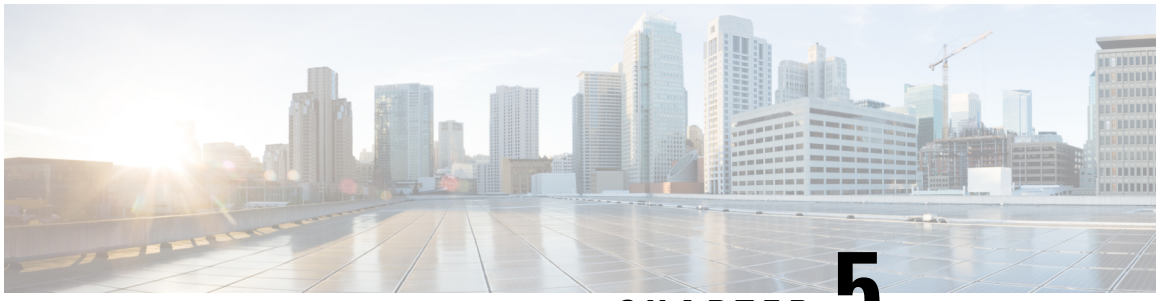
Procedure

Step 1 Locate the fan module in the back of the switch.

Step 2 Pinch the colored tab with two fingers.

Step 3 Grasp the fan module handle and pull it outward.

Step 4 After the fan blades have stopped spinning, remove the fan module completely from the fan bay.



CHAPTER 5

Connecting the Cisco MDS 9396V Switch

The Cisco MDS 9396V switch provides the following types of ports:

- Console port to an RS-232 port that you can use to create a local management connection.
- Mgmt0 is 10/100/1000Base-T Ethernet port that you can use to access and manage the switch by IP address, such as through the CLI of Fabric Manager.
- Mgmt1 is 100/1000Base-X Ethernet port that can be used to export analytic data. It is currently disabled and will be available for future use.
- Fibre Channel ports that you can use to connect to the SAN, or for in-band management.
- USB port—USB port that you can use for configuration file backups and capturing logs to file.

This chapter describes how to connect the various components of the Cisco MDS 9396V switch.

- Preparing for Network Connections, on page 35
- Connecting the Console Port, on page 36
- Connecting the Console Port to a PC, on page 36
- Connecting a Modem to a Console Port before Switch Power On, on page 37
- Connecting a Modem to a Console Port after Switch Power On, on page 37
- Connecting the Management Port, on page 38
- Connecting to a Fibre Channel Port, on page 38
- Powering Up the Switch, on page 39

Preparing for Network Connections

When preparing your site for network connections to the Cisco MDS 9396V switch, consider the following for each type of interface:

- Cabling required for each interface type
- Distance limitations for each signal type
- Additional interface equipment needed

Before installing the component, have all additional external equipment and cables available.

Connecting the Console Port

This section describes how to connect the RS-232 console port to a PC. The console port allows you to perform the following functions:

- Configure the switch from the CLI.
- Monitor network statistics and errors.
- Configure SNMP agent parameters.
- Download software updates to the switch or distribute software images residing in flash memory to attached devices.
- Perform initial switch configuration
- Perform password recovery

Connecting the Console Port to a PC

To connect the console port to a PC, follow these steps:

Before you begin

You can connect the console port to a PC serial port for local administrative access to the Cisco MDS 9396V switch.



Note The PC must support VT100 terminal emulation. The terminal emulation software—frequently a PC application such as HyperTerminal Plus—makes communication between the Cisco MDS 9396V switch and your PC possible during setup and configuration.

Procedure

Step 1 Configure the baud rate and character format of the PC terminal emulation program to match the following management port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity

Step 2 Connect the supplied RJ-45 to DB-9 female adapter or RJ-45 to DB-25 female adapter (depending on your PC connection) to the PC serial port.

Step 3 Connect one end of the supplied console cable (a rollover RJ-45 to RJ-45 cable) to the console port. Connect the other end to the RJ-45 to DB-9 (or RJ-45 to DB-25) adapter at the PC serial port.

Connecting a Modem to a Console Port before Switch Power On



Caution Do not connect the console port to a modem while the switch is booting. Connect the console port to a modem either before powering the switch on or after the switch has completed the boot process.

To connect the console port to a modem before the switch is powered on, follow these steps:

Procedure

Step 1 Connect the supplied console cable (a rollover RJ-45 to RJ-45 cable) to the console port.

