Preface

This preface describes the audience, organization, and conventions of the *Cisco MDS 9000 Family Configuration Guide*. It also provides information on how to obtain related documentation.

Audience

This guide is for experienced network administrators who are responsible for configuring and maintaining the Cisco MDS 9000 Family of multilayer directors and fabric switches.

Organization

This guide is organized as follows:

Chapter	Title	Description
Chapter 1	Product Overview	Presents an overview of the Cisco MDS 9000 Family of multilayer switches and directors.
Chapter 2	Before You Begin	Describes the command-line interface (CLI).
Chapter 3	Initial Configuration	Provides initial switch configuration options and switch access information.
Chapter 4	Configuring High Availability	Provides details on the high availability feature including switchover mechanisms.
Chapter 5	Software Images	Describes how to upgrade Cisco MDS 9000 Family switches, install software image files, use the Flash file system on the supervisor engine, and recover a corrupted bootflash image.
Chapter 6	Managing Modules	Explains how to display and analyze the status of each module and specifies the power on and power off process for modules.
Chapter 7	Managing System Hardware	Provides details on switch hardware inventory, power usage, power supply, module temperature, fan and clock modules, and environment information.

Chapter	Title	Description
Chapter 8	Configuring and Managing VSANs	Describes how virtual SANs (VSANs) work, explains the concept of default VSANs, isolated VSANs, VSAN IDs and attributes, and provides details on how to create, delete, and view VSANs.
Chapter 9	Configuring Interfaces	Explains port and operational state concepts in Cisco MDS 9000 Family switches and provides details on configuring ports and interfaces.
Chapter 10	Configuring Trunking	Explains TE ports and trunking concepts.
Chapter 11	Configuring PortChannels	Explains PortChannels and load balancing concepts and provides details on configuring PortChannels, adding ports to PortChannels, and deleting ports from PortChannels.
Chapter 12	Configuring and Managing Zones	Defines various zoning concepts and provides details on configuring a zone set and zone management features.
Chapter 13	Managing FLOGI, Name Server, and RSCN Databases	Provides name server and fabric login details required to manage storage devices and display registered state change notification (RSCN) databases.
Chapter 14	Configuring System Security and AAA Services	Discusses the AAA parameters, user profiles, RADIUS authentication, SSH services, and SNMP Security options provided in all switches in the Cisco MDS 9000 Family and provides configuration information for these options.
Chapter 15	Configuring Port Security	Provides details on port security features that can prevent unauthorized access to a switch port in the Cisco MDS 9000 Family.
Chapter 16	Configuring Fibre Channel Routing Services and Protocols	Provides details and configuration information on Fibre Channel routing services and protocols.
Chapter 17	Configuring IP Services	Provides details on IP over Fibre Channel (IPFC) services and provides configuring IPFC, virtual router, and DNS server configuration information.
Chapter 18	Configuring IP Storage	Provides details on extending the reach of Fibre Channel SANs by connecting separated SAN islands together via IP networks using FCIP, and allowing IP hosts to access FC storage using the iSCSI protocol.
Chapter 19	Configuring Call Home	Provides details on the Call Home service and includes information on Call Home, event triggers, contact information, destination profiles, and e-mail Options.

Chapter	Title	Description
Chapter 20	Configuring Domain Parameters	Explains the Fibre Channel domain (fcdomain) feature, which includes principal switch selection, domain ID distribution, FC ID allocation, and fabric reconfiguration functions.
Chapter 21	Configuring Traffic Management	Provides details on the quality of service (QoS) and Fibre Channel Congestion Control (FCC) features.
Chapter 22	Configuring System Message Logging	Describes how system message logging is configured and displayed.
Chapter 23	Discovering SCSI Targets	Describes how the SCSI LUN discovery feature is started and displayed.
Chapter 24	Monitoring Network Traffic Using SPAN	Describes the switched port analyzer (SPAN), identifies SPAN sources, specifies filters, explains SPAN Sessions, SD port characteristics, and configuration details.
Chapter 25	Advanced Features and Concepts	Describes the advanced configuration features features—time out values, fctrace, fabric analyzer, world wide names, flat FC IDs, loop monitoring, and interoperating switches.
Chapter 26	Configuring Fabric Configuration Servers	Describes how the fabric Configuration Server (FCS) feature is configured and displayed.
Chapter 27	Monitoring System Processes and Logs	Provides information on displaying system processes and status. It also provides information on configuring core and log files, HA policy, heartbeat and watchdog checks, and upgrade resets.

