Cisco MDS 9000 Family Command Reference

Cisco MDS SAN-OS Release 1.3 (from Release 1.3(1) through Release 1.3(5)
January 2006

Corporate 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: 408 526-4100

Customer Order Number: DOC-7816088=
Text Part Number: 78-16088-01

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 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.

CCIP, CCSP, the Cisco Arrow logo, the Cisco *Powered* Network mark, Cisco Unity, Follow Me Browsing, FormShare, and StackWise are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, and iQuick Study are service marks of Cisco Systems, Inc.; and Aironet, ASIST, BPX, Catalyst, CCDA, CCDP, CCIE, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, the Cisco IOS logo, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Empowering the Internet Generation, Enterprise/Solver, EtherChannel, EtherSwitch, Fast Step, GigaStack, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, MGX, MICA, the Networkers logo, Networking Academy, Network Registrar, *Packet*, PIX, Post-Routing, Pre-Routing, RateMUX, Registrar, ScriptShare, SlideCast, SMARTnet, StrataView Plus, Stratm, SwitchProbe, TeleRouter, The Fastest Way to Increase Your Internet Quotient, TransPath, and VCO are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site 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. (0304R)

Cisco MDS 9000 Family Command Reference, Release 1.2(1)
Copyright © 2004 Cisco Systems, Inc. All rights reserved.

New and Changed Information vii

Preface xiii

Audience xiii

Organization xiii

Document Conventions xiv

Related Documentation xvi

Obtaining Documentation xvi

Cisco.com xvi

Ordering Documentation xvii

Documentation Feedback xvii

Obtaining Technical Assistance xvii

Cisco Technical Support Website xviii

Submitting a Service Request xviii

Definitions of Service Request Severity xviii

Obtaining Additional Publications and Information xix

CHAPTER 1 **CLI Overview** 1-1

About the Switch Prompt 1-2

About the CLI Command Modes 1-3

Understanding CLI Command Hierarchy 1-4

EXEC Mode Options 1-5

Configuration Mode 1-6

Configuration Mode Commands and Submodes 1-6

Navigating Through CLI Commands 1-9

Getting Help 1-9

Command Completion 1-9

Using the no and Default Forms of Commands 1-10

Entering CLI Commands 1-10

Viewing Switch Configurations 1-10

Saving a Configuration 1-13

Clearing a Configuration 1-13

Displaying Users 1-13

Sending Messages to Users 1-13

Using the ping Command 1-14
Using traceroute 1-14
Setting the Switch's Shell Timeout 1-14
Displaying VTY Sessions 1-15
Clearing VTY Sessions 1-15
Setting the Switch's Terminal Timeout 1-15
Setting the Switch's Terminal Type 1-15
Setting the Switch's Terminal Length 1-16
Setting the Switch's Terminal Width 1-16
Displaying Terminal Settings 1-16
About Flash Devices 1-17
Internal bootflash: 1-17
External CompactFlash (Slot0) 1-17
Formatting Flash Disks and File Systems 1-18
Initializing bootflash: 1-18
Formatting Slot0: 1-18
Using the File System 1-19
Setting the Current Directory 1-19
Displaying the Current Directory 1-20
Listing the Files in a Directory 1-20
Creating a New Directory 1-20
Deleting an Existing Directory 1-20
Moving Files 1-21
Copying Files 1-21
Deleting Files 1-21
Displaying File Contents 1-22
Saving Command Output to a File 1-22
Compressing and Uncompressing Files 1-22
Displaying the Last Line in a File 1-23
Executing Commands Specified in a Script 1-23
Setting the Delay Time 1-24
Role-Based CLI 1-24
Using Valid Formats and Ranges 1-25

CHAPTER 2 A Commands 2-1

CHAPTER 3 B Commands 3-1

CHAPTER 4 C Commands 4-1

CHAPTER 5 D Commands 5-1

CHAPTER 6 Debug Commands 6-1

CHAPTER 7 E Commands 7-1

CHAPTER 8 F Commands 8-1

CHAPTER 9 G Commands 9-1

CHAPTER 10 H Commands 10-1

CHAPTER 11 I Commands 11-1

CHAPTER 12 K Commands 12-1

CHAPTER 13 L Commands 13-1

CHAPTER 14 M Commands 14-1

CHAPTER 15 N Commands 15-1

CHAPTER 16 P Commands 16-1

CHAPTER 17 Q Commands 17-1

CHAPTER 18 R Commands 18-1

CHAPTER 19 S Commands 19-1

CHAPTER 20 Show Commands 20-1

CHAPTER 21 T Commands 21-1

CHAPTER 22 U Commands 22-1

CHAPTER 23 V Commands 23-1

CHAPTER 24 W Commands 24-1

CHAPTER 25 Z Commands 25-1

CHAPTER 26 Advanced Services Module Commands 26-1

CHAPTER 27 Caching Services Module Commands 27-1

New and Changed Information

Table 1 summarizes the new and changed features for the *Cisco MDS 9000 Family Command Reference*, and tells you where they are documented. If a feature has changed in Release 1.3, a brief description of the change appears in the "Description" column, and that release is shown in the "Changed in Release" column.

Table 1 Documented Features for the Cisco MDS 9000 Family Command Reference

Feature	Description	Changed in Release	Where Documented
TL port ALPA cache	The **tlport alpa-cache** command	1.3(5)	T Commands
	The **show tlport alpa-cache** command		Show Commands
	The **clear tlport alpa-cache** command.		C Commands
FICON features	The **show ficon first-available port-address** command	1.3(4)	Show Commands
	The **ficon vsan** *vsan-id* **offline** and **online** commands		F Commands
IP Storage updates	The FCIP **tcp min-available-bandwidth** command.	1.3(4)	T Commands
	The iSCSI **tcp send-buffer-size** command		
	The iSCSI **tcp min-available-bandwidth** command		
	The iSCSI **tcp cwm** command		
	The iSCSI and FCIP **tcp max-jitter** command		
Online Health Management System	The **system health**, **system health clear-errors**, **system health external-loopback**, **system health internal-loopback**, and **system health module** commands	1.3(4)	S Commands
	The **show system health** command		Show Commands
Distributing zone sets	The **zoneset distribute vsan** command	1.3(4)	Z Commands
	The **show zone status vsan** command		Show Commands
Switch summary	The **show tech-support brief** command	1.3(4)	Show Commands

Table 1 Documented Features for the Cisco MDS 9000 Family Command Reference

Feature	Description	Changed in Release	Where Documented
In-Order-Guarantee (IOD)	The **in-order-guarantee vsan** command	1.3(4)	I Commands
IVR virtual domains	The **ivr virtual-fcdomain-add vsan-ranges** command	1.3(4)	I Commands
	The **show ivr virtual-fcdomain-add-status** command		Show Commands
	The **ivr withdraw domain** command		I Commands
Banner message	The **banner motd** command	1.3(4)	B Commands
	The **show banner motd** command		Show Commands
iSCSI SACK Default	The TCP SACK parameter is enabled by default for iSCSI configurations.	1.3(3)	T Commands
Zones	The **zoneset import** command	1.3(2a)	Z Commands
	The **zoneset export** command	1.3(2a)	
NVRAM	The **clear system reset-reason** command	1.3(2a)	C Commands
Licensing	The **update license** *url* command	1.3(2a)	U Commands
SCSI targets	The **show scsi-target pwwn** command	1.3(2a)	Show Commands
	The **discover scsi-target local** command	1.3(2a)	D Commands
Licensing	The **install license** command	1.3(1)	I Commands
	The **show license** command		Show Commands
PortChannel quiesce	The **quiesce** command	1.3(1)	Q Commands
Zone	The **member domain-id** *domain-id* **port-number** *port-number*, **member ipaddress** *ip-address subnet-mask,* **member interface fc** *slot-port,* **member interface fc** *slot-port* **swwn** *switch-wwn*, and the **member interface fc** *slot-port* **domain-id** *domain-id* commands	1.3(1)	Z Commands
	The EXEC **zone copy** command		
	The **show zone statistics lun-zoning** and the **show zone statistics read-only-zoning** commands		Show Commands
Inter-VSAN routing (IVR)	The **ivr enable**, **ivr vsan-topology**, **ivr zone**, and the **ivr zoneset** commands	1.3(1)	I Commands
	The **show ivr** command		Show Commands
	The **clear ivr zone database** command		C Commands
	The **logging level ivr** command		L Commands

Table 1 Documented Features for the Cisco MDS 9000 Family Command Reference

Feature	Description	Changed in Release	Where Documented
AAA server groups	The **aaa accounting logsize, aaa accounting default, aaa authentication login, aaa authentication iscsi, aaa authentication dhchap**, and the **aaa group server** commands	1.3(1)	A Commands
	The **show aaa authentication**, **show aaa groups**, and the **show aaa accounting** commands		Show Commands
RADIUS enhancements	The **radius-server host, radius-server key, radius-server retransmit**, and the **radius-server timeout** commands	1.3(1)	R Commands
	The **show radius-server** command		Show Commands
TACACS+ authentication	The **tacacs+ enable, tacacs-server host, tacacs-server key**, and the **tacacs-server timeout** commands	1.3(1)	T Commands
	The **show tacacs-server** command		Show Commands
FC-SP DHCHAP	The **fcsp dhchap, fcsp enable**, and the **fcsp timeout** commands	1.3(1)	F Commands
	The **interface fcsp** command		I Commands
	The **show fcsp** command		Show Commands
FI-bre CON-nection (FICON)	The **setup ficon** and the he **snmp port** commands	1.3(1)	S Commands
	The **ficon swap**, the **ficon vsan** *vsan-id* (EXEC mode), **ficon vsan** *vsan-id* (configuration mode), **file** *file-name*, and the **fcid-last-byte** commands		F Commands
	The **ficon portnumber** *portnumber* command		I Commands
	The **code-page** and the **clear ficon** commands		C Commands
	The **host** command		H Commands
	The **active equals saved** command		A Commands
	The **portaddress** command		P Commands
	The **show ficon** command		Show Commands
Fabric binding	The **fabric-binding activate, fabric-binding database copy, fabric-binding database diff, fabric-binding database vsan,** and the **fabric-binding enable** commands	1.3(1)	F Commands
	The **show fabric-binding enable** command		Show Commands
	The **clear fabric-binding statistics** command		C Commands
Registered Link Incident Report (RLIR)	The **show rlir** command	1.3(1)	Show Commands
	The **clear rlir** command		C Commands

Table 1 Documented Features for the Cisco MDS 9000 Family Command Reference

Feature	Description	Changed in Release	Where Documented
Trespass support	The **trespass** command	1.3(1)	I Commands
Internet Storage Name Service (iSNS)	The **isns profile** and the **isns register** commands		
	The **interface gigabitethernet** *slot_number* **isns** *profile-name* command		
	The **show isns** command	1.3(1)	Show Commands
Proxy initiator	The **switchport proxy-initiator** command	1.3(1)	S Commands
FCIP write accelerator	The **write-accelerator** command	1.3(1)	W Commands
FCIP compression	The **ip-compression** command	1.3(1)	I Commands
Call Home enhancements	The **destination-profile** *profile-name* command	1.3(1)	C Commands
	The **show callhome destination-profile** command		Show Commands
FC Domain ID changes	The **fcdomain allowed** *range* **vsan** *vsan-id*	1.3(1)	F Commands
	The **show fcdomain** command		Show Commands
Port rate limiting	The **switchport ingress-rate** command	1.3(1)	S Commands
Quality of Service (QoS)	The **qos enable, qos class-map, qos dwrr-q, qos policy-map**, and the **qos service** commands	1.3(1)	Q Commands
	The **show qos statistics** command		Show Commands
SPAN source	The **source interface** command	1.3(1)	S Commands
Module uptime	The **show module uptime** command	1.3(1)	Show Commands
Per VSAN Time Out Values (TOV)	The **fctimer** command.	1.3(1)	F Commands
Running configuration information	The **show running diff, show running interface,** and the **show running vsan** commands	1.3(1)	Show Commands
Transceiver and calibration information	The **show interface** *interface-type slot/port* **transceiver** command	1.3(1)	
Buffer-to-Buffer Credit (BB_credit) display	The **show interface bbcredit** command	1.3(1)	
Fabric-Device Management Interface (FDMI)	The **show fdmi** command	1.3(1)	
Auto-discovery of SCSI targets	The **show scsi-target auto-poll** command.	1.3(1)	

Table 1 Documented Features for the Cisco MDS 9000 Family Command Reference

Feature	Description	Changed in Release	Where Documented
IP Storage	The **switchport auto-negotiate** command and the **switchport- promiscuous-mode** commands were added.	1.1(1)	S Commands
Deleting directories	The **delete** command	All	D Commands

Table 2 contains the history of the changes to the *Cisco MDS 9000 Family Command Reference*, Release 1.3. When the document is updated for the next release, these changes are incorporated into the new revision and will no longer appear in this table.

Table 2 Documentation Changes for Cisco MDS 9000 Family Command Reference, Release 1.3

Date	Description of Change	Where Changed
11/21/2003	Document created	See Table 1.
12/19/2003	New 1.3(2a) features documented	See Table 1.
01/13/2004	New 1.3(3) features documented	See Table 1.
04/19/2004	New 1.3(4a) features documented	See Table 1.

Preface

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

Audience

This guide is for experienced network operators and 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	CLI Overview	Describes the CLI (command-line interface).
Chapter 2	A Commands	Describes all commands beginning with the letter “a.”
Chapter 3	B Commands	Describes all commands beginning with the letter “b.”
Chapter 4	C Commands	Describes all commands beginning with the letter “c.”
Chapter 5	D Commands	Describes all commands beginning with the letter “d.”
Chapter 6	Debug Commands	Describes all the **debug** commands.
Chapter 7	E Commands	Describes all commands beginning with the letter “e.”
Chapter 8	F Commands	Describes all commands beginning with the letter “f.”
Chapter 9	G Commands	Describes all commands beginning with the letter “g.”
Chapter 10	H Commands	Describes all commands beginning with the letter “h.”
Chapter 11	I Commands	Describes all commands beginning with the letter “i.”
Chapter 12	K Commands	Describes all commands beginning with the letter “k.”
Chapter 13	L Commands	Describes all commands beginning with the letter “l.”
Chapter 14	M Commands	Describes all commands beginning with the letter “m.”
Chapter 15	N Commands	Describes all commands beginning with the letter “n.”
Chapter 16	P Commands	Describes all commands beginning with the letter “p.”

Chapter	Title	Description
Chapter 17	Q Commands	Describes all commands beginning with the letter “q.”
Chapter 18	R Commands	Describes all commands beginning with the letter “r.”
Chapter 19	S Commands	Describes all commands beginning with the letter “s” except for the **show** commands.
Chapter 20	Show Commands	Describes all the **show** commands.
Chapter 21	T Commands	Describes all commands beginning with the letter “t.”
Chapter 22	U Commands	Describes all commands beginning with the letter “u.”
Chapter 23	V Commands	Describes all commands beginning with the letter “v.”
Chapter 24	W Commands	Describes all commands beginning with the letter “w.”
Chapter 25	Z Commands	Describes all commands beginning with the letter “z.”
Chapter 26	Advanced Services Module Commands	Describes all commands pertaining to the Advanced Services Module (ASM)
Chapter 27	Caching Services Module Commands	Describes all commands pertaining to the Caching Services Module (CSM) .

Document Conventions

Command descriptions use these conventions:

Convention	Indication
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 }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

Screen examples use these conventions:

Convention	Indication
`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

The documentation set for the Cisco MDS 9000 Family includes the following documents:

- *Cisco MDS 9000 Family Release Notes for Cisco MDS SAN-OS Releases*
- *Cisco MDS 9000 Family Interoperability Support Matrix*
- *Cisco MDS SAN-OS Release Compatibility Matrix for IBM SAN Volume Controller Software for Cisco MDS 9000*
- *Cisco MDS SAN-OS Release Compatibility Matrix for VERITAS Storage Foundation for Networks Software*
- *Regulatory Compliance and Safety Information for the Cisco MDS 9000 Family*
- *Cisco MDS 9500 Series Hardware Installation Guide*
- *Cisco MDS 9216 Switch Hardware Installation Guide*
- *Cisco MDS 9100 Series Hardware Installation Guide*
- *Cisco MDS 9000 Family Configuration Guide*
- *Cisco MDS 9000 Family Command Reference*
- *Cisco MDS 9000 Family Fabric Manager Configuration Guide*
- *Cisco MDS 9000 Family SAN Volume Controller Configuration Guide*
- *Cisco MDS 9000 Family MIB Quick Reference*
- *Cisco MDS 9000 Family CIM Programming Reference Guide*
- *Cisco MDS 9000 Family System Messages Guide*
- *Cisco MDS 9000 Family Troubleshooting Guide*
- *Cisco MDS 9000 Family Port Analyzer Adapter 2 Installation and Configuration Note*
- *Cisco MDS 9000 Family Port Analyzer Adapter Installation and Configuration Note*

For information on VERITAS Storage Foundation™ for Networks for the Cisco MDS 9000 Family, refer to the VERITAS website: http://support.veritas.com/

For information on IBM TotalStorage SAN Volume Controller Storage Software for the Cisco MDS 9000 Family, refer to the IBM TotalStorage Support website: http://www.ibm.com/storage/support/2062-2300/

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain 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 at this URL:

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

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

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

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 Ordering tool:

  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, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can send comments about technical documentation 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 Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco Systems, contact Cisco Technical Support at this URL: http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year at this URL:

http://www.cisco.com/techsupport

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

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

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool automatically provides recommended solutions. If your issue is not resolved using the recommended resources, your service request will be assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553 2447

For a complete list of Cisco TAC contacts, go to this URL:

http://www.cisco.com/techsupport/contacts

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your 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.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

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

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

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

- 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://cisco.com/univercd/cc/td/doc/pcat/

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. 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/ipj

- World-class networking training is available from Cisco. You can view current offerings at this URL:

  http://www.cisco.com/en/US/learning/index.html

CLI Overview

This chapter prepares you to configure switches from the CLI (command-line interface). It also lists the information you need to have before you begin, and it describes the CLI command modes.

This chapter includes the following sections:

- About the Switch Prompt, page 1-2
- About the CLI Command Modes, page 1-3
- Understanding CLI Command Hierarchy, page 1-4
- Navigating Through CLI Commands, page 1-9
- About Flash Devices, page 1-17
- Formatting Flash Disks and File Systems, page 1-18
- Using the File System, page 1-19
- Role-Based CLI, page 1-24
- Using Valid Formats and Ranges, page 1-25

About the Switch Prompt

If you are connected to the console port when the switch boots up, you see the output show in :

Note Refer to the *Cisco MDS 9200 Series Hardware Installation Guide* or the *Cisco MDS 9500 Series Hardware Installation Guide* for installation and connection instructions.

Once the switch is powered on successfully, you see the default switch prompt (`switch#`). You can perform embedded CLI operations, access command history, and use command parsing functions at this prompt. The switch gathers the command string upon detecting an **Enter** (CR) and accepts commands from a terminal.

Example 1-1 Output When a Switch Boots Up

```
Auto booting bootflash:/boot-279 bootflash:/system_image;...
Booting kickstart image:bootflash:/boot-279....
.........................................Image verification OK

Starting kernel...
INIT: version 2.78 booting
Checking all filesystems..... done.
Loading system software
Uncompressing system image: bootflash:/system_image
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
INIT: Entering runlevel: 3

<<<<<<SAN OS bootup log messages>>>>>>

         ---- Basic System Configuration Dialog ----

This setup utility will guide you through the basic configuration of
the system. Use ctrl-c to abort configuration dialog at any prompt.

Basic management setup configures only enough connectivity for
management of the system.

Would you like to enter the basic configuration dialog (yes/no): yes

<<<<<<after configuration>>>>>>

switch login:
```

About the CLI Command Modes

Switches in the Cisco MDS 9000 Family have two main command modes—user EXEC mode and configuration mode. The commands available to you depend on the mode you are in. To obtain a list of available commands in either mode, type a question mark (?) at the system prompt.

Table 1-1 lists and describes the two commonly used modes, how to enter the modes, and the resulting system prompts. The system prompt helps you identify which mode you are in and hence, which commands are available to you.

Table 1-1 Frequently Used Switch Command Modes

Mode	Description of Use	How to Access	Prompt
EXEC	Enables you to temporarily change terminal settings, perform basic tests, and display system information. **Note** Changes made in this mode are generally not saved across system resets.	At the switch prompt, enter the required EXEC mode command.	`switch#`
Configuration mode	Enables you to configure features that affect the system as a whole. **Note** Changes made in this mode are saved across system resets if you save your configuration. Refer to the *Cisco MDS CLI Configuration Guide* for further information.	From EXEC mode, enter the **config terminal** command.	`switch(config)#`

You can abbreviate commands and keywords by entering just enough characters to make the command unique from other commands. For example, you can abbreviate the **config terminal** command to **conf t**.

Understanding CLI Command Hierarchy

The CLI commands are organized hierarchically, with commands that perform similar functions grouped under the same level. For example, all commands that display information about the system, configuration, or hardware are grouped under the **show** command, and all commands that allow you to configure the switch are grouped under the **config terminal** command. Figure 1-1 illustrates a portion of the **config terminal** command hierarchy.

Figure 1-1 CLI Command Hierarchy Example

To execute a command, you enter the command by starting at the top level of the hierarchy. For example, to configure a Fibre Channel interface, use the **config terminal** command. Once you are in configuration mode, issue the **interface** command. When you are in the interface submode, you can query the available commands there.

The following example shows how to query the available commands in the interface submode:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc1/1
switch(config-if)# ?
Interface configuration commands:
  channel-group  Add to/remove from a port-channel
  exit           Exit from this submode
  fcdomain       Enter the interface submode
  fspf           To configure FSPF related parameters
  no             Negate a command or set its defaults
  shutdown       Enable/disable an interface
  switchport     Configure switchport parameters
```

EXEC Mode Options

When you start a session on the switch, you begin in EXEC mode. Based on the role or group to which you belong, you have access to limited commands or to all commands (see the "Role-Based CLI" section on page 1-24). From the EXEC mode, you can enter configuration mode. Most of the EXEC commands are one-time commands, such as **show** commands, which display the current configuration status. Here is a list of EXEC mode commands:

```
switch# ?
Exec Commands:
  attach      Connect to a specific linecard
  callhome    Callhome commands
  cd          Change current directory
  clear       Reset functions
  clock       Manage the system clock
  config      Enter configuration mode
  copy        Copy from one file to another
  debug       Debugging functions
  delete      Remove files
  dir         Directory listing for files
  discover    Discover information
  exit        Exit from the EXEC
  fcping      Ping an N-Port
  fctrace     Trace the route for an N-Port.
  find        Find a file below the current directory
  format      Format disks
  install     Upgrade software
  load        Load system image
  mkdir       Create new directory
  move        Move files
  no          Disable debugging functions
  ping        Send echo messages
  purge       Deletes unused data
  pwd         View current directory
  reload      Reboot the entire box
  rmdir       Remove existing directory
  run-script  Run shell scripts
  send        Send message to all the open sessions
  setup       Run the basic SETUP command facility
  show        Show running system information
  sleep       Sleep for the specified number of seconds
  system      System management commands
  tail        Display the last part of a file
  telnet      Telnet to another system
  terminal    Set terminal line parameters
  test        Test command
  traceroute  Trace route to destination
  undebug     Disable Debugging functions (See also debug)
  write       Write current configuration
  zone        Execute Zone Server commands
```

Configuration Mode

Configuration mode allows you to make changes to the existing configuration. When you save the configuration, these commands are preserved across switch reboots. Once you are in configuration mode, you can enter interface configuration mode, zone configuration mode, and a variety of protocol-specific modes. Configuration mode is the starting point for all configuration commands. When you are in configuration mode, the switch expects configuration commands from the user.

The following example shows output from the **config terminal** command:

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)#
```

Configuration Mode Commands and Submodes

The following is a list of configuration mode commands:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ?
Configure commands:
  aaa                 Configure AAA
  arp                 [no] remove an entry from the ARP cache
  boot                Configure boot variables
  callhome            Enter the callhome configuration mode
  clock               Configure time-of-day clock
  end                 Exit from configure mode
  exit                Exit from configure mode
  fcalias             Fcalias configuration commands
  fcanalyzer          Configure cisco fabric analyzer
  fcc                 Configure FC Congestion Control
  fcdomain            Enter the fcdomain configuration mode
  fcdroplatency       Configure switch or network latency
  fcflow              Configure  fcflow
  fcinterop           Interop commands.
  fcns                Name server configuration
  fcroute             Configure FC routes
  fcs                 Configure Fabric Config Server
  fctimer             Configure fibre channel timers
  fspf                Configure fspf
  in-order-guarantee  Set in-order delivery guarantee
  interface           Select an interface to configure
  ip                  Configure IP features
  line                Configure a terminal line
  logging             Modify message logging facilities
  no                  Negate a command or set its defaults
  ntp                 NTP Configuration
  power               Configure power supply
  poweroff            Poweroff a module in the switch
  qos                 Configure priority of FC control frames
  radius-server       Configure RADIUS related parameters
  role                Configure roles
  rscn                Config commands for RSCN
  snmp-server         Configure snmp server
  span                Enter SPAN configuration mode
  ssh                 Configure SSH parameters
  switchname          Configure system's network name
  system              System config command
  telnet              Enable telnet
  trunk               Configure Switch wide trunk protocol
  username            Configure user information.
```

```
vsan                Enter the vsan configuration mode
wwn                 Set secondary base MAC addr and range for additional WWNs
zone                Zone configuration commands
zoneset             Zoneset configuration commands
```

Configuration mode, also known as terminal configuration mode, has several submodes. Each of these submodes places you deeper in the prompt hierarchy. When you type **exit**, the switch backs out one level and returns you to the previous level. When you type **end**, the switch backs out to the user EXEC level. You can also type **Ctrl-Z** in configuration mode as an alternative to typing **end**.

Note When in configuration mode, you can alternatively enter
— **Ctrl-Z** instead of the **end** command, and
— **Ctrl-G** instead of the **exit** command

You can execute an EXEC mode command from a configuration mode or submode prompt. You can issue this command from any submode within the configuration mode. When in configuration mode (or in any submode), enter the **do** command along with the required EXEC mode command. The entered command is executed at the EXEC level and the prompt resumes its current mode level.

```
switch(config)# do terminal session-timeout 0
switch(config)#
```

In this example, **terminal session-timeout** is an EXEC mode command—you are issuing an EXEC mode command using the configuration mode **do** command.

The **do** command applies to all EXEC mode commands other than the **end** and **exit** commands. You can also use the help (?) and command completion (tab) features for EXEC commands when issuing a **do** command along with the EXEC command.

Table 1-2 lists some useful command keys that can be used in both EXEC and configuration modes:

Table 1-2 Useful Command Key Description

Command	Description
Ctrl-P	Up history
Ctrl-N	Down history
Ctrl-X-H	List history
Alt-P	History search backwards **Note** The difference between **Tab** completion and **Alt- P** or **Alt-N** is that TAB completes the current word while **Alt- P** and **Alt-N** completes a previously-entered command.
Alt-N	History search forwards
Ctrl-G	Exit
Ctrl-Z	End
Ctrl-L	Clear screen

Table 1-3 displays the commonly used configuration submodes.

Table 1-3 Submodes Within the Configuration Mode

Submode Name	From Configuration Mode Enter	Submode Prompt	Configured Information
Call Home	**callhome**	`switch(config-callhome)#`	Contact, destination, and e-mail
FCS Registration	**fcs register**	`switch(config-fcs-register)#`	FCS attribute registration
	From FCS registration submode: **platform name** *name* **vsan** *vsan-id*	`switch(config-fcs-register-attrib)#`	Platform name and VSAN ID association
Fibre Channel alias	**fcalias name** *name* **vsan** *vsan-id*	`switch(config-fcalias)#`	Alias member
FSPF	**fspf config vsan** *vsan-id*	`switch(config-(fspf-config))#`	Static SPF computation, hold time, and autonomous region
Interface configuration	**interface** *type slot/port*	`switch(config-if)#`	Channel groups, Fibre Channel domains, FSPF parameters, switch port trunk and beacon information, and IP address
	From the VSAN or mgmt0 (management) interface configuration submode: **vrrp** *number*	`switch(config-if-vrrp)#`	Virtual router (Refer to the *Cisco MDS CLI Configuration Guide* for further information.)
Line console	**line console**	`switch(config-console)#`	Primary terminal console
VTY	**line vty**	`switch(config-line)#`	Virtual terminal line
Role	**role name**	`switch(config-role)#`	Rule
SPAN	**span session** *number*	`switch(config-span)#`	SPAN source, destination, and suspend session information
VSAN database	**vsan database**	`switch(config-vsan-db)#`	VSAN database
Zone	**zone name** *string* **vsan** *vsan-id*	`switch(config-zone)#`	Zone member
Zone set	**zoneset name** *name* **vsan** *vsan-id*	`switch(config-zoneset)#`	Zone set member

Navigating Through CLI Commands

To redisplay a command you previously entered, press the **Up Arrow** key. You can continue to press the **Up Arrow** key to see more previously issued commands. Similarly, you can press the **Down Arrow**, **Right Arrow**, **Left Arrow**, and **Delete** keys to navigate through the command history and to modify an existing command string.

Getting Help

In any command mode, you can get a list of available commands by entering a question mark (?).

```
switch# ?
```

To obtain a list of commands that begin with a particular character sequence, type in those characters followed immediately by the question mark (?). Do not include a space.

```
switch# co?
configure copy
```

To list keywords or arguments, enter a question mark in place of a keyword or argument. Include a space before the question mark. This form of help is called command syntax help, because it reminds you which keywords or arguments are applicable based on the commands, keywords, and arguments you have already entered.

```
switch# config ?
 terminal Configure the system from the terminal
```

Tip If you are having trouble entering a command, check the system prompt and enter the question mark (?) for a list of available commands. You might be in the wrong command mode or using incorrect syntax.

Command Completion

In any command mode, you can begin a particular command sequence and immediately press the **Tab** key to complete the rest of the command.

```
switch (config)# ro<Tab>
switch (config)# role <Tab>
switch (config)# role name
```

This form of help is called command completion, because it completes a word for you. If several options are available for the typed letters, all options that match those letters are presented:

```
switch(config)# fc<Tab>
fcalias         fcdomain       fcs
fcanalyzer      fcdroplatency  fcns           fctimer
fcc             fcinterop      fcroute
switch(config)# fcd<Tab>
fcdomain        fcdroplatency
switch(config)# fcdo<Tab>
switch(config)# fcdomain
```

Using the no and Default Forms of Commands

You can issue the **no** form of any command to perform the following actions:

- Undo a wrongly issued command.

  If you issue the **zone member** command, you can undo the results:

```
switch(config)# zone name test vsan 1
switch(config-zone)# member pwwn 12:12:12:12:12:12:12:12
switch(config-zone)# no member pwwn 12:12:12:12:12:12:12:12
WARNING: Zone is empty. Deleting zone test. Exit the submode.
switch(config-zone)#
```

- Delete a created facility

  If you want to delete a zone that you created:

```
switch(config)# zone name test vsan 1
switch(config-zone)# exit
switch(config)# no zone name test vsan 1
switch(config)#
```

  You cannot delete a zone facility called test while residing in it. You must first exit the zone submode and return to configuration mode.

Entering CLI Commands

You can configure the software in one of two ways:

- You can create the configuration for the switch interactively by issuing commands at the CLI prompt.

You can create an ASCII file containing a switch configuration and then load this file on the required system. You can then use the CLI to edit and activate the file. (Refer to the *Cisco MDS CLI Configuration Guide* for further information.)

Viewing Switch Configurations

You can view the ASCII form of the configuration file when required. To view the current configuration tree from the EXEC prompt, issue the **show running-config** command. If the running configuration is different from the startup configuration, issue the **show startup-config** command to view the ASCII version of the current startup configuration that was used to boot the switch.

You can also gather specific information on the entire switch configuration by issuing the relevant **show** commands. Configurations are displayed based a specified feature, interface, module, or VSAN. Available **show** commands for each feature are briefly described in this section and listed at the end of each chapter.

Examples 1-2 to 1-8 display a few **show** command examples.

Example 1-2 Displays Details on the Specified Interface

```
switch# show interface fc1/1
fc1/1 is up
    Hardware is Fibre Channel, 20:01:ac:16:5e:4a:00:00
    vsan is 1
    Port mode is E
```

```
    Speed is 1 Gbps
    Beacon is turned off
    FCID is 0x0b0100
      0 frames input, 0 bytes, 0 discards
      0 runts, 0 jabber, 0 too long, 0 too short
      0 input errors, 0 CRC, 0 invalid transmission words
      0 address id, 0 delimiter
      0 EOF abort, 0 fragmented, 0 unknown class
      0 frames output, 0 bytes, 0 discards
      Received 0 OLS, 0 LRR, 0 NOS, 0 loop inits
      Transmitted 0 OLS, 0 LRR, 0 NOS, 0 loop inits
```

Example 1-3 Displays the Software and Hardware Version

```
switch# show version
Cisco Storage Area Networking Operating System (SAN-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2003, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
Andiamo Systems, Inc. and/or other third parties and are used and
distributed under license. Some parts of this software are covered
under the GNU Public License. A copy of the license is available
at http://www.gnu.org/licenses/gpl.html.

Software
  BIOS:      version 1.0.8
  loader:    version 1.1(2)
  kickstart: version 2.0(1) [build 2.0(0.6)] [gdb]
  system:    version 2.0(1) [build 2.0(0.6)] [gdb]

  BIOS compile time:       08/07/03
  kickstart image file is: bootflash:///m9500-sf1ek9-kickstart-mzg.2.0.0.6.bin
  kickstart compile time:  10/25/2010 12:00:00
  system image file is:    bootflash:///m9500-sf1ek9-mzg.2.0.0.6.bin
  system compile time:     10/25/2020 12:00:00

Hardware
  RAM 1024584 kB

  bootflash: 1000944 blocks (block size 512b)
  slot0:           0 blocks (block size 512b)

  172.22.92.181 uptime is 0 days 2 hours 18 minute(s) 1 second(s)

  Last reset at 970069 usecs after Tue Sep 16 22:31:25 1980
    Reason: Reset Requested by CLI command reload
    System version: 2.0(0.6)
    Service:
```

Example 1-4 Displays the Running Configuration

```
switch# show running
Building Configuration ...
 interface fc1/1
 interface fc1/2
 interface fc1/3
 interface fc1/4
 interface mgmt0
ip address 172.22.95.112 255.255.255.0
no shutdown
vsan database
boot system bootflash:system-237; sup-1
```

```
boot kickstart bootflash:boot-237 sup-1
callhome
ip default-gateway 172.22.95.1
switchname switch
trunk protocol enable
username admin password 5 /AFDAMD4B2xK2  role network-admin
```

Example 1-5 Displays the Difference between the Running and Startup Configuration

```
switch# show running diff
Building Configuration ...
*** Startup-config
--- Running-config
****************** 1,16 ****
  fcip enable
  ip default-gateway 172.22.91.1
  iscsi authentication none
  iscsi enable
! iscsi import target fc
  iscsi virtual-target name vt
    pWWN 21:00:00:04:cf:4c:52:c1
  all-initiator-permit
--- 1,20 ----
  fcip enable
+ aaa accounting logsize 500
+
+
+
  ip default-gateway 172.22.91.1
  iscsi authentication none
  iscsi enable
! iscsi initiator name junk
  iscsi virtual-target name vt
    pWWN 21:00:00:04:cf:4c:52:c1
  all-initiator-permit
```

Example 1-6 Displays the Configuration for a Specified Interface

```
switch# show running interface fc2/9
interface fc2/9
switchport mode E
no shutdown
```

Note The **show running interface** command is different from the **show interface** command.

Example 1-7 Displays the Configuration for all Interfaces in a 16-Port Module

```
switch# show running interface fc2/10 - 12
interface fc2/10
switchport mode E
no shutdown

interface fc2/11
switchport mode E
no shutdown

interface fc2/12
switchport mode FL
no shutdown
```

Example 1-8 Displays the Configuration Per VSAN

```
switch# show runnning vsan 1
Building Configuration ...
zone name m vsan 1
  member pwwn 21:00:00:20:37:60:42:5c
  member pwwn 21:00:00:20:37:4b:00:a2
zoneset name m vsan 1
  member m
zoneset  activate name m vsan 1
```

Saving a Configuration

To save the configuration, enter the **copy running-config startup-config** command from the EXEC mode prompt to save the new configuration into nonvolatile storage. Once this command is issued, the running and the startup copies of the configuration are identical.

Refer to the *Cisco MDS CLI Configuration Guide* for further information.

Clearing a Configuration

To clear a startup configuration, enter the **write erase** command from the EXEC mode prompt. Once this command is issued, the switch's startup configuration reverts to factory defaults. The running configuration is not affected. The **write erase** command erases the entire startup configuration with the exception of any configuration that affects the loader functionality.

The **write erase boot** command only erases the configuration that affects the loader functionality. The loader functionality configuration includes the boot variables and the mgmt0 IP configuration information (IP address, netmask and default gateway).

```
switch# write erase boot
This command will erase the boot variables and the ip configuration of interface mgmt 0
```

Displaying Users

The **show users** command displays all users currently accessing the switch.

```
switch# show users
admin    pts/7        Jan 12 20:56 (10.77.202.149)
admin    pts/9        Jan 12 23:29 (modena.cisco.com)
admin    pts/11       Jan 13 01:53 (dhcp-171-71-49-49.cisco.com)
```

Sending Messages to Users

The **send** command sends a message to all active CLI users currently using the switch. This message is restricted to 80 alphanumeric characters with spaces.

This example sends a warning message to all active users about the switch being shut down.

```
switch# send Shutting down the system in 2 minutes. Please log off.

Broadcast Message from admin@excal-112
        (/dev/pts/3) at 16:50 ...
Shutting down the system in 2 minutes. Please log off.
```

Using the ping Command

The **ping** command verifies the connectivity of a remote host or server by sending echo messages.

The syntax for this command is **ping** <*host or ip address*>

```
switch# ping 171.71.181.19
PING 171.71.181.19 (171.71.181.19): 56 data bytes
64 bytes from 171.71.181.19: icmp_seq=0 ttl=121 time=0.8 ms
64 bytes from 171.71.181.19: icmp_seq=1 ttl=121 time=0.8 ms

--- 171.71.181.19 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 0.8/0.8/0.8 ms
```

To abnormally terminate a ping session, type the **Ctrl-C** escape sequence

Using traceroute

The **traceroute** command prints the routes taken by a specified host or IP address.

The syntax for this command is **traceroute** <*host or ip address*>

```
switch# traceroute www.cisco.com
traceroute to www.cisco.com (171.71.181.19), 30 hops max, 38 byte packets
 1  kingfisher1-92.cisco.com (172.22.92.2)  0.598 ms  0.470 ms  0.484 ms
 2  nubulab-gw1-bldg6.cisco.com (171.71.20.130)  0.698 ms  0.452 ms  0.481 ms
 3  172.24.109.185 (172.24.109.185)  0.478 ms  0.459 ms  0.484 ms
 4  sjc12-lab4-gw2.cisco.com (172.24.111.213)  0.529 ms  0.577 ms  0.480 ms
 5  sjc5-sbb4-gw1.cisco.com (171.71.241.174)  0.521 ms  0.495 ms  0.604 ms
 6  sjc12-dc2-gw2.cisco.com (171.71.241.230)  0.521 ms  0.614 ms  0.479 ms
 7  sjc12-dc2-cec-css1.cisco.com (171.71.181.5)  2.612 ms  2.093 ms  2.118 ms
 8  www.cisco.com (171.71.181.19)  2.496 ms *  2.135 ms
```

To abnormally terminate a traceroute session, enter **Ctrl-C**.

Setting the Switch's Shell Timeout

Use the **exec-timeout** command in configuration mode to configure the lifetime of all terminal sessions on that switch. When the time limit configured by this command is exceeded, the shell exits and closes that session. The syntax for this command from is **exec-timeout** *minutes*

The default is 30 minutes. You can configure different timeout values for a console or a virtual terminal line (VTY) session. You can set the **exec-timeout** value to 0 to disable this feature so the session remains active until you exit the switch. This change is saved in the configuration file.

- From the console:

  ```
  switch(config)# line console
  switch(config-console)# exec-timeout 60
  ```

  Specifies the current console shell timeout to be 60 minutes.

- From a VTY session (Telnet or SSH):

  ```
  switch(config)# line vty
  switch(config-line)# exec-timeout 60
  ```

  Specifies the current console shell timeout to be 60 minutes.

Displaying VTY Sessions

Use the **show line** command to display all configured VTY sessions:

```
switch# show line
line Console:
    Speed:        9600 bauds
    Databits:     8 bits per byte
    Stopbits:     1 bit(s)
    Parity:       none
    Modem In: Disable
    Modem Init-String -
        default : ATE0Q1&D2&C1S0=1\015
    Statistics:  tx:5558511     rx:5033958     Register Bits:RTS|CTS|DTR|DSR|CD|RI
line Aux:
    Speed:        9600 bauds
    Databits:     8 bits per byte
    Stopbits:     1 bit(s)
    Parity:       none
    Modem In: Disable
    Modem Init-String -
        default : ATE0Q1&D2&C1S0=1\015
    Hardware Flowcontrol: ON
    Statistics:  tx:35     rx:0     Register Bits:RTS|DTR
```

Clearing VTY Sessions

Use the **clear line** command to close a specified VTY session:

```
switch# clear line Aux
```

Setting the Switch's Terminal Timeout

Use the **terminal session-timeout** command in EXEC mode to configure the automatic logout time for the current terminal session on that switch. When the time limit configured by this command is exceeded, the switch closes that session and exits.

The syntax for this command from is **terminal session-timeout** *minutes*

The default is 30 minutes. You can set the **terminal session-timeout** value to 0 to disable this feature so the terminal remains active until you choose to exit the switch. This change is not saved in the configuration file.