Step 2 Connect the other end of the console cable to the supplied RJ-45 to DB-25 adapter.

Step 3 Connect the RJ-45-to-DB-25 adapter to the DB-25 port on the modem.

Step 4 Power on the switch.

The switch boots automatically, and the following default console port characteristics are applied to the modem connection:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- Default initialization string (ATE0Q1&D2&C1S0=1\015) if previously configured

Note
For instructions on how to change these settings, see the *Cisco Fabric Manager Fundamentals Configuration Guide* for instructions on how to change these settings.

Connecting a Modem to a Console Port after Switch Power On

To connect the console port to a modem after the switch is powered on, follow these steps:

Procedure

Step 1 Ensure that the system has completed booting and the system image is running.

Step 2 Connect the supplied console cable (a rollover RJ-45 to RJ-45 cable) to the console port.

Step 3 Connect the other end of the console cable to the supplied RJ-45 to DB-25 adapter.

Step 4 Connect the RJ-45-to-DB-25 adapter to the DB-25 port on the modem.

Step 5 Initialize and configure the modem as specified in the *Cisco MDS 9000 Series Fundamentals Configuration Guide*.

Connecting the Management Port

The 10/100/1000Base-T MGMT ETH0 port and 100/1000BASE-X MGMT ETH1 port are located on the left side of the front panel (labeled MGMT ETH0 and MGMT ETH1). MGMT ETH0 is RJ45 port below the console port, MGMT ETH1 is 1x1 SFP cage above the console port.

MGMT ETH0 is the default Ethernet management port (interface mgmt0). This port is used for out-of-band management of the Cisco MDS 9396V switch and data streaming to remote receivers.

Note The MGMT1 Ethernet port is disabled in Cisco MDS NX-OS Release 9.4(1).

Use a modular, RJ-45, straight-through UTP cable to connect the management ports to an external hub or switch. To connect to a router, use a crossover cable.

Connecting to a Fibre Channel Port

The Fibre Channel ports in the Cisco MDS 9396V switch are compatible with LC-type fiber-optic SFP+ transceivers and cables. You can use these ports to connect to the SAN or for in-band management. For information about configuring the switch for in-band management, see the *Cisco MDS 9000 Series Fundamentals Configuration Guide*.

Each transceiver must match the transceiver on the other end of the cable, and the cable must not exceed the stipulated cable length for reliable communications. SFP+ transceivers can be ordered separately or with the Cisco MDS 9396V switch.

Use SFP transceivers supported by Cisco MDS only. For list of supported SFP+ transceivers, refer to *Cisco MDS 9000 Family Pluggable Transceivers Data Sheet*.

Warning Class 1 laser product. Statement 1008

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

Note Wear an ESD wrist strap connected to the chassis when handling transceivers. Keep optical connectors covered when not in use, and do not touch connector ends. The fiber-optic connectors must be free of dust, oil, and other contaminants.

Powering Up the Switch

To power up the switch, you must connect one or two power supplies. The number of power supplies and power sources used depends on the following conditions:

- If you are using combined power (not using power redundancy), you must connect a minimuim of one power supply to a power source.
- If you are using power supply (n+1) redundancy, you must connect two power supplies a single AC power source.
- If you are using grid (n+n) redundancy, you must use two power supplies and two power sources—you must connect each power supply to a different power source.

Note These switches are designed to boot up in less than 30 minutes provided the neighbouring devices are fully operational.

To power up the switch, perform these steps:

Before you begin

You must have the following before powering up the switch:

- Switch installed in a rack and connected to an earth ground.
- Recommended power cable for your nation or region.
- AC power source with the required amperage located within reach of the power cable being used.

Procedure

Step 1 Connect a power supply to an AC power source as follows:

a. Using the recommended power cable for your country or region , connect the C19 plug on the power cable to the power receptacle on the power supply.

b. Connect the other end of the power cable to the AC power source.

c. Verify that the LED is on and green. If the LED is off, check the AC power source circuit breaker to be sure that it is turned on.

Step 2 If you are using the power supply (n+1) redundancy, you must connect the second power supply as follows:

a. Using the recommended power cable for your country or region , connect the C19 plug on the power cable to the power receptacle on the second power supply.

b. Connect the other end of the power cable to the AC power source used by the other power supply.