Document Conventions

Command descriptions use these conventions:

boldface font	Commands and keywords are in boldface.
italic font	Arguments for which you supply values are in italics.
[ ]	Elements in square brackets are optional.
[x	y	z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.

Screen examples use these conventions:

`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.

Related Documentation

Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family

Cisco MDS 9100 Series Quick Start Guide

Cisco MDS 9500 Series and Cisco MDS 9216 Quick Start Guide

Cisco MDS 9100 Series Hardware Installation Guide

Cisco MDS 9216 Switch Hardware Installation Guide

Cisco MDS 9500 Series Hardware Installation Guide

Cisco MDS 9000 Family Command Reference

Cisco MDS 9000 Family Configuration Guide

Cisco MDS 9000 Family Fabric Manager User Guide

Cisco MDS 9000 Family Troubleshooting Guide

Cisco MDS 9000 Family System Messages Guide

Cisco MDS 9000 Family MIB Reference Guide

Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which may have shipped with your product. The Documentation CD-ROM is updated regularly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual or quarterly subscription.

Registered Cisco.com users can order a single Documentation CD-ROM (product number DOC-CONDOCCD=) through the Cisco Ordering tool:

http://www.cisco.com/en/US/partner/ordering/ordering_place_order_ordering_tool_launch.html

All users can order monthly or quarterly subscriptions through the online Subscription Store:

http://www.cisco.com/go/subscription

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can submit comments electronically on Cisco.com. On the Cisco Documentation home page, click **Feedback** at the top of the page.

You can e-mail your comments to mdsfeedback-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

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

Cisco provides Cisco.com, which includes the Cisco Technical Assistance Center (TAC) website, as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from the Cisco TAC website. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC website, including TAC tools and utilities.

Cisco.com

Cisco.com offers a suite of interactive, networked services that let you access Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com provides a broad range of features and services to help you with these tasks:

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

To obtain customized information and service, you can self-register on Cisco.com at this URL:

http://tools.cisco.com/RPF/register/register.do

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available: the Cisco TAC website and the Cisco TAC Escalation Center. The type of support that you choose depends on the priority of the problem and the conditions stated in service contracts, when applicable.

We categorize Cisco TAC inquiries according to urgency:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration. There is little or no impact to your business operations.
- Priority level 3 (P3)—Operational performance of the network is impaired, but most business operations remain functional. You and Cisco are willing to commit resources during normal business hours to restore service to satisfactory levels.
- Priority level 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operations are negatively impacted by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

- Priority level 1 (P1)—An existing network is "down," or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Cisco TAC Website

The Cisco TAC website provides online documents and tools to help troubleshoot and resolve technical issues with Cisco products and technologies. To access the Cisco TAC website, go to this URL:

http://www.cisco.com/tac

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC website. Some services on the Cisco TAC website require a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

http://tools.cisco.com/RPF/register/register.do

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC website, you can open a case online at this URL:

http://www.cisco.com/tac/caseopen

If you have Internet access, we recommend that you open P3 and P4 cases online so that you can fully describe the situation and attach any necessary files.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

Before calling, please check with your network operations center to determine the Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the *Cisco Product Catalog* at this URL:

  http://www.cisco.com/en/US/products/products_catalog_links_launch.html

- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: *Internetworking Terms and Acronyms Dictionary, Internetworking Technology Handbook, Internetworking Troubleshooting Guide,* and the *Internetworking Design Guide.* For current Cisco Press titles and other information, go to Cisco Press online at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access *Packet* magazine at this URL:

  http://www.cisco.com/go/packet

- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

  http://www.cisco.com/en/US/learning/le31/learning_recommended_training_list.html