```
switch# terminal session-timeout 600
```

Specifies the terminal timeout to be 600 minutes for the current session.

Setting the Switch's Terminal Type

Use the **terminal terminal-type** command in EXEC mode to specify the terminal type for a switch:

The syntax for this command is **terminal terminal-type** *terminal-type*

```
switch# terminal terminal-type vt100
```

Specifies the terminal type. The *terminal-type* string is restricted to 80 characters and must be a valid type (for example vt100 or xterm). If a Telnet or SSH session specifies an unknown terminal type, the switch uses the vt100 terminal by default.

Setting the Switch's Terminal Length

To set the terminal screen length for the current session, use the **terminal length** command in EXEC mode. This command is specific to only the console port. Telnet and SSH sessions set the length automatically.

The syntax for this command is **terminal length** *lines*

```
switch# terminal length 20
```

Sets the screen length for the current session to 20 lines for the current terminal session. The default is 24 lines.

Setting the Switch's Terminal Width

To set the terminal screen width for the current session, use the **terminal width** command in EXEC mode. This command is specific to only the console port. Telnet and SSH sessions set the width automatically.

The syntax for this command is **terminal width** *columns*

```
switch# terminal width 86
```

Sets the screen length for the current session to 86 columns for the current terminal session. The default is 80 columns.

Displaying Terminal Settings

The show terminal command displays the terminal settings for the current session:

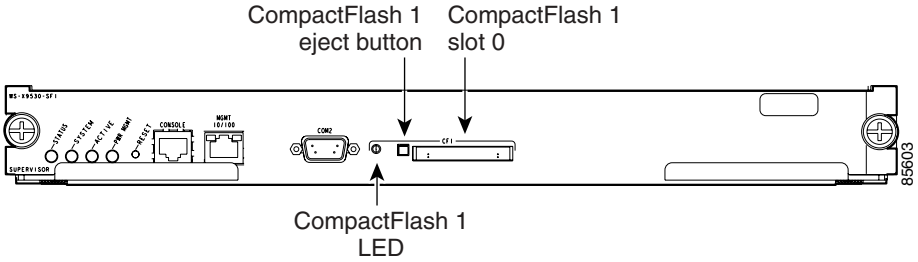
```
switch# show terminal
TTY: Type: "vt100"
Length: 24 lines, Width: 80 columns
Session Timeout: 525600 minutes
```

About Flash Devices

Every switch in the Cisco MDS 9000 Family contains one internal bootflash (see Figure 1-2). The Cisco MDS 9500 Series additionally contains one external CompactFlash called slot0 (see Figure 1-2 and Figure 1-3).

Figure 1-2 Flash Devices in the Cisco MDS 9000 Supervisor Module

Figure 1-3 External CompactFlash in the Cisco MDS 9000 Supervisor Module



Internal bootflash:

All switches in the Cisco MDS 9000 Family have one internal bootflash: that resides in the supervisor or switching module.You have access to two directories within the internal bootflash: file system.

- The volatile: directory which provides temporary storage, and is also the default. Files in temporary storage (volatile:) are erased when the switch reboots.
- The bootflash (nonvolatile storage): directory which provides permanent storage. The files in bootflash are preserved through reboots and power outages.

External CompactFlash (Slot0)

Cisco MDS 9500 Series directors contain an additional external CompactFlash called slot0:

The external CompactFlash, an optional device for MDS 9500 Series directors, can be used for storing software images, logs, and core dumps.

Formatting Flash Disks and File Systems

By formatting a flash disk or a file system, you are essentially clearing out the contents of the disk or the file system and restoring it to its factory-shipped state (see the "About Flash Devices" section on page 1-17 and "Using the File System" section on page 1-19 for additional information).

Initializing bootflash:

When a switch is shipped, the **init system** command is already performed and you do not need to issue it again. Initializing the switch resets the entire internal disk and erases all data in the bootflash: partition. The internal disk is composed of several file systems with bootflash: being one of them. All files in bootflash: are erased and you must download the system and kickstart images again. After issuing an **init system** command, you don't have to format the bootflash: again since bootflash: is automatically formatted.

Note The **init system** command also installs a new loader from the existing (running) kickstart image. You can access this command from the `switch(boot)#` prompt.

If bootflash: is found corrupted during a boot sequence, you will see the following message:

```
ERROR:bootflash: has unrecoverable error; please do "format bootflash:"
```

Use the **format bootflash:** command to only format the bootflash: file system. You can issue the **format bootflash:** command from either the `switch#` or the `switch(boot)#` prompts.

If you issue the **format bootflash:** command, you must download the kickstart and system images again.

Formatting Slot0:

Be sure to format an external CompactFlash device before using it to save files or images.

You can verify if the external CompactFlash device is formatted by inserting it into slot0: and issuing the **dir slot0:** command.

- If the external CompactFlash device is already formatted, you can see file system usage information (along with any existing files).
- If the external CompactFlash device is unformatted (corrupted), you will see the following message:

  ```
  Device unavailable
  ```

  In this case, you need to format the CompactFlash device using the **format slot0:** command.

Note The slot0: file system cannot be accessed from the standby the `loader>` prompt or the `switch(boot)#` prompt, if the disk is inserted after booting the switch.

Caution The SAN-OS software only supports Cisco-certified CompactFlash devices that are formatted using Cisco MDS switches. Using uncertified CompactFlash devices may result in unpredictable consequences; formatting CompactFlash devices using other platforms may result in errors.

Using the File System

The switch provides the following useful functions to help you manage software image files and configuration files:

- Setting the Current Directory, page 1-19
- Displaying the Current Directory, page 1-20
- Listing the Files in a Directory, page 1-20
- Creating a New Directory, page 1-20
- Deleting an Existing Directory, page 1-20
- Moving Files, page 1-21
- Copying Files, page 1-21
- Deleting Files, page 1-21
- Displaying File Contents, page 1-22
- Saving Command Output to a File, page 1-22
- Compressing and Uncompressing Files, page 1-22
- Displaying the Last Line in a File, page 1-23
- Executing Commands Specified in a Script, page 1-23
- Setting the Delay Time, page 1-24

Setting the Current Directory

The **cd** command changes the current directory level to a specified directory level. CLI defaults to the volatile: files system. This command expects a directory name input.

Tip Any file saved in the volatile: file system will be erased when the switch reboots.

The syntax for this command is **cd** *directory name*

This example changes the current directory to the mystorage directory that resides in the slot0 directory:

```
switch# cd slot0:mystorage
```

This example changes the current directory to the mystorage directory that resides in the current directory.

```
switch# cd mystorage
```

If the current directory is slot0:mydir, this command changes the current directory to slot0:mydir/mystorage.

Displaying the Current Directory

The **pwd** command displays the current directory location. This example changes the directory and displays the current directory.

```
switch# cd bootflash:
switch# pwd
bootflash:
```

Listing the Files in a Directory

The **dir** command displays the contents of the current directory or the specified directory. The syntax for this command is **dir** *directory or file name*

This example shows how to list the files on the default volatile: file system:

```
switch# dir
           Usage for volatile: filesystem
                          0 bytes total used
                   20971520 bytes free
                   20971520 bytes available
```

Creating a New Directory

The **mkdir** command creates a directory at the current directory level or at a specified directory level.

The syntax for this command is **mkdir** *directory name*

This example creates a directory called test in the slot0 directory.

```
switch# mkdir slot0:test
```

This example creates a directory called test at the current directory level.

```
switch# mkdir test
```

If the current directory is slot0:mydir, this command creates a directory called slot0:mydir/test.

Deleting an Existing Directory

The **rmdir** command deletes an existing directory at the current directory level or at a specified directory level. The directory must be empty to be deleted.

The syntax for this command is **rmdir** *directory name*

This example deletes the directory called test in the slot0 directory.

```
switch# rmdir slot0:test
```

This example deletes the directory called test at the current directory level.

```
switch# rmdir test
```

If the current directory is slot0:mydir, this command deletes the slot0:mydir/test directory.

Moving Files

The **move** command removes a file from the source directory and places it in the destination directory. If a file with the same name already exists in the destination directory, that file is overwritten by the moved file.

This example moves the file called samplefile from the slot0 directory to the mystorage directory.

```
switch# move slot0:samplefile slot0:mystorage/samplefile
```

This example moves a file from the current directory level.

```
switch# move samplefile mystorage/samplefile
```

If the current directory is slot0:mydir, this command moves slot0:mydir/samplefile to slot0:mydir/mystorage/samplefile.

Copying Files

The **copy** command copies a file.

This example copies the file called samplefile from the external CompactFlash (slot0) directory to the mystorage directory.

```
switch# copy slot0:samplefile slot0:mystorage/samplefile
```

This example copies a file from the current directory level.

```
switch# copy samplefile mystorage/samplefile
```

If the current directory is slot0:mydir, this command copies slot0:mydir/samplefile to slot0:mydir/mystorage/samplefile.
You can also use the **copy** command to upload and download files from the slot0: or bootflash: file system to or from a FTP, TFTP, SFTP, or SCP server.
Refer to the *Cisco MDS CLI Configuration Guide* for further information.

Deleting Files

The **delete** command deletes a specified file or the specified directory and all its contents. Refer to the *Cisco MDS CLI Configuration Guide* for further information.

This example shows how to delete a file from the bootflash: directory (assuming you are already in the bootflash: directory):

```
switch# delete dns_config.cfg
```

This example shows how to delete a file from an external CompactFlash (slot0):

```
switch# delete slot0:dns_config.cfg
```

This example deletes the entire `my-dir` directory and all its contents:

```
switch# delete bootflash:my-dir
```

Caution If you specify a directory, the **delete** command deletes the entire directory and all its contents.

Displaying File Contents

The **show file** command displays the contents of a specified file in the file system.

The syntax for this command is **show file** *file_name*

This example displays the contents of the test file that resides in the slot0 directory.

```
switch# show file slot0:test
config t
Int fc1/1
no shut
end
show int
```

This example displays the contents of a file residing in the current directory.

```
switch# show file myfile
```

Saving Command Output to a File

You can force all screen output to go to a file by appending **>** *filename* to any command. For example, enter **show interface > samplefile** at the EXEC mode switch prompt to save the interface configuration to *samplefile*—a file created at the same directory level. At the EXEC mode switch prompt, issue a **dir** command to view all files in this directory, including the recently saved *samplefile*.

Refer to the *Cisco MDS CLI Configuration Guide* for further information.

Note Redirection is allowed only if the current directory is on the `volatile:` (default) or `slot0:` file systems. Redirection is not allowed if the current directory is on the `bootflash:` file system. The current directory can be viewed using the **pwd** command and changed using the **cd** command.

Compressing and Uncompressing Files

The **gzip** command compresses (zips) the specified file using LZ77 coding.

This example directs the output of the show tech-support command to a file (Samplefile) and then zips the file and displays the difference in the space used up in the volatile: directory:

```
switch# show tech-support > Samplefile
Building Configuration ...
switch# dir
    1525859     Jul 04 00:51:03 2003 Samplefile
Usage for volatile://
    1527808 bytes used
   19443712 bytes free
   20971520 bytes total
switch# gzip volatile:Samplefile
switch# dir
     266069     Jul 04 00:51:03 2003 Samplefile.gz
Usage for volatile://
     266240 bytes used
   20705280 bytes free
   20971520 bytes total
```

The **gunzip** command uncompresses (unzips) LZ77 coded files.

This example unzips the file that was compressed in the previous example:

```
switch# gunzip samplefile
/volatile/samplefile.gz: No such file or directory
switch# gunzip Samplefile
switch# dir
    1525859     Jul 04 00:51:03 2003 Samplefile
Usage for volatile://
    1527808 bytes used
   19443712 bytes free
   20971520 bytes total
```

Displaying the Last Line in a File

The **tail** command displays the last lines (tail end) of a specified file.

The syntax for this command is **tail** *<file name> [<number of lines>]*

```
switch# tail mylog 10
```

You see the last 10 lines of the mylog file.

Executing Commands Specified in a Script

The **run-script** command executes the commands specified in a file. To use this command, be sure to create the file and specify commands in the required order.

Note You cannot create the script files at the switch prompt. You can create the script file on an external machine and copy it the bootflash: directory. This section assumes that the script file resides in the bootflash: directory.

The syntax for this command is **run-script** *file_name*

This example displays the CLI commands specified in the testfile that resides in the slot0 directory.

```
switch# show file slot0:testfile
conf t
interface fc 1/1
no shutdown
end
sh interface fc1/1
```

This file output is in response to the **run-script** command executing the contents in the testfile file:

```
switch# run-script slot0:testfile
'conf t'
Enter configuration commands, one per line. End with CNTL/Z.

'interface fc1/1'

'no shutdown'

'end'

'sh interface fc1/1'
fc1/1 is down (Fcot not present)
```

```
Hardware is Fibre Channel
Port WWN is 20:01:00:05:30:00:48:9e
Admin port mode is auto, trunk mode is on
vsan is 1
Beacon is turned off
Counter Values (current):
  0 frames input, 0 bytes, 0 discards
  0 runts, 0 jabber, 0 too long, 0 too short
  0 input errors, 0 CRC, 0 invalid transmission words
  0 address id, 0 delimiter
  0 EOF abort, 0 fragmented, 0 unknown class
  0 frames output, 0 bytes, 0 discards
  Received 0 OLS, 0 LRR, 0 NOS, 0 loop inits
  Transmitted 0 OLS, 0 LRR, 0 NOS, 0 loop inits
Counter Values (5 minute averages):
  0 frames input, 0 bytes, 0 discards
  0 runts, 0 jabber, 0 too long, 0 too short
  0 input errors, 0 CRC, 0 invalid transmission words
  0 address id, 0 delimiter
  0 EOF abort, 0 fragmented, 0 unknown class
  0 frames output, 0 bytes, 0 discards
  Received 0 OLS, 0 LRR, 0 NOS, 0 loop inits
  Transmitted 0 OLS, 0 LRR, 0 NOS, 0 loop inits
```

Setting the Delay Time

The **sleep** command delays an action by a specified number of seconds.

The syntax for this command is **sleep** <*seconds*>

```
switch# sleep 30
```

You will see the switch prompt return after 30 seconds.

This command is useful within scripts. For example, if you create a script called test-script:

```
switch# show file slot0:test-script
discover scsi-target remote
sleep 10
show scsi-target disk

switch# run-script slot0:test-script
```

When you execute the slot0:test-script, the switch software executes the **discover scsi-target remote** command, and then waits for 10 seconds before executing the **show scsi-target disk command**.

Role-Based CLI

By default, two roles exist in all switches:

- Network operator—Has permission to view the configuration.
- Network administrator—Has permission to execute all commands and to set up to 64 permission levels based on user roles and groups.

When you execute a command, perform command completion, or obtain context sensitive help, the switch software allows the operation to progress if you have the correct permission as specified in the description of the command.

Using Valid Formats and Ranges

Note Do not enter ellipsis (...), vertical bar (|), less or great (< >), bracket ([ ]), or braces ({ }) in command lines. These characters have special meaning in SAN-OS text strings.

Some commands require a MAC address, IP address, or IDs that must be designated in a standard format or given a range. See Table 1-4.

Table 1-4 Valid Formats and Ranges

Address	Description	Valid Format Example	Range
MAC address	6 bytes in hexadecimal format separated by colons (not case-sensitive)	00:00:0c:24:d2:Fe	—
IP address	32 bytes, written as 4 octets separated by periods (dotted decimal format) that are made up of a network section, an optional netmask section, and a host section.	126.2.54.1	—
VSAN	Integer that specifies the VSAN.	7	1 to 4093
VLAN	Integer that specifies the VLAN	11	1 to 4093
Port WWN (pWWN)	Eight hexadecimal numbers separated by colons (not case-sensitive).	12:34:56:78:9A:BC:dE:F1	—
Node WWN (nWWN)	Eight hexadecimal numbers separated by colons (not case-sensitive).	12:34:56:78:9A:BC:dE:F1	—
LUN	8 bytes in hexadecimal format separated by colons. A minimum of two hex characters are acceptable. The valid format is hhhh[:hhhh[:hhhh[:hhhh]]]	64 (100d = 64h)	—
FC ID	Six character hexadecimal value prepended by 0x.	0xabc123	—
Domain ID	Integer that specifies the domain.	7	1 to 239
Timers	Integer that specifies timers in milliseconds for latency, FC time out values (TOV).	100	0 to 2147483647
Switching module	Slot in which the applicable switching module resides.	1	1 to 15
Switch priority	Integer specifying switch priority.	5	1 to 254
Channel group	Integer that specifies a PortChannel group addition.	1	1 to 100
Fabric Shortest Path First (FSPF)	Integer that specifies the hold time (in milliseconds) before making FSPF computations.	1000	0 to 65535
Fabric Analyzer	The allowed range for the frame size limit in bytes.	64	64 to 65536
Fabric Analyzer captures	An example of 10 frames, limits the number of frames captured to 10.	10	0 to 2147483647
FCIP profile	Integer that specifies the FCIP profile	101	1 to 255
TCP retransmit time	Integer that specifies the minimum retransmit time for the TCP connection in milliseconds	300	250 to 5000

Table 1-4 Valid Formats and Ranges (continued)

Address	Description	Valid Format Example	Range
Keepalive timeout	Integer that specifies the TCP connection's keepalive timeout in seconds.	60	1 to 7200
TCP retransmissions	Integer that specifies the maximum number of TCP transmissions.	6	1 to 8
PMTU	Integer that specifies the path MTU reset time in seconds	90	60 to 3600
TCP buffer size	Integer that specifies the advertised TCP buffer size in KB.	5000	0 to 8192
Traffic burst size	Integer that specifies the maximum burst size in KB.	30	10 to 100
Peer TCP port	Integer that specifies the TCP port number	3000	0 to 65535
Acceptable time difference	Integer that specifies the acceptable time difference in milliseconds for a packet being accepted.	4000	1 to 60,000
iSCSI pWWN allocation	Integer that specifies the number of pWWNs that must be allocated to an iSCSI initiator.	2	1 to 64
CDP refresh and hold time	Integer that specifies the refresh time interval and the hold time in seconds for the CDP protocol.	60	5 to 255

A Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- aaa accounting logsize, page 2-2
- aaa accounting default, page 2-3
- aaa authentication login, page 2-4
- aaa authentication dhchap default, page 2-6
- aaa authentication iscsi default, page 2-7
- aaa group server, page 2-8
- active equals saved, page 2-9
- arp, page 2-10
- attach module, page 2-11

aaa accounting logsize

Use the **aaa accounting logsize** command to set the size of the local accounting log file. Use the no form of the command to revert to the default logsize 15000 bytes.

aaa accounting logsize *integer*

no aaa accounting logsize

Syntax Description

aaa accounting	Configures accounting methods
logsize	Configures local accounting log file size (in bytes).
integer	Sets the size limit of the local accounting log file in bytes from 0 to 35000.

Defaults

15,000

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example shows the log file size configured at 29000 bytes.

```
switch# config t
switch(config)# aaa accounting logsize 29000
```

Related Commands

Command	Description
show accounting logsize	Displays the configured log size.
show accounting log	Displays the entire log file.

aaa accounting default

Use the **aaa accounting default** command to configure the accounting method. Use the **no** form of the command to revert to the default local accounting.

aaa accounting default {**group** *group-name* [**none**] | **none**} | **local** [**none**] | **none**}

no aaa accounting default {**group** *group-name* [**none**] | **none**} | **local** [**none**] | **none**}

Syntax Description

group *group-name*	Specifies the group authentication method. The group name is a maximum of 127 characters.
local	Specifies the local authentication method.
none	No authentication, everyone permitted.

Defaults

Local accounting.

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Specify the currently configured command preceded by a **no** in order to revert to the factory default.

Examples

The following example enables accounting to be performed using remote TACACS+ servers which are member of the group called TacServers, followed by the local accounting method.

```
switch# config t
switch(config)# aaa accounting default group TacServer
```

The following example turns off accounting.

```
switch(config)# aaa accounting default none
```

The following example reverts to the local accounting (default).

```
switch(config)# no aaa accounting default group TacServer
```

Related Commands

Command	Description
show aaa accounting	Displays the configured accounting methods.

aaa authentication login

To configure the authentication method for a login, use the **aaa authentication login** command in configuration mode. Use the **no** form of this command to revert to local authentication.

aaa authentication login {**default** {**group** *group-name* [**none**] | **none**} | **local** [**none**] | **none**} | **console** {*group-name* [**none**] | **none**} | **local** [**none**] | **none**}| **error-enable**}

no aaa authentication login {**default** {**group** *group-name* [**none**] | **none**} | **local** [**none**] | **none**} | **console** {*group-name* [**none**] | **none**} | **local** [**none**] | **none**}| **error-enable**}

Syntax Description

default	Configures the default method.
console	Configures the console authentication login method.
group *group-name*	Specifies the group name. The group name is a maximum of 127 characters.
local	Specifies the local authentication method.
none	No authentication, everyone permitted.
error-enable	Configures login error message display enable.

Defaults

local user name authentication.

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Use the **console** option to override the console login method.

Specify the currently configured command preceded by a **no** in order to revert to the factory default.

Examples

The following example enables all login authentication to be performed using remote TACACS+ servers which are member of the group called TacServers, followed by the local login method.

```
switch# config t
switch(config)# aaa authentication login default group TacServer
```

The following example enables console authentication to use the group called TacServers, followed by the local login method.

```
switch(config)# aaa authentication login console group TacServer
```

The following example turns off password validation.

```
switch(config)# aaa authentication login default none
```

The following example reverts to the local authentication method (default).

```
switch(config)# no aaa authentication login default group TacServer
```

Related Commands

Command	Description
show aaa authentication	Displays the configured authentication methods.

aaa authentication dhchap default

To configure DHCHAP authentication method, use the **aaa authentication dhchap default** command in configuration mode. Use the **no** form of this command to revert to factory defaults.

aaa authentication dhchap default {**group** *group-name* [**none**] | **none**} | **local** [**none**] | **none**}}

no aaa authentication dhchap default {**group** *group-name* [**none**] | **none**} | **local** [**none**] | **none**}

Syntax Description

group *group-name*	Specifies the group name authentication method. The group name is a maximum of 127 characters.
local	Specifies local user name authentication (default).
none	Specifies no authentication.

Defaults

local user name authentication.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The **local** option disables other authentication methods and configures local authentication to be used exclusively.

Specify the currently configured command preceded by a **no** in order to revert to the factory default.

Examples

The following example enables all DHCHAP authentication to be performed using remote TACACS+ servers which are member of the group called TacServers, followed by the local authentication.

```
switch# config t
switch(config)# aaa authentication dhchap default group TacServer
```

The following example reverts to the local authentication method (default).

```
switch(config)# no aaa authentication dhcahp default group TacServer
```

Related Commands

Command	Description
show aaa authentication	Displays the configured authentication methods.

aaa authentication iscsi default

To configure iSCSI authentication method, use the **aaa authentication iscsi default** command in configuration mode. Use the **no** form of this command to negate the command or revert to factory defaults.

aaa authentication iscsi default {**group** *group-name* [**none**] | **none**} | **local** [**none**] | **none**}}

no aaa authentication iscsi default {**group** *group-name* [**none**] | **none**} | **local** [**none**] | **none**}}

Syntax Description

group *group-name*	Specifies the group name. The group name is a maximum of 127 characters.
local	Specifies local user name authentication (default).
none	Specifies no authentication.

Defaults

Local user name authentication.

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The **local** option disables other authentication methods and configures local authentication to be used exclusively.

Specify the currently configured command preceded by a **no** in order to revert to the factory default.

Examples

The following example enables all iSCSI authentication to be performed using remote TACACS+ servers which are member of the group called TacServers, followed by the local authentication.

```
switch# config t
switch(config)# aaa authentication iscsi default group TacServer
```

The following example reverts to the local authentication method (default).

```
switch(config)# no aaa authentication iscsi default group TacServer
```

Related Commands

Command	Description
show aaa authentication	Displays the configured authentication methods.

aaa group server

To configure one or more independent server groups, use the **aaa group server** command in configuration mode. Use the **no** form of this command to remove the server group.

aaa group server {**radius** | **tacacs+**} *group-name*
server *server-name*
no server *server-name*

no aaa group server {**radius** | **tacacs+**} *group-name*

Syntax Description

radius	Specifies the RADIUS server group.
tacacs+	Specifies the TACACS+ server group.
group-name	Identifies the specified group of servers with a user-defined name. The name is limited to 64 alphanumeric characters.
server *server-name*	Specifies the server name to add or remove from the server group.

Defaults

None.

Command Modes

Configuration.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

You can configure these server groups at any time but they only take effect when you apply them to a AAA service using the **aaa authentication login** or the **aaa accounting** commands.

Examples

You can configure these server groups at any time but they only take effect when you apply them to a AAA service using the **aaa authentication** or the **aaa accounting** commands.

```
switch# config t
switch(config)# aaa group server tacacs+ TacacsServer1
switch(config-tacacs+)# server ServerA
switch(config-tacacs+)# exit
switch(config)# aaa group server radius RadiusServer19
switch(config-radius)# server ServerB
switch(config-radius)# no server ServerZ
```

Related Commands

Command	Description
show aaa groups	Displays all configured server groups.
show radius-server groups	Displays configured RADIUS server groups
show tacacs-server groups	Displays configured TACACS server groups

active equals saved

Enable the **active equals saved** command to automatically write any changes to the block, prohibit or port address name to the IPL file. To disable the configuration or to revert to factory defaults, use the **no** form of the command.

active equals saved

no active equals saved

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled.

Command Modes

FICON configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Enabling **active equals saved** ensures that you do not have to perform the **copy running-config startup-config** command to save the FICON configuration as well as the running configuration. If your switch or fabric consists of multiple FICON-enabled VSANs, and one of these VSANs has **active equals saved** enabled, changes made to the non-FICON configuration causes all FICON-enabled configurations to be saved to the IPL file.

Refer to the *Cisco MDS 9000 Family Configuration Guide* for further information.

Examples

The following example enables the automatic save feature for a VSAN.

```
switch(config)# ficon vsan 2
switch(config-ficon)# active equals saved
```

The following example disables the automatic save feature for this VSAN.

```
switch(config-ficon)# no active equals saved
```

Related Commands

Command	Description
copy running-config startup-config	Saves the running configuration to the startup configuration.
ficon vsan *vsan-id*	Enables FICON on the specified VSAN.
show ficon	Displays configured FICON details.

arp

To enable the Address Resolution Protocol (ARP) for the switch, use the **arp** command.To disable the Address Resolution Protocol (ARP) for the switch, use the **no arp** command.

arp *hostname*

no arp *hostname*

Syntax Description

hostname	Name of the host. Maximum length is 20 characters.

Defaults

Enabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example disables the Address Resolution Protocol configured for the host with the IP address 10.1.1.1.

```
switch(config)# no arp 10.1.1.1
switch(config)#
```

Related Commands

Command	Description
show arp	Displays the ARP table.
clear arp	Deletes a specific entry or all entries from the ARP table.

attach module

To connect to a specific module, use the **attach module** command in EXEC mode.

attach module *slot-number*

Syntax Description

slot-number	Specifies slot number of the module to which to connect.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

You can use the **attach module** command to view the standby supervisor module information, but you cannot configure the standby supervisor module using this command.

You can also use the **attach module** command on the switching module portion of the Cisco MDS 9216 supervisor module, which resides in slot 1 of this two-slot switch.

To disconnect, use the **exit** command at the `module-number#` prompt, or type **$.** to forcibly abort the attach session.

Examples

The following example connects to the module in slot 2. Note that after you connect to the image on the module using the **attach module** command, the prompt changes to module-number#.

```
switch# attach module 1
Attaching to module 1 ...
To exit type 'exit', to abort type '$.'
module-1# exit
switch#
```

Related Commands

Command	Description
exit	Disconnects from the module.
show module	Displays the status of a module.

B Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- banner motd, page 3-2
- boot, page 3-4
- bport, page 3-6
- bport-keepalive, page 3-7

banner motd

To configure a message of the day (MOTD) banner, use the **banner motd** command in configuration mode.

banner motd [*delimiting-character message delimiting-character*]

no banner motd [*delimiting-character message delimiting-character*]

Syntax Description

delimiting-character	Identifies the delimiting character.
message	Specifies the banner message that is restricted to 40 lines with a maximum of 80 characters in each line.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(4).

Usage Guidelines

The configured MOTD banner is displayed before the login prompt on the terminal whenever a user logs in to a Cisco MDS 9000 Family switch.

Follow these guidelines when choosing your delimiting character:

- Do not use the *delimiting-character* in the *message* string.
- Do not use **"** and **%** as delimiters.

You can include tokens in the form $(token) in the message text. Tokens will be replaced with the corresponding configuration variable. For example:

- `$(hostname)` displays the host name for the switch
- `$(line)` displays the vty or tty line no or name
- The $(line-desc) and $(domain) tokens are not supported.

Examples

The following example configures a banner message with the following text “Testing the MOTD Feature.”

```
switch# config t
switch(config)# banner motd # Testing the MOTD Feature. #
```

The following example spans multiple lines and uses tokens to configure the banner message:

```
switch# config t
switch(config)# banner motd #
Enter TEXT message. End with the character '#'.
Welcome to switch $(hostname).
You tty line is $(line).
#
```

Related Commands

Command	Description
show banner motd	Displays the configured banner message.

boot

To perform operations on the system, use the **boot** command in configuration mode. Use the **no** form of this command to negate this feature or return to factory defaults.

boot {**asm-sfn** {**bootflash: | slot0: | tftp:**}[*image*] **[module** [*slot-number*]] **|**
auto-copy |
kickstart {**bootflash: | slot0: | tftp:**}[*image*] **[sup-1 [sup-2] | sup-2] |**
lasilc {**bootflash: | slot0: | tftp:**}[*image*] **[module** [*slot-number*]] **|**
system {**bootflash: | slot0: | tftp:**}[*image*] **[sup-1 [sup-2] | sup-2]**}

no boot {**asm-sfn | auto-copy | kickstart | lasilc | system**}

Syntax Description

asm-sfn	Configures the virtualization image.
module *slot-number*	Specifies the slot number of the ASM.
auto-copy	Configures auto-copying of boot variable images.
kickstart	Configures the kickstart image.
lasilc	Configures the boot image.
system	Configures the system image.
bootflash:	Specifies system image URI for bootflash.
slot0:	Specifies system image URI for slot 0.
tftp:	Specifies system image URI for TFTP.
image	Specifies the image file name.
sup-1	The upper supervisor.
sup-2	The lower supervisor.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.2(2).

Usage Guidelines

The **boot kickstart slot0:***image* command is currently not allowed. For kickstart, only bootflash: is allowed.

Whenthe **boot auto-copy** command is issued, the system copies the boot variable images which are local (present) in the active supervisor module (but not in the standby supervisor module) to the standby supervisor module. For kickstart and system boot variables, only those images that are set for the standby supervisor module are copied. For modules (line card) images, all modules present in standby's corresponding locations (bootflash: or slot0:) will be copied.

Examples

The following example adds the new system image file to the SYSTEM environment variable.

```
switch(config)# boot system bootflash:system.img
```

The following example boots from the CompactFlash device (slot0:). The switch updates the SYSTEM environment variable to reflect the new image file in the specified Flash device.

```
switch(config)# boot system slot0:system.img
```

The following example overwrites the old Kickstart environment variable in the configuration file:

```
switch(config)# boot kickstart bootflash:kickstart.img
```

The following example specifies the ASM image to be used:

```
switch(config)# boot asm-sfn bootflash:m9000-ek9-asm-sfn-mz.1.2.2.bin
```

The following example enables automatic copying of boot variables from the active supervisor module to the standby supervisor module.

```
switch(config)# boot auto-copy
```

The following example disables the automatic copy feature (default).

```
switch(config)# no boot auto-copy
```

Related Commands

Command	Description
show boot	Displays the configured boot variable information.

bport

To configure a B port mode on a FCIP interface, use the **bport** option. To disable a B port mode on a FCIP interface, use the **no** form of the command.

bport

no bport

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled

Command Modes

Interface onfiguration submode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# bport
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.
bport-keepalive	Configures B port keepalive responses.

bport-keepalive

To configure keepalive responses for B port FCIP interfaces, use the **bport-keepalive** option. To disable keepalive responses for B port FCIP interfaces, use the **no** form of the command.

bport-keepalive

no bport-keepalive

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled

Command Modes

Interface configuration submode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# bport-keepalives
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.
bport	Configures a B port FCIP interface.

C Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "About the CLI Command Modes" section on page 1-3 to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- callhome, page 4-3
- callhome test, page 4-7
- cd, page 4-8
- cdp, page 4-9
- cimserver, page 4-11
- clear arp-cache, page 4-13
- clear cdp, page 4-14
- clear cores, page 4-15
- clear counters, page 4-16
- clear debug-logfile, page 4-17
- clear fabric-binding statistics, page 4-18
- clear fcanalyzer, page 4-19
- clear fcflow stats, page 4-20
- clear fcns statistics, page 4-21
- clear fcs statistics, page 4-22
- clear ficon, page 4-23
- clear fspf counters, page 4-24
- clear ips arp, page 4-26
- clear ivr zone database, page 4-27
- clear license, page 4-28
- clear line, page 4-29
- clear logging, page 4-30
- clear ntp statistics, page 4-31
- clear port-security, page 4-32
- clear processes log, page 4-33

- clear qos statistics, page 4-34
- clear rlir, page 4-35
- clear rscn statistics, page 4-36
- clear screen, page 4-37
- clear ssh hosts, page 4-38
- clear system reset-reason, page 4-39
- clear arp-cache, page 4-13
- clear user, page 4-41
- clear vrrp, page 4-42
- clear zone, page 4-43
- clock, page 4-44
- code-page, page 4-46
- configure terminal, page 4-49
- configure terminal, page 4-49
- copy, page 4-50
- copy licenses, page 4-53

callhome

To configure the Call Home function, use the **callhome** command in configuration mode. To set a command back to its factory defaults or negate the command, use the **no** form of the command.

callhome -->
contract-id *contract-id* |
customer-id *customer-id* |
destination-profile {*profile-name* | **full-txt-destination** | **short-txt-destination** | **xml-destination**} {**alert-group** {**all** | **avanti** | **cisco-tac** | **environmental** | **inventory** | **license** | **linecard-hardware** | **supervisor-hardware** | **syslog-group-port** | **system** | **test** } | **email-addr** *email-address* | **message-level** *level* | **message-size** *size*} |
disable |
enable |
email-contact *email-address* |
phone-contact *number* |
site-id *site-number* |
streetaddress *street-address* |
switch-priority *priority-value* |
transport email {**from** *email-address* | **reply-to** *email-address* | **smtp-server** *ip address* [**port** *port-number*]}

callhome -->
no contract-id *contract-id* |
no customer-id *customer-id* |
no destination-profile {*profile-name* | **full-txt-destination** | **short-txt-destination** | **xml-destination**} {**alert-group** {**all** | **avanti** | **cisco-tac** | **environmental** | **inventory** | **license** | **linecard-hardware** | **supervisor-hardware** | **syslog-group-port** | **system** | **test** } | **email-addr** *email-address* | **message-level** *level* | **message-size** *size*} |
no disable |
no enable |
no email-contact *email-address* |
no phone-contact *number* |
no site-id *site-number* |
no streetaddress *street-address* |
no switch-priority *priority-value* |
no transport email {**from** *email-address* | **reply-to** *email-address* | **smtp-server** *ip address* [**port** *port-number*]}

Syntax Description

contract-id *contract-id*	(Optional). Configures service contract ID of the customer. Allows up to 64 characters for contract number.
customer-id *customer-id*	(Optional). Configures the customer ID for the switch. Allows customer ID up to 64 alphanumeric characters in free format.
destination-profile	(Optional) Configures a destination e-mail address for a message sent in full text format. This text provides the complete, detailed explanation of the failure.
profile-name	Configures a user-defined user profile with a maximum of 32 alphanumeric characters.
alert-group	Specifies one or more of the alert groups
all	Specifies an alert group consisting of all CallHome messages.

avanti	Specifies an alert group consisting of events which are meant only for Avanti.
cisco-tac	Specifies an alert group consisting of events which are meant only for Cisco TAC.
environmental	Specifies an alert group consisting of power, fan, temperature-related events
inventory	Specifies an alert group consisting of inventory status events.
license	Specifies an alert group consisting of license status events.
linecard-hardware	Specifies an alert group consisting of module-related events.
supervisor-hardware	Specifies an alert group consisting of supervisor related events.
syslog-port-group	Specifies an alert group consisting of syslog port group status events.
system	Specifies an alert group consisting of software related events.
test	Specifies an alert group consisting of user-generated test events.
email-addr *email-address*	Configures email address. Uses a standard e-mail address that does not have any text size restrictions.
message-level *level*	Configures a message urgency level. Allows from 0 (lowest level of urgency) to 9 (highest level of urgency), and the default is 0 (all Call Home message are sent).
message-size *size*	Configures a destination message size for a message sent in full text format. Allows from 0 to 1,000,000 bytes for the message size and the default is 500,000. A value of 0 implies that a message of any size can be sent
full-txt-destination	Configures destination profile for plain text message.
short-txt-destination	(Optional). Configures a destination for a short text message.
xml-destination	(Optional). Configures destination profile for XML message.
disable	Disables callhome.
email-contact *email-address*	(Optional). Configures the customer's e-mail address. Allows up to 128 alphanumeric characters in e-mail address format.
enable	Enables callhome.
phone-contact *number*	(Optional). Configures the customer's phone number. Allows up to 20 alphanumeric characters international phone format. **Note** Do not use spaces. Use the **+** prefix before the number.
site-id *site number*	(Optional). Identifies the unit to the outsourced throughput. Allows up to 256 alphanumeric characters in free format.
streetaddress *street-address*	(Optional). Configures the customer's street address where the equipment is located. Allows up to 256 alphanumeric characters in free format for the street number, city, state, and zip (combined).
switch-priority *priority-value*	(Optional). Configures the switch priority. Specifies a priority value. 0 is the highest priority and 7 the lowest.
transport	Optional. Configure the e-mail address from the user.
email	Configure the e-mail address from the user.
from *email-address*	Configure from email address. Provide from email address, example: SJ-9500-1@xyz.com. The maximum size is 255 characters.
reply-to *email-address*	Configure reply to email address. Provide reply-to email address, example: admin@xyz.com. The maximum size is 255 characters.

smtp-server *ip address*	Configure SMTP server address. The SMTP server (DNS name or IP address) . The maximum size is 255 characters.
port *port-number*	(Optional). Changes depending on the server location. The port usage defaults to 25 if no port number is specified.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The Call Home configuration commands available in the `(config-callhome)` submode.

A CallHome message is used to contact a support person or organization in case an urgent alarm is raised.

Once you have configured the contact information, you must enable the Call Home function. The **enable** command is required for the Call Home function to start operating. When you disable the Call Home function, all input events are ignored.

Note Even if Call Home is disabled, basic information for each Call Home event is sent to syslog.

Examples

The following examples assign contact informations:

```
switch# config t
switch# snmp-server contact personname@companyname.com
switch(config)# callhome
switch(config-callhome)# email-contact username@company.com
switch(config-callhome)# phone-contact +1-800-123-4567
switch(config-callhome)# streetaddress 1234 Picaboo Street, Any city, Any state, 12345
switch(config-callhome)# switch-priority 0
switch(config-callhome)# customer-id Customer1234
switch(config-callhome)# site-id Site1ManhattanNY
switch(config-callhome)# contract-id Company1234
```

The following example configures full-text destination profiles:

```
switch(config-callhome)# destination-profile full-txt-destination email-addr
person@place.com
switch(config-callhome)# destination-profile full-txt-destination message-size 1000000
```

The following example configures short-text destination profiles:

```
switch(config-callhome)# destination-profile short-txt-destination email-addr
person@place.com
switch(config-callhome)# destination-profile short-txt-destination message-size 100000
```

The following example configures the from and reply-to e-mail addresses:

```
switch(config-callhome)# transport email from user@company1.com
switch(config-callhome)# transport email reply-to person@place.com
```

The following example configures the SMTP server and ports:

```
switch(config-callhome)# transport email smtp-server 192.168.1.1
switch(config-callhome)# transport email smtp-server 192.168.1.1 port 30
```

The following example enables and disables the CallHome function:

```
switch(config-callhome)# enable
switch(config-callhome)# disable
```

The following example configures a user-defined destination profile called *test*.

```
switch(config-callhome)# destination-profile test
switch(config-callhome)# destination-profile test alert-group all
switch(config-callhome)# destination-profile test alert-group Cisco-TAC
switch(config-callhome)# destination-profile test alert-group Environmental
switch(config-callhome)# destination-profile test alert-group Inventory
switch(config-callhome)# destination-profile test alert-group Linecard-Hardware
switch(config-callhome)# destination-profile test alert-group Supervisor-Hardware
switch(config-callhome)# destination-profile test alert-group test
switch(config-callhome)# destination-profile test email-addr
switch(config-callhome)# destination-profile test email-addr user@company.com
switch(config-callhome)# destination-profile test format full-txt
switch(config-callhome)# destination-profile test message-level 5
switch(config-callhome)# destination-profile test message-size 100000
```

Related Commands

Command	Description
callhome test	Sends a dummy test message to the configured destination(s).
show callhome	Displays configured Call Home information.

callhome test

To simulate a CallHome message generation, use the **callhome test** command.

callhome test [**inventory**]

Syntax Description

inventory	Sends a dummy CallHome inventory.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

You can simulate a message generation by issuing a **callhome test** command.

Examples

The following example sends a test message to the configured destination(s):

```
switch# callhome test
trying to send test callhome message
successfully sent test callhome message
```

The following example sends a test inventory message to the configured destination(s)

```
switch# callhome test inventory
trying to send test callhome message
successfully sent test callhome message
```

Related Commands

Command	Description
callhome	Configures Call Home functions.
show callhome	Displays configured Call Home information.

cd

To change the default directory or file system, use the **cd** command.

cd {*directory* | **bootflash:**[*directory*] | **slot0:**[*directory*] | **volatile:**[*directory*]}

Syntax Description

directory	Name of the directory on the file system.
bootflash:	URI or alias of the bootflash or file system.
slot0:	URI or alias of the slot0 file system.
volatile:	URI or alias of the volatile file system.

Defaults

The initial default file system is flash:. For platforms that do not have a physical device named flash:, the keyword flash: is aliased to the default Flash device.

If you do not specify a directory on a file system, the default is the root directory on that file system.

Command Modes

EXEC mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

For all EXEC commands that have an optional file system argument, the system uses the file system specified by the **cd** command when you omit the optional file system argument. For example, the **dir** command, which displays a list of files on a file system, contains an optional file system argument. When you omit this argument, the system lists the files on the file system specified by the **cd** command.

Examples

The following example sets the default file system to the Flash memory card inserted in slot 0:

```
switch# pwd
bootflash:/
switch# cd slot0:
switch# pwd
slot0:/
```

Related Commands

Command	Description
copy	Copies any file from a source to a destination.
delete	Deletes a file on a Flash memory device.
dir	Displays a list of files on a file system.
pwd	Displays the current setting of the cd command.
show file systems	Lists available file systems and their alias prefix names.
undelete	Recovers a file marked deleted on a Class A or Class B Flash file system.

cdp

Use the **cdp** command to globally configure the Cisco Discovery Protocol parameters. Use the **no** form of this command to revert to factory defaults.

cdp {**enable** | **advertise** {**v1** | **v2**} | **holdtime** *holdtime-seconds* | **timer** *timer-seconds*}

no cdp {**enable** | **advertise** | **holdtime** *holdtime-seconds* | **timer** *timer-seconds*}

Syntax Description

enable	Enables CDP globally on all interfaces on the switch.
advertise	Specifies the EXEC command to be executed.
v1	Specifies CDP version 1.
v2	Specifies CDP version 2.
holdtime	Sets the hold time advertised in CDP packets.
holdtime-seconds	Specifies the holdtime in seconds. The default is 180 seconds and the valid range is from 10 to 255 seconds.
timer	Sets the refresh time interval.
timer-seconds	Specifies the time interval in seconds. The default is 60 seconds and the valid range is from 5 to 255 seconds.

Defaults

CDP is enabled.

The hold time default interval is 180 seconds.

The refresh time interval is 60 seconds.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Use the **cdp enable** command to enable the Cisco Discovery Protocol (CDP) feature at the switch level or at the interface level. Use the **no** form of this command to disable this feature. When the interface link is established, CDP is enabled by default

CDP version 1 (v1) and version 2 (v2) are supported in Cisco MDS 9000 Family switches. CDP packets with any other version number are silently discarded when received.

Examples

The following example disables the CDP protocol on the switch. When CDP is disabled on an interface, one packet is sent to clear out the switch state with each of the receiving devices.

```
switch(config)# no cdp enable
Operation in progress. Please check global parameters
switch(config-console)#
```

The following example enables (default) the CDP protocol on the switch. When CDP is enabled on an interface, one packet is sent immediately. Subsequent packets are sent at the configured refresh time

```
switch(config)# cdp enable
Operation in progress. Please check global parameters
switch(config)#
```

The following example configures the Gigabit Ethernet interface 8/8 and disables the CDP protocol on this interface. When CDP is disabled on an interface, one packet is sent to clear out the switch state with each of the receiving devices.

```
switch(config)# interface gigbitethernet 8/8
switch(config-if)# no cdp enable
Operation in progress. Please check interface parameters
switch(config-console)#
```

The following example enables (default) the CDP protocol on the selected interface. When CDP is enabled on this interface, one packet is sent immediately. Subsequent packets are sent at the configured refresh time.

```
switch(config-if)# cdp enable
Operation in progress. Please check interface parameters
switch(config)#
```

The following example globally configures the refresh time interval for the CDP protocol in seconds. The default is 60 seconds and the valid range is from 5 to 255 seconds.

```
switch# config terminal
switch(config)# cdp timer 100
switch(config)#
```

The following example globally configures the hold time advertised in CDP packet in seconds. The default is 180 seconds and the valid range is from 10 to 255 seconds.