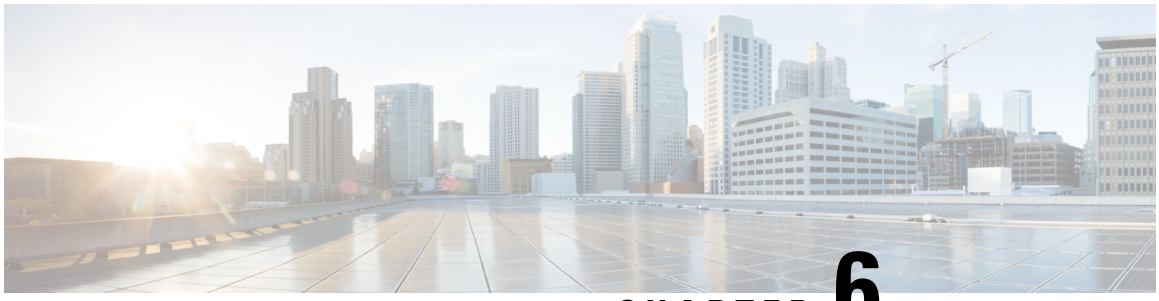
c. Verify that the LED is on and green. If the LED is off, check the AC power source circuit breaker to be sure that it is turned on.

Step 3 If you are using the grid (n+n) redundancy, you must connect the second power supply as follows:

a. Using the recommended power cable for your country or region , connect the C19 plug on the power cable to the power receptacle on the second power supply.

b. Connect the other end of the power cable to a second AC power source (this is a different power source than the one used by the first power supply).

c. Verify that the LED is on and green. If the LED is off, check the AC power source circuit breaker to be sure that it is turned on.



CHAPTER 6

Technical Specifications

- Switch Specifications, on page 41
- Power Specifications, on page 42
- Component Power Requirements and Heat Dissipation, on page 43

Switch Specifications

The following table lists the specifications for the Cisco MDS 9396V switch.

Environmental Specifications

Description	Specification
Temperature, ambient operating	32 to 104°F (0 to 40°C)
Temperature, ambient nonoperating and storage	-40 to 158°F (-40 to 70°C)
Humidity (RH), ambient (noncondensing) operating	5 to 90%
Humidity (RH), ambient (noncondensing) nonoperating and storage	5 to 95%
Altitude, operating	-197 to 6500 ft (-60 to 2000 m)
Noise levels	75 dB

Physical Specifications

Description	Specification
Switch Dimensions	HxWxD: 3.4 x 17.4 x 23.9 in (8.64 x 44.23 x 60.73cm)
Rack size	Chassis requires 2 RU (1.75 in. or 4.45 cm)
Weight (fully loaded)	44 lb (20 kg)

Description	Specification
Power Supply	• 1400W PSU AC Low Line Input: 90V to 140 V • 1400W PSU AC High Line input: 180V to 264V • 2000W PSU AC Low Line input: 90V to 140V • 2000W PSU AC High Line input: 180V to 305V • 2000W PSU DC input: 192V to 400V Frequency: 50 to 60 Hz (nominal)
Airflow	Back to front (toward ports) using port-side exhaust fans Front to back (into ports) using port-side intake fans 192 CFM (nominal speed) 480 CFM (maximum speed) Cisco recommends that you maintain a minimum air space of 2.5 in. (6.4 cm) between walls and chassis air vents and a minimum horizontal separation of 6 in. (15.2 cm) between two chassis to prevent overheating.

Power Specifications

General Power Supply Specifications – HVAC

HVAC Input Power	Specification
HVAC input voltage	90V to 140V, 180V to 305V
Power consumption (typical)	• 421W for 96-Port switch in idle status with no optics modules • 542W for 96-Port switch with 48 64G SW optics modules at 50%-line rate • 655W for 96-Port switch with 96 64G SW optics modules at 50%-line rate
AC input frequency	Nominal = 50 Hz to 60 Hz (nominal)
Power supply output capacity	2000 W (DS-CHV-2000W-I)

General Power Supply Specifications – HVDC

HVDC Input Power	Specification
HVDC input voltage	192V to 400V

HVDC Input Power	Specification
Power consumption (typical)	• 421W for 96-Port switch in idle status with no optics modules • 542W for 96-Port switch with 48 64G SW optics modules at 50%-line rate • 655W for 96-Port switch with 96 64G SW optics modules at 50%-line rate
Power supply output capacity	2000 W (DS-CHV-2000W-I)

Power Supply Requirements Specifications

Power Mode	PSU	Traffic Rate	Temperature	Voltage	Optics Speed	Optics Number	Fan Trays	Power	Power	Power
								110V/60HZ (Watts)	220V/50HZ (Watts)	380V DC(Watts)
Typical	2	50%	25C	Normal	64G SW	48	3	545	540	542
Typical	2	50%	25C	Normal	64G SW	96	3	660	650	655
Max	2	100%	40C	Normal	64G SW	96	3	890	880	885

Note To prevent a loss of input power, ensure that the total maximum load on each circuit supplying the power supply is within the current ratings of the wiring and breakers.