```
switch# config terminal
switch(config)# cdp holdtime 200
switch(config)#
```

The following example globally configures the CDP version. The default is version 2 (v2). The valid options are v1 and v2

```
switch# config terminal
switch(config)# cdp advertise v1
switch(config)#
```

Related Commands

Command	Description
clear cdp	Clears global or interface-specific CDP configurations.
show cdp	Displays configured CDP settings and parameters.

cimserver

Use the **cimserver** command to configure the Common Information Models (CIM) parameters. Use the **no** form of this command to revert to factory defaults.

cimserver
{**certificate** {**bootflash:***filename* | **slot0:***filename* | **volatile:***filename*} |
clearcertificate *filename* |
enable |
enablehttp |
enablehttps}

no cimserver
{**certificate** {**bootflash:***filename* | **slot0:***filename* | **volatile:***filename*} |
clearcertificate *filename*
enable
enablehttp
enablehttps}

Syntax Description

certificate	Installs the Secure Socket Layer (SSL) certificate
bootflash:	Specifies the location for internal bootflash memory.
slot0:	Specifies the location for the CompactFlash memory or PCMCIA card.
volatile:	Specifies the location for the volatile file system.
filename	The name of the license file with a .pem extention.
clearcertificate	Clears a previously-installed SSL certificate.
enable	Enables and starts the CIM server.
enablehttp	Enables the HTTP (non-secure) protocol for the CIM server—(default).
enablehttps	Enables the HTTPS (secure) protocol for the CIM server.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

A CIM client is required to access the CIM server. The client can be any client that supports CIM.

Examples

The following example installs a Secure Socket Layer (SSL) certificate specified in the file named with a .pem extention.

```
switch# config t
switch(config)# cimserver certificateName bootflash:simserver.pem
```

The following example clears the specified SSL certificate.

```
switch(config)# cimserver clearCertificateName bootflash:simserver.pem
```

The following example enables HTTPS (secure protocol).

```
switch(config)# cimserver enablehttps
```

The following example disables HTTPS (default).

```
switch(config)# no cimserver enablehttps
```

The following example

```
switch(config)# cimserver enable
```

The following example disables the CIM server (default).

```
switch(config)# no cimserver enable
```

The following example enables HTTP and reverts to the switch default.

```
switch(config)# cimserver enablehttp
```

The following example disables HTTP and reverts to the switch default.

```
switch(config)# no cimserver enablehttp
```

Related Commands

Command	Description
show csimserver	Displays configured CIM settings and parameters.

clear arp-cache

To clear the ARP cache table entries, use the **clear arp-cache** command in EXEC mode.

clear arp-cache

Syntax Description

This command has no arguments or keywords.

Defaults

The ARP table is empty by default.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Examples

The following example shows how to clear the arp-cache table entries.

```
switch# clear arp-cache
```

Related Commands

Command	Description
show arp	Displays Address Resolution Protocol (ARP) entries.

clear cdp

Use the **clear cdp** command to delete global or interface-specific CDP configurations.

clear cdp {**counters** | **table**} **[interface** {**gigabitethernet** *slot*/*port* | **mgmt 0**}**]**

Syntax Description

counters	Enables CDP on globally or on a per-interfaces basis.
table	Specifies the EXEC command to be executed.
interface	Displays CDP parameters for an interface.
gigabitethernet	Specifies the Gigabit Ethernet interface.
slot/*port*	Specifies the slot number and port number separated by a slash (/).
mgmt 0	Specifies the Ethernet management interface.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

You can issue this command for a specified interface or for all interfaces (management and Gigabit Ethernet interfaces)

Examples

The following example clears CDP traffic counters for all interfaces.

```
switch# clear cdp counters
switch#
```

The following example clears CDP entries for the specified Gigabit Ethernet interface.

```
switch# clear cdp table interface gigabitethernet 4/1
switch#
```

Related Commands

Command	Description
cdp	Configures global or interface-specific CDP settings and parameters.
show cdp	Displays configured CDP settings and parameters.

clear cores

To clear all core dumps for the switch, use the **clear cores** command in EXEC mode.

clear cores

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The system software keeps the last few cores per service and per slot and clears all other cores present on the active supervisor module.

Examples

The following example shows how to clear all core dumps for the switch.

```
switch# clear cores
```

Related Commands

Command	Description
show cores	Displays core dumps that have been made.

clear counters

To clear the interface counters, use the **clear counters** command in EXEC mode.

clear counters { all | interface {fc | mgmt | port-channel | sup-fc | vsan} *number*}

Syntax Description

all	Clears all interface counters.
interface	Clears interface counters for the specified interface.
type	Specifies the interface type. See the Keywords table in the “Usage Guidelines” section.
number	Specifies the number of the slot or interface being cleared.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The following table lists the keywords and number ranges for the **clear counters** interface types:

Keyword	Interface Type	Number
fc	Fibre Channel	1- 2 or 1 - 9 (slot)
gigabitethernet	Gigabit Ethernet	1- 2 or 1 - 9 (slot)
mgmt	Management	0-0 (management interface)
port-channel	PortChannel	1-128 (PortChannel)
sup-fc	Inband	0-0 (Inband interface)
vsan	VSAN	1- 4093 (VSAN ID)

This command clears counter displayed in the **show interface** command output.

Examples

The following example shows how to clear counters for a VSAN interface.

```
switch# clear counters interface vsan 13
```

Related Commands

Command	Description
show interface	Displays interface information.

clear debug-logfile

To delete the debug logfile, use the **clear debug-logfile** command in EXEC mode.

clear debug-logfile *filename*

Syntax Description

filename	The name (restricted to 80 characters) of the log file to be cleared. The maximum size of the log file is 1024 bytes.

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Examples

The following example shows how to clear the debug logfile.

```
switch# clear debug-logfile debuglog
```

Related Commands

Command	Description
show debug logfilw	Displays the logfile contents.

clear fabric-binding statistics

To clear fabric binding statistics in a FICON enabled VSAN, use the **clear fabric-binding statistics** command in EXEC mode.

clear fabric-binding statistics vsan *vsan-id*

Syntax Description

vsan *vsan-id*	Specifies the FICON-enabled VSAN. The ID of the VSAN is from 1 to 4093.

Defaults

None

Command Modes

EXEC mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example clears existing fabric binding statistics in VSAN 1.

```
switch# clear fabric-binding statistics vsan 1
```

Related Commands

Command	Description
show fabric-binding efmd statistics	Displays existing fabric binding statistics information.

clear fcanalyzer

To clear the entire list of configured hosts for remote capture, use the **clear fcanalyzer** command in EXEC mode.

clear fcanalyzer

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

This command clears only the list of configured hosts. Existing connections are not terminated.

Examples

The following example shows how to clear the entire list of configured hosts for remote capture.

```
switch# clear fcanalyzer
```

Related Commands

Command	Description
show fcanalyzer	Displays the list of hosts configured for a remote capture.

clear fcflow stats

To clear Fibre Channel flow statistics, use the **clear fcflow stats** command in EXEC mode.

clear fcflow stats [**aggregated**] **module** *module-number* **index** *flow-number*

Syntax Description

aggregated	Clears the Fibre Channel flow aggregated statistics.
module	Clears the statistics for a specified module.
module-number	Specifies the module number.
index	Clears the Fibre Channel flow counters for a specified flow index.
flow-number	Specifies the flow index number.

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Examples

The following example shows how to clear aggregated Fibre Channel flow statistics for flow index 1 of module 2.

```
switch(config)# # clear fcflow stats aggregated module 2 index 1
```

Related Commands

Command	Description
show fcflow	Displays the fcflow statistics.

clear fcns statistics

To clear the name server statistics, use the **clear fcns statistics** command in EXEC mode.

clear fcns statistics vsan *vsan-id*

Syntax Description

vsan *vsan-id*	FCS statistics are to be cleared for a specified VSAN ranging from 1 to 4093.

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Examples

The following example shows how to clear the name server statistics.

```
switch# show fcns statistics

Name server statistics for vsan 1
=================================
registration requests received = 0
deregistration requests received = 0
queries received = 23
queries sent = 27
reject responses sent = 23
RSCNs received = 0
RSCNs sent = 0

switch# clear fcns statistics vsan 1

switch# show fcns statistics

Name server statistics for vsan 1
=================================
registration requests received = 0
deregistration requests received = 0
queries received = 0
queries sent = 0
reject responses sent = 0
RSCNs received = 0
RSCNs sent = 0
switch#
```

Related Commands

Command	Description
show fcns statistics	Displays the name server statistics.

clear fcs statistics

To clear the fabric configuration server statistics, use the **clear fcs statistics** command in EXEC mode.

clear fcs statistics vsan *vsan-id*

Syntax Description

vsan *vsan-id*	FCS statistics are to be cleared for a specified VSAN ranging from 1 to 4093.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Examples

The following example shows how to clear the fabric configuration server statistics for VSAN 10.

```
switch# clear fcs statistics vsan 10
```

Related Commands

Command	Description
show fcs statistics	Displays the fabric configuration server statistics information.

clear ficon

Use the **clear ficon** command in EXEC mode to clear the FICON information for the specified VSAN.

clear ficon vsan *vsan-id* [**allegiance** | **timestamp**]

Syntax Description

vsan *vsan-id*	Specifies the FICON-enabled VSAN. The ID of the VSAN is from 1 to 4093.
allegiance	Clears FICON device allegiance.
timestamp	Clears FICON VSAN specific timestamp.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The **clear ficon vsan** *vsan-id* **allegiance** command aborts the currently-executing session.

Examples

The following example clears the current device allegiance for VSAN 1.

```
switch# clear ficon vsan 1 allegiance
```

The following example clears the VSAN clock for VSAN 20.

```
switch# clear ficon vsan 20 timestamp
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

clear fspf counters

To clear the Fabric Shortest Path First statistics, use the **clear fspf counters** command in EXEC mode.

clear fspf counters vsan *vsan-id* [**interface** *type*]

Syntax Description

vsan	Indicates that the counters are to be cleared for a VSAN.
vsan-id	The ID of the VSAN is from 1 to 4093.
interface *type*	(Optional). The counters are to be cleared for an interface. The interface types are fc for Fibre Channel, and port-channel for PortChannel.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

If the interface is not specified, then all of the counters of a VSAN are cleared. If the interface is specified, then the counters of the specific interface are cleared.

Examples

The following example clears the FSPF t statistics on VSAN 1.

```
switch# clear fspf counters vsan 1
```

The following example clears FSPF statistics specific to the Fibre Channel interface in VSAN 1, Slot 9 Port 32.

```
switch#  clear fspf counters vsan 1 interface fc 9/32
```

Related Commands

Command	Description
show fspf	Displays global FSPF information for a specific VSAN.

clear ip access-list counters

To clear IP access list counters, use the **clear ip access-list counters** command in EXEC mode.

clear ip access-list counters *list-name*

Syntax Description

list-name	Specifies the IP access list name (maximum 64 characters).

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Examples

The following example clears the counters for an IP access list.

```
switch# clear ip access-list counters adminlist
```

Related Commands

Command	Description
show ip access-list	Displays IP access list information.

clear ips arp

To clear ARP caches, use the **clear ips arp** command in EXEC mode.

clear ips arp {address *ip-address*| **interface gigabitethernet** *module-number***}**

Syntax Description

address	Clears fcflow aggregated statistics.
ip-address	Enters the peer IP address.
interface gigabitethernet	Specifies the Gigabit Ethernet interface.
module-number	Specifies slot and port of the Gigabit Ethernet interface.

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Examples

The ARP cache can be cleared in two ways: clearing just one entry or clearing all entries in the ARP cache.

The following example clears one ARP cache entry:

```
switch# clear ips arp address 10.2.2.2 interface gigabitethernet 8/7
arp clear successful
```

The following example clears all ARP cache entries

```
switch# clear ips arp interface gigabitethernet 8/7
arp clear successful
```

clear ivr zone database

To clear the inter-VSAN routing (IVR) zone database, use the **clear ivr zone database** command in EXEC mode.

clear ivr zone database

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Examples

The following example clears all configured IVZ information.

```
switch# clear ivr zone database
```

clear license

To uninstall a license, use the **clear license** command in EXEC mode.

clear license *filename*

Syntax Description

filename	Specifies the license file to be uninstalled.

Defaults

None.

Command Modes

EXEC.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(2).

Examples

The following example clears a specific license.

```
switch# clear license Ficon.lic
Clearing license Ficon.lic:
SERVER this_host ANY
VENDOR cisco
# An example fcports license
INCREMENT SAN_EXTN_OVER_IP cisco 1.000 permanent 1 HOSTID=VDH=ABCD \
        NOTICE=<LicFileID>san_extn2.lic</LicFileID><LicLineID>1</LicLineID> \
        SIGN=67CB2A8CCAC2

Do you want to continue? (y/n) y
Clearing license ..done
switch#
```

Related Commands

Command	Description
show license	Displays license information.

clear line

To clear VTY sessions, use the **clear line** command in EXEC mode.

clear line *vty-name*

Syntax Description

vty-name	Specifies the VTY name (maximum 64 characters).

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Examples

The following example clears one ARP cache entry:

```
switch# clear line Aux
arp clear successful
```

Related Commands

Command	Description
show line	Displays line information.

clear logging

To delete the SYSLOG information, use the **clear logging** command in EXEC mode.

clear logging {**logfile** | **nvram**}

Syntax Description

logfile	Clears log file messages.
nvram	Clears NVRAM logs.

Defaults

None.

Command Modes

EXEC.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Examples

The following example shows how to clear the debug logfile.

```
switch# clear logging logfile
```

Related Commands

Command	Description
show logging	Displays logging information.

clear ntp statistics

To clear Network Time Protocol (NTP) statistics, use the **clear ntp statistics** command in EXEC mode.

clear ntp statistics {**all-peers** | **io** | **local** | **memory**}

Syntax Description

all-peers	Clears I/O statistics for all peers.
io	Clears I/O statistics for I/O devices.
local	Clears I/O statistics for local devices.
memory	Clears I/O statistics for memory.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None mode.

Examples

The following example shows how to clear NTP statistics for all peers.

```
switch# clear ntp statistics all-peers
```

The following example shows how to clear NTP statistics for I/O devices.

```
switch# clear ntp statistics io
```

The following example shows how to clear NTP statistics for local devices.

```
switch# clear ntp statistics local
```

The following example shows how to clear NTP statistics for memory.

```
switch# clear ntp statistics memory
```

Related Commands

Command	Description
show ntp	Displays the configured server and peer associations.

clear port-security

To clear the log files on the switch, use the **clear processes log** command in EXEC mode.

clear
database auto-learn {**interface fc** *slot/port* | **port-channel** *number* **vsan** *vsan-id* | **statistics vsan** *vsan-id*}

Syntax Description

database	Clears the port security active configuration database.
statistics	Clears the port security counters.
auto-learn	Clears the auto-learnt entries for a specified interface or VSAN.
interface fc *slot/port*	Clears entries for a specified interface.
port-channel number	Clears entries for a specified PortChannel.
vsan *vsan-id*	Clears entries for a specified VSAN.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

The active database is read-only and **clear port-security database** command can be used when resolving conflicts.

Examples

The following example clears all existing statistics from the port security database for a specified VSAN.

```
switch# clear port-security statistics vsan 1
```

The following example clears learnt entries in the active database for a specified interface within a VSAN.

```
switch# clear port-security database auto-learn interface fc1/1 vsan 1
```

The following example clears learnt entries in the active database up to for the entire VSAN.

```
switch# clear port-security database auto-learn vsan 1
```

Related Commands

Command	Description
show port-security	Displays the configured port security information.

clear processes log

To clear the log files on the switch, use the **clear processes log** command in EXEC mode.

clear processes log {all | pid *pid-number*}

Syntax Description

all	Deletes all of the log files.
pid	Deletes the log files of a specific process.
pid-number	Specifies the process ID, which must be from 0 to 2147483647.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following examples show how to clear all of the log files on the switch.

```
switch# clear processes log all
```

Related Commands

Command	Description
show processes	Displays the detailed running or log information of processes or high availability applications.

clear qos statistics

To clear the quality of services statistics counters, use the **clear qos statistics** command in EXEC mode.

clear qos statistics

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following examples shows how to clear the quality of service counters.

```
switch# clear qos statistics
```

Related Commands

Command	Description
show qos statistics	Displays the current QoS settings, along with a number of frames marked high priority.

clear rlir

To clear the Registered Link Incident Report (RLIR), use the **clear rlir** command in EXEC mode.

clear rlir {**history** | **recent** {**interface fc** *slot*/*port* | **portnumber** *port-number*} | **statistics vsan** *vsan-id*}

Syntax Description

history	Clears RLIR link incident history.
recent	Clears recent link incidents.
interface fc *slot*/*port*	Clears entries for a specified interface.
portnumber *port-number*	Displays the port number for the link incidents.
statistics	Clears RLIR statistics.
vsan *vsan-id*	Specifies the VSNA ID for which the RLIR statistics are to be cleared.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example clears all existing statistics for a specified VSAN.

```
switch# clear rlir statistics vsan 1
```

The following example clears the link incident history.

```
switch# clear rlir history
```

The following example clears recent RLIR information for a specified interface.

```
switch# clear rlir recent interface fc 1/2
```

The following example clears recent RLIR information for a specified port number.

```
switch# clear rlir recent portnumber 16
```

Related Commands

Command	Description
show rscn	Displays RSCN information.

clear rscn statistics

To clear the registered state change notification statistics for a specified VSAN, use the **clear rscn statistics** command in EXEC mode.

clear rscn statistics vsan *vsan-id*

Syntax Description

vsan	The RSCN statistics are to be cleared for a VSAN.
vsan-id	The ID for the VSAN for which you want to clear RSCN statistics.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example shows how to clear rcsn statistics for VSAN 1.

```
switch# clear rscn statistics 1
```

Related Commands

Command	Description
show rscn	Displays RSCN information.

clear screen

To clear the terminal screen, use the **clear screen** command in EXEC mode.

clear screen

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example shows how to clear the terminal screen.

```
switch# clear screen
```

clear ssh hosts

To clear trusted SSH hosts, use the **clear ssh hosts** command in EXEC mode.

clear ssh hosts

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

None.

Examples

The following example shows how to clear reset-reason information from NVRAM and volatile storage.

```
switch# clear ssh hosts
```

Related Commands

Command	Description
show ssh hosts	Displays SSH host information.

clear system reset-reason

To clear the reset-reason information stored in NVRAM and volatile persistent storage, use the **clear system reset-reason** command in EXEC mode.

clear system reset-reason

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(2a).

Usage Guidelines

Use this command as listed below:

- In a Cisco MDS 9500 Series switch, this command clears the reset-reason information stored in NVRAM and volatile persistent storage in the active and standby supervisor modules.
- In a Cisco MDS 9200 Series switch, this command clears the reset-reason information stored in NVRAM and volatile persistent storage in the active supervisor module.

Examples

The following example shows how to clear trusted SSH hosts.

```
switch# clear system reset-reason
```

Related Commands

Command	Description
show system reset-reason	Displays system reset-reason information.

clear tlport alpa-cache

To clear the entire contents of the alpa-cache, use the **clear tlport alpa-cache** command in EXEC mode.

clear tlport alpa-cache

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(5).

Usage Guidelines

None.

Examples

The following example shows how to clear a TL port ALPA cache.

```
switch# clear tlport alpa-cache
```

Related Commands

Command	Description
show `tlport alpa-cache`	Displays TL port alpa-cache information.

clear user

To clear trusted SSH hosts, use the **clear user** command in EXEC mode.

clear user *username*

Syntax Description

username	Specifies the user name to clear.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

None.

Examples

The following example shows how to log out a specified user.

```
switch# clear user vsam
```

Related Commands

Command	Description
show users	Displays user information.

clear vrrp

To clear all the software counters for the specified virtual router, use the **clear vrrp** command in EXEC mode.

clear vrrp {**statistics** | **vr** *number* **interface** {**gigabitethernet** *port/slot* | **mgmt 0** | **port-channel** *portchannel-id* | **vsan** *vsan-id*}}

Syntax Description

statistics	Clears global VRRP statistics.
vr	Clears specific VR statistics.
number	Specifies a VR number from 1 to 255.
interface	Specifies an interface.
gigabitethernet *port/slot*	Specifies a gigabitethernet interface.
mgmt 0	Specifies the management interface.
port-channel *portchannel-id*	Specifies a port-channel interface.The ID of the port-channel interface is from 1 to 128.
vsan *vsan-id*	Specifies a VSAN. The ID of the VSAN is from 1 to 4093.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following examples shows how to clear all the software counters for virtual router 7 on VSAN 2.

```
switch# clear vrrp 7 interface vsan2
```

Related Commands

Command	Description
show vrrp	Displays VRRP configuration information.

clear zone

To clear all configured information in the zone server for a specified VSAN, use the **clear zone** command in EXEC mode.

clear zone {database | statistics {lun-zoning | read-only-zoning}} vsan *vsan-id*

Syntax Description

database	Clears zone server database information.
statistics	Clears zone server statistics.
lun-zoning	Clears LUN-zoning related statistics.
read-only-zoning	Clears read-only zoning related statistics.
vsan	Clears zone information for a VSAN.
vsan-id	The ID of the VSAN is from 1 to 4093.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

After issuing a **clear zone database** command, you need to explicitly issue the **copy running-config startup-config** to ensure that the running configuration is used when you next start the switch.

Examples

The following examples shows how to clear all configured information in the zone server for VSAN 1.

```
switch# clear zone database vsan 1
```

Related Commands

Command	Description
show zone	Displays zone information for any configured interface.

clock

To configure the time zone and the summer time of day, use the **clock** command in configuration mode. To disable the daylight saving time adjustment, use the **no** form of this command.

clock {summer-time | time-zone *daylight-timezone-name start-week start-day start-month start-time end-week end-day end-month end-time daylight-offset-to-be-added-in-minutes***}**

no clock {summer-time | time-zone *daylight-timezone-name start-week start-day start-month start-time end-week end-day end-month end-time daylight-offset-to-be-added-in-minutes***}**

Syntax Description

summer-time	Adjusts the daylight savings time for the Pacific time zone by 60 minutes starting the first sunday in April at 2 a.m. and ending the last Sunday in October at 2 a.m.
time-zone	Sets the time zone for a specified time zone name.
daylight-timezone-name	The 8-character name of the time zone
start-week *end-week*	The week ranging from 1 through 5
start-day *end-day*	The day ranging from Sunday through Saturday
start-month *end-month*	The month ranging from January through December
start-time *end-time*	The time ranging from
daylight-offset-to-be-added-in-minutes	The daylight offset ranges from1 through 1440 minutes that will be added to the start time and deleted from the end time

Defaults

Coordinated Universal Time (UTC), which is the same as Greenwich Mean Time (GMT).

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use this command if you need to change the UTC or GMT time or time zone.

Examples

The following example shows how to configure the time zone and summer time of day.

```
switch# config t
switch(config)# clock timezone <daylight timezone name> <start week> <start day> <start
month> <start time> <end week> <end day> <end month> <end time> <daylight offset to be
added in minutes>
switch(config)# clock summer-time Pacific 1 Sun Apr 02:00 5 Sun Oct 02:00 60
switch(config)# no clock summer-time
switch(config)# exit
switch#
```

Related Commands

Command	Description
clock set	Changes the default time on the switch.
show clock	Displays the current date and time.
show run	Displays changes made to the time zone configuration along with other configuration information.

code-page

Use the **code-page** command to configure the EBCDIC format. To disable the configuration or to revert to factory defaults, use the **no** form of the command.

code-page brazil |france | france | international-5 | italy | japan | spain-latinamerica | uk | us-canada

Syntax Description

code-page	Configures code page on a FICON-enabled VSAN
brazil	Configures the **brazil** EBCDIC format.
france	Configures the **france** EBCDIC format.
international-5	Configures the **international-5** EBCDIC format.
italy	Configures the **italy** EBCDIC format.
japan	Configures the **japan** EBCDIC format.
spain-latinamerica	Configures the **spain-latinamerica** *EBCDIC format.*
uk	Configures the **uk** EBCDIC format.
us-canada	Configures the **us-canada** EBCDIC format.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

This is an optional configuration. If you are not sure of the EBCDIC format to be used, we recommend retaining the **us-canada** (default) option.

Examples

The following example configures the **italy** EBCDIC format.

```
switch(config)# ficon vsan 2
switch(config-ficon)# code-page italy
```

The following example reverts to the factory default of using the **us-canada** EBCDIC format.

```
switch(config-ficon)# no code-page
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.
ficon vsan *vsan-id*	Enables FICON on the specified VSAN.

clock set

To change the system time on a Cisco MDS 9000 Family switch, use the **clock set** command in EXEC mode.

clock set *HH*:*MM*:*SS DD Month YYYY*

Syntax Description

HH	The two-digit time in hours in military format (15 for 3 p.m.).
MM	The two-digit time in minutes (58).
SS	The two-digit time in seconds(15).
DD	The two-digit date (12).
Month	The month in words (August).
YYYY	The four-digit year (2002).

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Generally, if the system is synchronized by a valid outside timing mechanism, such as an NTP clock source, or if you have a switch with calendar capability, you do not need to set the system clock. Use this command if no other time sources are available. The time specified in this command is relative to the configured time zone.

The **clock set** command changes are saved across system resets.

Examples

The following example displays the **clock set** command:

```
switch# clock set 15:58:15 12 August 2002
Mon Aug 12 15:58:00 PDT 2002
```

code-page

Use the **code-page** command to configure the EBCDIC format. To disable the configuration or to revert to factory defaults, use the **no** form of the command.

code-page {**brazil** | **france** | **france** | **international-5** | **italy** | **japan** | **spain-latinamerica** | **uk** | **us-canada**}

Syntax Description

brazil	Specifies **brazil** EBCDIC format.
france	Specifies **france** EBCDIC format.
international-5	Specifies **international-5** EBCDIC format.
italy	Specifies **italy** EBCDIC format.
japan	Specifies **japan** EBCDIC format.
spain-latinamerica	Specifies **spain-latinamerica** EBCDIC format.
uk	Specifies **uk** EBCDIC format.
us-canada	Specifies **us-canada** EBCDIC format.

Defaults

us-canada

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

This is an optional configuration. If you are not sure of the EBCDIC format to be used, we recommend retaining the **us-canada** (default) option.

Examples

The following example configures the **italy** EBCDIC format.

```
switch(config)# ficon vsan 2
switch(config-ficon)# code-page italy
```

The following example reverts to the factory default of using the **us-canada** EBCDIC format.

```
switch(config-ficon)# no code-page
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.
ficon vsan *vsan-id*	Enables FICON on the specified VSAN.

configure terminal

To enter the configuration mode, use the **configure terminal** command in EXEC mode.

configure terminal

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example enters the configuration mode:

```
switch# configure terminal
switch(config)#
```

The following example enters the configuration mode using an abbreviated format of the command:

```
switch# config t
switch(config)#
```

copy

To save a backup of the system software, use the **copy** command in EXEC mode.

copy *source-URL destination-URL*

Syntax Description

source-URL	The location URL or alias of the source file or directory to be copied.
destination-URL	The destination URL or alias of the copied file or directory.

The following table lists the aliases for source and destination URLs.

running-config	Specifies the configuration currently running on the switch. The **system:running-config** keyword represents the current running configuration file.
startup-config	Specifies the configuration used during initialization (startup). You can copy the startup configuration from NVRAM. The **nvram:startup-config** keyword represents the configuration file used during initialization.
bootflash:	Specifies the location for internal bootflash memory.
slot0:	Specifies the location for the CompactFlash memory or PCMCIA card.
volatile:	Specifies the location for the volatile file system.
system	Specifies the location for system memory, which includes the running configuration.
tftp:	Specifies the location for a Trivial File Transfer Protocol (TFTP) network server. The syntax for this alias is **tftp:**[[*//location*]*/directory*]*/filename*.
ftp:	Specifies the location for a File Transfer Protocol (FTP) network server. The syntax for this alias is **ftp:**[[*//location*]*/directory*]*/filename*.
scp:	Specifies the location for a secure copy (scp) network server. The syntax for this alias is **scp:**[[*//location*]*/directory*]*/filename*.
sftp:	Specifies the location for a Secure Trivial File Transfer Protocol (SFTP) network server. The syntax for this alias is **sftp:**[[*//location*]*/directory*]*/filename*.
log:	Specifies the location for log files stored in the same directory.
debug:	Specifies the location for the debug files stored in the debug partition
nvram:	Specifies the switch NVRAM.
core:	Specifies the location of the cores from any switching or supervisor module to an external flash (slot 0) or a TFTP server.
filename	The name of the Flash file.
sup-1 **sup-2**	The number of the supervisor module, where sup-1 is the slot 5 supervisor (active) and sup-2 is the slot 6 supervisor (standby).

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(4).

Usage Guidelines

This command makes the running and the backup copy of the software identical.

A file can only be copied from an active supervisor to a standby supervisor, not from standby to active.

This command does not allow 127.x.x.x IP addresses.

The copy function will not be completed if the required space is not available in the directory. First change to the required directory (for example, **cd bootflash:**) and verify the available space (for example, **dir bootflash:**).

The entire copying process may take several minutes.

Do not copy a file from an external source directly to the standby supervisor. You must copy from the external source to the active supervisor, and then copy the saved file to the standby supervisor.

You can save cores (from the active supervisor module, the standby supervisor module, or any switching module) to an external flash (slot 0) or to a TFTP server in one of two ways:

- On demand—to copy a single file based on the provided process ID.
- Periodically—to copy core files periodically as configured by the user.

You copy the logfile to a different location using the **copy log:messages** command.

The debug partition contains debugging files created by the software for troubleshooting purposes.

Examples

The following example saves your configuration to the startup configuration.

```
switch# copy system:running-config nvram:startup-config
```

The following example copies the file called samplefile from the slot0 directory to the mystorage directory.

```
switch# copy slot0:samplefile slot0:mystorage/samplefile
```

The following example copies a file from the current directory level.

```
switch# copy samplefile mystorage/samplefile
```

If the current directory is slot0:mydir, this command copies slot0:mydir/samplefile to slot0:mydir/mystorage/samplefile.

The following example downloads a configuration file from an external CompactFlash to the running configuration.

```
switch copy slot0:dns-config.cfg system:running-config
```

The following example saves a running configuration file to an external CompactFlash.

```
switch# copy system:running-config slot0:dns-config.cfg
```

The following example saves a startup configuration file to an external CompactFlash.

```
switch# copy system:startup-config slot0:dns-config.cfg
```

The following example creates a backup copy of the binary configuration.

```
switch# copy nvram:startup-config nvram:snapshot-config
```

The following example copies an image in bootflash on the active supervisor to the bootflash on the standby supervisor.

```
switch# copy bootflash:myimage bootflash://sup-2/myimage
```

The following example creates a running configuration copy in bootflash.

```
switch# copy system:running-config bootflash:my-config
```

The following examples creates a startup configuration copy in bootflash.

```
switch# copy nvram:startup-config bootflash:my-config
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
dir	Displays a list of files on a file system.
reload	Reloads the operating system.
show version	Displays the version of the running configuration file.

copy licenses

To save a backup of the installed license files, use the **copy licenses** command in EXEC mode.

copy licenses *source-URL destination-URL*

Syntax Description

source-URL	The location URL or alias of the source file or directory to be copied.
destination-URL	The destination URL or alias of the copied file or directory.

The following table lists the aliases for source and destination URLs.

bootflash:	Specifies the location for internal bootflash memory.
slot0:	Specifies the location for the CompactFlash memory or PCMCIA card.
volatile:	Specifies the location for the volatile file system.
filename	The name of the license file with a .tar extention.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(4).

Usage Guidelines

The copy function will not be completed if the required space is not available in the directory. First change to the required directory (for example, **cd bootflash:**) and verify the available space (for example, **dir bootflash:**).

We recommend backing-up your license files immediately after installing them and just before issuing a **write erase** command.

Examples

The following example saves a file called Enterprise.tar to the bootflash: directory.

```
switch# copy licenses bootflash:/Enterprise.tar
Backing up license done
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
dir	Displays a list of files on a file system.
install license	Installs a license file.

CHAPTER 5

D Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- delete, page 5-2
- dir, page 5-4
- discover scsi-target, page 5-6
- discover custom-list, page 5-5
- do, page 5-8

delete

To delete a specified file or directory on a Flash memory device, use the **delete** command in EXEC mode.

delete {**bootflash:***filename* | **slot0:***filename* | **volatile:***filename*}

Syntax Description

bootflash:	Flash image that resides on the supervisor module.
slot0:	Flash image that resides on another module.
volatile:	Flash image that resides on the volatile file system.
filename	The name of the file to be deleted.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

When you delete a file, the software erases the file.

If you attempt to delete the configuration file or image specified by the CONFIG_FILE or BOOTLDR environment variable, the system prompts you to confirm the deletion. Also, if you attempt to delete the last valid system image specified in the BOOT environment variable, the system prompts you to confirm the deletion.

Caution If you specify a directory, the **delete** command deletes the entire directory and all its contents.

Examples

The following example deletes the file named test from the Flash card inserted in slot 0.

```
switch# delete slot0:test
Delete slot0:test? [confirm]
```

The following example deletes a file from a directory.

```
switch# delete dns_config.cfg
```

The following example deletes a file from an external CompactFlash (slot0).

```
switch# delete slot0:dns_config.cfg
```

The following example deletes the entire `my-dir` directory and all its contents:

```
switch# delete bootflash:my-dir
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
dir	Displays a list of files on a file system.
show boot	Displays the contents of the BOOT environment variable, the name of the configuration file pointed to by the CONFIG_FILE environment variable, the contents of the BOOTLDR environment variable, and the configuration register setting.

dir

To display the contents of the current directory or the specified directory, use the **dir** command in EXEC mode.

dir [**bootflash:***directory-or-ilename* | **slot0:***directory-or-filename* | **volatile:***directory-or-filename*]

Syntax Description

bootflash:	(Optional) Flash image that resides on the supervisor module.
slot0:	(Optional) Flash image that resides on another module.
filename-or-directory	(Optional) Name of the file or directory to display on a specified device. The files can be of any type. You can use wildcards in the filename. A wildcard character (*) matches all patterns. Strings after a wildcard are ignored.
volatile:	Flash image on the volatile file system.

Defaults

The default file system is specified by the **cd** command.

Command Modes

EXEC mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

None.

Examples

The following example shows how to list the files on the bootflash directory.

```
switch# dir bootflash:
40295206     Aug 05 15:23:51 1980  ilc1.bin
12456448     Jul 30 23:05:28 1980  kickstart-image1
12288       Jun 23 14:58:44 1980  lost+found/
27602159     Jul 30 23:05:16 1980  system-image1
12447232     Aug 05 15:08:30 1980  kickstart-image2
28364853     Aug 05 15:11:57 1980  system-image2

Usage for bootflash://sup-local
  135404544 bytes used
   49155072 bytes free
  184559616 bytes total
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
delete	Deletes a file on a Flash memory device.

discover custom-list

To selectively initiate discovery for specified domain IDs in a VSAN, use the **discover custom-list** command in EXEC mode.

discover custom-list {**add** | **delete**} **vsan** *vsan-id* **fcid** *fc-id*

Syntax Description

add	Add a targets to the customized list.
delete	Deletes a target from the customized list.
vsan *vsan-id*	Discovers SCSI targets for the specified VSAN ID. The range is 1 to 4093.
fcip *fc-id*	Discovers SCSI targets for the specified FC ID. The format is *0xhhhhhhh*, where *h* is a hexadecimal digit.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

None.

Examples

The following example selectively initiates discovery for the specified VSAN and FC ID.

```
switch# discover custom-list add vsan 1 fcid 0X123456
```

The following example deletes the specified VSAN and FC ID from the customized list.

```
switch# discover custom-list delete vsan 1 fcid 0X123456
```

discover scsi-target

To discover SCSI targets on local storage to the switch or remote storage across the fabric, use the **discover scsi-target** command in EXEC mode.

discover scsi-target {**custom-list** | **local** | **remote** | **vsan** *vsan-id* **fcid** *fc-id*} **os** {**aix** | **all** | **hpux** | **linux** | **solaris** | **windows**} [**lun** | **target**]

Syntax Description

custom-list	Discovers SCSI targets from the customized list.
local	Discovers local SCSI targets.
remote	Discovers remote SCSI targets.
vsan *vsan-id*	Discovers SCSI targets for the specified VSAN ID. The range is 1 to 4093.
fcip *fc-id*	Discovers SCSI targets for the specified FC ID. The format is *0xhhhhhhhh*, where *h* is a hexadecimal digit.
os	Discovers the specified operating system.
aix	Discovers the AIX operating system
all	Discovers all operating systems
hpux	Discovers the HPUX operating system
linux	Discovers the Linux operating system
solaris	Discovers the Solaris operating system
windows	Discovers the Windows operating system
lun	Discovers SCSI targets and LUNs.
target	Discovers SCSI targets .

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(2a).

Usage Guidelines

On-demand discovery only discovers Nx ports present in the name server database that have registered a FC4 Type = SCSI_FCP.

Examples

The following example shows how to discover local targets assigned to all OSs.

```
switch# discover scsi-target local os all
discovery started
```

The following example shows how to discover remote targets assigned to the Windows OS.

```
switch# discover scsi-target remote os windows
discovery started
```

The following example shows how to discover SCSI targets for the specified VSAN (1) and FC ID (0x9c03d6).

```
switch# discover scsi-target vsan 1 fcid 0x9c03d6
discover scsi-target vsan 1 fcid 0x9c03d6
VSAN:    1 FCID: 0x9c03d6 PWWN: 00:00:00:00:00:00:00:00
  PRLI RSP: 0x01 SPARM: 0x0012...
```

The following example begins discovering targets from a customized list assigned to the Linux operating system.

```
switch# discover scsi-target custom-list os linux
discovery started
```

do

Use the **do** command to execute an EXEC-level command from any configuration mode or submode.

do *command*

Syntax Description

command	Specifies the EXEC command to be executed.

Defaults

None.

Command Modes

All configuration modes.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Use this command to execute EXEC commands while configuring your switch. After the EXEC command is executed, the system returns to the mode from which you issued the do command.

Examples

The following example disables the **terminal session-timeout** command using the **do** command in configuration mode.

```
switch(config)# do terminal session-timeout 0
switch(config)#
```

The following example create, enables, and displays the interface from configuration mode.

```
switch(config)# int fc 3/1
switch(config-if)# no shut
switch(config-if)# do show interface fc 3/1
fc3/1 is trunking
    Hardware is Fibre Channel
    Port WWN is 20:81:00:05:32:00:4a:9e
    Peer port WWN is 20:43:00:0c:88:00:4a:e2
    Admin port mode is auto, trunk mode is on
    Port mode is TE
    Port vsan is 1
    Speed is 2 Gbps
    Transmit B2B Credit is 0
    Receive B2B Credit is 255
    Receive data field Size is 2112
    Beacon is turned off
    Trunk vsans (admin allowed and active) (1-10)
    Trunk vsans (up)                       (1-10)
    Trunk vsans (isolated)                 ()
    Trunk vsans (initializing)             ()
    5 minutes input rate 504 bits/sec, 63 bytes/sec, 0 frames/sec
    5 minutes output rate 344 bits/sec, 43 bytes/sec, 0 frames/sec
      69390 frames input, 4458680 bytes
        0 discards, 0 errors
        0 CRC,  0 unknown class
        0 too long, 0 too short
      69458 frames output, 3086812 bytes
        0 discards, 0 errors
      2 input OLS, 1 LRR, 0 NOS, 2 loop inits
      1 output OLS, 1 LRR, 1 NOS, 1 loop inits
```

CHAPTER 6

Debug Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All debug commands are issued in EXEC mode and are shown here in alphabetical order. For more information, refer to the *Cisco MDS 9000 Family Troubleshooting Guide* and the *Cisco MDS 9000 Family System Messages Guide*.

Using the CLI, you can enable debugging modes for each switch feature and view a real-time updated activity log of the control protocol exchanges. Each log entry is time-stamped and listed in chronological order. Access to the debug feature can be limited through the CLI roles mechanism and can be partitioned on a per-role basis.

- debug aaa, page 6-3
- debug all, page 6-4
- debug bootvar, page 6-5
- debug callhome, page 6-6
- debug cdp, page 6-8
- debug cimserver, page 6-9
- debug core, page 6-10
- debug ethport, page 6-12
- debug exceptionlog, page 6-13
- debug fabric-binding, page 6-14
- debug fc-tunnel, page 6-15
- debug fc2, page 6-17
- debug fc2d, page 6-19
- debug fcc, page 6-20
- debug fcdomain, page 6-22
- debug fcfwd, page 6-24
- debug fcns, page 6-25
- debug fcs, page 6-26
- debug fcsp-mgr, page 6-27
- debug flogi, page 6-33
- debug fspf, page 6-36
- debug hardware arbiter, page 6-38

- debug idehsd, page 6-39
- debug ipconf, page 6-42
- debug ipfc, page 6-43
- debug ips, page 6-44
- debug logfile, page 6-49
- debug mcast, page 6-50
- debug mip, page 6-52
- debug module, page 6-53
- debug ntp, page 6-54
- debug platform, page 6-55
- debug port, page 6-56
- debug port-channel, page 6-58
- debug qos, page 6-59
- debug radius, page 6-60
- debug rd-reg, page 6-61
- debug rdl errors, page 6-62
- debug rib, page 6-63
- debug rscn, page 6-65
- debug scsi-target, page 6-66
- debug security, page 6-67
- debug sensor, page 6-68
- debug snmp, page 6-69
- debug span, page 6-71
- debug system health, page 6-72
- debug tacacs+, page 6-74
- debug tcap, page 6-75
- debug tlport, page 6-76
- debug ttyd, page 6-77
- debug vni, page 6-78
- debug vrrp, page 6-79
- debug vsan, page 6-80
- debug wr-reg, page 6-81
- debug wwn, page 6-82
- debug xbar, page 6-83
- debug xbc, page 6-84
- debug zone, page 6-85

debug aaa

To enable debugging for boot variables, use the **debug aaa** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug aaa {**all** | **conf-events** | **errors** | **events** | **mts**}

no debug aaa {**all** | **conf-events** | **errors** | **events** | **mts**}

Syntax Description

all	Enables all AAA debug options.
conf-events	Enables AAA configuration events debugging.
errors	Enables debugging for AAA errors.
events	Enables debugging for AAA events.
mts	Enables AAA transmit and receive MTS packets debugging.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug aaa conf-events** command is issued:

```
switch# debug aaa conf-events
Nov 20 06:29:52 aaa: aaa_cleanup_session
Nov 20 06:29:52 aaa: mts_drop of request msg
Nov 20 06:29:52 aaa: Configured method local Succeeded
Nov 20 06:29:58 aaa: Src: 0x00000101/10886  Dst: 0x00000101/0  ID: 0x003
ize: 197 [REQ] Opc: 8402 (MTS_OPC_AAA_REQ) RR: 0x003A48F7  HA_SEQNO: 0x0
 TS: 0x9FC1C1234E7C  REJ:0  SYNC:0
Nov 20 06:29:58 aaa: 01 01 0C 00 00 00 00 00 00 00 00 00 00 00 02 01
Nov 20 06:29:58 aaa: 00 00 00 00 00 00 00 06 08 00 03 05 00 00 00 00
Nov 20 06:29:58 aaa: 08 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Nov 20 06:29:58 aaa: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Nov 20 06:29:58 aaa: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Nov 20 06:29:58 aaa: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Nov 20 06:29:58 aaa: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Nov 20 06:29:58 aaa: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Nov 20 06:29:58 aaa: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Nov 20 06:29:58 aaa: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

debug all

To enable debugging for all features on the switch, use the **debug all** command in EXEC mode. You can disable this command and turn off all debugging by using the **no** form of this command.

debug all

no debug all

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug all** command is issued:

```
switch# debug all
```

debug bootvar

To enable debugging for boot variables, use the **debug bootvar** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug bootvar {**all** | **errors** | **events** | **info** | **pss**}

no debug bootvar {**all** | **errors** | **events** | **info** | **pss**}

Syntax Description

all	Enables all boot variable debug options.
errors	Enables debugging for boot variable errors.
events	Enables debugging for boot variable events.
info	Enables debugging for boot variable information.
pss	Enables debugging for boot variable PSS operations.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug bootvar all** command is issued:

```
switch# debug bootvar all
```

debug callhome

To enable debugging for the Call Home function, use the **debug callhome** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug callhome {**all** | **events** | **mts**}

no debug callhome {**all** | **events** | **mts**}

Syntax Description

all	Enables debugging for all Call Home features.
events	Enables debugging for all Call Home events.
mts	Enables debugging for all Call Home tx/rx packets of MTS

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The **debug callhome** command, when used with the **all** parameter, displays the troubleshooting information for both Call Home event traces and a dump of the messaging and transaction service (MTS) messages that the Call Home function receives.

Note The debug Call Home function displays event traces for both successful and unsuccessful Call Home e-mail transmissions.

Examples

The following example displays the system output when the **debug callhome events** command is issued:

```
switch# debug callhome events
2005-03-09T05:37:21 2005 Mar  9 05:37:21 callhome: filling in name field with Test
2005 Mar  9 05:37:21 callhome: filling in the header list
2005 Mar  9 05:37:21 callhome: filling up the chassis list
2005 Mar  9 05:37:21 callhome: filling up the main body list
2005 Mar  9 05:37:21 callhome: filling up the fru list 2005 Mar  9 05:37:21 callhome:
Entering function do_event_correlation
2005 Mar  9 05:37:21 callhome: getting dest profiles for alert group test
2005 Mar  9 05:37:21 callhome: getting dest profiles for alert group cisco-tac
2005 Mar  9 05:37:21 callhome: Applying the event rule for destination profile full_txt
2005 Mar  9 05:37:21 callhome: Applying the event rule for destination profile short_txt
2005 Mar  9 05:37:21 callhome: Applying the event rule for destination profile xml 2005
Mar  9 05:37:21 callhome: Applying the event rule for destination profile basu
2005 Mar  9 05:37:21 callhome: Exiting function do_event_correlation
2005 Mar  9 05:37:21 callhome: running cli commands for alert name : Test, message id :
1540383426
```

```
2005 Mar  9 05:37:21 callhome: process scheduled for running cli commands for alert Test,
message id 1540383426, destination profile basu
2005 Mar  9 05:37:21 callhome: process scheduled for running cli commands for alert Test,
message id 1540383426, destination profile xml
2005 Mar  9 05:37:21 callhome: process scheduled for running cli commands for alert Test,
message id 1540383426, destination profile short_txt
.
.
```

The following example displays the system output when the **debug callhome mts** command is issued:

```
switch# debug callhome mts
Apr  8 13:09:42 callhome: Src: 0x00000501/4067  Dst: 0x00000501/66  ID: 0x0004FA
0D  Size: 252 [REQ] Opc: 182 (MTS_OPC_DEBUG_WRAP_MSG) RR: 0x0004FA0D  HA_SEQNO:
0x00000000  TS: 0x86708AFE37B  REJ:0
Apr  8 13:09:42 callhome: 00 00 00 00 06 00 00 00 00 00 00 00 00 00 00 00
Apr  8 13:09:42 callhome: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr  8 13:09:42 callhome: 00 00 00 00 00 00 00 00 00 00 00 00 FF FF FF FF
...
Apr  8 13:09:42 callhome: Src: 0x00000501/4067  Dst: 0x00000501/66  ID: 0x0004FA
10  Size: 252 [REQ] Opc: 182 (MTS_OPC_DEBUG_WRAP_MSG) RR: 0x0004FA10  HA_SEQNO:
0x00000000  TS: 0x86708D6A974  REJ:0
Apr  8 13:09:42 callhome: 00 00 00 00 05 00 00 00 00 00 00 00 00 00 00 00
Apr  8 13:09:42 callhome: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr  8 13:09:42 callhome: 00 00 00 00 00 00 00 00 00 00 00 00 FF FF FF FF
...
```

debug cdp

To enable debugging for the CDP function, use the **debug cdp** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug cdp {**all** | **errors** | **events** {**mts** | **packets** | **pss**}}
[**interface** {**gigabitethernet** *slot*/*port* | **mgmt 0**}]

no debug cdp {**all** | **errors** | **events** {**mts** | **packets** | **pss**}}
[**interface** {**gigabitethernet** *slot*/*port* | **mgmt 0**}]

Syntax Description

all	Enables debugging for all CDP features.
errors	Enables debugging for CDP error conditions.
events	Enables debugging for CDP events.
mts	Enables debugging for CDP tx/rx MTS packets.
packets	Enables debugging for CDP tx/rx CDP packets.
pss	Enables debugging for all PSS related CDP events.
interface	Specifies debugging for the specified interface.
gigbitethernet *slot*/*port*	Specifies the Gigabit Ethernet interface slot and port.
mgmt 0	Specifies the management interface.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug cdp events packets** command is issued:

```
switch# debug cdp events packets
Apr  8 21:22:34 cdp: Sent CDP packet, interface 0x2380000
Apr  8 21:22:34 cdp: Sent CDP packet, interface 0x2381000
Apr  8 21:22:35 cdp: Sent CDP packet, interface 0x2382000
Apr  8 21:22:35 cdp: Sent CDP packet, interface 0x2383000
Apr  8 21:22:51 cdp: Received CDP packet, interface 0x5000000
Apr  8 21:23:01 cdp: Sent CDP packet, interface 0x5000000
Apr  8 21:23:34 cdp: Sent CDP packet, interface 0x2380000
Apr  8 21:23:34 cdp: Sent CDP packet, interface 0x2381000
Apr  8 21:23:35 cdp: Sent CDP packet, interface 0x2382000
...
```

debug cimserver

To enable debugging for the Common Information Model (CIM) management applications function, use the **debug cimserver** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug cimserver {**all** | **errors** | **events** | **mts** | **trace**}

no debug cimserver {**all** | **errors** | **events** | **mts** | **trace**}

Syntax Description

all	Enables debugging for all CIM features.
errors	Enables debugging for CIM error conditions.
events	Enables debugging for CIM events.
mts	Enables debugging for CIM tx/rx MTS packets.
trace	Enables debugging for CIM traces.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug cimserver all** command is issued:

```
switch# debug cimserver all
2004 Mar 29 20:05:22 cimsrvprov: cim_mts_dispatch(): Opcode is 182
```

debug core

To enable core daemon debugging, use the **debug core** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug core {**error** | **flow**}

no debug core {**error** | **flow**}

Syntax Description

error	Enables debugging for core demon error conditions.
flow	Enables debugging for the core demon flow.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug core flow** command is issued:

```
switch# debug core flow
```

debug dstats

To enable delta statistics debugging, use the **debug dstats** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug dstats {**error** | **flow**}

no debug dstats {**error** | **flow**}

Syntax Description

error	Enables debugging for delta statistics error conditions.
flow	Enables debugging for the delta statistics flow.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug dstats flow** command is issued:

```
switch# debug dstats flow
```

debug ethport

To enable Ethernet port debugging, use the **debug ethport** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ethport {all | error |
event [**interface gigabitethernet** *slot/port* | **module** *slot*] |
ha [**interface gigibetethernet** *slot/port* | **module** *slot*] |
trace [**interface gigibetethernet** *slot/port* | **module** *slot*]**}**

no debug ethport {all | error |
event [**interface gigabitethernet** *slot/port* | **module** *slot*] |
ha [**interface gigibetethernet** *slot/port* | **module** *slot*] |
trace [**interface gigibetethernet** *slot/port* | **module** *slot*]**}**

Syntax Description

all	Enables debugging for all Ethernet port features.
error	Enables debugging for Ethernet port error conditions.
event	Enables debugging for Ethernet port events.
ha	Enables debugging for port high availability.
trace	Enables debugging for Ethernet port traces.
interface gigibetethernet *slot/port*	Specifies the slot and port of the Gigabit Ethernet interface.
module *slot*	Specifies the slot number of the module being debugged.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug ethport all** command is issued:

```
switch# debug ethport all
1981 May  5 07:28:59 ethport: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
1981 May  5 07:28:59 ethport: fu_fsm_execute_all: null fsm_event_list
1981 May  5 07:28:59 ethport: fu_fsm_engine_post_event_processing: mts msg
MTS_OPC_DEBUG_WRAP_MSG(msg_id 52343) dropped
```

debug exceptionlog

To enable the exception log debugging feature, use the **debug exceptionlog** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug exceptionlog {**demux** | **deque** | **error** | **flow** | **info**}

no debug exceptionlog {**demux** | **deque** | **error** | **flow** | **info**}

Syntax Description

demux	Enables debugging for the exception logger demux functions.
deque	Enables debugging for the exception logger deque function.
error	Enables debugging for exception logger errors.
flow	Enables debugging for the exception logger flow.
info	Enables debugging for exception logger information.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug exceptionlog** command is issued:

```
switch# debug exceptionlog
7), credit(3), empty
```

debug fabric-binding

To enable debugging for the fabric binding feature, use the **debug fabric-binding** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fabric-binding {**all** | **efmd** {**db-events** | **errors** | **merge** {**errors** | **events** | **packets**}} | **mts-events** | **pss-events**} | **errors** [**vsan** *vsan-id*] | **events** [**vsan** *vsan-id*] | **mts-events** | **pss-events** | **snmp-events** | **trace** [**vsan** *vsan-id*]}

no debug fabric-binding {**all** | **efmd** {**db-events** | **errors** | **merge** {**errors** | **events** | **packets**}} | **mts-events** | **pss-events**} | **errors** [**vsan** *vsan-id*] | **events** [**vsan** *vsan-id*] | **mts-events** | **pss-events** | **snmp-events** | **trace** [**vsan** *vsan-id*]}

Syntax Description

all	Enables debugging for all fabric binding features.
efmd	Enables debugging for Exchange Fabric Membership Data (EFMD) protocol.
db-events	Enables debugging for EFMD protocol database events.
merge	Enables debugging for EFMD protocol merges.
packets	Enables debugging for EFMD protocol packets.
errors	Enables debugging for fabric binding errors.
vsan *vsan-id*	Specifies the VSAN ID. The range is 1 to 4093.
events	Enables debugging for fabric binding events.
mts-events	Enables debugging for fabric binding MTS events.
pss-events	Enables debugging for fabric binding PSS events.
snmp-events	Enables debugging for fabric binding SNMP events
trace	Enables debugging for fabric binding traces.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fabric-binding all** command is issued:

```
switch# debug fabric-binding all
```

debug fc-tunnel

To enable debugging for the Fibre Channel tunnel feature, use the **debug fc-tunnel** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fc-tunnel {**all** | **errors** | **external-events** | **ha** | **label-update** | **mts** {**pkt** | **pkthdr**} {**both** | **rx** | **tx**} | **pss** | **route-update** [**vsan** *vsan-id*] | **rsvp-messages** [**tunnel** *tunnel-id* | **vsan** *vsan-id*] | **state-machine**}

no debug fc-tunnel {**all** | **errors** | **external-events** | **ha** | **label-update** | **mts** {**pkt** | **pkthdr**} {**both** | **rx** | **tx**} | **pss** | **route-update** [**vsan** *vsan-id*] | **rsvp-messages** [**tunnel** *tunnel-id* | **vsan** *vsan-id*] | **state-machine**}

Syntax Description

all	Enables debugging for all FC tunnel features.
errors	Enables debugging for FC tunnel errors.
external-events	Enables debugging for external FC tunnel events.
ha	Enables debugging for FC tunnel high availability (HA) events.
label-update	Enables debugging for FC tunnel label updates.
mts	Enables debugging for FC tunnel MTS events.
pkt	Specifies debugging of packets.
pkthdr	Specifies debugging of headers.
both	Specifies debugging in both the transmit and receive directions.
tx	Specifies debugging in the transmit direction.
rx	Specifies debugging in the receive direction.
pss	Enables debugging for FC tunnel PSS events.
route-update	Enables debugging for FC tunnel route updates.
vsan *vsan-id*	Specifies the VSAN ID. The range is 1 to 4093.
rsvp-messages	Enables debugging for FC tunnel SNMP events
tunnel *tunnel-id*	Specifies the tunnel ID. The range is 1 to 255.
state-machine	Enables debugging for FC tunnel traces.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fc-tunnel all** command is issued:

```
switch# debug fc-tunnel all
```

debug fc2

To enable debugging for the FC2 feature, use the **debug fc2** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fc2 {**credit** |
error [**fcid** *fcid* [**interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | **interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]]
flag |
flow [**fcid** *fcid* [**interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | **interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | (**interface fc** *type number* | **vsan** *vsan-id*) |
frame |
loopback |
pkt {**both** | **tx** | **rx**} [**bytes** *bytes* | **fcid** *fcid* [**bytes** *bytes* | **interface** {**fc** *slot/port* | **fcip** *port*} [**bytes** *bytes* | **pkts** *pkts* [**bytes** *bytes*]] | **pkts** *pkts* [**bytes** *bytes*] | **vsan** *vsan-id* [**bytes** *bytes* | **interface** {**fc** *slot/port* | **fcip** *port*} [**bytes** *bytes* | **pkts** *pkts* [**bytes** *bytes*]]] |
pkthdr {**both** | **tx** | **rx**} [**bytes** *bytes* | **fcid** *fcid* [**bytes** *bytes* | **interface** {**fc** *slot/port* | **fcip** *port*} [**bytes** *bytes* | **pkts** *pkts* [**bytes** *bytes*]] | **pkts** *pkts* [**bytes** *bytes*] | **vsan** *vsan-id* [**bytes** *bytes* | **interface** {**fc** *slot/port* | **fcip** *port*} [**bytes** *bytes* | **pkts** *pkts* [**bytes** *bytes*]]] |
rdl |
rxhdrhistory [**fcid** *fcid* [**interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | **interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]]
txhdrhistory [**fcid** *fcid* [**interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | **interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]]}

no debug fc2 {**credit** |
error [**fcid** *fcid* [**interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | **interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]]
flag |
flow [**fcid** *fcid* [**interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | **interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | (**interface fc** *type number* | **vsan** *vsan-id*) |
frame |
loopback |
pkt {**both** | **tx** | **rx**} [**bytes** *bytes* | **fcid** *fcid* [**bytes** *bytes* | **interface** {**fc** *slot/port* | **fcip** *port*} [**bytes** *bytes* | **pkts** *pkts* [**bytes** *bytes*]] | **pkts** *pkts* [**bytes** *bytes*] | **vsan** *vsan-id* [**bytes** *bytes* | **interface** {**fc** *slot/port* | **fcip** *port*} [**bytes** *bytes* | **pkts** *pkts* [**bytes** *bytes*]]] |
pkthdr {**both** | **tx** | **rx**} [**bytes** *bytes* | **fcid** *fcid* [**bytes** *bytes* | **interface** {**fc** *slot/port* | **fcip** *port*} [**bytes** *bytes* | **pkts** *pkts* [**bytes** *bytes*]] | **pkts** *pkts* [**bytes** *bytes*] | **vsan** *vsan-id* [**bytes** *bytes* | **interface** {**fc** *slot/port* | **fcip** *port*} [**bytes** *bytes* | **pkts** *pkts* [**bytes** *bytes*]]] |
rdl |
rxhdrhistory [**fcid** *fcid* [**interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | **interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]]
txhdrhistory [**fcid** *fcid* [**interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]] | **interface** {**fc** *slot/port* | **fcip** *port*} | **vsan** *vsan-id* [**interface** {**fc** *slot/port* | **fcip** *port*}]]}

Syntax Description

credit	Enables FC2 credit debugging.
error	Enables FC2 error debugging.
fcid *fcid*	Restricts debugging to the specified FCID.
interface	Restricts debugging to the specified interface.
fc *slot/port*	Restricts debugging to the specified interface.
fcip *port*	Restricts debugging to the specified interface.
vsan *vsan-id*	Restricts debugging to the specified VSAN.
flag	Enables FC2 flags debugging.
flow	Enables FC2 flow debugging.
frame	Enables FC2 frame debugging.
loopback	Enables FC2 loopback debugging.
pkt	Enables FC packet debugging.
both	Enables debugging in both the transmit and receive directions.
tx	Enables debugging in the transmit direction,
rx	Enables debugging in the receive direction.
bytes *bytes*	Specifies the number of bytes to display.
pkts *pkts*	Specifies the number of packets to display.
pkthdr	Enables FC header debugging.
rdl	Enables FC2 RDL debugging.
rxhdrhistory	Enables FC2 received header history debugging.
txhdrhistory	Enables FC2 transmitted header history debugging.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

If FSPF receives a bad FC2 packet analyze the output of the **debug fc2 pkt** command.

Examples

The following example displays the system output when the **debug fc2 error vsan 1** command is issued:

```
switch1# debug fc2 error vsan 1
```

debug fc2d

To enable debugging for the FC2 feature, use the **debug fc2** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fc2 {**all** | **bypass ficon_mgr** | **demux [vsan** *vsan-id*] | **deque** | **error** | **event [vsan** *vsan-id*] | **ha [vsan** *vsan-id*] | **trace [detail] [vsan** *vsan-id*] | **warning [vsan** *vsan-id*]}

no debug fc2 {**all** | **bypass ficon_mgr** | **demux [vsan** *vsan-id*] | **deque** | **error** | **event [vsan** *vsan-id*] | **ha [vsan** *vsan-id*] | **trace [detail] [vsan** *vsan-id*] | **warning [vsan** *vsan-id*]}

Syntax Description

all	Enables all FC2D debug flags.
demux	Enables debugging of FC2D message demux.
vsan *vsan-id*	Restricts debugging to the specified VSAN.
deque	Enables debugging of FC2D message dequeue.
error	Enables debugging of FC2D error.
event	Enables debugging of FC2D FSM and Events.
ha	Enables debugging of FC2D HA.
trace	Enables debugging of FC2D trace.
detail	Enables detailed debugging of FC2D trace.
warning	Enables debugging of FC2D warning.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(4).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fc2d all** command is issued:

```
switch1# debug fc2d all
2004 Mar 29 22:57:25 fc2d: fu_fsm_execute_all: match_msg_id(0), log_already_open (0)
2004 Mar 29 22:57:25 fc2d: fu_fsm_execute_all: null fsm_event_list
2004 Mar 29 22:57:25 fc2d: fu_fsm_engine_post_event_processing: mts msg MTS_OPC_
DEBUG_WRAP_MSG(msg_id 6894921) dropped
```

debug fcc

To enable debugging for the Fibre Channel Congestion (FCC) function, use the **debug fcc** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fcc {**all** | **error** [**module** *slot*] | **event** [**module** *slot*] |
mts [pkt {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} | **pkthdr** {**both** | **tx** | **rx** [**numpkt** *range*]}**]** | **trace** [**module** *slot*]}

no debug fcc {**all** | **error** [**module** *slot*] | **event** [**module** *slot*] |
mts {pkt {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} | **pkthdr** {**both** | **tx** | **rx** [**numpkt** *range*]}**}** | **trace** [**module** *slot*]}

Syntax Description

all	Enables debugging for all FCC features.
errors	Enables debugging for FCC error conditions.
events	Enables debugging for FCC events.
mts	Enables debugging for FCC tx/rx MTS packets.
trace	Enables debugging for FCC traces.
module *slot*	Specifies the slot number of the module being debugged.
pkt	Enables debugging for FCC tx/rx FCC packets.
pkthdr	Enables debugging for FCC tx/rx FCC headers.
numpkt	Specifies the number of required packets
both	Specifies debugging in both the transmit and receive directions.
tx	Specifies debugging in the transmit direction,
rx	Specifies debugging in the receive direction.
node	Specifies the node for the packets in the receive direction.
opcode	Specifies the opcode for the packets in the receive direction.
sap	Specifies the sap for the packets in the receive direction.
range	Specifies the integer range from 1 to 4096.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fcc all** command is issued:

```
switch# debug fcc all
```

debug fcdomain

To enable debugging for the fcdomain feature, use the **debug fcdomain** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fcdomain {**all** | **critical** | **error** |
fc {**pkt** | **pkthdr**} {**both** | **rx** | **tx**} [**interface** *type number* [**vsan** *vsan-id*] | **vsan** *vsan-id*] |
ipc {**pkt** | **pkthdr**} {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} |
memory | **notify** | **phase**}

no debug fcdomain {**all** | **critical** | **error** |
fc {**pkt** | **pkthdr**} {**both** | **rx** | **tx**} [**interface** *type number* [**vsan** *vsan-id*] | **vsan** *vsan-id*] |
ipc {**pkt** | **pkthdr**} {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} |
memory | **notify** | **phase**}

Syntax Description

all	Enables debugging of all fcdomain parameters.
critical	Enables debugging of critical operations.
error	Enables debugging of error operation.
fc	Enables debugging of Fibre Channel Packets and Headers.
ipc	Enables debugging of IPC Packets and Headers.
pkt	Enables debugging of packets.
pkthdr	Enables debugging of headers.
both	Enables debugging in both the transmit and receive directions.
rx	Enables debugging in the receive direction.
interface *type number*	Specifies the interface to be debugged.
vsan *vsan-id*	Restricts debugging to the specified VSAN.
tx	Enables debugging in the transmit direction,
memory	Enables debugging of memory operations.
notify	Enables debugging of notifications
phase	Enables debugging of global phases

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fcdomain critical** command is issued:

```
switch# debug fcdomain critical
Jan 27 07:04:31 fcdomain: Src: 0x00000501/6243  Dst: 0x00000501/14  ID: 0x0005BF
41  Size: 252 [REQ] Opc: 182 (MTS_OPC_DEBUG_WRAP_MSG) RR: 0x0005BF41  HA_SEQNO:
0x00000000  TS: 0x183C4D027F4A3
Jan 27 07:04:31 fcdomain: 00 00 00 00 68 00 00 00 00 00 00 00 00 00 00 00
Jan 27 07:04:31 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Jan 27 07:04:31 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 FF FF FF FF
Jan 27 07:04:31 fcdomain: 2F 64 65 76 2F 70 74 73 2F 30 00 00 00 00 00 00
Jan 27 07:04:31 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
...
```

The following example displays the system output when the **debug fcdomain error** command is issued:

```
switch# debug fcdomain error
Jan 27 07:05:29 fcdomain: Src: 0x00000501/6245  Dst: 0x00000501/14  ID: 0x0005BF
7E  Size: 252 [REQ] Opc: 182 (MTS_OPC_DEBUG_WRAP_MSG) RR: 0x0005BF7E  HA_SEQNO:
0x00000000  TS: 0x183D5E63C081A
Jan 27 07:05:29 fcdomain: 00 00 00 00 64 00 00 00 00 00 00 00 00 00 00 00
Jan 27 07:05:29 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Jan 27 07:05:29 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 FF FF FF FF
Jan 27 07:05:29 fcdomain: 2F 64 65 76 2F 70 74 73 2F 30 00 00 00 00 00 00
...
```

The following example displays the system output when the **debug fcdomain ipc pkthdr both** command is issued:

```
vegas2# debug fcdomain ipc pkthdr both
Apr  8 20:44:38 fcdomain: Src: 0x00000501/3883  Dst: 0x00000501/14  ID: 0x00038E
1D  Size: 252 [REQ] Opc: 182 (MTS_OPC_DEBUG_WRAP_MSG) RR: 0x00038E1D  HA_SEQNO:
0x00000000  TS: 0x5DD9B14EA3AA  REJ:0
Apr  8 20:44:38 fcdomain: 00 00 00 00 08 00 00 00 00 00 00 00 00 00 00 00
Apr  8 20:44:38 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr  8 20:44:38 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 FF FF FF FF
Apr  8 20:44:38 fcdomain: 2F 64 65 76 2F 70 74 73 2F 30 00 00 00 00 00 00
Apr  8 20:44:38 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr  8 20:44:38 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
...
Apr  8 20:44:38 fcdomain: Src: 0x00000501/3883  Dst: 0x00000501/14  ID: 0x00038E
20  Size: 252 [REQ] Opc: 182 (MTS_OPC_DEBUG_WRAP_MSG) RR: 0x00038E20  HA_SEQNO:
0x00000000  TS: 0x5DD9B186CCEB  REJ:0
Apr  8 20:44:38 fcdomain: 00 00 00 00 07 00 00 00 00 00 00 00 00 00 00 00
Apr  8 20:44:38 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr  8 20:44:38 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 FF FF FF FF
Apr  8 20:44:38 fcdomain: 2F 64 65 76 2F 70 74 73 2F 30 00 00 00 00 00 00
Apr  8 20:44:38 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr  8 20:44:38 fcdomain: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
...
```

Related Commands

Command	Description
show fcdomain domain-list	Displays current domains in the fabric.
fcdomain	Enables fcdomain features.

debug fcfwd

To enable debugging for the Fibre Channel forwarding feature, use the **debug fcfwd** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fcfwd {**flogimap** | **idxmap** | **pcmap** | **sfib** | **spanmap**} {**error** | **event** | **trace**} [**module** *slot* | **vsan** *vsan-id* [**module** *slot*]]

no debug fcfwd {**flogimap** | **idxmap** | **pcmap** | **sfib** | **spanmap**} {**error** | **event** | **trace**} [**module** *slot* | **vsan** *vsan-id* [**module** *slot*]]

Syntax Description

flogimap	Enables flogimap debugging.
idxmap	Enables idxmap debugging.
pcmap	Enables pcmap debugging.
sfib	Enables sfib debugging.
spanmap	Enables spanmap debugging.
error	Enables debugging for FCC error conditions.
event	Enables debugging for FCC events.
trace	Enables debugging for FCC traces.
module *slot*	Specifies the slot number of the module being debugged.
vsan *vsan-id*	Restricts debugging to the specified VSAN.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fcfwd error** command is issued:

```
switch# debug fcfwd error
```

debug fcns

To enable debugging for name server registration, use the **debug fcns** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fcns {**all** | **errors** | **events** {**mts** | **query** | **register**}} [**vsan** *vsan-id*]

no debug fcns {**all** | **errors** | **events** {**mts** | **query** | **register**}} [**vsan** *vsan-id*]

Syntax Description

all	Enables debugging for all name server features.
errors	Enables debugging for name server error conditions.
events	Enables debugging for name server events.
mts	Enables debugging for name server tx/rx MTS packets.
query	Enables debugging for name server tx/rx CDP packets.
register	Enables debugging for name server PSS related events.
vsan *vsan-id*	Restricts debugging to the specified VSAN.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fcns events register vsan 99** command is issued:

```
switch# debug fcns events register vsan 99
Feb 17 04:42:54 fcns: vsan 99: Got Entry for port-id 27800
Feb 17 04:42:54 fcns: vsan 99: Registered port-name 36a4078be0000021 for port-id 780200
Feb 17 04:42:54 fcns: vsan 99: Registered node-name 36a4078be0000020 for port-id 780200
...
```

debug fcs

To enable debugging for the fabric configuration server, use the **debug fcs** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fcs {**all** | **discovery events** | **errors** [**vsan** *vsan-id*] | **ess-events** [**vsan** *vsan-id*] | **mts events** {**brief** | **detail**} | **pss events** | **queries events** [**vsan** *vsan-id*] | **registrations events** [**vsan** *vsan-id*] | **rscn events** [**vsan** *vsan-id*] | **snmp events**}

no debug fcs {**all** | **discovery events** | **errors** [**vsan** *vsan-id*] | **ess-events** [**vsan** *vsan-id*] | **mts events** {**brief** | **detail**} | **pss events** | **queries events** [**vsan** *vsan-id*] | **registrations events** [**vsan** *vsan-id*] | **rscn events** [**vsan** *vsan-id*] | **snmp events**}

Syntax Description

all	Enables debugging for all FCS features.
discovery events	Enables debugging for FCS discovery events.
errors	Enables debugging for FCS error conditions.
mts events	Enables debugging for FCS tx/rx MTS events.
pss events	Enables debugging for FCS
brief	Provides brief information for each event.
detail	Provides detailed information for each event.
queries events	Enables debugging for FCS tx/rx events.
registration events	Enables debugging for FCS PSS related events.
rscn events	Enables debugging for FCS RSCN events.
snmp events	Enables debugging for FCS SNMP events.
vsan *vsan-id*	Restricts debugging to the specified VSAN.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fcs all** command is issued:

```
switch# debug fcs all
```

debug fcsp-mgr

To enable debugging for the Fibre Channel Security Protocol (FC-SP) manager, use the **debug fcsp-mgr** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fcsp-mgr {**all** | **critical** | **datastructure** | **dhchap** | **error** | **event-gen** | **fc2** | **fsm** | **general** | **ha** | **init** | **level1** | **level2** | **level3** | **level4** | **level5** | **message** | **mts** | **notify** | **trace**}

no debug fcsp-mgr {**all** | **critical** | **datastructure** | **dhchap** | **error** | **event-gen** | **fc2** | **fsm** | **general** | **ha** | **init** | **level1** | **level2** | **level3** | **level4** | **level5** | **message** | **mts** | **notify** | **trace**}

Syntax Description

all	Enables debugging for all FC-SP features.
critical	Enables debugging of FC-SP critical errors.
datastructure	Enables debugging of FC-SP data structures.
dhchap	Enables debugging of DHCHAP.
error	Enables debugging of FC-SP error.
event-gen	Enables debugging of FC-SP event generation.
fc2	Enables debugging of FC-SP FC2 messages.
fsm	Enables debugging of FC-SP events.
general	Enables general debugging of FC-SP.
ha	Enables debugging of FC-SP High Availability
init	Enables debugging of FC-SP Initialization.
level1	Sets debugging level of FC-SP Mgr to 1.
level2	Sets debugging level of FC-SP Mgr to 2.
level3	Sets debugging level of FC-SP Mgr to 3.
level4	Sets debugging level of FC-SP Mgr to 4.
level5	Set debugging level of FC-SP Mgr to 5.
message	Enables debugging of FC-SP messages.
mts	Enables debugging of FC-SP MTS messages.
notify	Sets debug level to notify.
trace	Enables debugging of FC-SP function enter/exit.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fcs all** command is issued:

```
switch# debug fcsp-mgr all
2004 Mar 29 23:33:56 fcsp-mgr: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
2004 Mar 29 23:33:56 fcsp-mgr: fu_fsm_execute_all: null fsm_event_list
2004 Mar 29 23:33:56 fcsp-mgr: fu_fsm_engine_post_event_processing: mts msg MTS_
OPC_DEBUG_WRAP_MSG(msg_id 7061762) dropped
```

debug fdmi

To enable debugging for the Fabric-Device Management Interface (FDMI) feature, use the **debug fdmi** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fdmi {**all** | **errors** | **fdmi-messages** [**vsan** *vsan-id*] | **ha** | **mts** {**pkt** {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} | **pkthdr** {**both** | **tx** | **rx** [**numpkt** *range*]}} | **pss** | **trace**}

no debug fdmi {**all** | **errors** | **fdmi-messages** [**vsan** *vsan-id*] | **ha** | **mts** {**pkt** {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} | **pkthdr** {**both** | **tx** | **rx** [**numpkt** *range*]}} | **pss** | **trace**}

Syntax Description

all	Enables debugging for all FDMI features.
errors	Enables debugging for FDMI error conditions.
fdmi-messages	Enables the dump of FDMI PDUs.
ha	Enables the dump of HA synchronization messages.
mts	Enables debugging for FDMI tx/rx MTS events.
pkt	Enables debugging for FCC tx/rx FCC packets.
both	Specifies debugging in both the transmit and receive directions.
tx	Specifies debugging in the transmit direction,
rx	Specifies debugging in the receive direction.
node	Specifies the node for the packets in the receive direction.
range	Specifies the integer range from 1 to 4096.
opcode	Specifies the opcode for the packets in the receive direction.
sap	Specifies the sap for the packets in the receive direction.
pkthdr	Enables debugging for FCC tx/rx FCC headers.
numpkt	Specifies the number of required packets
pss	Enables debugging for FDMI PSSs.
trace	Restricts debugging for FDMI traces.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fdmi all** command is issued:

```
switch# debug fdmi all
```

debug ficon

To enable debugging for the FI-bre CON-nection (FICON) interface capabilities, use the **debug ficon** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ficon {**all** | **bypass** {**acl** | **esa** | **file** | **pm** | **postcheck** | **precheck**} |
control-device {**all** | **bypass ficon_mgr** | **demux** [**vsan** *vsan-id*] | **deque** | **error** | **event** [**vsan** *vsan-id*] | **ficon_mgr** | **ha** [**vsan** *vsan-id*] | **demux** [**vsan** *vsan-id*] | **sb3** {**error** | **flow**} **trace** **[detail]** [**vsan** *vsan-id*] | **warning** [**vsan** *vsan-id*]} |
error | **event** | **file-trace** | **ha** | **max-port-number** *ports* | **pss-trace** |
stat {**all** | **demux** [**vsan** *vsan-id*] | **deque** | **error** | **event** [**vsan** *vsan-id*] | **ha** [**vsan** *vsan-id*] | **trace** [**detail**] [**vsan** *vsan-id*] | **warning** [**vsan** *vsan-id*]} |
timer | **trace**}

no debug ficon {**all** | **bypass** {**acl** | **esa** | **file** | **pm** | **postcheck** | **precheck**} |
control-device {**all** | **bypass ficon_mgr** | **demux** [**vsan** *vsan-id*] | **deque** | **error** | **event** [**vsan** *vsan-id*] | **ficon_mgr** | **ha** [**vsan** *vsan-id*] | **demux** [**vsan** *vsan-id*] | **sb3** {**error** | **flow**} **trace** **[detail]** [**vsan** *vsan-id*] | **warning** [**vsan** *vsan-id*]} |
error | **event** | **file-trace** | **ha** | **max-port-number** *port* | **pss-trace** |
stat {**all** | **demux** [**vsan** *vsan-id*] | **deque** | **error** | **event** [**vsan** *vsan-id*] | **ha** [**vsan** *vsan-id*] | **trace** [**detail**] [**vsan** *vsan-id*] | **warning** [**vsan** *vsan-id*]} |
timer | **trace**}

Syntax Description

all	Enables debugging for all FICON features.
bypass	Enables bypass flags for FICON error conditions.
acl	Bypass ACL manager execution.
esa	Bypass ESA execution.
file	Bypass file operations execution.
pm	Bypass port manager execution.
postcheck	Bypass post check execution for VSAN enable.
precheck	Bypass precheck execution for VSAN enable.
control-device	Enables the dump of FICON control devices.
all	Specifies all debug flags of FICON control device.
bypass ficon_mgr	Bypass FICON Manager.
demux	Configure debugging of FICON control device message demux.
deque	Configure debugging of FICON control device message deque.
error	Configure debugging of FICON control device error.
event	Configure debugging of FICON control device FSM and Events.
ficon_mgr	Configure debugging of FICON manager control device.
ha	Configure debugging of FICON control device HA.
sb3	Configure debugging of SB3 library.
trace	Configure debugging of FICON control device trace.
warning	Configure debugging of FICON control device warning.
error	Enables debugging for FICON errors.

event	Enables debugging for FICON events.
file-trace	Enables debugging of FICON file flow
ha	Enables the debugging of HA synchronization messages.
max-port-number *ports*	Specifies maximum number of ports.
pss-trace	Enables debugging of FICON PSS flow.
stat	Enables debugging of FICON statistics.
all	Specifies all debug flags of FICON statistics.
demux	Specifies FICON statistics message demux.
deque	Specifies FICON statistics message deque.
error	Specifies FICON statistics errors.
event	Specifies FICON statistics FSM and events.
ha	Specifies FICON statistics HA.
trace	Specifies FICON statistics trace.
warning	Specifies FICON statistics warnings
timer	Enables debugging of FICON timer messages.
trace	Enables debugging of FICON flow.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(2).

Usage Guidelines

FICON must be enabled on the switch to use this command.

Examples

The following example displays the system output when the **debug ficon all** command is issued:

```
switch# debug ficon all
```

debug flogi

To enable debugging for the fabric login (FLOGI) feature, use the **debug flogi** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug flogi {**action** [**interface** *type number* | **vsan** *vsan-id*] |
all |
bypass {**acl** | **dm** | **dpvm** | **fcsp** | **lcp** | **npiv** | **ns** | **pl** | **pm** | **pmvc** | **rib**| **vsan_mgr** | **zs**} |
demux [**interface** *type number* | **vsan** *vsan-id*] |
error |
event [**interface** *type number* | **vsan** *vsan-id*] |
ha [**interface** *type number* | **vsan** *vsan-id*] |
init [**interface** *type number* | **vsan** *vsan-id*] |
timers [**interface** *type number* | **vsan** *vsan-id*] |
trace [**interface** *type number* | **vsan** *vsan-id*] |
warning}

Syntax Description

action	Enables all FLOGI debug features.
all	Enables all FLOGI debug options.
bypass	Bypass some components in FLOGI execution.
acl	Bypass ACL execution.
dm	Bypass domain manager execution.
dpvm	Bypass DPVM execution.
fcsp	Bypass FCSP execution.
lcp	Bypass LCP execution.
npiv	Bypass NPIV execution.
ns	Bypass name server execution.
pl	Bypass port lock execution.
pm	Bypass port manager execution.
pmvc	Bypass PM VSAN change execution.
rib	Bypass RIB execution.
vsan_mgr	Bypass VSAN manager execution.
zs	Bypass zone server execution.
demux	Enables FLOGI demux
error	Enables debugging for FLOGI error conditions.
event	Enables debugging for FLOGI FSMs and events.
ha	Enables debugging for FLOGI high availability.
init	Enables debugging of FLOGI addition, deletion, and initialization.
timer	Enables debugging for FLOGI message timers
trace	Enables debugging for FLOGI traces.
warning	Enables debugging for FLOGI warnings.
interface *type number*	Restricts debugging to the specified interface.
vsan *vsan-id*	Restricts debugging to the specified VSAN.

Defaults Disabled.

Command Modes EXEC mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines None.

Examples The following example displays the system output when the **debug flogi all** command is issued:

```
switch# debug flogi all
Apr  9 22:44:08 flogi: fs_demux: msg consumed by sdwrap_process msg
Apr  9 22:44:08 flogi: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
Apr  9 22:44:08 flogi: fu_fsm_execute_all: null fsm_event_list
Apr  9 22:44:08 flogi: fu_fsm_engine: mts msg MTS_OPC_DEBUG_WRAP_MSG(msg_id 67690) dropped
```

The following example displays the system output when the **debug flogi event** command is issued:

```
switch# debug flogi event
Apr 10 00:07:16 flogi: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
Apr 10 00:07:16 flogi: fu_fsm_execute_all: null fsm_event_list
Apr 10 00:07:16 flogi: fu_fsm_engine: mts msg MTS_OPC_DEBUG_WRAP_MSG(msg_id 71314) dropped
```

The following example displays the system output when the **debug flogi trace** command is issued:

```
switch# debug flogi trace
Apr 10 00:42:36 flogi: fs_genport_vsan_hash_fn: key: 0x1 index: 0x1
Apr 10 00:42:36 flogi: fs_mts_hdlr_fs_flogo: FLOGI HOLD(0x8122144) refcnt:3
Apr 10 00:42:36 flogi: fs_clear_all_outstanding_responses_for_flogi: FLOGI FREE(
a07e00300500252b) refcnt:3
```

debug fm

To enable feature manager debugging, use the **debug fm** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fm {**error** | **flow**}

no debug fm {**error** | **flow**}

Syntax Description

error	Enables debugging for feature manager error conditions.
flow	Enables debugging for the feature manager flow.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fm flow** command is issued:

```
switch# debug fm flow
```

debug fspf

To enable debugging for the FSPF feature, use the **debug fspf** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug fspf {**all** [**interface** *type number*] [**vsan** *vsan-id*] |
database [**interface** *type number*] [**vsan** *vsan-id* |
error |
event [**interface** *type number*] [**vsan** *vsan-id*] |
fc {**pkt** | **pkthdr**} {**both** | **tx** | **rx**} [**interface** *type number*] [**vsan** *vsan-id*] |
flood [**interface** *type number*] [**vsan** *vsan-id*] |
ha [**interface** *type number*] [**vsan** *vsan-id*] |
mts {pkt {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} | **pkthdr** {**both** | **rx** [**numpkt** *range*] | **tx**}} |
retrans [**interface** *type number*] [**vsan** *vsan-id*] |
route |
timer}

no debug fspf {**all** [**interface** *type number*] [**vsan** *vsan-id*] |
database [**interface** *type number*] [**vsan** *vsan-id* |
error |
event [**interface** *type number*] [**vsan** *vsan-id*] |
fc {**pkt** | **pkthdr**} {**both** | **tx** | **rx**} [**interface** *type number*] [**vsan** *vsan-id*] |
flood [**interface** *type number*] [**vsan** *vsan-id*] |
ha [**interface** *type number*] [**vsan** *vsan-id*] |
mts {pkt {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} | **pkthdr** {**both** | **rx** [**numpkt** *range*] | **tx**}} |
retrans [**interface** *type number*] [**vsan** *vsan-id*] |
route |
timer}

Syntax Description

all	Enables debugging for all FSPF features.
database	Enables debugging for the FSPF database.
error	Enables debugging for FSPF error conditions.
events	Enables debugging for FSPF events.
fc	Enables debugging of Fibre Channel Packets and Headers.
ipc	Enables debugging of IPC Packets and Headers.
pkt	Enables debugging for FCC tx/rx FCC packets.
both	Specifies debugging in both the transmit and receive directions.
tx	Specifies debugging in the transmit direction,
rx	Specifies debugging in the receive direction.
node	Specifies the node for the packets in the receive direction.
range	Specifies the integer range from 1 to 4096.
opcode	Specifies the opcode for the packets in the receive direction.
sap	Specifies the sap for the packets in the receive direction.
pkthdr	Enables debugging for FCC tx/rx FCC headers.

numpkt	Specifies the number of required packets
flood	Enables debugging for FSPF flooding events.
ha	Enables debugging for FSPF high availability.
mts	Enables debugging for FSPF tx/rx MTS events.
retrans	Enables debugging for FSPF retransmits.
route	Enables debugging for FSPF route computation.
timer	Enables debugging for FSPF timers.
interface *type number*	Restricts debugging to the specified interface.
vsan *vsan-id*	Restricts debugging to the specified VSAN.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

If you receive bad packets on an interface, use the **debug fc pkt** command.

If you receive an error in processing a packet on an interface in VSAN, turn on **debug fspf error** to get more information. Make sure there is no misconfiguration of FSPF parameters on the two ends of the interface. Also issue the **debug fspf fc pkt** command for the specific interface.

If you receive an error in flooding the local LSR in a VSAN issue the **debug fspf flood** and **debug fspf error** commands. If error is reported in transmitting packet check if interface is up and turn on **debug fc2 error**.

If you receive an error in processing a timer event for the interface in a VSAN, issue the **debug fspf error** command.

If you receive an error in processing due to a wrong MTS message, use the **debug fspf mts pkt** and **debug fspf error** commands.

If you receive an error when interacting with RIB, use the **debug fspf route** command along with the RIB debug traces.

If you receive an error in computing routes for VSANs, issue the **debug fspf error** and the **debug fspf route** commands.

If you receive an error due to the interface being stuck in a state other than FULL, use the **debug fspf event** and **debug fspf fc pkt** commands on the interfaces involved.

Examples

The following example displays the system output when the **debug fspf all** command is issued:

```
switch1# debug fspf all
Apr 5 11:50:01 fspf: Wrong hello interval for packet on interface 100f000 in VSAN 1
Apr 5 11:50:04 fspf: Error in processing hello packet , error code = 4
```

debug hardware arbiter

To configures debugging for the hardware arbiter driver, use the **debug hardware arbiter** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug hardware arbiter {**error** | **flow**} [**group** *number*]}

no debug hardware arbiter {**error** | **flow**} [**group** *number*]}

Syntax Description

error	Enables debugging for hardware arbiter kernel errors.
flow	Enables debugging for hardware arbiter kernel flow.
group *number*	Restricts debugging to the specified group. The range is 0 to 17.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug hardware arbiter error group** command is issued:

```
switch# debug hardware arbiter error group 1
```

debug idehsd

To enable IDE hot swap handler debugging, use the **debug idehsd** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug idehsd {**cmd dbglevel** [*debug-level*] | **error** | **flow**}

no debug idehsd {**cmd dbglevel** [*debug-level*] | **error** | **flow**}

Syntax Description

cmd dbglevel	Enables debugging for the IDE hot swap handler.
debug-level	Specifies the debug level (0 to 8).
error	Enables debugging for IDE hot swap handler error conditions.
flow	Enables debugging for IDE hot swap handler flow.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug idehsd cmd dbglevel** command is issued:

```
switch# debug idehsd cmd dbglevel 5
set debug level to 5 succeeded
```

debug ilc_helper

To enable ILC helper debugging, use the **debug ilc_helper** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ilc_helper {**all** | **errors** | **events** | **info**}

no debug ilc_helper {**all** | **errors** | **events** | **info**}

Syntax Description

all	Enables debugging for all ILC helper features.
errors	Enables debugging for ILC helper error conditions.
events	Enables debugging for the ILC helper events.
info	Enables debugging for ILC helper information.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug ilc_helper all** command is issued:

```
switch# debug ilc_helper all
```

debug ipacl

To enable IP ACL debugging, use the **debug ipacl** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ipacl {**all** | **error** | **event** | **trace**}

no debug ipacl {**all** | **error** | **event** | **trace**}

Syntax Description

all	Enables debugging for all IP ACL features.
error	Enables debugging for IP ACL error conditions.
event	Enables debugging for the IP ACL events.
trace	Enables debugging for IP ACL trace.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug ipacl all** command is issued:

```
switch# debug ipacl all
```

debug ipconf

To enable IP configuration debugging, use the **debug ipconf** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ipconf {all | errors | events | info | pss}

no debug ipconf {all | errors | events | info | pss}

Syntax Description

all	Enables debugging for all IP configuration features.
errors	Enables debugging for IP configuration error conditions.
events	Enables debugging for IP configuration tx/rx MTS events.
info	Enables debugging for IP configuration information.
pss	Enables debugging for IP configuration PSS operations.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug ipconf all** command is issued:

```
switch# debug ipconf all
```

debug ipfc

To enable IPFC debugging, use the **debug ipfc** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ipfc {**all** | **errors** | **events** | **info** | **kernel** {**errors** | **events**}}

Syntax Description

all	Enables debugging for all IPFC features.
errors	Enables debugging for IPFC error conditions.
events	Enables debugging for IPFC tx/rx MTS events.
info	Enables debugging for IPFC information.
kernel	Enables debugging for IPFC kernel operations.
errors	Enables debugging for IPFC kernel error conditions.
events	Enables debugging for IPFC kernel events.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug ipfc kernel errors** command is issued:

```
switch# debug ipfc kernel errors
```

debug ips

To enable debugging for the IP storage (IPS) manager, use the **debug ips** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ips {**acl** {**flow** | **flow-detail**} | **all** | **demux** | **error** | **flow** {**ethernet** | **fcip**} | **fsm** | **ha** | **init** | **iscsi** {**config** | **config-detail** | **flow** | **flow-detail** | **msgs**} | **isns** {**config** | **config-detail** | **error** | **flow** | **flow-detail** | **msgs** | **packet**} | **show_all** | **upgrade**}

no debug ips {**acl** {**flow** | **flow-detail**} | **all** | **demux** | **error** | **flow** {**ethernet** | **fcip**} | **fsm** | **ha** | **init** | **iscsi** {**config** | **config-detail** | **flow** | **flow-detail** | **msgs**} | **isns** {**config** | **config-detail** | **error** | **flow** | **flow-detail** | **msgs** | **packet**} | **show_all** | **upgrade**}

Syntax Description

acl	Enables debugging for ACLs.
flow	Enables debugging for the IPS flow.
flow-detail	Enables detailed debugging for the IPS flow.
all	Enables all IPS debug options.
demux	Enables debugging for IPS demux
error	Enables debugging for IPS error conditions.
ethernet	Restricts debugging to the Ethernet flow
fcip	Restricts debugging to the FCIP flow
fsm	Enables debugging for IPS FSM and events.
ha	Enables debugging for IPS high availability.
init	Enables debugging of IPS addition, deletion, and initialization.
iscsi	Enables debugging of iSCSI.
config	Enables debugging of the iSCSI configuration.
config-detail	Enables detailed debugging of the iSCSI configuration.
msgs	Enables debugging of the iSCSI messages received and responded.
show_all	Enables all debugging IPS manager flags.
upgrade	Enables debugging for upgrade.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug ips show_all** command is issued:

```
switch# debug ips show_all
IPS Manager:
iSCSI Trace Detail debugging is on
```

debug klm

To enable kernel loadable module parameter debugging, use the **debug klm** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug klm {**fc2** {**cpuhog** *seconds* | **flag** *flags*} | **scsi-target** {**driver** | **error** [**vsan** *vsan-id*] [**fcid** *fc-id*] | **flag** *flags* | **flow** [**vsan** *vsan-id*] [**fcid** *fc-id*] | **snmp** | **syscall**} | **sdip** {**all** | **error** | **flow** | **warning**}}

no debug klm {**fc2** {**cpuhog** *seconds* | **flag** *flags*} | **scsi-target** {**driver** | **error** [**vsan** *vsan-id*] [**fcid** *fc-id*] | **flag** *flags* | **flow** [**vsan** *vsan-id*] [**fcid** *fc-id*] | **snmp** | **syscall**} | **sdip** {**all** | **error** | **flow** | **warning**}}

Syntax Description

fc2	Enables debugging for FC2 driver debug parameters.
cpuhog *seconds*	Specify the FC2 CPU hog value. The ranges is 0 to 10000 seconds.
flag *flags*	Specify the flag values. The ranges is 0x0 to 0xffffffff.
scsi-target	Enables debugging for the SCSI target driver.
driver	Enables debugging for SCSI target driver flags.
error	Enables debugging for driver error conditions.
vsan *vsan-id*	Restricts debugging to the specified VSAN.
fcid *fc-id*	Restricts debugging to the specified FCID interface.
flow	Enables debugging for SCSI target flow.
snmp	Enables debugging for SCSI target SNMP requests.
syscall	Enables debugging for SCSI target system call request.
sdip	Enables debugging for the SDIP driver.
all	Enables debugging for the SCSI target driver.
flow	Enables debugging for driver flow.
warning	Enables debugging for driver warnings.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug klm scsi-target driver** command is issued:

```
switch# debug klm scsi-target driver
```

debug license

To enable licensing debugging, use the **debug license** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug license {**all** | **errors** | **event s** | **mts**}

no debug license {**all** | **errors** | **events** | **mts**}

Syntax Description

all	Enables debugging for all licensing features.
errors	Enables debugging for licensing error conditions.
events	Enables debugging for the licensing events.
mts	Enables debugging for Tx/Rx packets of MTS.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug license all** command is issued:

```
switch# debug license all
```

debug logfile

To direct the output of the debug commands to a specified file, use the **debug logfile** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug logfile *filename* [**size** *bytes*]

Syntax Description

filename	Assigns the name of the log file. Maximum length is 80 characters.
size *bytes*	Specifies the logfile size in bytes. The range is 4096 to 4194304.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use this command to log debug messages to a special log file. This file is more secure and easier to process than sending the debug output to the console.

When you use the **debug logfile** command to create a log file, the file is automatically created in the log: directory on the supervisor module unless you specify a different path.

For example, using the **debug logfile** command to created a log file named captureDebug, you must enter the **dir log://sup-local/?** command to find the log file you created. Following example shows you how to find the log file created.

```
switch# debug logfile captureDebug
switch#  dir log://sup-local/?
  log:                        Enter URL "log:[//<module-number>]/<filename>"
  log://sup-local/dmesg
  log://sup-local/messages
  log://sup-local/captureDebug

switch#  dir log://sup-local/
```

Examples

The following example redirects the output of the debug commands to the file named *sample*.

```
switch# debug logfile sample
```

The following example assigns the log file size for the file named *sample*.

```
switch# debug logfile sample size 410000
```

debug mcast

To enable debugging for multicast definitions, use the **debug mcast** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug mcast {all | error [**vsan** *vsan-id*] [**interface fc** *slot/port*] **| event** [**vsan** *vsan-id*] [**interface fc** *slot/port*] **| mts {pkt** {**both | rx** [**node** *range* **| opcode** *range* **| sap** *range*] **| tx**} **| pkthdr** {**both | rx** [**numpkt** *range*] **| tx**}**} | trace** [**vsan** *vsan-id*] [**interface fc** *slot/port*]**]**

no debug mcast {all | error [**vsan** *vsan-id*] [**interface fc** *slot/port*] **| event** [**vsan** *vsan-id*] [**interface fc** *slot/port*] **| mts {pkt** {**both | rx** [**node** *range* **| opcode** *range* **| sap** *range*] **| tx**} **| pkthdr** {**both | rx** [**numpkt** *range*] **| tx**}**} | trace** [**vsan** *vsan-id*] [**interface fc** *slot/port*]**]**

Syntax Description

all	Enables debugging for all multicast definitions.
error	Enables debugging for multicast errors.
event	Enables debugging for multicast events.
mts	Enables debugging for multicast tx/rx MTS events.
trace	Enables debugging for multicast traces.
vsan *vsan-id*	Restricts debugging to the specified VSAN.
interface fc *slot/port*	Restricts debugging to the specified interface.
pkt	Specifies debugging of packets.
pkthdr	Specifies debugging of headers.
numpkt	Specifies the number of required packets
both	Specifies debugging in both the transmit and receive directions.
tx	Specifies debugging in the transmit direction,
rx	Specifies debugging in the receive direction.
node	Specifies the node for the packets in the receive direction.
opcode	Specifies the opcode for the packets in the receive direction.
sap	Specifies the sap for the packets in the receive direction.
range	Specifies the integer range from 1 to 4096.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug mcast all** command is issued:

```
switch# debug mcast all
```

debug mip

To enable debugging for multiple IP (MIP) kernel drivers, use the **debug mip** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug mip {**errors** | **events**}

no debug mip {**errors** | **events**}

Syntax Description

errors	Enables debugging for MIP error conditions.
events	Enables debugging for MIP events.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug mip errors** command is issued:

```
switch# debug mip errors
```

debug module

To enable debugging for switching or service modules, use the **debug module** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug module {**all** | **error** [**module** *slot*] | **event** | **ha** | **no-powerdown** | **trace** [**module** *slot*]}

no debug module {**all** | **error** [**module** *slot*] | **event** | **ha** | **no-powerdown** | **trace** [**module** *slot*]}

Syntax Description

all	Enables debugging for all module features.
error	Enables debugging for module error conditions.
event	Enables debugging for module events.
ha	Enables debugging for a module's high availability features.
no-powerdown	Disables the power cycle feature for the module.
trace	Enables debugging for a module's trace flows.
module *slot*	Restricts debugging to the specified module.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug fcs all** command is issued:

```
switch# debug fcs all
Apr 28 19:23:20 module: fu_fsm_execute: (ID(5): Slot 4, node 0x0402)
Apr 28 19:23:20 module:     current state [LCM_ST_LC_ONLINE]
Apr 28 19:23:20 module:     current event [LCM_EV_LCM_HEARTBEAT_TIMEOUT]
Apr 28 19:23:20 module:     next state    [LCM_ST_LC_ONLINE]
Apr 28 19:23:20 module: fu_add_pss_data: adding data for key <8, 0x3300000000000
004> to the pss runtime service add data list
Apr 28 19:23:20 module: fu_add_pss_data: added key <8, 0x3300000000000004> data
...
```

debug ntp

To enable debugging for the NTP module, use the **debug ntp** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ntp {**errors** | **info**}

no debug ntp {**errors** | **info**}

Syntax Description

errors	Enables debugging for NTP error conditions.
info	Enables debugging for NTP information and events.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug ntp errors** command is issued:

```
switch# debug ntp errors
```

debug platform

To enable debugging for the platform manager, use the **debug platform** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug platform {**all** [**fc_id** *fc-id*] | **error** [**module** *slot*] | **flow** [**module** *slot*] | **fsm** | **ha** | **hitless** | **mts** {**pkt** | **pkthdr**} {**tx** | **rx**} | **nopowerdown** | **supervisor-reset**}

no debug platform {**all** [**fc_id** *fc-id*] | **error** [**module** *slot*] | **flow** [**module** *slot*] | **fsm** | **ha** | **hitless** | **mts** {**pkt** | **pkthdr**} {**tx** | **rx**} | **nopowerdown** | **supervisor-reset**}

Syntax Description

all	Enables debugging for all platform features.
error	Enables debugging for platform-related error conditions.
flow	Enables debugging for platform-related flows.
fsm	Enables debugging for platform-related FSMs.
ha	Enables debugging for platform-related high availability.
hitless	Enables the platform loading feature while the switch is in hitless mode.
mts	Enables debugging for platform-related tx/rx MTS events.
nopowerdown	Enables powering down modules
supervisor-reset	Resets the local supervisor.
fcid *f c-id*	Restricts debugging to the specified FC ID module number. The range is 0 to 2147483647.
pkt	Enables debugging of packets.
pkthdr	Enables debugging of headers.
tx	Enables debugging in the transmit direction,
rx	Enables debugging in the receive direction.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug platform all** command is issued:

```
switch# debug platform all
```

debug port

To enable debugging for ports, use the **debug port** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug port {**all** | **bypass** {**acl_manager** | **domain_manager** | **fcsp** | **ficon** | **fport_server** | **lcp** | **loopback_diag** | **port_channel_mgr** | **port_lock** | **qos_mgr** | **span** | **switch_wwn** | **vsan_mgr** | **wwn_mgr** | **xbar_mgr** | **zone_server**} | **error** | **event** [**interface** *type number* | **module** *slot*] | **ha** [**interface** *type number* | **module** *slot*] | **trace** [**interface** *type number* | **module** *slot*]}

no debug port {**all** | **bypass** {**acl_manager** | **domain_manager** | **fcsp** | **ficon** | **fport_server** | **lcp** | **loopback_diag** | **port_channel_mgr** | **port_lock** | **qos_mgr** | **span** | **switch_wwn** | **vsan_mgr** | **wwn_mgr** | **xbar_mgr** | **zone_server**} | **error** | **event** [**interface** *type number* | **module** *slot*] | **ha** [**interface** *type number* | **module** *slot*] | **trace** [**interface** *type number* | **module** *slot*]}

Syntax Description

all	Enables all port debug options.
bypass	Bypasses some components in port execution.
error	Enables debugging for port error conditions.
event	Enables debugging for port FSMs and events.
ha	Enables debugging for port high availability.
trace	Enables debugging for port traces.
acl_manager	Bypasses ACL manager execution.
domain_manager	Bypasses domain manager execution.
fcsp	Bypasses FCSP execution.
ficon	Bypasses FICON execution.
fport_server	Bypasses FPort server execution.
lcp	Bypasses LCP execution.
loopback_diag	Bypasses loopback diagnostics execution.
port_channel_mgr	Bypasses port channel manager execution.
port_lock	Bypasses port lock execution.
qos_mgr	Bypasses QOS manager execution.
span	Bypasses SPAN execution.
switch_wwn	Bypasses using switch WWN and uses VSAN WWN in ELP.
vsan_mgr	Bypasses VSAN manager execution.
wwn_mgr	Bypasses WWN manager execution.
xbar_mgr	Bypasses XBAR manager execution.
zone_mgr	Bypasses zone manager execution.
interface *type number*	Restricts debugging to the specified interface.
module *slot*	Restricts debugging to the specified module.

Defaults

Disabled.

Command Modes EXEC mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines None.

Examples The following example displays the system output when the **debug port all** command is issued:

```
switch# debug port all
Apr 10 00:49:38 port: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
Apr 10 00:49:38 port: fu_fsm_execute_all: null fsm_event_list
Apr 10 00:49:38 port: fu_fsm_engine: mts msg MTS_OPC_DEBUG_WRAP_MSG(msg_id 40239) dropped
```

The following example displays the system output when the **debug port event** command is issued:

```
switch# debug port event
Apr 10 15:30:35 port: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
Apr 10 15:30:35 port: fu_fsm_execute_all: null fsm_event_list
Apr 10 15:30:35 port: fu_fsm_engine: mts msg MTS_OPC_DEBUG_WRAP_MSG(msg_id 7002)
 dropped
switch# Apr 10 15:30:35 port: fu_priority_select:  - setting fd[3] for select call  -
setting fd[5] for select call  - setting fd[6] for select call
Apr 10 15:30:35 port: fu_priority_select_select_queue: round credit(16)
Apr 10 15:30:35 port:     curr_q - FU_PSEL_Q_CAT_FD, usr_q_info(32), fd(5), priority(3),
credit(2), empty
Apr 10 15:30:35 port: fu_priority_select: returning FU_PSEL_Q_CAT_MTS queue, fd(3),
usr_q_info(8)
```

debug port-channel

To enable debugging for PortChannels, use the **debug port-channel** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug port-channel {**all** | **error** | **event** | **ha** | **trace** | **warning**}

no debug port-channel {**all** | **error** | **event** | **ha** | **trace** | **warning**}

Syntax Description

all	Enables all PortChannel debug options.
error	Enables debugging for PortChannel error conditions.
event	Enables debugging for PortChannel FSMs and events.
ha	Enables debugging for PortChannel high availability.
trace	Enables debugging for PortChannel traces.
warning	Enables debugging for PortChannel warning.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug port-channel all** command is issued:

```
switch# debug port-channel all
```

debug qos

To enable debugging for quality of Service (QoS), use the **debug qos** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug qos {**all** [**interface fc** *slot*/*port*] | **detail** | **errors supervisor** | **flow** | **trace**}

no debug qos {**all** [**interface fc** *slot*/*port*] | **detail** | **errors supervisor** | **flow** | **trace**}

Syntax Description

all	Enables all QoS debug options.
interface fc *slot*/*port*	Restricts debugging to the specified interface.
detail	Enables all QoS debug output.
errors supervisor	Enables debugging for supervisor QoS error conditions.
flow	Enables flow-level QoS debug options.
trace	Enables debugging for QoS traces.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug qos all** command is issued:

```
switch# debug qos all
```

debug radius

To enable debugging for boot variables, use the **debug radius** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug radius {**aaa-request** | **aaa-request-lowlevel** | **all** | **config** | **config-lowlevel**}

no debug radius {**aaa-request** | **aaa-request-lowlevel** | **all** | **config** | **config-lowlevel**}

Syntax Description

aaa-request	Enables RADIUS AAA request debug.
aaa-request-lowlevel	Enables RADIUS AAA request low-level debugging.
all	Enables Enable all the debug flags.
config	Enables RADIUS configuration debugging.
config-lowlevel	Enables RADIUS configuring low-level debugging.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug radius config-lowlevel** command is issued:

```
switch# debug radius config-lowlevel
Nov 20 06:36:42 radius: radius_new_debug_conf_open: entering...
Nov 20 06:36:42 radius: radius_new_conf_close: entering...
Nov 20 06:36:42 radius: radius_new_conf_close: returning 0
Nov 20 06:36:42 radius: radius_new_enable_info_config: entering for Radius Daemon debug
Nov 20 06:36:42 radius: radius_new_debug_conf_open: entering...
Nov 20 06:36:42 radius: radius_new_debug_conf_open: exiting
Nov 20 06:36:42 radius: radius_new_enable_info_config: SET_REQ for Radius Daemon debug
with 1
Nov 20 06:36:42 radius: radius_new_enable_info_config: SET_REQ done for Radius Daemon
debug with 1
Nov 20 06:36:42 radius: radius_new_enable_info_config: got back the return value of
configuration operation:success
Nov 20 06:36:42 radius: radius_new_debug_conf_close: entering...
Nov 20 06:36:42 radius: radius_new_debug_conf_close: returning 0
Nov 20 06:36:42 radius: radius_new_enable_info_config: exiting for Radius Daemon debug
```

debug rd-reg

To enable debugging for the list of devices using the read-register feature, use the **debug rd-reg** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug rd-reg [*device-name* | *register address*]

Syntax Description

device-name	Specifies the device name for the required device.
register address	Specifies the register address for the required device.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug rd-reg abc** command is issued:

```
switch# debug rd-reg abc
```

debug rdl errors

To enable debugging for RDL errors, use the **debug rdl errors** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug rdl errors

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug rdl errors** command is issued:

```
switch# debug rdl errors
```

debug rib

To enable debugging for the routing information base (RIB) feature, use the **debug rib** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug rib {**all** | **error** | **event** | **trace**}

Syntax Description

all	Enables debugging for all RIB features.
detail	Enables detailed debugging for all RIB features.
error	Enables debugging for RIB errors.
event	Enables debugging for RIB events.
trace	Enables debugging for trace events.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

If a RIB operation is ignored or not supported, then issue the **debug rib all** command to find out more details.

Examples

The following example displays the system output when the **debug rib error** command is issued:

```
switch# debug rib error
```

debug rlir

To enable RLIR debugging, use the **debug rlir** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug rlir {**all** | **errors** | **events** | **mts-errors** | **mts-events**}

no debug rlir {**all** | **errors** | **events** | **mts-errors** | **mts-events**}

Syntax Description

all	Enables debugging for all RLIR features.
errors	Enables debugging for RLIR error conditions.
events	Enables debugging for the RLIR events.
mts-errors	Enables debugging for MTS error conditions.
mts-events	Enables debugging for MTS events.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug rlir all** command is issued:

```
switch# debug rlir all
```

debug rscn

To enable debugging for the registered state change notification (RSCN) feature, use the **debug rscn** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug rscn {**all** | **errors** | **events** | **mts-errors** | **mts-events**} [**vsan** *vsan-id*]

no debug rscn {**all** | **errors** | **events** | **mts-errors** | **mts-events**} [**vsan** *vsan-id*]

Syntax Description

all	Enables debugging for all RSCN features.
errors	Enables debugging for RSCN errors.
events	Enables debugging for RSCN events.
mts-errors	Enables debugging for RSCN MTS errors.
mts-events	Enables debugging for RSCN MTS events.
vsan *vsan-id*	Restricts debugging to the specified VSAN.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug rscn errors** command is issued:

```
switch# debug rscn errors
```

debug scsi-target

To enable debugging for SCSI targets, use the **debug scsi-target** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug scsi-target {**error** | **flow**}

no debug scsi-target {**error** | **flow**}

Syntax Description

error	Enables debugging for SCSI target daemon error conditions.
flow	Enables debugging for the SCSI target flow.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug scsi-target flow** command is issued:

```
switch# debug scsi-target flow
Apr 28 21:11:52 vhbad: vhba_mts_handler: sdwrap_dispatch: retval:0
Apr 28 21:11:54 vhbad: vhbad_handle_timeout: timer:1 context:(nil)
Apr 28 21:12:06 vhbad: vhba_mts_handler: sysmgr_dispatch: retval:-1
```

debug security

To enable debugging for the security and accounting features, use the **debug security** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug security {**all** | **events** | **mts** | **radius**}

no debug security {**all** | **events** | **mts** | **radius**}

Syntax Description

all	Enables debugging for all security features.
events	Enables debugging for security events.
mts	Enables debugging for security MTS packets.
radius	Enables debugging for RADIUS events.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug security radius** command is issued:

```
switch# debug security radius
Mar  5 00:51:13 securityd: RADIUS is enabled, hence it will be tried first for CHAP
authentication
Mar  5 00:51:13 securityd: reading RADIUS configuration
Mar  5 00:51:13 securityd: opening radius configuration for group:default
Mar  5 00:51:13 securityd: opened the configuration successfully
Mar  5 00:51:13 securityd: GET request for RADIUS global config
Mar  5 00:51:13 securityd: got back the return value of global radius configuration
operation:success
Mar  5 00:51:13 securityd: closing RADIUS pss configuration
Mar  5 00:51:13 securityd: opening radius configuration for group:default
```

debug sensor

To enable debugging for the sensor manager, use the **debug sensor** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug sensor {**demux** | **deque** | **error** | **info** | **init**}

no debug sensor {**demux** | **deque** | **error** | **info** | **init**}

Syntax Description

demux	Enables debugging for sensor demux functions.
deque	Enables debugging for sensor deque events.
error	Enables debugging for sensor errors.
info	Enables debugging for sensor information.
init	Enables debugging for sensor initialization.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use this command to debug sensor manager events and information.

Examples

The following example displays the system output when the **debug sensor info** command is issued:

```
switch# debug sensor info
```

Related Commands

Command	Description
show environment temperature	Displays current temperature threshold settings and state.

debug snmp

To enable debugging for the SNMP manager, use the **debug snmp** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug snmp
{**all** |
errors |
mts {**pkt** {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} | **pkthdr** {**both** | **rx** [**numpkt** *range*] | **tx**}}
| **pkt-dump** |
trace {**trace-entryexit** | **trace-stub**}}

no debug snmp
{**all** |
errors |
mts {**pkt** {**both** | **rx** [**node** *range* | **opcode** *range* | **sap** *range*] | **tx**} | **pkthdr** {**both** | **rx** [**numpkt** *range*] | **tx**}}
| **pkt-dump** |
trace [**trace-entryexit** | **trace-stub**]}

Syntax Description

all	Enables debugging for all SNMP output.
errors	Enables debugging for SNMP error output.
mts	Enables debugging for SNMP packets and headers.
pkt-dump	Enables a packet dump of debug output.
trace	Enables trace level debug output.
pkt	Specifies debugging of packets.
pkthdr	Specifies debugging of headers.
both	Specifies debugging in both the transmit and receive directions.
tx	Specifies debugging in the transmit direction.
rx	Specifies debugging in the receive direction.
node	Specifies the node for the packets in the receive direction.
opcode	Specifies the opcode for the packets in the receive direction.
sap	Specifies the sap for the packets in the receive direction.
numpkt	Specifies the number of required packets
range	Specifies the integer range from 1 to 4095.
trace-entryexit	Specifies trace-level entry or exit debug output.
trace-stub	Specifies trace-level stub debug output.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug snmp trace** command is issued:

```
switch# debug snmp trace
Apr 29 16:03:34 snmpd[1177]: SDWRAP message Successfully processed
```

debug span

To enable SPAN debugging, use the **debug span** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug span {**all** | **buffer-size** *bytes* | **error** | **event** | **trace** | **warning**}

no debug span {**all** | **error** | **event** | **trace** | **warning**}

Syntax Description

all	Enables debugging for all SPAN features.
buffer-size *bytes*	Configures event logs buffer size for SPAN. The range is 4096 to 131072.
error	Enables debugging for SPAN errors.
event	Enables debugging for SPAN events.
ha	Enables debugging for SPAN HA.
lib	Enables debugging for SPAN library.
trace	Enables debugging for SPAN traces.
warning	Enables debugging for SPAN warning messages.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug span all** command is issued:

```
switch# debug span all
Apr 29 16:06:44 span: span_demux: msg consumed by sdwrap_process msg
Apr 29 16:06:44 span: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
Apr 29 16:06:44 span: fu_fsm_execute_all: null fsm_event_list
Apr 29 16:06:44 span: fu_fsm_engine: mts msg MTS_OPC_DEBUG_WRAP_MSG(msg_id 2548887)
dropped
Apr 29 16:06:48 span: fu_priority_select:  - setting fd[3] for select call
Apr 29 16:06:48 span: fu_priority_select_select_queue: round credit(12)
Apr 29 16:06:48 span:     curr_q - FU_PSEL_Q_CAT_CQ, usr_q_info(4), priority(7),
credit(6), empty
Apr 29 16:06:48 span: fu_priority_select: returning FU_PSEL_Q_CAT_MTS queue, fd(3),
usr_q_info(2)
Apr 29 16:06:48 span: span_get_data_from_mts_q dequeued mts msg (26e525),
MTS_OPC_DEBUG_WRAP_MSG
```

debug system health

To enable system health monitoring debugging, use the **debug system health** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug system health {**all** | **asic-counters** | **battery-charger** | **cache-disk** | **eobc** | **error** | **event** | **external-loopback** | **failure-analysis** | **fc2** | **ha** | **inband** | **loopback** | **mgmt** | **misc** | **mts** | **pss** | **serdes** | **special** | **trace** | **xipc**}

no debug system health {**all** | **asic-counters** | **battery-charger** | **cache-disk** | **eobc** | **error** | **event** | **external-loopback** | **failure-analysis** | **fc2** | **ha** | **inband** | **loopback** | **mgmt** | **misc** | **mts** | **pss** | **serdes** | **special** | **trace** | **xipc**}

Syntax Description

all	Enables debugging of all online health flags.
asic-counters	Enables debugging of system health ASIC statistics.
battery-charger	Enables debugging of system health battery charger tests.
cache-disk	Enables debugging of system health cache-disk tests.
eobc	Enables debugging of system health EOBC tests.
error	Enables debugging of system health error conditions.
event	Enables debugging of system health events.
external-loopback	Enables debugging of system health external loopback tests.
failure-analysis	Enables debugging of system health failure analysis.
fc2	Enables debugging of system health FC2 frames.
ha	Enables debugging of health monitoring HA flags.
inband	Enables debugging of system health inband tests.
loopback	Enables debugging of system health loopback tests.
mgmt	Enables debugging of system health management-port port tests.
misc	Enables debugging of system health misc
mts	Enables debugging of system health MTS
pss	Enables debugging of system health pss
serdes	Enables debugging of system health SerDes tests.
special	Enables debugging of system health special.
trace	Enables debugging of health monitoring trace flags.
xipc	Enables debugging of system health XIPC.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug system health** command is issued:

```
switch# debug system health all
```

debug tacacs+

To enable debugging for boot variables, use the **debug tacacs+** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug tacacs+ {**aaa-request** | **aaa-request-lowlevel** | **all** | **config** | **config-lowlevel**}

no debug tacacs+ {**aaa-request** | **aaa-request-lowlevel** | **all** | **config** | **config-lowlevel**}

Syntax Description

aaa-request	Enables TACACS+ AAA request debug.
aaa-request-lowlevel	Enables TACACS+ AAA request low-level debugging.
all	Enables Enable all the debug flags.
config	Enables TACACS+ configuration debugging.
config-lowlevel	Enables TACACS+ configuring low-level debugging.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug tacacs+ config-lowlevel** command is issued:

```
switch# debug tacacs+ config-lowlevel
Nov 20 06:39:44 tacacs: tacacs_debug_conf_open: entering...
172.22.94.252# Nov 20 06:39:44 tacacs: tacacs_debug_conf_open: exiting
Nov 20 06:39:44 tacacs: tacacs_conf_close: entering...
Nov 20 06:39:44 tacacs: tacacs_conf_close: returning 0
Nov 20 06:39:44 tacacs: tacacs_enable_info_config: entering for TACACS+ Daemon debug
Nov 20 06:39:44 tacacs: tacacs_debug_conf_open: entering...
Nov 20 06:39:44 tacacs: tacacs_debug_conf_open: exiting
Nov 20 06:39:44 tacacs: tacacs_enable_info_config: SET_REQ for TACACS+ Daemon debug with 1
Nov 20 06:39:44 tacacs: tacacs_enable_info_config: SET_REQ done for TACACS+ Daemon debug
with 1
Nov 20 06:39:44 tacacs: tacacs_enable_info_config: got back the return value of
configuration operation:success
Nov 20 06:39:44 tacacs: tacacs_debug_conf_close: entering...
Nov 20 06:39:44 tacacs: tacacs_debug_conf_close: returning 0
Nov 20 06:39:44 tacacs: tacacs_enable_info_config: exiting for TACACS+ Daemon debug
```

debug tcap

To enable debugging the exception logger, use the **debug tcap** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug tcap {**demux** | **deque** | **error** | **info** | **init**}

no debug tcap {**demux** | **deque** | **error** | **info** | **init**}

Syntax Description

demux	Enables debugging for terminal capture demux functions.
deque	Enables debugging for terminal capture deque events.
error	Enables debugging for terminal capture errors.
info	Enables debugging for terminal capture information.
init	Enables debugging for terminal capture initialization.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use this command to debug terminal capture utility events and information.

Examples

The following example displays the system output when the **debug tcap demux** command is issued:

```
switch# debug tcap demux
```

debug tlport

To enable debugging for TL port interfaces, use the **debug tlport** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug tlport {**all** | **errors** | **events** {**fc2** {**terminal** | **transit**} | **mts** | **pss**}} [**interface fc** *slot*/*port*]

no debug tlport {**all** | **errors** | **events** {**fc2** {**terminal** | **transit**} | **mts** | **pss**}} [**interface fc** *slot*/*port*]

Syntax Description

all	Enables debugging for all TL port features.
errors	Enables debugging for TL port error conditions.
events	Enables debugging for TL port monitoring events.
fc2	Enables debugging for TL port monitoring FC 2 events.
terminal	Specifies TL port monitoring FC 2 terminating events.
transit	Specifies TL port monitoring FC 2 transit events.
mts	Enables debugging for TL port monitoring MTS packets.
pss	Enables debugging for TL port monitoring PSS packets.
interface fc *slot*/*port*	Restricts debugging to the specified interface.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug tlport events pss** command is issued:

```
switch# debug tlport events pss
```

debug ttyd

To enable TTYD debugging, use the **debug ttyd** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug ttyd {**all** | **errors** | **events**}

no debug ttyd {**all** | **errors** | **events**}

Syntax Description

all	Enables debugging for all TTYD features.
errors	Enables debugging for TTYD error conditions.
events	Enables debugging for TTYD events.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug ttyd events** command is issued:

```
switch# debug ttyd events
```

debug vni

To enable debugging for a virtual network interface (VNI), use the **debug vni** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug vni {**all** | **errors** | **events** | **info** | **pss**}

no debug vni {**all** | **errors** | **events** | **info** | **pss**}

Syntax Description

all	Enables debugging for all VNI features.
errors	Enables debugging for VNI error conditions.
events	Enables debugging for VNI events.
info	Enables debugging for VNI events.
pss	Enables debugging for VNI PSS packets.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug vni all** command is issued:

```
switch# debug vni all
Apr 29 17:00:59 vni: Received MTS message
Apr 29 17:00:59 vni: message not processed by system mgr library , so process it normal
way
```

debug vrrp

To enable debugging for a Virtual Router Redundancy Protocol (VRRP), use the **debug vrrp** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug vrrp {**configuration** | **engine**} {**all** | **error** | **event** | **info**}

no debug vrrp {**configuration** | **engine**} {**all** | **error** | **event** | **info**}

Syntax Description

configuration	Enables VRRP configuration debugging.
engine	Enables VRRP engine debugging.
all	Enables debugging for all VRRP features.
error	Enables debugging for VRRP error conditions.
event	Enables debugging for VRRP events.
info	Enables debugging for VRRP events.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug vrrp engine all** command is issued:

```
switch# debug vrrp engine all
Apr 29 17:35:58 vrrp_eng: fu_priority_select:  - setting fd[7] for select call - setting
fd[11] for select call  - setting fd[12] for select call  - setting fd [13] for select
call  - setting fd[15] for select call
Apr 29 17:35:58 vrrp_eng: fu_priority_select_select_queue: round credit(6)
Apr 29 17:35:58 vrrp_eng:     curr_q - FU_PSEL_Q_CAT_FD, usr_q_info(6), fd(15),
priority(2), credit(1), empty
Apr 29 17:35:58 vrrp_eng: fu_priority_select: returning FU_PSEL_Q_CAT_FD queue, fd(7),
usr_q_info(3)
Apr 29 17:35:58 vrrp_eng: heartbeat sent
Apr 29 17:35:58 vrrp_eng: message not processed by system mgr library , so process it
normal way
```

debug vsan

To enable debugging for VSANs, use the **debug vsan** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug vsan {**all** | **global** | **ha** | **info** | **membership** | **mts**}

no debug vsan {**all** | **global** | **ha** | **info** | **membership** | **mts**}

Syntax Description

all	Enables all debugging flags for the VSAN feature.
global	Enables debugging of events for the VSAN global parameter database
ha	Enables debugging of VSAN's HA-related events.
info	Enables debugging of events for VSAN information database.
membership	Enables debugging of events for VSAN membership database.
mts	Enables debugging of Tx/Rx packets of MTS.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug vsan all** command is issued:

```
switch# debug vsan all
```

debug wr-reg

To enable debugging for the list of devices using the write-register feature, use the **debug wr-reg** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug wr-reg [*device-name* | *register-address*]

no debug wr-reg [*device-name* | *register-address*]

Syntax Description

device-name	Specifies the device name for the required device.
register-address	Specifies the register address for the required device.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug wr-reg** command is issued:

```
switch# debug wr-reg
```

debug wwn

To enable debugging for the world wide name (WWN) manager, use the **debug wwn** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug wwn {**all** | **detail** | **errors** | **flow** | **trace**}

no debug wwn {**all** | **detail** | **errors** | **flow** | **trace**}

Syntax Description

all	Enables all WWN debug options.
detail	Enables all WWN output
error	Enables debugging for WWN error conditions.
flow	Enables flow-level WWN debug options.
trace	Enables debugging for WWN traces.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug wwn all** command is issued:

```
switch# debug wwn all
Apr 29 19:24:17 wwn: 53601-wwnm_sdwrap_dispatch:77|SDWRAP massage Successfully processed
Apr 29 19:24:17 wwn: Src: 0x00000601/5206  Dst: 0x00000601/46  ID: 0x002C7DE4  Size: 252
[REQ] Opc: 182 (MTS_OPC_DEBUG_WRAP_MSG) RR: 0x002C7DE4  HA_SEQNO: 0x00000000  TS:
0x55D49A130243  REJ:0
Apr 29 19:24:17 wwn: 2F 64 65 76 2F 70 74 73 2F 30 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Apr 29 19:24:17 wwn: 00 00 00 00 00 00 00 00 2E 00 00 00
Apr 29 19:24:17 wwn: 53601-wwnm_unmask_sigalrm:1261|TRACE:
FILE=_manager/wwnm/wwnm_utilities.c
```

debug xbar

To enable crossbar debugging (XBAR), use the **debug xbar** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug xbar {**all** | **demux** | **deque** | **error** [**module** *slot*] | **fsm** [**module** *slot*] | **ha** [**module** *slot*] | **init** | **main**}

Syntax Description

all	Enables all XBAR debug options.
demux	Enables debugging for XBAR demux functions.
deque	Enables debugging for XBAR deque events.
error	Enables debugging for XBAR errors.
fsm	Enables debugging for XBAR FSMs.
ha	Enables debugging for XBAR high availability information.
init	Enables debugging for XBAR initialization.
main	Enables XBAR debugging for main functions.
module *slot*	Specifies the slot number of the module being debugged.

Defaults

Enabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example displays the system output when the **debug xbar all** command is issued:

```
switch# debug xbar all
Apr 29 19:48:34 xbar:  its a sdwrap msg, fsm utils dropping the mts msg
Apr 29 19:48:34 xbar: fu_fsm_engine: (Error) SYSERR_FU_xx: 0x10, err_num (16) in demux
Apr 29 19:48:34 xbar: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
Apr 29 19:48:34 xbar: fu_fsm_execute_all: null fsm_event_list
...
```

debug xbc

To enable crossbar client debugging (XBC), use the **debug xbc** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug xbc {**demux** | **deque** | **init** | **main**}

no debug xbc {**demux** | **deque** | **init** | **main**}

Syntax Description

demux	Enables debugging for crossbar demux functions.
deque	Enables debugging for crossbar deque events.
init	Enables debugging for crossbar initialization.
main	Enables debugging for crossbar main functions.

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use this command to debug crossbar client events and information.

Examples

The following example displays the system output when the **debug xbc init** command is issued:

```
switch# debug xbc init
```

debug zone

To enable debugging for zones, use the **debug zone** command in EXEC mode. When you finish using a debug command, remember to disable it with its specific **no** command (or use the **no debug all** command to turn off all debugging).

debug zone {**all** |
change {**errors** | **events** | **packets**} |
database {**detail** | **errors** | **events**} |
gs errors {**errors** | **events** | **packets**} |
lun-zoning {**errors** | **events** | **packets**} |
merge {**errors** | **events** | **packets**} |
mts notifications |
pss {**errors** | **events**} ||
read-only-zoning {**errors** | **events** | **packets**} |
tcam errors {**errors** | **events** | **packets**} |
transit {**errors** | **events**}} [**vsan** *vsan-id*]

no debug zone {**all** |
change {**errors** | **events** | **packets**} |
database {**detail** | **errors** | **events**} |
gs errors {**errors** | **events** | **packets**} |
lun-zoning {**errors** | **events** | **packets**} |
merge {**errors** | **events** | **packets**} |
mts notifications |
pss {**errors** | **events**} ||
read-only-zoning {**errors** | **events** | **packets**} |
tcam errors {**errors** | **events** | **packets**} |
transit {**errors** | **events**}} [**vsan** *vsan-id*]

Syntax Description

all	Enables all zone server debug options.
vsan *vsan-id*	Restricts debugging to the specified VSAN.
change	Enables debugging for change protocol messages.
database	Enables debugging for the zone database messages.
errors	Enables debugging for zone errors.
events	Enables debugging for zone events.
packets	Enables debugging for zone packets.
database	Enables debugging for database messages.
gs	Enables debugging for GS protocol messages.
lun-zoning	Enables debugging for LUN zoning messages.
merge	Enables debugging for merge protocol messages.
mts notification	Enables debugging for MTS notification messages.
pss	Enables debugging for PSS debug messages
read-only-zoning	Enables debugging for read-only Zoning messages.
tcam	Enables debugging for TCAM messages.
transit	Enables debugging for transit frame messages.

Defaults Disabled.

Command Modes EXEC mode.

Command History This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines None.

Examples The following example displays the system output when the **debug zone all** command is issued:

```
switch# debug zone all
```

E Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- end, page 7-2
- exit, page 7-3

end

To exit any of the configuration modes and return to EXEC mode, use the **end** command in configuration mode.

end

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

You can also press **Ctrl-Z** to exit configuration mode.

Examples

The following example changes the name to george. Entering the **end** command causes the system to exit configuration mode and return to EXEC mode.

```
switch(config)# hostname george
george(config)# end
switch#
```

Related Commands

Command	Description
exit	Exits configuration mode, or any of the configuration modes.

exit

To exit any configuration mode or close an active terminal session and terminate the EXEC, use the exit command at the system prompt.

exit

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

EXEC and Configuration modes.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use the **exit** command at the EXEC levels to exit the EXEC mode. Use the **exit** command at the configuration level to return to privileged EXEC mode. Use the **exit** command in interface configuration mode to return to configuration mode. You also can press **Ctrl-Z**, or use the **end** command, from any configuration mode to return to EXEC mode.

Note The **exit** command is associated with privilege level 0. If you configure AAA authorization for a privilege level greater than 0, this command will not be included in the command set for that privilege level.

Examples

The following example displays an exit from the interface configuration mode for VRRP to return to the interface configuration mode.

```
switch(config-if-vrrp)# exit
switch(config-if)#
```

The following example displays an exit from the interface configuration mode to return to the configuration mode.

```
switch(config-if)# exit
switch(config)#
```

The following example shows how to exit an active session (log-out).

```
switch# exit
```

Related Commands

Command	Description
end	Returns you to EXEC mode.

F Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- fabric-binding activate, page 8-3
- fabric-binding database copy, page 8-4
- fabric-binding database diff, page 8-5
- fabric-binding database vsan, page 8-6
- fabric-binding enable, page 8-8
- fcalias name, page 8-9
- fcanalyzer, page 8-10
- fcc priority, page 8-13
- fcdomain, page 8-14
- fcdroplatency, page 8-17
- fcflow stats, page 8-19
- , page 8-20
- fcinterop fcid-allocation, page 8-22
- fcinterop loop-monitor, page 8-23
- fcip enable, page 8-24
- fcip profile, page 8-25
- fcns proxy-port, page 8-26
- fcping, page 8-27
- fcroute, page 8-29
- fcs register, page 8-31
- fcsp dhchap, page 8-32
- fcsp enable, page 8-35
- fcsp timeout, page 8-36
- fctimer, page 8-37
- fctrace, page 8-38

- fc-tunnel, page 8-39
- ficon swap, page 8-41
- ficon vsan (EXEC mode), page 8-42
- ficon vsan (configuration mode), page 8-43
- find, page 8-45
- format, page 8-46
- fspf config vsan, page 8-47
- fspf cost, page 8-49
- fspf dead-interval, page 8-50
- fspf hello-interval, page 8-52
- fspf passive, page 8-53
- fspf retransmit-interval, page 8-54

fabric-binding activate

To activate fabric binding in a FICON enabled VSAN, use the **fabric-binding activate** command in configuration mode. To disable this feature, use the **no** form of this command.

fabric-binding activate vsan *vsan-id* [**force**]

no fabric-binding activate vsan *vsan-id*

Syntax Description

vsan *vsan-id*	Specifies the FICON-enabled VSAN. The ID of the VSAN is from 1 to 4093.
force	Forces fabric binding activation.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Fabric binding is configured on a per-VSAN basis and can only be implemented in FICON VSANs.

Examples

The following example activates the fabric binding database for the specified VSAN.