Power Supply Fuse Information

Part Number	PID	Type	Fuse Rated AMP	I2T	Fuse Melting Time
341-101444-01	DS-CAC-1400W-I	Fast acting	16A	384	0.09S@100A
341-101445-01	DS-CAC-1400W-E	Fast acting	16A	384	0.09S@100A
341-101446-01	DS-CHV-2000W-I	Fast acting	16A	1331	0.1s@125A
341-101447-01	DS-CHV-2000W-E	Fast acting	16A	1331	0.1s@125A

Component Power Requirements and Heat Dissipation

Consider heat dissipation when sizing the air-conditioning requirements for an installation. The power and heat associated with a Cisco MDS 9396V 64 Gbps 96-Port Fibre Channel (FC) Switch varies based upon the following considerations:

- The environment (temperature) outside the chassis
- Internal chassis temperature

- Any hardware component failure in the chassis
- Average switching traffic levels

The following table lists the power requirements and heat dissipation for the components of the Cisco MDS 9396V 64 Gbps 96-Port Fibre Channel Switch.

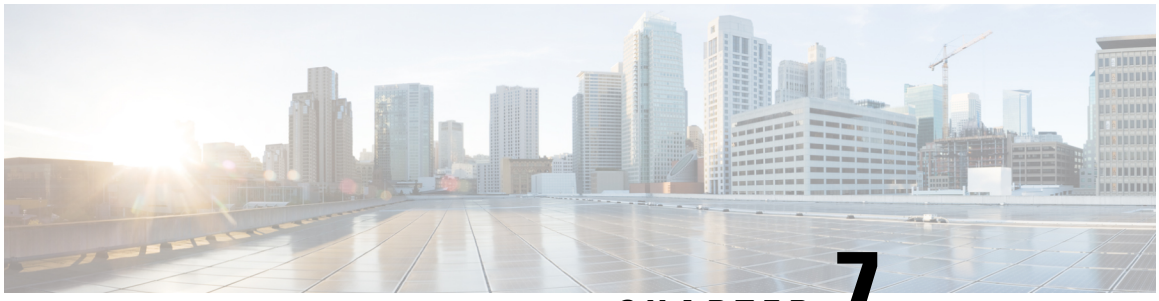
Power Requirements and Heat Dissipation Specifications

Module Type/Product Number	Power Required (watts)	Heat Dissipation (BTU/hr)	Input Current		
			110VAC(amps)	220VAC(amps)	380VDC(amps)
DS-C9396V-K9	880 maximum	3003	8.1	4	2.3

Connection Guidelines for Powered Systems

For connecting the Cisco MDS 9396V switch power supplies to the site power source, follow these basic guidelines:

- Each power supply should have its own dedicated branch circuit.
- For international, circuits should be sized according to local and national codes.
- The AC power receptacles 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 at the service equipment.



CHAPTER 7

Cable and Port Specifications

This section includes the cables and connectors used with the Cisco MDS 9396V Multilayer Fabric Switch.

Caution We strongly recommend that power cable runs and other potential noise sources be located as far away as practical from network cabling that terminates on Cisco equipment. In situations where long parallel cable runs exist but cannot be separated by at least 3.3 ft. (1 m), we recommend that you shield these potential noise sources. To avoid interference, the source should be shielded by housing it in a grounded metallic conduit.

- Cables and Adapters, on page 45
- Console Port, on page 46
- MGMT 10/100/1000 Ethernet Port, on page 47
- Supported AC Power Cords and Plugs, on page 49

Cables and Adapters

The Cisco MDS 9396V Switch accessory kit includes the following:

- RJ-45 to RJ-45 rollover cable
- RJ-45 to DB-9 female DTE adapter (labeled “Terminal”)
- RJ-45 to DB-25 female DTE adapter (labeled “Terminal”)
- RJ-45 to DB-25 male DCE adapter (labeled “Modem”)

Note Additional cables and adapters can be ordered from your customer service representative.