```
switch# config t
switch(config)# fabric-binding activate vsan 1
```

The following example deactivates the fabric binding database for the specified VSAN.

```
switch(config)# no fabric-binding activate vsan 10
```

The following example activates the fabric binding database for the specified VSAN forcefully—even if the configuration is not acceptable.

```
switch(config)# fabric-binding activate vsan 3 force
```

The following example reverts to the previously-configured state or to the factory default (if no state is configured)

```
switch(config)# no fabric-binding activate vsan 1 force
```

Related Commands

Command	Description
fabric-binding database	Configures a fabric-binding database.
fabric-binding enable	Enables fabric-binding.

fabric-binding database copy

To copy from the active fabric binding database to the configuration fabric binding database, use the **fabric-binding database copy** command in EXEC mode.

fabric-binding database copy vsan *vsan-id*

Syntax Description

vsan *vsan-id*	Specifies the FICON-enabled VSAN. The ID of the VSAN is from 1 to 4093.

Defaults

None

Command Modes

EXEC mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Fabric binding is configured on a per-VSAN basis and can only be implemented in FICON VSANs.

If the configured database is empty, this command is not accepted

Examples

The following example copies from the active database to the config database in VSAN 1.

```
switch# fabric-binding database copy vsan 1
```

Related Commands

Command	Description
fabric-binding diff	Provides the differences between the fabric-binding databases.

fabric-binding database diff

To view the differences between the active database and the configuration database in a FICON enabled VSAN, use the **fabric-binding database diff** command in EXEC mode.

fabric-binding database diff {**active** | **config**} **vsan** *vsan-id*

Syntax Description

active	Provides information on the differences in the active database with respect to the configuration database.
config	Provides information on information on the differences in the configuration database with respect to the active database.
vsan *vsan-id*	Specifies the FICON-enabled VSAN. The ID of the VSAN is from 1 to 4093.

Defaults

None

Command Modes

EXEC mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Fabric binding is configured on a per-VSAN basis and can only be implemented in FICON VSANs.

Examples

The following example displays the differences between the active database and the configuration database in VSAN 1.

```
switch# fabric-binding database diff active vsan 1
```

The following example displays information on the differences between the configuration database and the active database.

```
switch# fabric-binding database diff config vsan 1
```

Related Commands

Command	Description
fabric-binding copy	Copies from the active to the config fabric binding database.

fabric-binding database vsan

To configure a user-specified fabric binding list in a FICON enabled VSAN, use the **fabric-binding database vsan** command in configuration mode. To disable an FC alias, use the **no** form of this command.

fabric-binding database vsan *vsan-id*
swwn *switch-wwn* **domain** *domain-id*

fabric-binding database vsan *vsan-id*
no swwn *switch-wwn* **domain** *domain-id*

no fabric-binding database vsan *vsan-id*

Syntax Description

vsan-id	Specifies the FICON-enabled VSAN. The ID of the VSAN is from 1 to 4093.
swwn *switch-wwn*	Configures the switch WWN in dotted hex format.
domain *domain-id*	Specifies the specified domain ID. The domain ID is a number from 1 to 239.

Defaults

None

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Fabric binding is configured on a per-VSAN basis and can only be implemented in FICON VSANs.

The persistent domain ID must be specified along with the sWWN. Domain ID authorization is required in FICON VSANs where the domains are statically configured and the end devices reject a domain ID change in all switches in the fabric.

Examples

The following example enters the fabric binding database submode and adds the sWWN and domain ID of a switch to the configured database list.

```
switch# config t
switch(config)# fabric-binding database vsan 5
switch(config-fabric-binding)# swwn 21:00:05:30:23:11:11:11 domain 102
```

The following example deletes a fabric binding database for the specified VSAN.

```
switch# config t
switch(config)# no fabric-binding database vsan 10
```

The following example deletes the sWWN and domain ID of a switch from the configured database list.

```
switch# config t
switch(config)# fabric-binding database vsan 5
switch(config-fabric-binding)# no swwn 21:00:15:30:23:1a:11:03 domain 101
```

Related Commands

Command	Description
fabric-binding activate	Activates fabric-binding.
fabric-binding enable	Enables fabric-binding.

fabric-binding enable

To enable fabric binding in a FICON-enabled VSAN, use the **fabric-binding enable** command. To disable fabric binding, use the **no** form of this command.

fabric-binding enable

no fabric-binding enable

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Fabric binding is configured on a per-VSAN basis and can only be implemented in FICON VSANs.

The fabric binding feature must be enabled in each switch in the fabric that participate in the fabric binding.

Examples

The following examples enables fabric binding on that switch.

```
switch# config t
switch(config)# fabric-binding enable
```

The following example disables fabric binding on that switch.

```
switch# config t
switch(config)# no fabric-binding enable
```

Related Commands

Command	Description
fabric-binding activate	Activates fabric-binding.
fabric-binding database	Configures a fabric-binding database.

fcalias name

To configure an FC alias, use the **fcalias name** command. To disable an FC alias, use the **no** form of this command.

fcalias name *alias name* **vsan** *vsan-id*

no fcalias name *alias name* **vsan** *vsan-id*

Syntax Description

alias-name	The name of the fcalias. Maximum length is 64 characters.
vsan	The fcalias is for a VSAN.
vsan-id	The ID of the VSAN is from 1 to 4093.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

To include multiple members in any alias, use the FC ID, fWWN, or pWWN values.

Examples

The following examples show how to configure an fcalias called AliasSample on VSAN 3.

```
switch# config t
switch(config)# fcalias name AliasSample vsan 3
switch(config-fcalias)#
```

Related Commands

Command	Description
show fcalias	Displays the member name information in a Fibre Channel alias (fcalias).

fcanalyzer

To configure the Cisco Fabric Analyzer use the **fcanalyzer** command in configuration mode.

fcanalyzer {**local** [**brief**] [**display-filter** *expression*] [**limit-captured-frames** *number*] [**limit-frame-size** *bytes*] [**write** {**slot:** | **volatile:**}] | **remote** *ip-address* [**active** [*port-number*]]}

Syntax Description

local	Begins capturing the frames locally (supervisor module).
brief	Displays the protocol summary in a brief format.
display-filter *expression*	Displays the filtered frames using the provided filter expression.
limit-frame-size *bytes*	Limits the size of the frame captures. The range is 64 to 65536 bytes.
limit-captured-frames *number*	Limits the number of frames captured to 10. The range is 0 to 2147483647 frames and the default is 100 frames. Use 0 if you do not want to limit the captured frames.
write	Saves the captured frames to a specified file.
slot:	Specifies the Flash device in slot 0.
volatile:	Specifies volatile memory.
remote	Configures the remote IP address to which the captured frames will be sent.
ip-address	Specifies IP address or histamine. Maximum length is 1024 characters.
active	Enables active mode (passive is the default) with the remote host.
port-number	Specifies port number

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

You can capture Fibre Channel control traffic from a switch and decode it without having to disrupt connectivity and without having to be local to the point of analysis.

Examples

The following examples shows how to configure the Cisco Fabric Analyzer.

```
switch# config t
switch(config)# fcanalyzer local
Capturing on eth2
switch(config)# fcanalyzer local brief
Capturing on eth2
switch(config)# fcanalyzer local display-filter SampleF
Capturing on eth2
switch(config)# fcanalyzer local limit-frame-size 64
Capturing on eth2
switch(config)# fcanalyzer local limit-captured-frames 10
Capturing on eth2
sswitch(config)# fcanalyzer local write SampleFile
Capturing on eth2
switch(config)# fcanalyzer remote 10.21.0.3
Capturing on eth2
switch(config)# fcanalyzer remote 10.21.0.3 active
Capturing on eth2
```

Related Commands

Command	Description
clear fcanalyzer	Clears the entire list of configured hosts.
show fcanalyzer	Displays the list of hosts configured for a remote capture.

fcc enable

To enable Fibre Channel Congestion Control (FCC), use the **fcc enable** command in configuration mode. To disable this feature, use the **no** form of the command.

fcc enable

no fcc enable

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

FCC reduces the congestion in the traffic without interfering with standard Fibre Channel protocol.

Examples

The following example shows how to enable FCC.

```
switch# config t
switch(config)# fcc enable
```

Related Commands

Command	Description
show fcc	Displays FCC settings.

fcc priority

To assign the FCC priority to the entire switch, use the **fcc priority** command in configuration mode. To revert to the default, use the **no** form of the command.

fcc priority *number*

no fcc priority *number*

Syntax Description

number	The FCC priority threshold. The range is 0 to 7, where 0 is the lowest priority and 7 the highest priority.

Defaults

The default priority is 4.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

FCC reduces the congestion in the traffic without interfering with standard Fibre Channel protocol.

Examples

The following example shows how to configure the FCC priority threshold as 2.

```
switch# config t
switch(config)# fcc priority 2
```

Related Commands

Command	Description
show fcc	Displays FCC settings.

fcdomain

To configure the Fibre Channel domain feature, use the **fcdomain** command. The **no** form of this command, disables the FC domain.

fcdomain {**allowed** *domain* **vsan** *vsan-id* |
auto-reconfigure vsan *vsan-id* |
contiguous-allocation vsan *vsan-id* |
domain *id* {**preferred | static**} **vsan** *vsan-id* |
fabric-name *name* **vsan** *vsan-id* |
fcid {**database | persistent vsan** *vsan-id*} |
priority *value* **vsan** *vsan-id* |
restart [**disruptive**] **vsan** *vsan-id* |
vsan *vsan-id*}

no fcdomain {**allowed** *domain* **vsan** *vsan-id* |
auto-reconfigure vsan *vsan-id* |
contiguous-allocation vsan *vsan-id* |
domain *id* {**preferred | static**} **vsan** *vsan-id* |
fabric-name *name* **vsan** *vsan-id* |
fcid {**database | persistent vsan** *vsan-id*} |
priority *value* **vsan** *vsan-id* |
restart [**disruptive**] **vsan** *vsan-id* |
vsan *vsan-id*}

Syntax Description

allowed *domain*	Configures the allowed domain ID list ranging from 1 to 239.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.
auto-reconfigure	Configures autoreconfigure.
contiguous-allocation	Configures contiguous allocation.
domain *id*	Configures the domain ID and its type. The range is 0 to 239.
preferred	Configures the domain ID as preferred. By default, the local switch accepts the domain ID assigned by the principal switch and the assigned domain ID becomes the runtime domain ID.
static	Configures the domain ID as static. The assigned domain ID is discarded, all local interfaces are isolated, and the local switch assigns itself the configured domain ID, which becomes the runtime domain ID.
fabric-name *name*	Specifies the fabric name. The name format is *hh*:*hh*:*hh*:*hh*:*hh*:*hh*:*hh*:*hh*.
fcid	Configures FC domain persistent FCIDs.
database	Enters persistent FCIDs submode.
persistent	Enables or disables FC domain persistent FCIDs.
priority *value*	Specifies the FC domain priority. The range is 1 to 254.
restart	Starts a disruptive or nondisruptive reconfiguration.
disruptive	Forces the disruptive fabric reconfiguration.

Defaults

Enabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.1(1)	This command was introduced.
2.0(1)	The **global-enable** keyword option was deprecated.

Usage Guidelines

You can use this command to select the principle switch, domain ID distribution, reconfigure fabric, and allocate FC IDs.

Examples

The following examples show how to configure the Fibre Channel domain feature.

```
switch# config t

switch(config)# fcdomain domain 3 preferred vsan 87

switch(config)# no fcdomain domain 3 preferred vsan 87

switch(config)# fcdomain domain 2 static vsan 237

switch(config)# no fcdomain domain 2 static vsan 237

switch(config)# fcdomain restart vsan 1

switch(config)# fcdomain restart disruptive vsan 1

switch(config)# fcdomain priority 25 VSAN 99

switch(config)# no fcdomain priority 25 VSAN 99

switch(config)# fcdomain auto-reconfigure vsan 10

switch(config)# fcdomain contiguous-allocation vsan 81-83

switch(config)# no fcdomain contiguous-allocation vsan 1030

switch(config)# fcdomain fabric-name 20:1:ac:16:5e:0:21:01 vsan 3

switch(config)# no fcdomain fabric-name 20:1:ac:16:5e:0:21:01 vsan 3010

switch(config)# fcdomain allowed 50-110 vsan 4

switch(config)# no fcdomain allowed 50-110 vsan 5
```

Related Commands

Command	Description
show fcdomain	Displays global information about the FC domain configurations.

fcdomain rcf-reject

To enable the RCF reject flag for a Fibre Channel or FCIP interface, use the **fcdomain** option. To disable this feature, use the **no** form of the command.

fcdomain rcf-reject vsan *number*

no fcdomain rcf-reject vsan *number*

Syntax Description

vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

Enabled

Command Modes

Interface configuration submode

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

Use this option to configure the RCF reject option for the selected Fibre Channel or FCIP interface.

Examples

The following examples show how to configure the FCIP RCF reject fcdomain feature.

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fcdomain rcf-reject vsan 1
```

Related Commands

Command	Description
show fcdomain	Displays global information about the FC domain configurations.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

fcdroplatency

To configure the network and switch FC drop latency time, use the **fcdroplatency** command in configuration mode. To disable the FC latency time, use the **no** form of this command.

fcdroplatency {network *milliseconds* [**vsan** *vsan-id*] | **switch** *milliseconds*}

no fcdroplatency {network *milliseconds* [**vsan** *vsan-id*] | **switch** *milliseconds*

Syntax Description

network *milliseconds*	Specifies network latency. The range is 500 to 60000.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.
switch *milliseconds*	Specifies switch latency. The range is 0 to 60000 milliseconds.

Defaults

2000 millisecond network latency

500 millisecond switch latency

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example shows how to configure the network latency to 5000 milliseconds.

```
switch# config t
switch(config)#
switch(config)# fcdroplatency network 5000
switch(config)#
```

The following example shows how to revert to the default network latency.

```
switch(config)# no fcdroplatency network 5000
switch(config)#
```

The following example shows how to configure the switch latency to 4000 milliseconds.

```
switch(config)# fcdroplatency switch 4000
switch(config)#
```

The following example shows how to revert to the default switch latency.

```
switch(config)# no fcdroplatency switch 4000
switch(config)#
```

Related Commands

Command	Description
show fcdroplatency	Displays the configured FC drop latency parameters.

fcflow stats

To configure fcflow statistics, use the **fcflow stats** command in configuration mode. To disable the counter, use the **no** form of this command.

fcflow stats {**aggregated module** *module-number* **index** *flow-number* **vsan** *vsan-id* | **module** *module-number* **index** *flow-number destination-fcid source-fcid netmask* **vsan** *vsan-id*}

no fcflow stats {**aggregated module** *module-number* **index** *flow-number* | **module** *module-number* **index** *flow-number*}

Syntax Description

aggregated	Configures aggregated fcflow statistics.
module *module-number*	Configure fcflow statistics on a module.
index *flow-number*	Specifies a flow index. The range is 1 to 2147483647.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.
destination-fcid	Enters the destination FC ID in hexadecimal format.
source-fcid	Enters the source FC ID in hexadecimal format.
netmask	Enters the mask for the source and destination FC ID (restricted to 6 hexadecimal characters ranging from 0x000000 to 0xffffff).

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

If you enable flow counters, you can enable a maximum of 1K entries for aggregate flow and flow statistics. Be sure to assign an unused flow index to a module for each new flow. Flow indexes can be repeated across modules. The number space for flow index is shared between the aggregate flow statistics and the flow statistics.

Examples

The following example shows how to configure aggregated fcflow statistics for module 1.

```
switch-config# fcflow stats aggregated module 1
switch-config#
```

The following example enables the aggregated flow counter.

```
switch(config)# fcflow stats aggregated module 1 index 1005 vsan 1
```

The following example disables the aggregated flow counter.

```
switch(config)# no fcflow stats aggregated module 1 index 1005
```

The following example enables the flow counter for module 1.

```
switch(config)# fcflow stats module 1 index 1 0x145601 0x5601 0xffffff vsan 1
```

The following example disables the flow counter for module 1.

```
switch(config)# no fcflow stats module 2 index 1001
```

Related Commands

Command	Description
show fcflow stats	Displays the configured FC drop latency parameters.

fcid-last-byte

Use the **fcid-last-byte** command to allocate the last byte FC ID for the fabric address. To disable the configuration or to revert to factory defaults, use the **no** form of the command.

fcid-last-byte *last-byte-id*

no fcid-last-byte *last-byte-id*

Syntax Description

last-byte-fcid	Specifies the last-byte FC ID range from 0 to 250.

Defaults

0

Command Modes

FICON configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

This is an optional configuration. If you are not sure of the EBCDIC format to be used, we recommend retaining the **us-canada** (default) option.

Examples

The following example assigns the last byte FC ID for the fabric address.

```
switch# config t
switch(config)# ficon vsan 2
switch(config-ficon)# fcid-last-byte 12
```

The following example removes the configured last byte FC ID for the fabric address and reverts to the default.

```
switch# config t
switch(config)# ficon vsan 2
switch(config-ficon)# no fcid-last-byte 3
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.
ficon vsan *vsan-id*	Enables FICON on the specified VSAN.

fcinterop fcid-allocation

To allocate FC IDs on the switch, use the **fcinterop fcid-allocation** command in configuration mode. To disable FC IDs on the switch, use the **no** form of the command.

fcinterop fcid-allocation {**auto** | **flat** | **none**}

no fcinterop fcid-allocation {**auto** | **flat** | **none**}

Syntax Description

auto	Assigns single FCID to compatible HBAs.
flat	Assign single FCID.
none	Assigns FCID range.

Defaults

The default is **fcinterop fcid-allocation auto**.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

This command defines how the switch assigns FC IDs.

Examples

```
switch# config t
switch(config)# fcinterop fcid-allocation none
switch(config)# fcinterop fcid-allocation flat
switch(config)# fcinterop fcid-allocation auto
```

Related Commands

Command	Description
show flogi database	Displays the fabric login (FLOGI) table.

fcinterop loop-monitor

To monitor removal of discs from a loop port, use the **fcinterop loop-monitor** command in configuration mode. To disable loop monitoring, use the **no** form of this command.

fcinterop loop-monitor

no fcinterop loop-monitor

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

This command detects devices that are removed from a looped port.

Examples

The following example shows how to enables monitoring of NL ports in a loop.

```
switch# config t
switch(config)# fcinterop loop-monitor
```

The following example shows how to disable monitoring of NL ports in a loop.

```
switch# config t
switch(config)# no fcinterop loop-monitor
```

Related Commands

Command	Description
show flogi database	Verify if a storage device is displayed in the Fabric login (FLOGI) table.

fcip enable

To enable the FCIP feature in any switch in the Cisco MDS Family, issue the **fcip enable** command.

fcip enable

no fcip enable

Syntax Description

This command has no other arguments or keywords.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The configuration and verification commands for the iSCSI feature are only available when FCIP is enabled on a switch. When you disable this feature, all related configurations are automatically discarded.

Examples

The following command enables the FCIP feature.

```
switch(config)# fcip enable
```

The following command disables the FCIP feature (default).

```
switch(config)# no fcip enable
```

Related Commands

Command	Description
show fcip	Displays FCIP information.

fcip profile

To create and configure an FCIP profile, use the **fcip profile** command. To remove an FCIP profile, use the **no** form of the command.

fcip profile *profile-id*

no fcip profile *profile-id*

Syntax Description

profile-id	Specifies a ID range from 1 to 255.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

When you perform this command, the CLI enters FCIP profile configuration mode.

Examples

```
switch## config t
switch(config)# fcip profile 5
switch(config-profile)#
```

Related Commands

Command	Description
show fcip profile	Displays information about the FCIP profile.
interface fcip *interface_number* **use-profile** *profile-id*	Configures the interface using an existing profile ID from 1 to 255.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

fcns proxy-port

To register a name server proxy, use the **fcns proxy-port** command in configuration mode.

fcns proxy-port *wwn-id* **vsan** *vsan-id*

no fcns proxy-port *wwn-id* **vsan** *vsan-id*

Syntax Description

wwn-id	Specifies the port WWN, with the format *hh:hh:hh:hh:hh:hh:hh:hh*.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

One name server can be configured to proxy another name server and name server information can be displayed using the CLI. The name server can be viewed using the CLI or the Cisco Fabric Manager.

All name server registration requests come from the same port whose parameter is registered or changed. If it does not, then the request is rejected.

Examples

The following example shows registering a name server proxy.

```
switch# config t
switch(config)#
switch(config)# fcns proxy-port 21:00:00:e0:8b:00:26:d
```

The following example shows configuring a proxy port for VSAN 2.

```
switch(config)# fcns proxy-port 21:00:00:e0:8b:00:26:d vsan 2
```

Related Commands

Command	Description
show fcns	Displays the name server database and statistical information for a specified VSAN or for all VSANs.

fcping

To ping an N port with a specified FC ID, use the **fcping** command in EXEC mode.

fcping {fcid {*fc-port* | *domain-controller-id*} **| pwwn** *wwn-id***} vsan** *vsan-id* [**count** *number*] [**timeout** *seconds***] [usr-priority**]

Syntax Description

fc id	The FC ID of the destination N port.
fc-port	The port FC ID, with the format *0xhhhhhh*.
domain-controller-id	Verifies connection to the destination switch.
pwwn *pwwn-id*	Specifies the port WWN of the destination N port, with the format *hh*:*hh*:*hh*:*hh*:*hh*:*hh*:*hh*:*hh*.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.
count *number*	Specifies the number of frames to send. The range is 0 to 2147483647, where 0 sends frames forever.
timeout *seconds*	Specifies the timeout value in seconds. The range is 1 to 10.
usr-priority	The priority the frame receives in the switch fabric. The range is 0 to 1.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

To obtain the domain controller address, concatenate the domain ID with **FFFC**. For example, if the domain ID is **0xda**(218), the concatenated ID is **0xfffcda**.

Examples

The following example shows a fcping operation for the specified pWWN or the FCID of the destination. By default, five frames are sent.

```
switch# fcping fcid 0xd70000 vsan 1
28 bytes from  0xd70000  time = 730 usec
28 bytes from  0xd70000  time = 165 usec
28 bytes from  0xd70000  time = 262 usec
28 bytes from  0xd70000  time = 219 usec
28 bytes from  0xd70000  time = 228 usec

5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 165/270/730 usec
```

The following example shows the setting of the number of frames to be sent using the count option. The range is from 0 through 2147483647. A value of 0 will ping forever.

```
switch# fcping fcid 0xd70000 vsan 1 count 10
28 bytes from  0xd70000  time = 730 usec
28 bytes from  0xd70000  time = 165 usec
28 bytes from  0xd70000  time = 262 usec
28 bytes from  0xd70000  time = 219 usec
28 bytes from  0xd70000  time = 228 usec
28 bytes from  0xd70000  time = 230 usec
28 bytes from  0xd70000  time = 230 usec
28 bytes from  0xd70000  time = 225 usec
28 bytes from  0xd70000  time = 229 usec
28 bytes from  0xd70000  time = 183 usec

10 frames sent, 10 frames received, 0 timeouts
Round-trip min/avg/max = 165/270/730 usec
```

The following example shows the setting of the timeout value. The default period to wait is 5 seconds. The range is from 1 through 10 seconds.

```
switch# fcping fcid 0xd500b4 vsan 1 timeout 10
28 bytes from  0xd500b4  time = 1345 usec
28 bytes from  0xd500b4  time = 417 usec
28 bytes from  0xd500b4  time = 340 usec
28 bytes from  0xd500b4  time = 451 usec
28 bytes from  0xd500b4  time = 356 usec

5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 340/581/1345 usec
```

This command shows the `No response from the N port` message even when the N port or NL port is active. This is due to resource exhaustion at the N port or NL port. Retry the command a few seconds later.

```
switch# fcping fcid 0x010203 vsan 1
No response from the N port.

switch# fcping pwwn 21:00:00:20:37:6f:db:dd vsan 1
28 bytes from 21:00:00:20:37:6f:db:dd time = 1454 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 471 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 372 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 364 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 1261 usec

5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 364/784/1454 usec
```

fcroute

To configure Fibre Channel routes, use the **fcroute** command.

fcroute *fcid* [*network_mask*] **interface** {**fc** *slot*/*port* | **portchannel** *port*} **domain** *domain-id* [[**metric** *number*] **remote**] **vsan** *vsan-id*

Syntax Description

fcid	Specifies the FCID. The format is **0x***hhhhhh*.
network_mask	Specifies the FCID network mask. The format is **0x***hhhhhh*.
interface	Specifies the route for the specified interface.
fc *slot*/*port*	Specifies a Fibre Channel interface.
portchannel *port*	Specifies a PortChannel interface.
domain *domain-id*	Specifies the route for the domain of the next hop switch. The range is 1 to 239.
metric *number*	Specifies the cost of the route. The range is 1 to 65535. Default cost is 10.
remote	Configures the static route for a destination switch remotely connected.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use this command to assign forwarding information to the switch.

Examples

```
switch# config t
switch(config)#
switch(config)# fcroute 0x111211 interface fc1/1 domain 3 vsan 2
switch(config)#
switch(config)# fcroute 0x111211 interface port-channel 1 domain 3 vsan 4
switch(config)#
switch(config)# fcroute 0x031211 interface fc1/1 domain 3 metric 1 vsan 1
switch(config-if)#
switch(config)# fcroute 0x111112 interface fc1/1 domain 3 metric 3 remote vsan 3
```

Related Commands

Command	Description
show fcroute	Displays Fibre Channel routes.

fcs plat-check-global vsan

To enable FCS platform and node name checking fabric wide, use the **fcs plat-check-global vsan** command in configuration mode. To disable this feature, use the **no** form of the command.

fcs plat-check-global vsan *vsan-id*

no fcs plat-check-global vsan *vsan-id*

Syntax Description

vsan-id	Specifies the VSAN ID for platform checking, which is from 1 to 4096.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

```
switch# config t
switch(config)# fcs plat-check-global vsan 2
```

Related Commands

Command	Description
show fcs	Displays fabric configuration server information.

fcs register

To register FCS attributes, use the **fcs register** command in configuration mode. To disable this feature, use the **no** form of the command.

fcs register
platform name *name* **vsan** *vsan-id*

fcs register
no platform name *name* **vsan** *vsan-id*

Syntax Description

platform name *name*	Specifies name of the platform to register. Maximum size is 255 characters.
vsan *vsan-id*	Specifies the VSAN ID. The range is 1 to 4096.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

```
switch# config t
switch(config)# fcs register
switch(config-fcs-register)# platform Platform1 vsan 10
```

Related Commands

Command	Description
show fcs	Displays fabric configuration server information.

fcsp dhchap

To configure DHCHAP options in a switch, use the **fcsp dhchap** command in configuration mode. This command is only available when the FC-SP feature is enabled. Use the **no** form of the command to revert to factory defaults.

fcsp dhchap {**devicename** *switch-wwn* **password** [**0** | **7**] *password* |
dhgroup [**0** | **1**| **2** | **3** | **4**] |
hash [**md5** | **sha1**] |
password [**0** | **7**] *password* [**wwn** *wwn-id*]

no fcsp dhchap {**devicename** *switch-wwn* **password** [**0** | **7**] *password* |
dhgroup [**0** | **1**| **2** | **3** | **4**] |
hash [**md5** | **sha1**] |
password [**0** | **7**] *password* [*wwn-id*]

Syntax Description

devicename	Configures a password of another device in the fabric
switch-wwn	Provides the WWN of the device being configured
dhgroup	Configures DHCHAP Diffie-Hellman group priority list.
0	Null DH—no exchange is performed (default).
1| **2**	**3**	**4**	Specifies one or more of the groups specified by the standards.
hash	Configures DHCHAP Hash algorithm priority list in order of preference.
md5	Specifies the MD5 Hash algorithm.
sha1	Specifies the SHA-1 Hash algorithm
password	Configures DHCHAP password for the local switch.
0	Specifies a clear text password.
7	Specifies a password in encrypted text.
password	Provides the password with a maximum of 64 alphanumeric characters
wwn-id	The WWN ID with the format hh:hh:hh:hh:hh:hh:hh:hh.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

You can only see the **fcsp dhchap** command if you issue the **fcsp enable** command.

Using SHA-1 as the hash algorithm may prevent RADIUS or TACACS+ usage.

If you change the DH group configuration, ensure to change it globally for all switches in the fabric.

Examples

The following example enables FC-SP.

```
switch## config t
switch(config)# # fcsp enable
switch (config)#
```

The following example configures the use of only the SHA-1 hash algorithm.

```
switch(config)# fcsp dhchap hash sha1
```

The following example configures the use of only the MD-5 hash algorithm.

```
switch(config)# fcsp dhchap hash md5
```

The following example defines the use of the default hash algorithm priority list of MD-5 followed by SHA-1 for DHCHAP authentication.

```
switch(config)# fcsp dhchap hash md5 sha1
```

The following example reverts to the factory default priority list of the MD-5 hash algorithm followed by the SHA-1 hash algorithm.

```
switch(config)# no fcsp dhchap hash sha1
```

The following example prioritizes the use of DH group 2, 3, and 4 in the configured order.

```
switch(config)# fcsp dhchap group 2 3 4
```

The following example reverts to the DHCHAP factory default order of 0, 4, 1, 2, and 3 respectively.

```
switch(config)# no fcsp dhchap group 0
```

The following example configures a clear text password for the local switch.

```
switch(config)# fcsp dhchap password 0 mypassword
```

The following example configures a clear text password for the local switch to be used for the device with the specified WWN.

```
switch(config)# fcsp dhchap password 0 mypassword 30:11:bb:cc:dd:33:11:22
```

The following example removes the clear text password for the local switch to be used for the device with the specified WWN.

```
switch(config)# no fcsp dhchap password 0 mypassword 30:11:bb:cc:dd:33:11:22
```

The following example configures a password entered in an encrypted format for the local switch.

```
switch(config)# fcsp dhchap password 7 sfsfdf
```

The following example configures a password entered in an encrypted format for the local switch to be used for the device with the specified WWN.

```
switch(config)# fcsp dhchap password 7 sfsfdf 29:11:bb:cc:dd:33:11:22
```

The following example removes the password entered in an encrypted format for the local switch to be used for the device with the specified WWN.

```
switch(config)# no fcsp dhchap password 7 sfsfdf 29:11:bb:cc:dd:33:11:22
```

The following example configures a clear text password for the local switch to be used with any connecting device.

```
switch(config)# fcsp dhchap password mypassword1
```

The following example configures a password for another switch in the fabric which is identified by the Switch WWN device name.

```
switch(config)# fcsp dhchap devicename 00:11:22:33:44:aa:bb:cc password NewPassword
```

The following example removes the password entry for this switch from the local authentication database.

```
switch(config)# no fcsp dhchap devicename 00:11:22:33:44:aa:bb:cc password NewPassword
```

The following example configures a clear text password for another switch in the fabric which is identified by the Switch WWN device name.

```
switch(config)# fcsp dhchap devicename 00:11:55:66:00:aa:bb:cc password 0 NewPassword
```

The following example configures a password entered in an encrypted format for another switch in the fabric which is identified by the Switch WWN device name.

```
switch(config)# fcsp dhchap devicename 00:11:22:33:55:aa:bb:cc password 7 asdflkjh
```

Related Commands

Command	Description
fcsp enable	Enable FC-SP.
show fcsp	Displays configured FC-SP information.

fcsp enable

To enable the Fibre Channel Security Protocol (FC-SP) in a switch, use the **fcsp enable** command in configuration mode. Further FC-SP commands are available when the FC-SP feature is enabled. To disable FC-SP, use the **no** form of this command.

fcsp enable

no fcsp enable

Syntax Descriptionf

fcsp	Specifies the FC-SP feature in the switch.
enable	Enables the FC-SP feature in this switch.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following example enables FC-SP.

```
switch# config t
switch(config)# fcsp enable
switch(config)#
```

Related Commands

Command	Description
show fcsp	Displays configured FC-SP information.

fcsp timeout

To configure the timeout value for FC-SP message, use the **fcsp timeout** command in configuration mode. Use the **no** form of the command to revert to factory defaults.

fcsp timeout *timeout-period*

no fcsp timeout *timeout-period*

Syntax Description

timeout-period	Specifies the time out period. The time ranges from 20 to 100 seconds. The default is 30 seconds.

Defaults

30 seconds

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

You can only see the **fcsp timeout** command if you issue the **fcsp enable** command.

Examples

The following example configures the FCSP timeout value.

```
switch# config t
switch(config)# fcsp enable
switch(config)# fcsp timeout 60
```

Related Commands

Command	Description
fcsp enable	Enable FC-SP.
show fcsp	Displays configured FC-SP information.

fctimer

To change the default Fibre Channel timers, use the **fctimer** command in configuration mode. To revert to the default values, use the **no** form of the command.

fctimer {**d_s_tov** *milliseconds* [**vsan** *vsan-id*] | **e_d_tov** *milliseconds* [**vsan** *vsan-id*] | **r_a_tov** *milliseconds* [**vsan** *vsan-id*]}

no fctimer {**d_s_tov** *milliseconds* [**vsan** *vsan-id*] | **e_d_tov** *milliseconds* [**vsan** *vsan-id*] | **r_a_tov** *milliseconds* [**vsan** *vsan-id*]}

Syntax Description

d_s_tov *milliseconds*	Specifies the distributed services time out value. The range is 5000 to 100000 milliseconds.
e_d_tov *milliseconds*	Specifies the error detect time out value. The range is 1000 to 100000 milliseconds, with a default of 2000.
r_a_tov *milliseconds*	Specifies the resolution allocation time out value. The range is 5000 to 100000 milliseconds, with a default of 10000.
vsan *vsan-id*	Specifies the VSAN ID. The range is 1 to 4096.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The Cisco MDS 9000, Brocade, and McData FC Error Detect (ED_TOV) and Resource Allocation (RA_TOV) timers default to the same values. They can be changed if needed. In accordance with the FC-SW2 standard, these values must be the same on each switch within in the fabric.

Use the **vsan** option to configure different TOV values for VSANs with special types of links like FC or IP tunnels.

Examples

The following examples show how to change the default Fibre Channel timers.

```
switch# config t
switch(config)# fctimer e_d_tov 5000
switch(config)# fctimer r_a_tov 7000
```

Related Commands

Command	Description
show fctimer	Displays the configured Fibre Channel timer values.

fctrace

To trace the route to an N port, use the **fctrace** command in EXEC mode.

fctrace {fcid *fcid* **vsan** *vsan-id* [**timeout** *value]* **| pwwn** *pwwn-id* [**timeout** *seconds*]}

Syntax Description

fcid *fcid*	The FCID of the destination N port, with the format **0x***hhhhhh*
pwwn *pwwn-id*	The PWWN of the destination N port, with the format *hh*:*hh*:*hh*:*hh*:*hh*:*hh*:*hh*:*hh*.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.
timeout *seconds*	Configures the timeout value. The range is 1 to 10.

Defaults

By default, the period to wait before timing out is 5 seconds.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example traces a route to the specified fcid in VSAN 1.

```
switch# fctrace fcid 0x660000 vsan 1
Route present for :  0x660000
20:00:00:05:30:00:5f:1e(0xfffc65)
Latency: 0 msec
20:00:00:05:30:00:61:5e(0xfffc66)
Latency: 0 msec
20:00:00:05:30:00:61:5e(0xfffc66)
```

fc-tunnel

To terminate a Fibre Channel tunnel in a destination switch, use the **fc-tunnel** command. To remove a configuration or revert it to factory defaults, use the **no** form of the command.

fc-tunnel {**enable** | **explicit-path** *name* [**next-address** *ip-address* {**loose** | **strict**}] | **tunnel-id-map** *tunnel-id* **interface fc** *slot-number*}

no fc-tunnel {**enable** | **explicit-path** *name* | **tunnel-id-map** *tunnel-id*}

Syntax Description

enable	Enables the FC tunnel feature
explicit-path *name*	Specifies an explicit path. Maximum length is 16 characters.
next-address *ip-address*	Specifies the IP address of the next hop switch.
loose	Specifies that a direct connection to the next hop is not required.
strict	Specifies that a direct connection to the next hop is required.
tunnel-id-map *tunnel-id*	Specifies fc-tunnel id to outgoing interface. The range is 1 to 255.
interface fc *slot/port*	Configures the Fiber Channel interface in the destination switch.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

All VSANs with RSPAN traffic must be enabled. If a VSAN containing RSPAN traffic is not enabled, it will be dropped.

The FC tunnel can only be configured in the same subnet as the VSAN interface.

The Fibre Channel tunnel feature must be enabled (the **interface fc-tunnel** command) on *each* switch in the end-to-end path of the Fibre Channel fabric in which RSPAN is to be implemented

Examples

The following example enables the FC tunnel feature.

```
switch# config t
switchS(config)# fc-tunnel enable
```

The following example places you at the explicit path prompt for the path named Path 1and specifies that the next hop VSAN interface IP addresses.

```
switch# config t
switchS(config)# fc-tunnel explicit-path Path1
switchS(config-explicit-path)# next-address 10.10.10.2 strict
switchS(config-explicit-path)# next-address 10.10.10.3 strict
switchS(config-explicit-path)# next-address 10.10.10.4 strict
```

The following example places you at the explicit path prompt for the path named Path 3 and configures a minimum cost path in which this IP address exists.

```
switchS(config)# fc-tunnel explicit-path Path3
switchS(config-explicit-path)# next-address 10.10.10.3 loose
```

The following example configures the FC tunnel (100) in the destination switch (switch D).

```
switchD(config)# fc-tunnel tunnel-id-map 100 interface fc2/1
```

The following example creates two explicit paths and configures the next hop addresses for each path in the source switch (switch S).

```
switchS# config t
switchS(config)# fc-tunnel explicit-path Path1
switchS(config-explicit-path)# next-address 10.10.10.2 strict
switchS(config-explicit-path)# next-address 10.10.10.3 strict
switchS(config-explicit-path)# next-address 10.10.10.4 strict
switchS(config-explicit-path)# exit
switchS(config)# fc-tunnel explicit-path Path3
switchS(config-explicit-path)# next-address 10.10.10.3 loose
```

The following example references the configured path in the source switch (switch S).

```
switchS# config t
switchS(config)# interface fc-tunnel 100
switchS(config)# explicit-path Path1
```

Related Commands

Command	Description
show span session	Displays all SPAN session information.
show fc-tunnel tunnel-id-map	Displays FC tunnel egress mapping information

ficon swap

To enable the FICON feature in a specified VSAN, use the **ficon swap** command in configuration mode.

ficon swap portnumber *port-number port-number* [**after swap noshut**]

Syntax Description

portnumber	Configures the FICON port number for this interface.
port-number	Specifies the port numbers that must be swapped
after swap noshut	Initializes the port shut down after the ports are swapped.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The **ficon swap portnumber** *old-port-number new port-number* command causes all configuration associated with *old-port-number* and *new port-number* to be swapped, including VSAN configurations. This command is only associated with the two ports in concerned. You must issue this VSAN-independent command from the EXEC mode.

If you specify the **ficon swap portnumber after swap noshut** command, the ports will automatically be initialize.

Refer to the *Cisco MDS 9000 Family Configuration Guide* for further information.

Examples

The following example swaps the contents of ports 3 with port 15, shuts them down, and automatically initializes both ports.

```
switch# ficon swap portnumber 3 15 after swap noshut
```

The following example swaps the contents of ports 3 with port 15 and shuts them down.

```
switch# ficon swap portnumber 3 15
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

ficon vsan (EXEC mode)

To configure FICON related parameters in EXEC mode, use the **ficon vsan** command. To remove the configuration or revert to the default values, use the **no** form of the command.

ficon vsan *vsan-id* | **apply file** *file-name* | **copy file** *old-file-name new-file-name* | **offline** | **online**}

Syntax Description

vsan-id	Enters the FICON configuration mode for the specified VSAN (from 1 to 4096).
apply file *file-name*	Specifies the existing FICON configuration file name after switch initialization. Maximum length is 80 characters.
copy file	Makes a copy of the specified FICON configuration file.
old-file-name	Specifies the old (existing) FICON configuration file name
new-file-name	Specifies the new name for the copied file.
offline	Logs out all ports in the VSAN that needs to be suspended.
online	Removes the offline condition and to allow ports to log on again.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

When an MDS switch is booting up with saved configuration, if FICON is enabled on a VSAN, the IPL configuration file is applied automatically by the SAN-OS software after the switch initialization is completed.

Use the **ficon vsan** *vsan-id* **copy file** *exiting-file-name save-as-file-name* command to copy an existing FICON configuration file. You can see the list of existing configuration files by issuing the **show ficon vsan** *vsan-id* command

Examples

The following example applies the configuration from the saved files to the running configuration.

```
switch# ficon vsan 2 apply file SampleFile
```

The following example copies an existing FICON configuration file called IPL and renames it to IPL3.

```
switch# ficon vsan 20 copy file IPL IPL3
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

ficon vsan (configuration mode)

To enable the FICON feature in a specified VSAN, use the **ficon vsan** command in configuration mode. To disable the feature or to revert to factory defaults, use the **no** form of the command.

ficon vsan *vsan-id*

Syntax Description

vsan *vsan-id*	Enters the FICON configuration mode for the specified VSAN (from 1 to 4096).

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

An IPL configuration file is automatically created

Once you enable FICON, you cannot disable in-order delivery, fabric binding, or static domain ID configurations.

When you disable FICON, the FICON configuration file is also deleted.

Examples

The following example is enables FICON on VSAN 2.

```
switch(config)# ficon vsan 2
```

The following example is disables FICON on VSAN 6.

```
switch(config)# no ficon vsan 6
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

file

To access FICON configuration files in a specified VSAN, use the **file** command. To disable the feature or to revert to factory defaults, use the **no** form of the command.

file *file-name*

no file *file-name*

Syntax Description

file *file-name*	Creates or accesses the FICON configuration file in the specified VSAN

Defaults

None.

Command Modes

FICON configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The configuration file submode allows you to create and edit FICON configuration files. If a specified file does not exist, it is created. Up to 16 files can be saved. Each file name is restricted to 8 alphanumeric characters.

Examples

The following example accesses the FICON configuration file called IplFile1 for VSAN 2. If this file does not exist, it is created.

```
switch# config t
switch(config)# ficon vsan 2
switch(config-ficon)# file IplFile1
switch(config-ficon-file)#
```

The following example deletes a previously-created FICON configuration file.

```
switch(config-ficon)# no file IplFileA
```

Related Commands

Command	Description
ficon vsan	Enable FICON for a VSAN.
show ficon	Displays configured FICON details.

find

To display a list of files on a file system, use the **find** command in EXEC mode.

find *filename*

Syntax Description

filename	Specifies a search string to match to the files in the default directory. Maximum length is 64 characters.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use the **find** (Flash file system) command to display more detail about the files in a particular file system.

Examples

The following example is sample output of all files that begin with the letter *a*:

```
switch# find a
./accountingd
./acl
./ascii_cfg_server
./arping
```

Related Commands

Command	Description
cd	Changes the default directory or file system.
dir	Displays all files in a given file system.

format

To erase all the information on a module, use the **format** command in EXEC mode.

format {**bootflash:** | **slot0:**}

Syntax Description

bootflash:	Specifies bootflash: memory.
slot0:	Specifies the Flash device in slot 0.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The SAN-OS software only supports Cisco-certified CompactFlash devices that are formatted using Cisco MDS switches. Using uncertified CompactFlash devices may result in unpredictable consequences; formatting CompactFlash devices using other platforms may result in errors.

Examples

The following example erases all information on the bootflash memory.

```
switch# format bootflash:
```

fspf config vsan

To configure an FSPF feature for the entire VSAN, use the **fspf config vsan** command in configuration mode. To delete FSPF configuration for the entire VSAN, use the **no** form of the command.

fspf config vsan *vsan-id*
min-ls-arrival *ls-arrival-time*
min-ls-interval *ls-interval-time*
region *region-id*
spf {**hold-time** *spf-holdtime* | **static**}

fspf config vsan *vsan-id*
no min-ls-arrival
no min-ls-interval
no region
no spf {**hold-time** | **static**}

no fspf config vsan *vsan-id*

Syntax Description

vsan-id	Specifies a VSAN ID. The range is 1 to 4093.
min-ls-arrival *ls-arrival-time*	Specifies the minimum time before a new link state update for a domain will be accepted by switch. The parameter *ls-arrival-time* is an integer specifying time in milliseconds. The range is 0 to 65535.
min-ls-interval *ls-interval-time*	Specifies the minimum time before a new link state update for a domain will be generated by the switch. The parameter *ls-interval-time* is an integer specifying time in milliseconds. The range is 0 to 65535.
region *region-id*	Specifies the autonomous region to which the switch belongs. The backbone region has *region-id*=0. The parameter *region-id* is an unsigned integer value ranging from 0 to 255.
spf	Specifies parameters related to SPF route computation.
hold-time *spf-holdtime*	Specifies the time between two consecutive SPF computations. If the time is small then routing will react faster to changes but CPU usage will be more. The parameter *spf-holdtime* is an integer specifying time in milliseconds. The range is 0 to 65535.
static	Forces static SPF computation.

Defaults

In the FSPF configuration mode, the default is dynamic.

If configuring spf hold-time, the default value for FSPF is 0.

If configuring min-ls-arrival, the default value for FSPF is 1000 msecs.

If configuring min-ls-interval, the default value for FSPF is 5000 msecs.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

This command configures FSPF on VSANs globally.

For the commands issued in FSPF configuration mode, you do not have to specify the VSAN number every time. This prevents configuration errors that might result from specifying the wrong VSAN number for these commands.

Examples

The following example configures FSPF globally in VSAN 1, deletes the FSPF configured in VSAN 3, disables FSPF in VSAN 5, and enables FSPF in VSAN 7.

```
switch## config t
switch(config)##
switch(config)# fspf config vsan 1
switch-config-(fspf-config)# spf static
switch-config-(fspf-config)# exit
switch(config)#
switch(config)# no fspf config vsan 3
switch(config)#
```

Related Commands

Command	Description
show fspf interface	Displays information for each selected interface.
fspf enable	Enables FSPF routing protocol in the specified VSAN (from the `switch(config-if)#` prompt).
fspf cost	Configures the cost for the selected interface in the specified VSAN (from the `switch(config-if)#` prompt).
fspf hello-interval	Specifies the hello message interval to verify the health of a link in the VSAN (from the `switch(config-if)#` prompt).
fspf passive	Disables the FSPF protocol for the specified interface in the specified VSAN (from the `switch(config-if)#` prompt).
fspf retrasmit	Specifies the retransmit time interval for unacknowledged link state updates in specified VSAN (from the `switch(config-if)#` prompt).

fspf cost

To configure FSPF link cost for an FCIP interface, use the **fspf cost** command. Torevert to the default value, use the **no** form of the command.

fspf cost *link-cost* **vsan** *vsan-id*

no fspf cost *link-cost* **vsan** *vsan-id*

Syntax Description

link-cost	Enters FSPF link cost in seconds. The range is 1 to 65535.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

1000 seconds for 1 Gbps

500 seconds for 2 Gbps

Command Modes

Interface configuration submode

Command History

This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

FSPF tracks the state of links on all switches in the fabric, associates a cost with each link in its database, and then chooses the path with a minimal cost. The cost associated with an interface can be changed using the **fspf cost** command to implement the FSPF route selection.

Examples

seconds.

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf cost 5000 vsan 1
```

Related Commands

Command	Description
show fspf interface	Displays information for each selected interface.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf dead-interval

To set the maximum interval for which a hello message must be received before the neighbor is considered lost, use the **fspf dead-interval** command. To revert to the default value, use the **no** form of the command.

fspf dead-interval *seconds* **vsan** *vsan-id*

no fspf dead-interval *seconds* **vsan** *vsan-id*

Syntax Description

seconds	Specifies the FSPF dead interval in seconds. The rage is 2 to 65535.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

80 seconds

Command Modes

Interface configuration submode

Command History

This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

Note This value must be the same in the ports at both ends of the ISL.

Caution An error is reported at the command prompt if the configured dead time interval is less than the hello time interval.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf dead-interval 4000 vsan 1
```

Related Commands

Command	Description
show fspf interface	Displays information for each selected interface.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf enable vsan

To enable FSPF for a VSAN, use the **fspf enable** command in configuration mode. To disable FSPF routing protocols, use the **no** form of the command.

fspf enable vsan *vsan-id*

no fspf enable vsan *vsan-id*

Syntax Description

vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

Enabled

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

This command configures FSPF on VSANs globally.

Examples

The following example enables FSPF in VSAN 5 and disables FSPF in VSAN 7.

```
switch## config t
switch(config)# fspf enable vsan 5
switch(config)# no fspf enable vsan 7
```

Related Commands

Command	Description
fspf config vsan	Configures FSPF features for a VSAN.
show fspf interface	Displays information for each selected interface.

fspf hello-interval

To verify the health of the link, use the **fspf hello-interval** command. To revert to the default value, use the **no** form of the command.

fspf hello-interval *seconds* **vsan** *vsan-id*

no fspf hello-interval *seconds* **vsan** *vsan-id*

Syntax Description

hello-interval *seconds*	Specifies the FSPF hello-interval in seconds. The rage is 2 to 65535.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

20 seconds

Command Modes

Interface configuration submode

Command History

This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

This command configures FSPF for the specified FCIP interface.

Note This value must be the same in the ports at both ends of the ISL.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf hello-interval 3 vsan 1
```

Related Commands

Command	Description
show fspf interface	Displays information for each selected interface.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf passive

To disable the FSPF protocol for selected interfaces, use the **fspf passive** command. To revert to the default state, use the **no** form of the command.

fspf passive vsan *vsan-id*

no fspf passive vsan *vsan-id*

Syntax Description

vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

FSPF is enabled.

Command Modes

Interface configuration submode

Command History

This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

By default, FSPF is enabled on all E ports andTE ports. FSPF can be disabled by setting the interface as passive using the **fspf passive** command.

Note FSPF must be enabled on the ports at both ends of the ISL for the protocol to operate correctly.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf passive vsan 1
```

Related Commands

Command	Description
show fspf interface	Displays information for each selected interface.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf retransmit-interval

To specify the time after which an unacknowledged link state update should be transmitted on the interface, use the **fspf retransmit-interval** command. To revert to the default value, use the **no** form of the command.

fspf retransmit-interval *seconds* **vsan** *vsan-id*

no spf retransmit-interval *seconds* **vsan** *vsan-id*

Syntax Description

seconds	Specifies FSPF retransmit interval in seconds. The range is 1 to 65535.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

5 seconds

Command Modes

Interface configuration submode

Command History

This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

Note This value must be the same in the ports at both ends of the ISL.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf retransmit-interval 6 vsan 1
```

Related Commands

Command	Description
show fspf interface	Displays information for each selected interface.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

G Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "About the CLI Command Modes" section on page 1-3 to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- gzip, page 9-2
- gunzip, page 9-3

gzip

To compress (zip) a specified file using LZ77 coding, use the **gzip** command in EXEC mode.

gzip {**bootflash: | slot0: | volatile:**} *filename*

Syntax Description

bootflash:	Source location for the file to be compressed and destination of the compressed file.
slot0:	Source location for the file to be compressed and destination of the compressed file.
volatile:	Source location for the file to be compressed and destination of the compressed file.This is the default directory.
filename	The name of the file to be compressed.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

This command is useful in compressing large files. The output of the **show tech-support** command can directed to a file and compressed for further use. The **gzip** command replaces the source file with a compressed .gz file.

Examples

This example directs the output of the **show tech-support** command to a file (Samplefile) and then zips the file and displays the difference in the space used up in the volatile: directory:

```
switch# show tech-support > Samplefile
Building Configuration ...
switch# dir
    1525859     Jul 04 00:51:03 2003  Samplefile
Usage for volatile://
    1527808 bytes used
   19443712 bytes free
   20971520 bytes total
switch# gzip volatile:Samplefile
switch# dir
     266069     Jul 04 00:51:03 2003  Samplefile.gz
Usage for volatile://
     266240 bytes used
   20705280 bytes free
   20971520 bytes total
```

Related Commands

Command	Description
gunzip	Uncompresses LZ77 coded files.

gunzip

To uncompress (unzip) LZ77 coded files, use the **gunzip** command in EXEC mode.

gunzip {**bootflash:** | **slot0:** | **volatile:**} *filename*

Syntax Description

bootflash:	Source location for the compressed file and destination of the uncompressed file.
slot0:	Source location for the compressed file and destination of the uncompressed file.
volatile:	Source location for the compressed file and destination of the uncompressed file. This is the default directory.
filename	The name of the compressed file.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

This command is useful in uncompressing large files. The **gunzip** command replaces the compressed.gz source file with an uncompressed file.

Examples

This example unzips a compressed file on volatile: directory and displays the space used:

```
switch# dir
     266069     Jul 04 00:51:03 2003  Samplefile.gz
Usage for volatile://
     266240 bytes used
   20705280 bytes free
   20971520 bytes total
switch# gunzip Samplefile
switch# dir
    1525859     Jul 04 00:51:03 2003 Samplefile
Usage for volatile://
    1527808 bytes used
   19443712 bytes free
   20971520 bytes total
```

Related Commands

Command	Description
gzip	Compresses a specified file using LZ77 coding.

CHAPTER 10

H Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "About the CLI Command Modes" section on page 1-3 to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- host, page 10-2

host

Use the **host** command to configure the switch offline state, the mainframe access control parameters, and the mainframe time stamp parameters. To disable the configuration or to revert to factory defaults, use the **no** form of the command.

host {**control** [**switch offline**] | **port control** | **set-timestamp**}

no host {**control** [**switch offline**] | **port control** | **set-timestamp**}

Syntax Description

control	Allows the host control of FICON.
switch offline	Allows the host to move the switch to an offline state and shut down the ports (default).
port control	Enables the host to configure FICON parameters.
set-timestamp	Allows the host to set the director clock

Defaults

Host offline control enabled.

Command Modes

FICON configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

By default, the clock in each VSAN is the same as the switch hardware clock. Mainframe users are allowed to change the VSAN-clock.

Examples

The following example prohibits mainframe users from moving the switch to an offline state.

```
switch# config t
switch(config)# ficon vsan 2
switch(config-ficon)# no host control switch offline
```

The following example allows the host to move the switch to an offline state and shut down the ports .

```
switch(config-ficon)# host control switch offline
```

The following example prohibits mainframe users to configure FICON parameters in the Cisco MDS switch (default).

```
switch(config-ficon)# no host port control
```

The following example allows mainframe users to configure FICON parameters in the Cisco MDS switch.

```
switch(config-ficon)# host port control
```

The following example prohibits mainframe users from changing the VSAN-specific clock.

```
switch(config-ficon)# no host set-timestamp
```

The following example allows the host to set the clock on this switch (default).

```
switch(config-ficon)# host set-timestamp
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.
ficon vsan *vsan-id*	Enables FICON on the specified VSAN.

I Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- in-order-guarantee, page 11-3
- install all, page 11-4
- install license, page 11-10
- install module bios, page 11-11
- install module epld, page 11-12
- install module loader, page 11-14
- interface, page 11-15
- interface fc, page 11-17
- interface fc-tunnel, page 11-19
- interface fcip, page 11-21
- interface gigabitethernet, page 11-24
- interface gigabitethernet, page 11-24
- interface iscsi, page 11-26
- interface mgmt, page 11-28
- interface port-channel, page 11-29
- interface vsan, page 11-31
- ip access-list, page 11-34
- ip address (FCIP profile configuration submode), page 11-37
- ip-compression, page 11-39
- ip default-gateway, page 11-40
- ip default-network, page 11-41
- ip domain-list, page 11-42
- ip domain-lookup, page 11-43
- ip domain-name, page 11-44
- ip name-server, page 11-45

- ip route, page 11-46
- ip routing, page 11-47
- iscsi authentication, page 11-48
- iscsi enable, page 11-49
- iscsi import target fc, page 11-50
- iscsi import target fc, page 11-50
- iscsi initiator ip-address, page 11-51
- iscsi initiator name, page 11-53
- iscsi interface vsan-membership, page 11-55
- iscsi save-initiator, page 11-56
- iscsi virtual-target name, page 11-58
- isns profile, page 11-61
- isns reregister, page 11-62
- ivr enable, page 11-63
- ivr vsan-topology, page 11-64
- ivr virtual-fcdomain-add, page 11-65
- ivr withdraw domain, page 11-66
- ivr zone name, page 11-67
- ivr zoneset, page 11-68

in-order-guarantee

To enable in-order delivery, use the **in-order-guarantee** command in configuration mode. To disable in-order delivery, use the **no** form of the command.

in-order-guarantee [**vsan** *vsan-id*]

no in-order-guarantee [**vsan** *vsan-id*]

Syntax Description

vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(4).

Usage Guidelines

In-order delivery of data frames guarantees frame delivery to a destination in the same order that they were sent by the originator.

Examples

The following example shows how to enable in-order delivery for the entire switch.

```
switch# config t
switch(config) # in-order-guarantee
```

The following example shows how to disable in-order delivery for the entire switch.

```
switch(config)# no in-order-guarantee
```

The following example shows how to enable in-order delivery for a specific VSAN.

```
switch(config)# in-order-guarantee vsan 3452
```

The following example shows how to disable in-order delivery for a specific VSAN.

```
switch(config)# no in-order-guarantee vsan 101
```

Related Commands

Command	Description
show in-order-guarantee	Displays the in-order-guarantee status.

install all

To upgrade all modules in any Cisco MDS 9000 family switch, use the **install all** command. This upgrade can happen nondisruptively or disruptively depending on the current configuration of your switch.

install all [{**asm-sfn** | **kickstart** | **ssi** | **system**} *URL*]

Syntax Description

asm-sfn *filename*	Upgrades the ASM image.
system	Upgrades the system image.
ssi	Upgrades the SSI image.
kickstart	Upgrades the kickstart image.
URL	The location URL of the source file to be installed.

The following table lists the aliases for *URL*.

bootflash:	Source location for internal bootflash memory.
slot0:	Source location for the CompactFlash memory or PCMCIA card.
volatile:	Source location for the volatile file system.
tftp:	Source location for a Trivial File Transfer Protocol (TFTP) network server. The syntax for this URL is **tftp:[[//location]/directory]/filename**.
ftp:	Source location for a File Transfer Protocol (FTP) network server. The syntax for this URL is **ftp:[[//location]/directory]/filename**.
sftp:	Source location for a Secure Trivial File Transfer Protocol (SFTP) network server. The syntax for this URL is **sftp:[[//<username@>location]/directory]/filename**.
scp:	Source location for a Secure Copy Protocol (SCP) network server. The syntax for this URL is **scp:[[//location]/directory]/filename**.
image-filename	The name of the source image file.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.2(2).

Usage Guidelines

The **install all** command upgrades all modules in any Cisco MDS 9000 Family switch.

To copy a remote file, specify the entire remote path exactly as it is.

Caution If a switchover is required when you issue the **install all** command from a Telnet or SSH session, all open sessions are terminated. If no switchover is required, the session remains unaffected. The software issues a self-explanatory warning at this point and provides the option to continue or terminate the installation.

See the *Cisco MDS 9000 Family Configuration Guide* for detailed procedures.

Examples

The following example displays the result of the **install all** command if the system and kickstart files are specified locally.

```
switch# install all sys bootflash:isan-1.3.1 kickstart bootflash:boot-1.3.1

Verifying image bootflash:/boot-1.3.1
[####################] 100% -- SUCCESS

Verifying image bootflash:/isan-1.3.1
[####################] 100% -- SUCCESS

Extracting "slc" version from image bootflash:/isan-1.3.1.
[####################] 100% -- SUCCESS

Extracting "ips" version from image bootflash:/isan-1.3.1.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:/isan-1.3.1.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image bootflash:/boot-1.3.1.
[####################] 100% -- SUCCESS

Extracting "loader" version from image bootflash:/boot-1.3.1.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable          Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive       rolling
     2       yes      disruptive       rolling  Hitless upgrade is not supported
     3       yes      disruptive       rolling  Hitless upgrade is not supported
     4       yes  non-disruptive       rolling
     5       yes  non-disruptive         reset
     6       yes  non-disruptive         reset



Images will be upgraded according to following table:
Module       Image       Running-Version           New-Version  Upg-Required
------  ----------  --------------------  --------------------  ------------
     1         slc               1.3(2a)               1.3(1)           yes
     1        bios      v1.1.0(10/24/03)      v1.1.0(10/24/03)            no
     2         ips               1.3(2a)               1.3(1)           yes
     2        bios      v1.1.0(10/24/03)      v1.1.0(10/24/03)            no
     3         ips               1.3(2a)               1.3(1)           yes
     3        bios      v1.1.0(10/24/03)      v1.1.0(10/24/03)            no
     4         slc               1.3(2a)               1.3(1)           yes
     4        bios      v1.1.0(10/24/03)      v1.1.0(10/24/03)            no
     5      system               1.3(2a)               1.3(1)           yes
```

```
     5   kickstart              1.3(2a)                1.3(1)           yes
     5        bios      v1.1.0(10/24/03)       v1.1.0(10/24/03)        no
     5      loader               1.2(2)                 1.2(2)           no
     6      system              1.3(2a)                1.3(1)           yes
     6   kickstart              1.3(2a)                1.3(1)           yes
     6        bios      v1.1.0(10/24/03)       v1.1.0(10/24/03)        no
     6      loader               1.2(2)                 1.2(2)           no

Do you want to continue with the installation (y/n)?  [n] y

Install is in progress, please wait.

Syncing image bootflash:/boot-1.3.1 to standby.
[####################] 100% -- SUCCESS

Syncing image bootflash:/isan-1.3.1 to standby.
[####################] 100% -- SUCCESS
Jan 18 23:40:03 Hacienda %VSHD-5-VSHD_SYSLOG_CONFIG_I: Configuring console from

Performing configuration copy.
[####################] 100% -- SUCCESS

Module 6: Waiting for module online.
|
Auto booting bootflash:/boot-1.3.1 bootflash:/isan-1.3.1...
Booting kickstart image: bootflash:/boot-1.3.1....
.....................................Image verification OK

Starting kernel...
INIT: version 2.78 booting
Checking all filesystems..r.r.. done.
Loading system software
Uncompressing system image: bootflash:/isan-1.3.1
CCCC
```

```
Jan 18 23:43:19 Hacienda %LICMGR-3-LOG_LIC_NO_LIC: No license(s) present for feature
ENTERPRISE_PKG. Application(s) shutdown in 50 days.
Jan 18 23:43:19 Hacienda %LICMGR-3-LOG_LIC_NO_LIC: No license(s) present for feature
SAN_EXTN_OVER_IP. Application(s) shutdown in 50 days.
Jan 18 23:43:19 Hacienda %LICMGR-3-LOG_LICAPP_NO_LIC: Application port-security running
without ENTERPRISE_PKG license, shutdown in 50 days
Jan 18 23:43:19 Hacienda %LICMGR-4-LOG_LICAPP_EXPIRY_WARNING: Application Roles evaluation
license ENTERPRISE_PKG expiry in 50 days
Jan 18 23:44:54 Hacienda %BOOTVAR-5-NEIGHBOR_UPDATE_AUTOCOPY: auto-copy supported by
neighbor, starting...

Module 1: Non-disruptive upgrading.
[#                   ]   0%Jan 18 23:44:56 Hacienda %MODULE-5-STANDBY_SUP_OK: Supervisor 5
is standby
Jan 18 23:44:55 Hacienda %IMAGE_DNLD-SLOT1-2-IMG_DNLD_STARTED:  Module image download
process. Please wait until completion...
Jan 18 23:45:12 Hacienda %IMAGE_DNLD-SLOT1-2-IMG_DNLD_COMPLETE:  Module image download
process. Download successful.
Jan 18 23:45:48 Hacienda %MODULE-5-MOD_OK: Module 1 is online
[####################] 100% -- SUCCESS

Module 4: Non-disruptive upgrading.
[#                   ]   0%Jan 18 23:46:12 Hacienda %IMAGE_DNLD-SLOT4-2-IMG_DNLD_STARTED:
Module image download process. Please wait until completion...
Jan 18 23:46:26 Hacienda %IMAGE_DNLD-SLOT4-2-IMG_DNLD_COMPLETE:  Module image download
process. Download successful.
Jan 18 23:47:02 Hacienda %MODULE-5-MOD_OK: Module 4 is online
[####################] 100% -- SUCCESS

Module 2: Disruptive upgrading.
...
-- SUCCESS

Module 3: Disruptive upgrading.
...
 -- SUCCESS

Install has been successful.

MDS Switch
Hacienda login:
```

The following example displays the result of the **install all** command if the system and kickstart files are specified remotely.

```
switch# install all system
scp://user@171.69.16.26/tftpboot/HKrel/qa/vegas/final/m9500-sf1ek9-mz.1.3.2a.bin kickstart
scp://user@171.69.16.26/tftpboot/HKrel/qa/vegas/final/m9500-sf1ek9-kickstart-mz.1.3.2a.bin
For scp://user@171.69.16.26, please enter password:
For scp://user@171.69.16.26, please enter password:

Copying image from
scp://user@171.69.16.26/tftpboot/HKrel/qa/vegas/final/m9500-sf1ek9-kickstart-mz.1.3.2a.bin
to bootflash:///m9500-sf1ek9-kickstart-mz.1.3.2a.bin.
[####################] 100% -- SUCCESS

Copying image from
scp://user@171.69.16.26/tftpboot/HKrel/qa/vegas/final/m9500-sf1ek9-mz.1.3.2a.bin to
bootflash:///m9500-sf1ek9-mz.1.3.2a.bin.
[####################] 100% -- SUCCESS

Verifying image bootflash:///m9500-sf1ek9-kickstart-mz.1.3.2a.bin
[####################] 100% -- SUCCESS
```

```
Verifying image bootflash:///m9500-sf1ek9-mz.1.3.2a.bin
[####################] 100% -- SUCCESS

Extracting "slc" version from image bootflash:///m9500-sf1ek9-mz.1.3.2a.bin.
[####################] 100% -- SUCCESS

Extracting "ips" version from image bootflash:///m9500-sf1ek9-mz.1.3.2a.bin.
[####################] 100% -- SUCCESS

Extracting "system" version from image bootflash:///m9500-sf1ek9-mz.1.3.2a.bin.
[####################] 100% -- SUCCESS

Extracting "kickstart" version from image
bootflash:///m9500-sf1ek9-kickstart-mz.1.3.2a.bin.
[####################] 100% -- SUCCESS

Extracting "loader" version from image bootflash:///m9500-sf1ek9-kickstart-mz.1.3.2a.bin.
[####################] 100% -- SUCCESS



Compatibility check is done:
Module  bootable          Impact  Install-type  Reason
------  --------  --------------  ------------  ------
     1       yes  non-disruptive       rolling
     2       yes      disruptive       rolling  Hitless upgrade is not supported
     3       yes  non-disruptive       rolling
     4       yes  non-disruptive       rolling
     5       yes  non-disruptive         reset
     6       yes  non-disruptive         reset
     7       yes  non-disruptive       rolling
     8       yes  non-disruptive       rolling
     9       yes      disruptive       rolling  Hitless upgrade is not supported


Images will be upgraded according to following table:
Module       Image       Running-Version           New-Version  Upg-Required
------  ----------  --------------------  --------------------  ------------
     1         slc                1.3(1)                1.3(2a)           yes
     1        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no
     2         ips                1.3(1)                1.3(2a)           yes
     2        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no
     3         slc                1.3(1)                1.3(2a)           yes
     3        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no
     4         slc                1.3(1)                1.3(2a)           yes
     4        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no
     5      system                1.3(1)                1.3(2a)           yes
     5   kickstart                1.3(1)                1.3(2a)           yes
     5        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no
     5      loader                1.2(2)                 1.2(2)            no
     6      system                1.3(1)                1.3(2a)           yes
     6   kickstart                1.3(1)                1.3(2a)           yes
     6        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no
     6      loader                1.2(2)                 1.2(2)            no
     7         slc                1.3(1)                1.3(2a)           yes
     7        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no
     8         slc                1.3(1)                1.3(2a)           yes
     8        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no
     9         ips                1.3(1)                1.3(2a)           yes
     9        bios      v1.1.0(10/24/03)      v1.0.8(08/07/03)            no

Do you want to continue with the installation (y/n)?  [n]
```

Related Commands

Command	Description
install module bios	Upgrades the supervisor or switching module BIOS.
install module loader	Upgrades the bootloader on the active or standby supervisor or modules.
show version	Displays software image version information.

install license

To program the supervisor or switching module BIOS, use the **install license** command.

install license [**bootflash: | slot0: | volatile:**] *file-name*

Syntax Description

bootflash:	Source location for the license file.
slot0:	Source location for the license file.
volatile:	Source location for the license file.
file-name	The name of the license file.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

If a target file name is provided after the source URL, the license file is installed with that name. Otherwise, the filename in the source URL is used. This command also verifies the license file before installing it.

Examples

The following example installs a file named license-file which resides in the bootflash: directory..

```
switch# install license bootflash:license-file
```

Related Commands

Command	Description
show license	Displays license information.

install module bios

To program the supervisor or switching module BIOS, use the **install module bios system** command.

install module *module-number* **bios {system [bootflash: | slot0: | volatile: |** *system-image***]}**

Syntax Description

install module	Upgrades the BIOS for a supervisor or switching module.
module-number	From slot 1 to 9 in a Cisco MDS 9500 Series switch. From slot 1 to 2 in a Cisco MDS 9200 Series switch.
bios	Configures the BIOS in the specified module.
system	Specifies the system image to use (optional). If system is not specified, the current running image is used.
bootflash:	Source location for internal bootflash memory
slot0:	Source location for the CompactFlash memory or PCMCIA card.
volatile:	Source location for the volatile file system.
system-image	The name of the system or kickstart image.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(3).

Usage Guidelines

If the BIOS is upgraded, you need to reboot to make the new BIOS effective. You can schedule the reboot at a convenient time so traffic will not be impacted.

The console baud rate automatically reverts to the default rate (9600) after any BIOS upgrade.

The URL is always the system image URL in the supervisor module, and points to the bootflash: or slot0: directories.

Examples

The following example shows how to perform a non disruptive upgrade for the system.

```
switch# install module 1 bios
Started bios programming .... please wait
###
BIOS upgrade succeeded for module 1
```

In this example, the switching module in slot 1 was updated.

install module epld

To upgrade the electrically programmable logical devices (EPLDs) module, use the **install module epld** command. This command is only for supervisor modules, not switching modules.

install module *module-number* **epld [bootflash: |ftp: | scp: | sftp: | tftp: | volatile:]**

Syntax Description

install module	Upgrades the BIOS for a supervisor or switching module.
module-number	Enters the number for the standby supervisor modules or any other line card.
epld	Upgrades the EPLD images on the specified module.
bootflash:	Source location for internal bootflash memory.
ftp	Local/Remote URI containing EPLD Image.
scp	Local/Remote URI containing EPLD Image.
sftp	Local/Remote URI containing EPLD Image.
tftp	Local/Remote URI containing EPLD Image.
volatile:	Source location for the volatile file system.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

Issue this command from the active supervisor module to update any other module.

If you forcefully upgrade a module that is not online, all EPLDs are forcefully upgraded. If the module is not present in the switch, an error is returned. If the module is present, the command process continues.

Do not insert or extract any modules while an EPLD upgrade or downgrade is in progress.

Examples

The following example upgrades the EPLDs for the module in slot 2.

```
switch# install module 2 epld scp://user@10.6.16.22/users/dino/epld.img

The authenticity of host '10.6.16.22' can't be established.
RSA1 key fingerprint is 55:2e:1f:0b:18:76:24:02:c2:3b:62:dc:9b:6b:7f:b7.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.6.16.22' (RSA1) to the list of known hosts.
user@10.6.16.22's password:
epld.img             100% |*****************************|  1269 KB    00:00

Module Number                                       2
EPLD                              Curr Ver     New Ver
-----------------------------------------------------
Power Manager                        0x06
XBUS IO                              0x07        0x08
UD chip Fix                          0x05
Sahara                               0x05        0x05

Module 2 will be powered down now!!
Do you want to continue (y/n) ? y
\ <----------------------------------------------------------------progress twirl
Module 2 EPLD upgrade is successful
```

The following example forcefully upgrades the EPLDs for the module in slot 2.

```
switch# install module 2 epld scp://user@10.6.16.22/epld-img-file-path

Module 2 is not online, Do you want to continue (y/n) ? y
cchetty@171.69.16.22's password:
epld.img             100% |*****************************|  1269 KB    00:00
\ <----------------------------------------------------------------progress twirl
Module 2 EPLD upgrade is successful
```

Related Commands

Command	Description
show version module *number* **epld**	Displays the current EPLD versions.
show version epld	Displays the available EPLD versions.

install module loader

To upgrade the bootloader on either the active or standby supervisor module, use the **install module loader** command. This command is only for supervisor modules, not switching modules.

install module *module-number* **loader kickstart [bootflash: | slot0: | volatile: |** *kickstart-image***]**

Syntax Description

install module	Upgrades the BIOS for a supervisor or switching module.
module-number	Enters the module number for the active or standby supervisor modules (only slot 5 or 6).
loader	Configures the bootloader.
kickstart	Specifies the kickstart image to use.
bootflash:	Source location for internal bootflash memory
slot0:	Source location for the CompactFlash memory or PCMCIA card.
volatile:	Source location for the volatile file system.
kickstart-image	The name of the kickstart image.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(3).

Usage Guidelines

Before issuing the **install module loader** command, be sure to read the release notes to verify compatibility issues between the boot loader and the kickstart or system images.

If you install a loader version that is the same as the currently-installed version, the loader will not be upgraded. When both the current version and the installed version are the same, use the **init system** command to force a loader upgrade.

Examples

The following example shows how to perform a non disruptive upgrade for the system.

```
switch# install module 6 loader bootflash:kickstart_image
```

This example displays the command being issued on the standby supervisor module in slot 6.

Related Commands

Command	Description
show version	Verify the output before and after the upgrade.

interface

To configure an interface on the Cisco MDS 9000 Family of switches, use the **interface** command in configuration mode.

interface {**cpp** | **fc** | **fc-tunnel** | **fcip** | **gigabitethernet** | **iscsi** | **mgmt** | **port-channel** | **svc** | **vsan**}

Syntax Description

cpp	Configures a Control Plane Process (CPP) interface for the Advanced Services Module (ASM)—see the interface cpp command.
fc	Configures a Fiber Channel interface—see the interface fc command.
fc-tunnel	Configures a Fiber Channel link interface—see the interface fc-tunnel command.
fcip	Configures a Fibre Channel over IP (FCIP) interface—see the interface fcip command.
gigabitethernet	Configures a Gigabit Ethernet interface—see the interface gigabitethernet command.
iscsi	Configures an iSCSI interface—see the interface iscsi command.
mgmt	Configures a management interface—see the interface mgmt command.
port-channel	Configures a PortChannel interface—see the interface port-channel command.
svc	Configures a SAN Volume Controller (SVC) interface for the Caching Services Module (CSM).
vsan	Configures a VSAN interface—see the interface vsan command.

Defaults

Disabled.

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

You can specify a range of interfaces by issuing a command with the following example format:

interface fc1/1 - 5 , fc2/5 - 7

The spaces are required before and after the dash (-) and before and after the comma (,).

Examples

The following example selects the mgmt 0 interface and enters interface configuration submode.

```
switch# config t
switch(config)# interface mgmt 0
switch(config-if)#
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.

interface fc

To configure a Fibre Channel interface on the Cisco MDS 9000 Family of switches, use the **interface fc** command. To disable a Fibre Channel interface, use the **no** form of the command.

interface fc *slot/port*
channel-group *group-id* [**force**]
fcdomain rcf-reject vsan *vsan-id*
ficon portnumber *portnumber*
fspf {**cost** *link-cost* | **dead-interval** *seconds* | **hello-interval** *seconds* | **passive** | **retransmit-interval** *seconds*} **vsan** *vsan-id*

interface fc *slot/port*
no channel-group
no fcdomain rcf-reject vsan *vsan-id*
no ficon portnumber *portnumber*
no fspf {**cost** *link-cost* | **dead-interval** *seconds* | **hello-interval** *seconds* | **passive** | **retransmit-interval** *seconds*} **vsan** *vsan-id*

Syntax Description

slot/port	Specifies a slot number and port number.
channel-group *group-id*	Adds to or removes from a PortChannel. The range is 1 to 128.
force	Forcefully adds a port.
fcdomain	Enters the interface submode.
rcf-reject	Configures the rcf-reject flag.
vsan *vsan-id*	Specifies the VSAN ID. The range is 1 to 4093
fspf	Configures FSPF parameters.
cost *link-cost*	Configures FSPF link cost. The range is 1 to 65535.
dead-interval *seconds*	Configures FSPF dead interval in seconds. The range is 1 to 65535.
seconds	Specifies interval in seconds from 1 to 65535.
ficon	Configures FICON parameters.
portnumber *portnumber*	Configures the FICON port number for this interface.
hello-interval	Configures FSPF hello-interval.
passive	Enables or disables FSPF on the interface.
retransmit-interval	Configures FSPF retransmit interface.
shutdown	Enables or disables an interface.
switchport	Configures switchport parameters.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

You can specify a range of interfaces by issuing a command with the following example format:

interface fc1/1*space***-***space***5***space***,***space***fc2/5***space***-***space***7**

Refer to the *Cisco MDS 9000 Family Configuration Guide* for information on port number allocation.

Examples

The following example configures ports 1 to 4 in Fibre Channel interface 9.

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc9/1 - 4
switch(config-if)#
```

The following example assigns the FICON port number to the selected Fibre Channel port.

```
switch# config t
switch(config)# interface fc1/1
switch(config-if)# ficon portnumber 15
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.

interface fc-tunnel

To configure a Fibre Channel tunnel and facilitate RSPAN traffic in the Cisco MDS 9000 Family of switches, use the **interface fc-tunnel** command. To remove a configured tunnel or revert to factory defaults, use the **no** form of the command.

interface fc-tunnel *number*
destination *ip-address*
explicit-path *path-name*
source *ip-address*]

no interface fc-tunnel *number*
no destination *ip-address* |
no explicit-path *path-name*
no source *ip-address*

no interface fc-tunnel *number*

Syntax Description

number	Specifies a tunnel ID range form 1 to 255.
destination *ip-address*	Maps the IP address of the destination switch
explicit-path *path-name*	Specifies a name for the explicit path. Maximum length is 16 alphanumeric characters.
source *ip-address*	Maps the IP address of the source switch

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

None.

Examples

The following example initiates the FC tunnel (100) in the source switch (switch S).

```
switch(config)# config t
switch(config)# interface fc-tunnel 100
switch(config-if)#
```

The following example maps the IP address of the source switch (switch S) to the FC tunnel (100).

```
switchS(config-if)# source 10.10.10.1
```

The following example maps the IP address of the destination switch (switch D) to the FC tunnel (100).

```
switch(config-if)# destination 10.10.10.2
```

The following example enables traffic flow through this interface.

```
switch(config-if)# no shutdown
```

The following example references the configured path in the source switch (switch S).

```
switch# config t
switch(config)# interface fc-tunnel 100
switch(config)# explicit-path Path1
```

Related Commands

Command	Description
show interface fc-tunnel	Displays an FC tunnel interface configuration for a specified interface.
fc-tunnel explicit-path	Configures a new or existing next-hop path.

interface fcip

To configure a Fibre Channel over IP Protocol (FCIP) interface on the Cisco MDS 9000 Family of switches, use the **interface fcip** command. To disable a FCIP interface, use the **no** form of the command.

interface fcip *interface_number*
bport
bport-keepalives
channel-group *number* [**force**]
fcdomain rcf-reject vsan *vsan-id*
ficon portnumber *portnumber* |
fspf {**cost** *link-cost* | **dead-interval** *seconds* | **hello-interval** *seconds* | **passive** | **retransmit-interval** *seconds*} **vsan** *vsan-id*
passive-mode
peer-info ipaddr *ip-address* [**port** *number*]
special-frame peer-wwn *pwwn-id*
tcp-connections *number*
time-stamp [**acceptable-diff** *number*]
use-profile *profile-id*

interface fcip *interface_number*
no bport
no bport-keepalives
no channel-group *number* [**force**]
no fcdomain rcf-reject vsan *vsan-id*
no ficon portnumber *portnumber*
no fspf {**cost** *link-cost* | **dead-interval** *seconds* | **hello-interval** *seconds* | **passive** | **retransmit-interval** *seconds*} **vsan** *vsan-id*
no passive-mode
no peer-info ipaddr *ip-address* [**port** *number*]
no special-frame peer-wwn *pwwn-id*
no tcp-connections *number*
no time-stamp [**acceptable-diff** *number*]
no use-profile *profile-id*

Syntax Description

interface-number	Configures the specified interface from 1 to 255.
bport	Sets the B port mode.
bport-keepalives	Sets the B port keepalive responses.
channel-group *number*	Specifies a PortChannel number from 1 to 128.
force	Forcefully adds a port.
fcdomain	Enters the fcdomain mode for this FCIP interface
rcf-reject	Configures the rcf-reject flag.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.
fspf	Configures FSPF parameters.
cost *link-cost*	Enters FSPF link cost. The range is 1 to 65535
dead-interval *seconds*	Specifies the dead interval in seconds. The range is 1 to 65535.
ficon	Configures FICON parameters.
portnumber *portnumber*	Configures the FICON port number for this interface.

hello-interval *seconds*	Specifies FSPF hello-interval in seconds. The range is 1 to 65535.
passive	Enables or disables FSPF on the interface.
retransmit-interval	Specifies FSPF retransmit interface in seconds. The range is 1 to 65535.
passive-mode	Configures a passive connection.
peer-info	Configures the peer information.
ipaddr *ip-address*	Specifies the peer IP address.
port *number*	Specifies the peer port number. The range is 1 to 65535.
shutdown	Enables or disables an interface.
special-frame	Configures special frames.
peer-wwn *pwwn-id*	Specifies the peer WWN for special frames.
switchport	Configures switchport parameters.
tcp-connections *number*	Specifies the number of TCP connection attempts. Valid values are 1 or 2.
time-stamp	Configures time-stamp.
acceptable-diff *number*	Specifies the acceptable time difference for time-stamps. The range is 1 to 60000.
use-profile *profile-id*	Specifies the interface using an existing profile ID. The range is 1 to 255.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

You can specify a range of interfaces by issuing a command with the following example format:

interface fcip1*space***-***space***5***space***,***space***fcip10***space***-***space***12***space*

Refer to the *Cisco MDS 9000 Family Configuration Guide* for information on port number allocation.

Examples

The following example selects an FCIP interface and enters interface configuration submode.

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fcip 1
switch(config-if)#
```

The following example assigns the FICON port number to the selected FCIP interface.

```
switch# config t
switch(config)# interface fcip 51
switch(config-if)# ficon portnumber 234
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

interface gigabitethernet

To configure an Gigabit Ethernet interface on the Cisco MDS 9000 Family of switches, use the **interface gigabitethernet** command. To revert to the default values, use the **no** form of the command.

interface gigabitethernet *slot/port*
cdp enable
channel-group *group-id* [**force**]
isns *profile-name*

interface gigabitethernet *slot/port*
no cdp enable
no channel-group
no isns *profile-name*

Syntax Description

slot/port	Specifies a slot number and port number.
cdp enable	Enables Cisco Discovery Protocol (CDP) configuration parameters.
channel-group *group-id*	Adds to or removes from a PortChannel. The range is 1 to 128.
force	Forcefully adds a port.
isns *profile-name*	Specifies the profile name to tag the interface. Maximum length is 64 characters.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

You can specify a range of interfaces by issuing a command with the following example format:

interface gigabitethernet1/1*space***-***space***2***space***,***space***gigabitethernet3/1***space***-***space***2**

Examples

The following example configures the Gigabit Ethernet interface at slot 4 port 1.

```
switch# config t
switch(config)# interface gigabitethernet 4/1
switch(config-if)#
```

The following example enters a IP address and subnet mask for the selected Gigabit Ethernet interface.

```
switch(config-if)# ip address 10.1.1.100 255.255.255.0
```

The following example changes the IP maximum transmission unit (MTU) value for the selected Gigabit Ethernet interface.

```
switch(config-if)# switchport mtu 3000
```

The following example creates a VR ID for the selected Gigabit Ethernet interface, configures the virtual IP address for the VR ID (VRRP group), and assigns a priority.

```
switch(config-if)# vrrp 100
switch(config-if-vrrp)# address 10.1.1.100
switch(config-if-vrrp)# priority 10
```

The following example adds the selected Gigabit Ethernet interface to a channel group. If the channel group does not exist, it is created, and the port is shut down.

```
switch(config-if)# channel-group 10
gigabitethernet 4/1 added to port-channel 10 and disabled
please do the same operation on the switch at the other end of the port-channel, then do
"no shutdown" at both ends to bring them up
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.

interface iscsi

To configure an iSCSI interface on the Cisco MDS 9000 Family of switches, use the **interface iscsi** command. To revert to default values, use the **no** form of the command.

interface iscsi *slot/port*
mode {**pass-thru** | **store-and-forward**}

interface iscsi *slot/port*
no mode {**pass-thru** | **store-and-forward**}

no interface iscsi *slot/port*

Syntax Description

slot/port	Specifies a slot number and port number.
mode	Configures a forwarding mode
pass-thru	Forwards one frame at a time (default).
store-and-forward	Forwards data at the desired size.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

To configure ISCSI interface, enable ISCSI using the **iscsi enable** command.

You can specify a range of interfaces by issuing a command with the following example format:
interface iscsi *space* fc1/1*space-space*5*space*,*space*fc2/5*space-space*7

Examples

The following example enables the iSCSI feature.

```
switch# config t
switch(config)# iscsi enable
```

The following example enables the store-and-forward mode for iSCSI interfaces 9/1 to 9/4.

```
switch(config)# interface iscsi 9/1 - 4
switch(config-if)# mode store-and-forward
```

The following example reverts to using the default pass-thru mode for iSCSI interface 9/1.

```
switch(config)# interface iscsi 9/1
switch(config-if)# mode pass-thru
```

Related Commands

Command	Description
iscsi enable	Enables ISCSI.
show interface	Displays an interface configuration for a specified interface.

interface mgmt

To configure a management interface on the Cisco MDS 9000 Family of switches, use the **interface mgmt** command in configuration mode.

interface mgmt *number*

Syntax Description

number	Specifies the management interface number which is 0.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

When you try to shutdown a management interface(mgmt0), a follow-up message confirms your action before performing the operation. Use the **force** option to bypass this confirmation, if required.