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/c/en/us/support/index.html.

Console Port

The console port is an asynchronous RS-232 serial port with an RJ-45 connector. You can use the RJ-45 to RJ-45 rollover cable and the RJ-45 to DB-9 female adapter or the RJ-45 to DB-25 female DTE adapter (depending on your computer serial port) to connect the console port to a computer running terminal emulation software.

Console Port Pinouts

The following table lists the pinouts for the console port on the Cisco MDS 9396V Switch.

Pin	Signal
1[1]	RTS
2	DTR
3	TxD
4	GND
5	GND
6	RxD
7	DSR
8	CTS

[1] Pin 1 is connected internally to pin 8.

Connecting the Console Port to a Computer Using the DB-9 Adapter

You can use the RJ-45 to RJ-45 rollover cable and RJ-45 to DB-9 female DTE adapter (labeled “Terminal”) to connect the console port to a computer running terminal emulation software. The following table lists the pinouts for the console port, the RJ-45 to RJ-45 rollover cable, and the RJ-45 to DB-9 female DTE adapter.

Port Mode Signaling and Pinouts with DB-9 Adapter

Console Port	RJ-45 to RJ-45 Rollover Cable		RJ-45 to DB-9 Terminal Adapter	Console Device
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	Signal
RTS	1	8	8	CTS
DTR	2	7	6	DSR
TxD	3	6	2	RxD
GND	4	5	5	GND
GND	5	4	5	GND
RxD	6	3	3	TxD
DSR	7	2	4	DTR

Console Port	RJ-45 to RJ-45 Rollover Cable		RJ-45 to DB-9 Terminal Adapter	Console Device
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	Signal
CTS	8	1	7	RTS

Connecting the Console Port to a Computer Using the DB-25 Adapter

You can use the RJ-45 to RJ-45 rollover cable and RJ-45 to DB-25 female DTE adapter (labeled "Terminal") to connect the console port to a computer running terminal emulation software. The following table lists the pinouts for the console port, the RJ-45 to RJ-45 rollover cable, and the RJ-45 to DB-25 female DTE adapter.

Port Mode Signaling and Pinouts with DB-25 Adapter

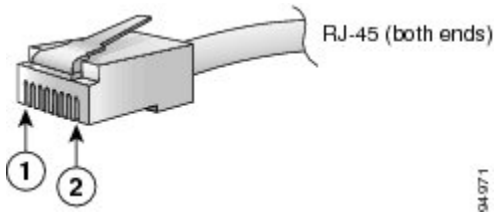
Console Port	RJ-45 to RJ-45 Rollover Cable		RJ-45 to DB-25 Terminal Adapter	Console Device
Signal	RJ-45 Pin	RJ-45 Pin	DB-25 Pin	Signal
RTS	1	8	5	CTS
DTR	2	7	6	DSR
TxD	3	6	3	RxD
GND	4	5	7	GND
GND	5	4	7	GND
RxD	6	3	2	TxD
DSR	7	2	20	DTR
CTS	8	1	4	RTS

MGMT 10/100/1000 Ethernet Port

Use a modular, RJ-45, straight-through UTP cable to connect the 10/100/1000 management Ethernet port to external hubs and switches. To connect to a router, use a crossover cable.

Note We recommend that you use mgmt0 with 1 Gbps if you're using features such as SAN Analytics and telemetry.

Figure 13: RJ-45 Interface Cable Connector



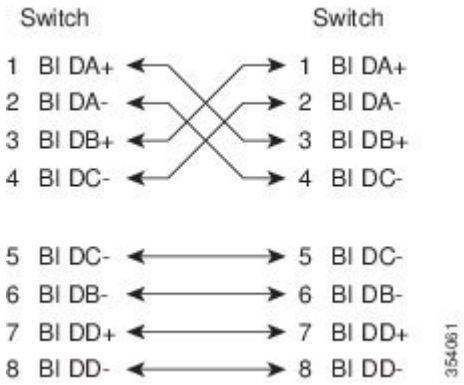
1	Pin 1	**2**	Pin 8

The following table lists the connector pinouts and signal names for a 10/100/1000BASE-T management port (MDI) cable pinout.

Pin	Signal
1	BI DA+
2	BI DA-
3	BI DB+
4	BI DC+
5	BI DC-
6	BI DB-
7	BI DD+
8	BI DD-

The following figure shows a schematic of the 10/100/1000BASE-T cable.

Figure 14: Twisted-Pair 10/100/1000BASE-T Cable Schematic

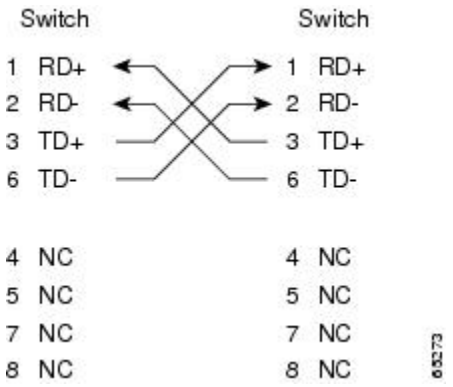


The following table lists the connector pinouts and signal names for a 10/100BASE-T management port (MDI) cable pinouts.

Pin	Signal
1	TD+
2	TD-
3	RD+
4	RD-
5	Not used
6	Not used
7	Not used
8	Not used

The following figure shows a schematic of the 10/100BASE-T cable.

Figure 15: Twisted-Pair 10/100BASE-T Cable Schematic



Supported AC Power Cords and Plugs

Each switch AC power supply unit requires one power cord. Cisco approved cords may be ordered with the product. Standard power cords with a country specific plug can be used with wall outlets. Jumper power cords can be used with cabinet outlets. The user may also source their own power cords for the product, as long as they meet the power cord specifications for this product.

Only standard power cords and jumper power cords provided with the switch are supported.

Not all cables are compatible with the locking mechanism.

If you do not order a power cord with the system, you are responsible for selecting the appropriate power cord for the product. Using a non-compatible power cord with this product may result in electrical safety hazard. Orders delivered to Argentina, Brazil, and Japan must have the appropriate power cord ordered with the system.

Wall Outlet Power Cords

The following table lists the supported standard power cords and their dimensions.

Standard Power Cords for Cisco MDS 9396V Switch

Description	Part Number	Length	
		Feet	Meters
Power Cord, 250VAC 10A IRAM 2073 Plug, Argentina	CAB-9K10A-AR	8.2	2.5
Power Cord, 250VAC 10A 3112 Plug, Australia	CAB-9K10A-AU	8.2	2.5
Power Cord, 250VAC 10A, Brazil	CAB-250V-10A-BR	8.2	2.5
Power Cord, 250VAC 10A GB1002 Plug, China	CAB-9K10A-CH	8.2	2.5

Description	Part Number	Length	
		Feet	Meters
Power Cord, 250VAC 10A CEE 7/7 Plug, EU	CAB-9K10A-EU	8.2	2.5
Power Cord, 250VAC 10A SI16S3 Plug, Israel	CAB-9K10A-ISR	8.2	2.5
Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	CAB-9K10A-IT	8.2	2.5
Power Cord, 125VAC 13A KSC8305 Plug, Korea	CAB-9K10A-KOR	8.2	2.5
Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	CAB-9K12A-NA	8.2	2.5
Power Cord, 250VAC 10A SABS 164/1 Plug, South Africa	CAB-9K10A-SA	5.12	1.82
Power Cord, 250VAC 10A, Straight C15, MP232 Plug, SWITZ	CAB-9K10A-SW	8.2	2.5
Power Cord, 125VAC 15A CNS10917-2, Taiwan	CAB-9K10A-TWN	8.2	2.5
Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK	CAB-9K10A-UK	8.2	2.5

Jumper Power Cords

Jumper power cords for 1400 W AC PSUs have an IEC C15 connector on the outlet end of the cord and an IEC C14 connector on the inlet end of the cord. These cords are compatible with IEC C13 outlet receptacles.

Jumper power cords for HVAC PSUs have a Saf-D-Grid connector on the outlet end of the cord and an IEC C14 connector on the inlet end of the cord. This type of outlet receptacle is commonly used for power distribution inside cabinets.

The following table lists the supported cabinet jumper cords and their dimensions.

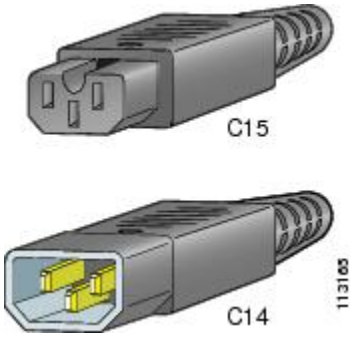
Cabinet Jumper Power Cords for Cisco MDS 9396V Switch

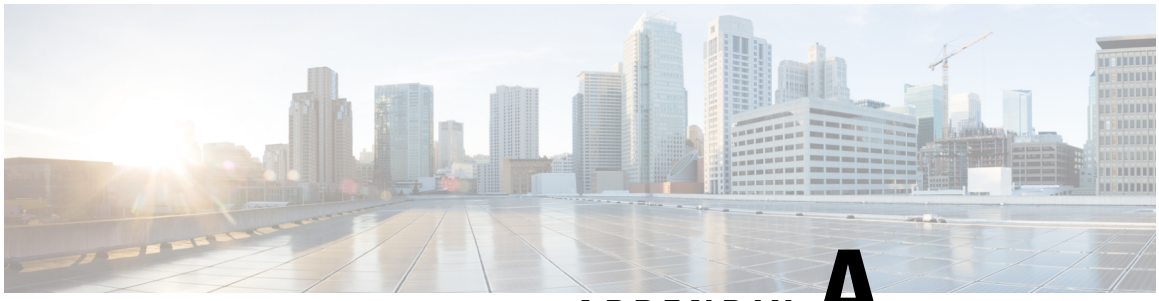
Description	Part Number	Length	
		Feet	Meters
Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors	CAB-C15-CBN	4	1.22
Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors, China, Republic of Korea	CAB-C15-CBN-CK	9.1	3

Description	Part Number	Length	
		Feet	Meters
Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors, EU, Russian Federation, Belarus, Kazakhstan and Australia	CAB-C15-CBN-EURA	9.1	3
Cabinet Jumper Power Cord, 250 VAC 16A, C20-C19 Connectors	CAB-C19-CBN	8.9	2.74

The following figures show the available jumper cord plug types.

Figure 16: Jumper power cord for 1400 W AC PSU





APPENDIX A

Site Planning and Maintenance Records

This section includes a site planning checklist and maintenance records to use when installing the switch.

Note For information about how to query the switch for configuration information, see the Cisco NX-OS Fundamentals Configuration Guide.

- Site Preparation Checklist, on page 53
- Contact and Site Information, on page 55
- Chassis and Network Information, on page 55

Site Preparation Checklist

Planning the location and layout of your equipment rack or wiring closet is essential for successful switch operation, ventilation, and accessibility. The following table lists the site planning tasks that we recommend completing before installing the Cisco MDS 9396T Switch.

Consider heat dissipation when sizing the air-conditioning requirements for an installation.

Table 2: Site Planning Checklist

Task No.	Planning Activity	Verified By	Time	Date
1	Space evaluation: • Space and layout • Floor covering • Impact and vibration • Lighting • Maintenance access			

Task No.	Planning Activity	Verified By	Time	Date
2	Environmental evaluation: • Ambient temperature • Humidity • Altitude • Atmospheric contamination • Air flow			
3	Power Evaluation: • Input power type • Power receptacles[1] • Receptacle proximity to the equipment • Dedicated circuit for power supply • Dedicated (separate) circuits for redundant power supplies • UPS[2] for power failures			
4	Grounding evaluation: • Circuit breaker size • CO ground (AC-powered systems)			
5	Cable and interface equipment evaluation: • Cable type • Connector type • Cable distance limitations • Interface equipment (transceivers)			

Task No.	Planning Activity	Verified By	Time	Date
6	Electromagnetic interference (EMI) evaluation: • Distance limitations for signaling • Site wiring • RFI[3] levels			

1. Verify that the power supply installed in the chassis has a dedicated AC source circuit.

2. UPS = uninterruptible power supply.

3. RFI = radio frequency interference.

Contact and Site Information

Use the following worksheet to record contact and site information.

Table 3: Contact and Site Information

Contact person	
Contact phone	
Contact E-Mail	
Building/site name	
Data center location	
Floor location	
Address (line 1)	
Address (line 2)	
City	
State	
Zip code	
Country	

Chassis and Network Information

Use the following worksheets to record chassis and network information.

Contract Number :

Chassis Serial Number:

Product Number:

Switch IP address	
Switch IP netmask	
Host name	
Domain name	
IP broadcast address	
Gateway/router address	
DNS address	
Modem telephone number	