Examples

The following example configures the management interface, displays the options available for the configured interface, and exits to configuration mode.

```
switch# config t
switch(config)#
switch(config)# interface mgmt 0
switch(config-if)# exit
switch(config)#
```

The following example shuts down the interface without using the **force** option:

```
switch# config t
switch(config)# interface mgmt 0
switch(config-if)# shutdown
Shutting down this interface will drop all telnet sessions.
Do you wish to continue (y/n)? y
```

The following example shuts down the interface using the **force** option:

```
switch# config t
switch(config)# interface mgmt 0
switch(config-if)# shutdown force
switch(config-if)#
```

Related Commands

Command	Description
show interface mgmt	Displays interface configuration for specified interface.

interface port-channel

To configure a port channel interface on the Cisco MDS 9000 Family of switches, use the **interface port-channel** command.

interface port-channel *number*
fcdomain rcf-reject vsan *vsan-id*
fspf [cost *link_cost* **| dead-interval** *seconds* **| ficon portnumber** *portnumber* **| hello-interval** *seconds* **| isns** *profile-name* **| passive | retransmit-interval** *seconds***]**

interface port-channel *number*
no fcdomain rcf-reject vsan *vsan-id*
no fspf [cost *link_cost* **| dead-interval** *seconds* **| ficon portnumber** *portnumber* **| hello-interval** *seconds* **| isns** *profile-name* **| passive | retransmit-interval** *seconds***]**

no interface port-channel *number*

Syntax Description

interface	Selects an interface to configure.
port-channel	Configure port channel parameters
number	Enter PortChannel number 1-128
fcdomain	Enter the interface submode
rcf-reject	Configure the rcf-reject flag
vsan	Specify the vsan range
vsan-id	The ID of the VSAN is from 1 to 4093.
fspf	Configure FSPF parameters
cost	Configure FSPF link cost
link_cost	Enter FSPF link cost 1-65535
dead-interval	Configure FSPF dead interval
seconds	Enter dead interval (in sec) 2-65535
ficon	Configures FICON parameters.
portnumber *portnumber*	Configures the FICON port number for this interface.
hello-interval	Configure FSPF hello-interval
seconds	Enter hello interval (in sec) 1-65535
isns	Tags this interface to the Internet Storage Name Service (iSNS) profile.
profile-name	SPecifies the profile name to tag the interface.
passive	Enable/disable FSPF on the interface
retransmit-interval	Configure FSPF retransmit interface
seconds	Enter retransmit interval (in sec) 1-65535

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Refer to the *Cisco MDS 9000 Family Configuration Guide* for information on port number allocation.

Examples

The following example enters configuration mode and configures a PortChannel interface.

```
switch# config t
switch(config)#
switch(config)# interface port-channel 32
switch(config-if)#
```

The following example assigns the FICON port number to the selected PortChannel port.

```
switch# config t
switch(config)# interface Port-channel 1
switch(config-if)# ficon portnumber 234
```

Related Commands

Command	Description
show interface	Displays interface configuration for specified interface.

interface vsan

To configure a VSAN interface on the Cisco MDS 9000 Family of switches, use the **interface vsan** command. To remove a VSAN interface, use the **no** form of the command.

interface vsan *vsan-id*

no interface vsan *vsan-id*

Syntax Description

vsan-id	Specifies the VSAN ID. The range is 1 to 4093.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example selects a VSAN interface and enters interface configuration submode.

```
switch# config t
switch(config)# interface vsan 1
switch(config-if)#
```

Related Commands

Command	Description
show interface	Displays interface configuration for specified interface.

ip access-group

To create an access group to use an access list, use the **ip access-group** command in interface mode. Use the **no** form of this command to negate a previously issued command or revert to factory defaults.

ip access-group *group-name* **[in | out]**

Syntax Description

group-name	Specifies the IP access-group name. Maximum length is 29 alphanumeric characters and the text is case insensitive.
in	Specifies that the group is for ingress traffic.
out	Specifies that the group is for egress traffic.

Defaults

Groups are created for both ingress and egress traffic.

Command Modes

Interface mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

The access-group command controls access to an interface. Each interface can only be associated with one access list. The access group becomes active on creation.

We recommend creating all rules in an access list, before creating the access group that uses this access -list.

If you create an access group before an access-list, all packets in that interface are dropped, because the access list is empty.

The access-group configuration for the ingress traffic applies to both local and remote traffic. The access-group configuration for the egress traffic applies only to local traffic. You can create a different access-group for each type of traffic.

Examples

The following example creates an access group called SampleName for both the ingress and egress traffic (default)

```
switch# config t
switch(config)# interface gigabitethernet 1/2
switch(config-if)# ip access-group SampleName
```

The following example deletes the access group called NotRequired.

```
switch(config-if)# no ip access-group NotRequired
```

The following example creates an access group called SampleName (if it does not already exist) for ingress traffic.

```
switch(config-if)# ip access-group SampleName1 in
```

The following example deletes the access group called SampleName for ingress traffic.

```
switch(config-if)# no ip access-group SampleName1 in
```

The following example creates an access group called SampleName (if it does not already exist) for local egress traffic.

```
switch(config-if)# ip access-group SampleName2 out
```

The following example deletes the access group called SampleName for local egress traffic.

```
switch(config-if)# no ip access-group SampleName2 out
```

Related Commands

Command	Description
ip access-list	Configures IP access control lists.
show ip access-list	Displays the IP-ACL configuration information.

ip access-list

To configure IP access control lists (ACL), use the **ip access-list** command in configuration mode. Use the **no** form of this command to negate a previously issued command or revert to factory defaults.

ip access-list *list-number* {**deny** | **permit**} *ip-protocol* {*src-addr src-wildcard* | **any**} **{***dest-addr dest-wildcard* | *operator port-value*] **[***operator port port-value* [**established** | **icmp-type** *icmp-value* | **precedence** *precedence-value*] [**tos** *tos-value*] [**log-deny**]

Syntax Description

ip access-list	Specifies the IP access-list .
list-number	Identifies the IP-ACL with an integer ranging from 1 to 256.
deny	Denies access if the conditions match.
permit	Provides access if the conditions match.
ip-protocol	Specifies the name or number (integer range from 0 to 255) of an IP protocol. The IP protocol name can be **eigrp**, **gre**, **icmp**, **igmp**, **igrp**, **ip**, **ipinip**, **nos**, **ospf**, **pim**, **tcp**, or **udp**.
source	Specifies the network from which the packet is sent. There are two ways to specify the source: • A 32-bit quantity in four-part, dotted-decimal format • A keyword **any** as an abbreviation for a destination and destination-wildcard of 0.0.0.0 255.255.255.255
source-wildcard	Applies the wildcard bits to the source. Each wildcard bit set to zero indicates that the corresponding bit position in the packet's IP address must exactly match the bit value in the corresponding position of the packet's ip address will be considered a match to this access list. There are two ways to specify the destination wildcard: • A 32-bit quantity in four-part, dotted-decimal format • A keyword **any** as an abbreviation for a destination and destination-wildcard of 0.0.0.0 255.255.255.255
destination	Specifies the network from which the packet is sent. There are two ways to specify the destination: • A 32-bit quantity in four-part, dotted-decimal format • A keyword **any** as an abbreviation for a destination and destination-wildcard of 0.0.0.0 255.255.255.255
destination-wildcard	Applies the wildcard bits to the destination. There are two ways to specify the destination wildcard: • A 32-bit quantity in four-part, dotted-decimal format • A keyword **any** as an abbreviation for a destination and destination-wildcard of 0.0.0.0 255.255.255.255
operator	Compares source or destination ports. and has the following options: **eq** = equal **neq** = not equal

port-value	Specifies the decimal number (range from 0 to 65535) or one of the following names to indicate a TCP or UDP port. The TCP port names are: bgp, chargen, daytime, discard, domain, echo, finger, ftp, ftp-data, gopher, hostname, irc, klogin, kshell, lpd, nntp, pop2, pop3, smtp, sunrpc, syslog, tasacs-ds, talk, telnet, time, uucp, whois, or www. The UDP port names are, biff, bootpc, bootps, discard, dns, dnsiz, echo, mobile-ip, nameserver, netbios-dgm, netbios-ns, ntp, rip, snmp, snmptrap, sunrpc, syslog, tacacs-ds, talk, tftp, time, who, or xdmcp.
icmp-type *icmp-value*	Filters ICMP packets by ICMP message type. The range is 0 to 255.
established	Indicates an established connection for the TCP protocol. A match occurs if the TCP datagram has the ACK, FIN, PSH, RST, SYN or URG control bits set. The non matching case is that of the initial TCP datagram to form a connection.
precedence *precedence-value*	Filters packets by precedence level (a number from 0 to 7), or the following names: critical, flash, flash-override, immediate, internet, network, priority, or routine.
tos *tos-value*	Filters packets by type of service level (a number from 0 to 15), or the following names: max-reliability, max-throughput, min-delay, min-monetary-cost, or normal
log	Sends an information logging message to the console about the packet that matches the entry.

Defaults

Denied.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

Using the **log-deny** option at the end of the individual ACL entries shows the ACL number and whether the packet was permitted or denied, in addition to port-specific information. This option causes an information logging message about the packet that matches the dropped entry (or entries).

Examples

The following example configures the an IP-ACL called List 1 and permits IP traffic from any source address to any destination address

```
switch# config t
switch(config)# ip access-list List1 permit ip any any
```

The following example removes the IP-ACL called List 1.

```
switch# config t
switch(config)# no ip access-list List1 permit ip any any
```

The following example updates List 1 to deny TCP traffic from any source address to any destination address.

```
switch# config t
switch(config)# ip access-list List1 deny tcp any any
```

The following example defines an IP-ACL that permits this network. Subtracting 255.255.248.0 (normal mask) from 255.255.255.255 yields 0.0.7.255.

```
switch# config t
switch(config)# ip access-list List1 permit udp 192.168.32.0 0.0.7.255
```

The following example permits all IP traffic from and to the specified networks.

```
switch# config t
switch(config)# ip access-list List1 permit ip 10.1.1.0 0.0.0.255 172.16.1.0 0.0.0.255
```

The following example denies TCP traffic from 1.2.3.0 through source port 5 to any destination.

```
switch# config t
switch(config)# ip access-list List2 deny tcp 1.2.3.0 0.0.0.255 eq port 5 any
```

The following example removes this entry from the IP-ACL.

```
switch# config t
switch(config)# no ip access-list List2 deny tcp 1.2.3.0 0.0.0.255 eq port 5 any
```

The following example creates an access group called SampleName for both the ingress and egress traffic (default).

```
switch# config t
switch(config)# interface mgmt0
switch(config-if)# ip access-group SampleName
```

The following example deletes the access group called NotRequired.

```
switch# config t
switch(config)# interface mgmt0
switch(config-if)# no ip access-group SampleName
```

The following example creates an access group called SampleName (if it does not already exist) for ingress traffic.

```
switch# config t
switch(config)# interface mgmt0
switch(config-if)# ip access-group SampleName1 in
```

Related Commands

Command	Description
show ip access-list	Displays the IP-ACL configuration information.

ip address (FCIP profile configuration submode)

To assign the local IP address of a Gigabit Ethernet interface to the FCIP profile, use the **ip address** command. To remove the IP address, us the **no** form of the command.

ip address *address*

no ip address *address*

Syntax Description

address	Specifies the IP address.

Defaults

Disabled

Command Modes

FCIP profile configuration submode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

To create a FCIP profile, you must assign a local IP address of a Gigabit Ethernet interface to the FCIP profile.

Examples

```
switch# config t
switch(config)# fcip profile 5
switch(config-profile)# ip address 10.5.1.1
```

Related Commands

Command	Description
show fcip profile	Displays information about the FCIP profile.
interface fcip *interface_number* **use-profile** *profile-id*	Configures the interface using an existing profile ID from 1 to 255.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

ip address (interface configuration submode)

To assign an IP address to a Gigabit Ethernet interface, use the **ip address** command in interface configuration submode. To remove the IP address, us the **no** form of the command.

ip address *address netmask*

no ip address *address netmask*

Syntax Description

address	Specifies the IP address.
netmask	Specifies the network mask.

Defaults

None.

Command Modes

Interface configuration submode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(2).

Usage Guidelines

None.

Examples

```
switch# config t
switch(config)# interface gigabitethernet 1/2
switch(config-profile)# ip address 10.5.1.1 255.255.0.0
```

Related Commands

Command	Description
show fcip profile	Displays information about the FCIP profile.
interface fcip *interface_number* **use-profile** *profile-id*	Configures the interface using an existing profile ID from 1 to 255.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

ip-compression

To enable compression on the FCIP link, use the **ip-compression** command. To disable a FCIP interface, use the **no** form of the command.

ip-compression [**high-throughput** | **high-comp-ratio**]

no ip-compression

Syntax Description

high-throughput	Enables faster compression.
high-comp-ratio	Enables a better compression ratio.

Defaults

Disabled

Command Modes

Interface configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None

Examples

The following example enables faster compression.

```
switch(config-if)# ip-compression high-throughput
```

The following example enables a better compression ratio.

```
switch(config-if)# ip-compression high-comp-ratio
```

The following example disables compression.

```
switch(config-if)# no ip-compression
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

ip default-gateway

To configure the IP address of the default gateway, use the **ip default-gateway** command. To disable the IP address of the default gateway, use the **no** form of the command.

ip default-gateway *destination-ip-address* [**interface cpp** *slot_number/processor-number/vsan-id*]

no ip default-gateway *destination-ip-address* [**interface cpp** *slot/processor-number/vsan-id*]

Syntax Description

destination-ip-address	Specifies the IP address,
interface	Configures an interface.
cpp	Specifies a virtualization IPFC interface.
slot	Specifies a slot number of the ASM.
processor-number	Specifies the processor number for the IPFC interface. The current processor number is always 1.
vsan-id	Specifies the ID of the management VSAN. The range 1 to 4093.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following examples configures the IP default gateway to 1.1.1.4.

```
switch# config t
switch(config)# ip default-gateway 1.1.1.4
```

Related Commands

Command	Description
show ip route	Displays the IP address of the default gateway.

ip default-network

To configure the IP address of the default network, use the **ip default-network** command in configuration mode. To disable the IP address of the default network, use the **no** form of the command.

ip default-network *ip-address*

no ip default-network *ip-address*

Syntax Description

ip-address	Specifies the IP address of the default network.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following examples configures the IP address of the default network to 1.1.1.4.

```
switch# config t
switch(config)# ip default-network 1.1.1.4
```

ip domain-list

To configure the IP domain list, use the **ip domain-list** command in configuration mode. To disable the IP domain list, use the **no** form of the command.

ip domain-list *domain-name*

no ip domain-list *domain-name*

Syntax Description

domain-name	Specifies the domain name for the IP domain list. Maximum length is 80 characters.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example configures the IP domain list.

```
switch# config t
switch(config)# ip domain MyList
```

ip domain-lookup

To enable the DNS server lookup feature, use the **ip domain-lookup** command in configuration mode. Use the **no** form of this command to disable this feature.

ip domain-lookup

no ip domain-lookup

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Instead of IP addresses, you can configure the switch using meaningful names. The configured name automatically looks up the corresponding IP address.

Examples

The following example configures a DNS server lookup feature.

```
switch# config t
switch(config)# ip domain-lookup
```

ip domain-name

To configure a domain name, use the **ip domain-name** command in configuration mode. To delete a domain name, use the **no** form of the command.

ip domain-name *domain-name*

no ip domain-name *domain-name*

Syntax Description

domain-name	Specifies the domain name.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example configures a domain name.

```
switch# config t
switch(config)# ip domain-name MyDomain
```

ip name-server

To configure a name server, use the **ip name-server** command in configuration mode. To disable this feature, use the **no** form of the command.

ip name-server *ip-address*

no ip name-server *ip-address*

Syntax Description

ip-address	Specifies the IP address for the name server.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

You can configure a maximum of six servers. By default, no server is configured.

Examples

The following example configure a name server with an IP address of 1.1.1.4.

```
switch# config t
switch(config)# ip name-server 1.1.1.4
```

The following example specifies the first address (15.1.0.1) as the primary server and the second address (15.2.0.0) as the secondary sever.

```
switch(config)# ip name-server 15.1.0.1 15.2.0.0
```

The following example deletes the configured server(s) and reverts to factory default.

```
switch(config)# no ip name-server
```

ip route

To configure a static route, use the **ip route** command in configuration mode.

ip route *ip-address subnet-mask* [*nexthop_ip-address*] [**interface** {**gigabitethernet** *slot /port* | **mgmt 0** | **port-channel** *channel-id* | **vsan** *vsan-id*} | **distance** *distance-number*]

no ip route *ip-address subnet-mask* [*nexthop_ip-address*] [**interface** {**gigabitethernet** *slot /port* | **mgmt 0** | **port-channel** *channel-id* | **vsan** *vsan-id*} | **distance** *distance-number*]

Syntax Description

ip-address	Specifies the IP address for the route.
subnet-mask	Specifies the subnet mask for the route.
nexthop_ip-address	Specifies the IP address of the next hop switch.
interface	Configures the interface associated with the route.
gigabitethernet *slot /port*	Specifies a Gigabit Ethernet interface at a port and slot.
mgmt 0	Specifies the managment interface (mgmt 0).
port-channel *channel-id*	Specifies a PortChannel interface. The range is 1 to 128.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.
distance *distance-number*	Specifies the distance metric for this route. It can be from 0 to 32766.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following examples shows how to configure a static route.

```
switch# config t
switch(config)# IP route 10.0.0.0 255.0.0.0 20.20.20.10 distance 10 interface vsan 1
```

Related Commands

Command	Description
show ip route	Displays the IP address routes configured in the system.

ip routing

To enable the IP forwarding feature, use the **ip routing** command in configuration mode. To disable this feature, use the **no** form of the command.

ip routing

no ip routing

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example enables the IP forwarding feature.

```
switch# config t
switch(config)# ip routing
```

iscsi authentication

Use the **iscsi authentication** command to configure the default authentication method for iSCSI. To revert to the default, use the **no** form of the command.

iscsi authentication {**chap** | **chap-none** | **none**}

no iscsi authentication {**chap** | **chap-none** | **none**}

Syntax Description

chap-none	Configure either the CHAP or no authentication.
chap	Configures the Challenge Handshake Authentication Protocol (CHAP) authentication method.
none	Specifies that no authentication is required for the selected interface

Defaults

chap-none

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

By default, the Cisco MDS 9000 Family switch accepts an iSCSI initiator with either no authentication or CHAP authentication. If CHAP authentication is always required, use the **iscsi authentication chap** command. If no authentication is always required, use the **iscsi authentication none** command.

Use the **chap-none** option to override the global configuration which might have been configured to allow only one option—either CHAP or none—not both.

Examples

The following example configures CHAP only for ISCSI authentication.

```
switch# config t
switch(config)# iscsi authentication chap
```

Related Commands

Command	Description
show iscsi global	Displays all iSCSI initiators configured by the user.

iscsi enable

To enable the iSCSI feature in any Cisco MDS switch, issue the **iscsi enable** command. To disable this feature, use the **no** form of the command.

iscsi enable

no iscsi enable

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The configuration and verification commands for the iSCSI feature are only available when iSCSI is enabled on a switch. When you disable this feature, all related configurations are automatically discarded.

Examples

The following command enables the iSCSI feature.

```
switch(config)# iscsi enable
```

The following command disables the iSCSI feature (default).

```
switch(config)# no iscsi enable
```

iscsi import target fc

To allow dynamic mapping of Fibre Channel targets, use the **iscsi import target fc** command. To disable this feature, use the **no** form of the command.

iscsi import target fc

no iscsi import target fc

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

This command directs iSCSI to dynamically import all Fibre Channel targets into iSCSI.

Examples

The following example allows dynamic mapping of Fibre Channel targets.

```
switch# config t
switch(config)# iscsi import target fc
```

The following example disables dynamic mapping of Fibre Channel targets.

```
switch(config)# no iscsi import target fc
```

Related Commands

Command	Description
show iscsi global	Displays all iSCSI initiators configured by the user..

iscsi initiator ip-address

To assign persistent WWNs to an iSCSI initiator or assign an iSCSI initiator into VSANs other than the default VSAN, use the **iscsi initiator ip-address** command.

iscsi initiator ip-address *ipaddress*
static {**nwwn** | **pwwn**} {*wwn-id* | **system-assign** *number*}
vsan *vsan-id*

iscsi initiator ip-address *ipaddress*
no static {**nwwn** | **pwwn**} {*wwn-id* | **system-assign** *number*}
no vsan *vsan-id*

Syntax Description

ipaddress	Specifies the initiator IP address.
nwwn	Configures the inititiator node WWN hex value.
pwwn	Configures the peer WWN for special frames.
wwn-id	Enters the pWWN or nWWN ID.
system-assign *number*	Generates the nWWN value automatically. The number ranges from 1 to 64.
vsan *vsan-id*	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Under a circumstance where an iSCSI initiator needs to have a persistent binding to FC WWNs, this command should be used. Also, an iSCSI initiator can be put into multiple VSANs. An iSCSI host can become a member of one or more VSANs.

Examples

The following command configures an iSCSI initiator. using the IP address of the initiator node.

```
switch(config)# iscsi initiator ip address 10.50.1.1
```

The following command deletes the configured iSCSI initiator.

```
switch(config)# no iscsi initiator ip address 10.5.0.0
```

The following command uses the switch's WWN pool to allocate the nWWN for this iSCSI initiator and keeps it persistent.

```
switch(config-(iscsi-init))# static nWWN system-assign
```

The following command assigns the user provided WWN as nWWN for the iSCSI initiator. You can only specify one nWWN for each iSCSI node.

```
switch(config-(iscsi-init))# nWWN 20:00:00:05:30:00:59:11
```

The following command uses the switch's WWN pool to allocate two pWWNs for this iSCSI initiator and keeps it persistent.

```
switch(config-(iscsi-init))# static pWWN system-assign 2
```

The following command assigns the user provided WWN as pWWN for the iSCSI initiator.

```
switch(config-(iscsi-init))# pWWN 21:00:00:20:37:73:3b:20
```

Related Commands

Command	Description
show iscsi initiator	Displays information about configured iSCSI initiators.

iscsi initiator name

To assign persistent WWNs to an iSCSI initiator or assign an iSCSI initiator into VSANs other than the default VSAN, use the **iscsi initiator name** command. To revert to factory defaults, use the **no** form of the command.

iscsi initiator name *name*
static {**nwwn** | **pwwn**} {*wwn-id* | **system-assign**}
username *username*
vsan *vsan-id*

iscsi initiator name *name*
no mutual-chap-username *username* [**mutual-chap-password** *password*]
no static {**nwwn** | **pwwn**} {*wwn-id* | **system-assign**}
no username *username*
no vsan *vsan-id*

no iscsi initiator name *name*

Syntax Description

name	Enters the initiator name to be used. The minimum length is 16 characters and maximum is 223 characters.
nwwn	Configures the inititiator node WWN hex value.
pwwn	Configures the peer WWN for special frames.
wwn-id	Specifies the pWWN or nWWN ID.
system-assign	Generates the pWWN or nWWN value automatically.
username *username*	Specifies the username for iSCSI login authentication.
vsan *vsan-id*	Specifies a VSAN ID. The range 1 to 4093.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(2).

Usage Guidelines

Under a circumstance where an iSCSI initiator needs to have a persistent binding to FC WWNs, this command should be used. Also, an iSCSI initiator can be put into multiple VSANs. An iSCSI host can become a member of one or more VSANs.

Examples

The following command configures an iSCSI initiator using the iSCSI name of the initiator node.

```
switch(config)# iscsi initiator name iqn.1987-02.com.cisco.initiator
```

The following command deletes the configured iSCSI initiator.

```
switch(config)# no iscsi initiator name iqn.1987-02.com.cisco.initiator
```

The following command configures an iSCSI initiator. using the IP address of the initiator node.

```
switch(config)# iscsi initiator ip-address 10.50.0.0
```

The following command deletes the configured iSCSI initiator.

```
switch(config)# no iscsi initiator ip-address 10.50.0.0
```

The following command uses the switch's WWN pool to allocate the nWWN for this iSCSI initiator and keeps it persistent.

```
switch(config-(iscsi-init))# static nWWN system-assign
```

The following command assigns the user provided WWN as nWWN for the iSCSI initiator. You can only specify one nWWN for each iSCSI node.

```
switch(config-(iscsi-init))# nWWN 20:00:00:05:30:00:59:11
```

The following command uses the switch's WWN pool to allocate two pWWNs for this iSCSI initiator and keeps it persistent.

```
switch(config-(iscsi-init))# static pWWN system-assign 2
```

The following command assigns the user provided WWN as pWWN for the iSCSI initiator.

```
switch(config-(iscsi-init))# pWWN 21:00:00:20:37:73:3b:20
```

Related Commands

Command	Description
show iscsi initiator	Displays information about configured iSCSI initiators.

iscsi interface vsan-membership

To configure VSAN membership for iSCSI interfaces, use the **iscsi interface vsan-membership** command. Use the **no** form of this command to disable this feature or to revert to factory defaults.

iscsi interface vsan-membership

no iscsi interface vsan-membership

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled.

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

If the **iscsi interface vsan-membership** command is disabled, you will not be able to configure iSCSI VSAN membership

Examples

The following command enables the iSCSI interface VSAN membership.

```
switch# config t
switch(config)# iscsi interface vsan-membership
```

The following command disables the iSCSI interface VSAN membership (default).

```
switch(config)# no iscsi interface vsan-membership
```

Related Commands

Command	Description
show iscsi initiator	Displays information about configured iSCSI initiators.

iscsi save-initiator

To permanently save the automatically-assigned nWWN/pWWN mapping, use the **iscsi initiator name** command.

iscsi save-initiator [name *name***]**

no iscsi save-initiator [name *name***]**

Syntax Description

name *name*	Specifies the initiator name to be used from 1 to 255 characters. The minimum length is 16 characters.

Defaults

None

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following commands save the automatically assigned mapping.

```
switch(config)# iscsi save-initiator
switch(config)# iscsi save-initiator name iqn.1987-02.com.cisco.initiator
```

The following command configures an iSCSI initiator. using the IP address of the initiator node.

```
switch(config)# iscsi initiator ip-address 10.50.0.0
```

The following command deletes the configured iSCSI initiator.

```
switch(config)# no iscsi initiator ip-address 10.50.0.0
```

The following command uses the switch's WWN pool to allocate the nWWN for this iSCSI initiator and keeps it persistent.

```
switch(config-(iscsi-init))# static nWWN system-assign
```

The following command assigns the user provided WWN as nWWN for the iSCSI initiator. You can only specify one nWWN for each iSCSI node.

```
switch(config-(iscsi-init))# nWWN 20:00:00:05:30:00:59:11
```

The following command uses the switch's WWN pool to allocate two pWWNs for this iSCSI initiator and keeps it persistent.

```
switch(config-(iscsi-init))# static pWWN system-assign 2
```

The following command assigns the user provided WWN as pWWN for the iSCSI initiator.

```
switch(config-(iscsi-init))# pWWN 21:00:00:20:37:73:3b:20
```

Related Commands

Command	Description
show iscsi initiator	Displays information about configured iSCSI initiators.

iscsi virtual-target name

To create a static iSCSI virtual target, use the **iscsi virtual-target** command. To revert to the default values, use the **no** form of the command.

iscsi virtual-target name *name*
advertise interface gigabitethernet *interface-number*
initiator name *initiator-name*
pwwn *pwwn-id* **(secondary-pwwn** *secondary pwwn-id* **| fc-lun** *number* **iscsi-lun** *number* **|**
name *initiator-name***) | ip-address** *ip-address* **(***ip-subnet***) permit [trespass]**

no iscsi virtual-target name *name*
advertise interface gigabitethernet *interface-number*
initiator name *initiator-name*
pwwn *pwwn-id* **(secondary-pwwn** *secondary pwwn-id* **| fc-lun** *number* **iscsi-lun** *number* **|**
name *initiator-name***) | ip-address** *ip-address* **(***ip-subnet***) permit [trespass]**

Syntax Description

iscsi	Configures iSCSI parameters.
virtual-target	Configures the iSCSI virtual target name.
name	Configures the virtual target name.
name	Enters the virtual target name to be used. The minimum length is 16 characters and maximum of 223 bytes.
advertise	Advertises the virtual target name on the specified interface.
interface gigabitethernet	Selects the Gigabit Ethernet interface to configure.
interface-number	Configures the specified interface from 1 to 255.
initiator	Allows the iSCSI initiator to access a specified target.
name	Configures the iSCSI initiator name.
initiator-name	Enters the initiator name to be used from 1 to 255 characters.
ip-address	Configures the iSCSI initiator's IP address.
ip-address	Enters the initiator IP address.
ip-subnet	Configures all initiators in the subnet.
permit	Permits access to the specified target.
pwwn	Configures the peer WWN for special frames.
pwwn-id	Enters the peer pWWN ID.
secondary-pwwn	Enters the secondary pWWN ID.
secondary pwwn-id	Enters the peer pWWN ID.
fc-lun *number*	Specifies the Fibre Channel Logical Unit Number.
iscsi-lun *number*	Specifies the iSCSI virtual target number.
tresspas	Move LUNs forcefully from one port to another.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.3(2).

Usage Guidelines

This command is used to configure a static iSCSI target for access by iSCSI initiators. A virtual target may contain a subset of LUs of an FC target or one whole FC target.

Do not specify the LUN if you wish to map the whole Fibre Channel target to an iSCSI target. All Fibre Channel LUN targets are exposed to iSCSI.

One iSCSI target cannot contain more than one Fibre Channel target.

Examples

The follow example creates a static virtual target and enters ISCSI target configuration submode.

```
switch# config t
switch(config)# iscsi virtual-target name abc123
switch(config-(iscsi-tgt))# ?
ISCSI Virt-tgt Configuration:
  advertise  Advertise virtual target on interfaces specified
  exit       Exit from this submode
  initiator  Allow iSCSI initiator access to this target
  no         Negate a command or set its defaults
  pWWN       Enter the pWWN of the fc-target
```

The following command advertises the virtual target only on the specified interface. By default, it is advertised on all interfaces in all IPS modules.

```
switch(config-(iscsi-tgt))# advertise interface gigabitethernet 4/1
```

The following command maps a virtual target node to a Fibre Channel target.

```
switch(config-(iscsi-tgt))# pWWN 26:00:01:02:03:04:05:06
```

The following command enters the secondary pWWN for the virtual target node.

```
switch(config-(iscsi-tgt))# pWWN 26:00:01:02:03:04:05:06 secondary-pwwn
66:00:01:02:03:04:05:02
```

Use the LUN option to map different Fibre Channel LUNs to different iSCSI virtual targets. If you have already mapped the whole Fibre Channel target, you will not be able to use this option.

```
switch(config-(iscsi-tgt))# pWWN 26:00:01:02:03:04:05:06 fc-lun 0 iscsi-lun 0
```

The following command allows the specified iSCSI initiator node to access this virtual target. You can issue this command multiple times to allow multiple initiators.

```
switch(config-(iscsi-tgt))# initiator iqn.1987-02.com.cisco.initiator1 permit
```

The following command prevents the specified initiator node from accessing virtual targets.

```
switch(config-(iscsi-tgt))# no initiator iqn.1987-02.com.cisco.initiator1 permit
```

The following command allows the specified IP address to access this virtual target:

```
switch(config-(iscsi-tgt))# initiator ip address 10.50.1.1 permit
```

The following command prevents the specified IP address from accessing virtual targets:

```
switch(config-(iscsi-tgt))# no initiator ip address 10.50.1.1 permit
```

The following command allows all initiators in this subnetwork to access this virtual target:

```
switch(config-(iscsi-tgt))# initiator ip address 10.50.0.0 255.255.255.0 permit
```

The following command prevents all initiators in this subnetwork from accessing virtual targets:

```
switch(config-(iscsi-tgt))# no initiator ip address 10.50.0.0 255.255.255.0 permit
```

The following command allows all initiator nodes to access this virtual target.

```
switch(config-(iscsi-tgt))# all-initiator-permit
```

The following command prevents any initiator node from accessing virtual targets.

```
switch(config-(iscsi-tgt))# no all-initiator-permit
```

The following command configures a primary and secondary port and moves the LUNs from one port to the other using the **trespass** command.

```
switch# config terminal
switch(config)#iscsi virtual-target name iqn.1987-02.com.cisco.initiator
switch(config-(iscsi-tgt))# pwwn 50:00:00:a1:94:cc secondary-pwwn 50:00:00:a1:97:ac
switch(config-(iscsi-tgt))# trespass
```

Related Commands

Command	Description
show iscsi virtual target	Displays information about iSCSI virtual targets.

isns profile

To create an Internet Storage Name Service (iSNS) profile, use the **isns profile** command. To delete an iSNS profile, use the **no** form of the command.

isns profile name *profile-name*
server *ip-address*

isns profile name *profile-name*
no server *ip-address*

no isns profile name *profile-name*

Syntax Description

name *profile-name*	Specifies the iSNS profile name

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Use this command to create an iSNS profile or to add or modify the iSNS server for a profile. To change the server address, you must first delete the existing server address with the **no server** command.

Examples

The following command configures a profile called MyIsns and specifies the IP address of an iSNS server for the profile:

```
switch# config t
switch(config)# isns profile name MyIsns
switch(config-(isns-profile))# server 10.10.100.211
```

The following command deletes an iSNS server from the profile:

```
switch(config-(isns-profile))# no server 10.10.100.211
```

Related CommandsT

Command	Description
show isns profile	Displays details for configured iSNS profiles.

isns reregister

To register all Internet Storage Name Service (iSNS) objects for an interface that is already tagged to an iSNS profile, use the **isns register** command.

isns reregister gigabitethernet *slot/number* | **port-channel** *channel-group*

Syntax Description

gigabitethernet *slot/number*	Specifies tagged Gigabit Ethernet interface slot and port with slot-number.
port-channel *channel-group*	Specifies tagged PortChannel group as channel-group number.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

Use this command to reregister portals and targets with the iSNS server for a tagged interface.

Examples

The following command re-registers portal and targets for a tagged interface:

```
switch# isns reregister gigabitethernet 1/4
```

Related CommandsT

Command	Description
show isns profile	Displays details for configured iSNS profiles.

ivr enable

To enable the Inter-VSAN Routing (IVR) feature, use the **ivr enable** command.

ivr enable

no ivr enable

Syntax Description

ivr	Configures IVR parameters.
enable	Enable the IVR feature.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The IVR feature must be enabled in all edge switches in the fabric that participate in the IVR.

The configuration and display commands for the IVR feature are only available when IVR is enabled on a switch.

When you disable this configuration, all related configurations are automatically discarded.

Examples

The following command enters the configuration mode and enables the IVR feature on this switch:

```
switch# config t
switch(config)# ivr enable
```

Related Commands

Command	Description
show ivr status	Displays the status of the IVR feature.

ivr vsan-topology

To configure a VSAN topology for Inter-VSAN Routing (IVR), use the **ivr vsan-topology** command.

ivr vsan-topology activate | auto |
database --> autonomous-fabric-id *fabric-id* **switch-wwn** *swwn* **vsan-ranges** *vsan-id*

no ivr vsan-topology activate | auto |
database --> autonomous-fabric-id *fabric-id* **switch-wwn** *swwn* **vsan-ranges** *vsan-id*

Syntax Description

activate	Activates the VSAN topology database for inter-VSAN routing.
auto	Enables discovery of VSAN topology for inter-VSAN routing.
database	Configures VSAN topology database for inter-VSAN routing.
autonomous-fabric-id *fabric-id*	Specifies the fabric ID for the IVR topology.
switch-wwn *swwn*	Configures the switch WWN in dotted hex format.
vsan-ranges	Configures up to 5 ranges of VSANs to be added to the database.
vsan-id	Specifies the VSAN ID from 1 to 4093.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following command enters the configuration mode, enables the IVR feature, enters the VSAN topology database, and configures the pWWN—VSAN association for VSANs 2 and 2000:

```
switch# config t
switch(config)# ivr enable
switch(config)# ivr vsan-topology database
switch(config-ivr-topology-db)# autonomous-fabric-id 1 switch 20:00:00:00:30:00:3c:5e
vsan-ranges 3,2000
```

Related CommandsT

Command	Description
show ivr vsan-topology	Displays the configured VSAN topology for a fabric.

ivr virtual-fcdomain-add

To add the IVR virtual domains in a specific VSAN(s) to the assigned domains list in that VSAN, use the **ivr virtual-fcdomain-add** command. To delete the IVR virtual domains, use the **no** form of the command.

ivr virtual-fcdomain-add vsan-ranges *vsan-id*

no ivr virtual-fcdomain-add vsan-ranges *vsan-id*

Syntax Description

vsan-ranges	Specifies the IVR VSANs or range of VSANs.
vsan-id	Identifies the VSAN ID from 1 to 4093.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(4).

Usage Guidelines

Use the **no ivr virtual-fcdomain-add** command to remove the currently active domains from the fcdomain manager list in a specified VSAN.

Examples

The following command adds the IVR virtual domains in VSAN 1.

```
switch# config t
switch(config)# ivr virtual-fcdomain-add vsan-ranges 1
```

The following command reverts to the factory default of not adding IVR virtual domains.

```
switch# config t
switch(config)# ivr virtual-fcdomain-add vsan-ranges 1
```

Related Commands

Command	Description
show ivr virtual-fcdomain-add-status	Displays the configured VSAN topology for a fabric.
ivr withdraw domain	Removes overlapping domains.

ivr withdraw domain

To withdraw overlapping virtual domain from a specified VSAN, use the **ivr withdraw domain** command in EXEC mode.

ivr withdraw domain *domain-id* **vsan** *vsan-id*

Syntax Description

domain-id	Specifies the domain id. The range is 1 to 239.
vsan *vsan-id*	Specifies the VSAN ID. The range is 1 to 4093.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(4).

Usage Guidelines

When you enable the **ivr virtual-fcdomain-add** command, links may fail to come up due to overlapping virtual domain identifiers. If so, temporarily withdraw the overlapping virtual domain from that VSAN using the **ivr withdraw domain** command in EXEC mode.

Examples

The following command withdraws overlapping domains.

```
switch# ivr withdraw domain 10 vsan 20
```

Related CommandsT

Command	Description
show ivr virtual-fcdomain-add-status	Displays the configured VSAN topology for a fabric.
ivr virtual-fcdomain-add	Adds the IVR virtual domains.

ivr zone name

To configure a zone for Inter-VSAN Routing (IVR), use the **ivr zone name** command. To disable a zone for IVR, use the **no** form of the command.

ivr zone name *ivzs-name*

no ivr zone name *ivz-name*

Syntax Description

ivz-name	Specifies the IVZ name. Maximum length is 59 characters.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following command enters the configuration mode, enables the IVR feature, creates an IVZ, and adds a pWWN-VSAN member:

```
switch# config t
switch(config)# ivr enable
switch(config)# ivr zone name Ivz_vsan2-3
switch(config-ivr-zone)# member pwwn 21:00:00:e0:8b:02:ca:4a vsan 3
```

Related CommandsT

Command	Description
show ivr zone	Displays the configured VSAN topology for a fabric.

ivr zoneset

To configure a zoneset for Inter-VSAN Routing (IVR), use the **ivr zoneset** command. To revert to the factory defaults, use the **no** form of the command.

ivr zoneset {**activate name** *ivzs-name* [**force**] | **name** *ivzs-name*}

no ivr zoneset {**activate name** *ivzs-name* [**force**] | **name** *ivzs-name*}

Syntax Description

activate	Activates a previously-configured IVZS.
force	Forces a IVZS activation
name *ivzs-name*	Specifies the IVZS name. Maximum length is 59 characters.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

None.

Examples

The following command enters the configuration mode, enables the IVR feature, creates an IVZS, adds a IVZ member, and activates the IVZS:

```
switch# config t
switch(config)# ivr enable
switch(config)# ivr zoneset name Ivr_zoneset1
switch(config-ivr-zoneset)# member Ivz_vsan2-3
switch(config-ivr-zoneset)# exit
switch(config)# ivr zoneset activate name IVR_ZoneSet1
```

Related CommandsT

Command	Description
show ivr zoneset	Displays the configured VSAN topology for a fabric.

CHAPTER 12

K Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- kernel core, page 12-2

kernel core

Use the **kernel core** command to generate a core dump for each module. Use the **no** form of this command to negate the command or revert to its factory

kernel core {**limit** *number* | **module** *slot* {**force** | **level** {**all** | **header** | **kernel** | **ram** | **used-ram**} | **target** *ipaddress*}

no kernel core {**limit** *number* | **module** *slot* {**force** | **level** {**all** | **header** | **kernel** | **ram** | **used-ram**} | **target** *ipaddress*}

Syntax Description

limit *number*	Limits the number of modules for which the core is generated. The range is 1 to 6.
module *slot*	Configures the module requiring the core generation.
force	Forces a module to dump kernel core.
level	Specifies the core dump level for the selected module.
all	Dumps all the memory (requires 1G of space)
header	Dumps kernel header only.
kernel	Dumps all kernel memory pages.
ram	Dumps all the RAM pages.
used-ram	Dumps all the used RAM pages.
target *ipaddress*	Configures the external server IP address on the sme physical LAN.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.1(1)	This command was introduced.

Usage Guidelines

Core dumps performed on the supervisor module can lead to packet loss, even in a dual supervisor configuration.

Examples

The following example limits core generation to two modules.

```
switch(config)# kernel core limit 2
succeeded
```

The following example configures module 5 to generate cores.

```
switch(config)# kernel core module 5
succeeded
```

The following example configures module 5 to generate only header-level cores.

```
switch(config)# kernel core module 5 level header
succeeded
```

The following example configures the external server.

```
switch(config)# kernel core target 10.50.5.5
succeeded
```

Related Commands

Command	Description
show kernel	Displays configured kernel core settings.
show running-config	Displays all switch configurations saved to PSS.

CHAPTER 13

L Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- line com1, page 13-2
- line console, page 13-5
- line vty, page 13-8
- logging console, page 13-9
- logging level, page 13-10
- logging logfile, page 13-11
- logging module, page 13-12
- logging monitor, page 13-13
- logging server, page 13-14

line com1

To configure auxiliary COM 1 port, use the **line com1** command. To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

line com1 -->
databits *number* |
flowcontrol hardware |
modem {**in** | **init-string** {**default** | **user-input**} | **set-string user-input** *string*} |
parity {**even** | **none** | **odd**} |
speed *speed* |
stopbits {**1** | **2**}

line com1 -->
no databits *number* |
no flowcontrol hardware |
no modem {**in** | **init-string** | **set-string user-input**} |
no parity {**even** | **none** | **odd**} |
no speed *speed* |
no stopbits {**1** | **2**}

Syntax Description

databits *number*	Specifies the number of databits per character . The range is 5 to 8.
flowcontrol hardware	Enables modem flowcontrol on the COM1 port.
modem	Enables the modem mode.
in	Enables the COM 1 port to only connect to a modem.
init-string default	Writes the default initialization string to the modem.
set-string user-input *string*	Sets the user-specified initilization string to its corresponding profile. Maximum length is 80 characters.
init-string user-default	Writes the provided initialization string to the modem.
parity	Sets terminal parity.
even	Sets even parity.
none	Sets no parity.
odd	Sets odd parity.
speed *speed*	Sets the transmit and receive speeds. The range is 110 to 115, 200 baud.
stopbits	Sets async line stopbits.
1	Sets one stop bit.
2	Sets two stop bits.

Defaults

9600 Baud

8 databits

1 stopbit

Parity none

Default init string

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.2(2).

Usage Guidelines

The **line com1** command available in **config t** command mode. The **line com1** configuration commands are available in `config-com1` submode.

You can perform the configuration specified in this section only if you are connected to the console port or the COM1 port.

We recommend you use the default initialization string. If the required options are not provided in the user-input string, the initialization string is not processed.

You must first set the user-input string before initializing the string.

Examples

The following example configures a line console and sets the options for that terminal line.

```
switch## config t
switch(config)#
switch(config)# line com1
switch(config-com1)# databits 6
switch(config-com1)# parity even
switch(config-com1)# stopbits 1
```

The following example disables the current modem from executing its functions.

```
switch# config t
switch(config)# line com1
switch(config-com1)# no modem in
```

The following example enables (default) the COM1 port to only connect to a modem.

```
switch# config t
switch(config)# line com1
switch(config-com1)# modem in
```

The following example Writes the provides initialization string to the modem. This is the default.

```
switch# config t
switch(config)# line com1
switch(config-com1)# modem init-string default
```

The following example assigns the user-specified initialization string to its corresponding profile.

```
switch# config t
switch(config)# line com1
switch(config-com1)# modem set-string user-input ATE0Q1&D2&C1S0=3\015
```

The following example deletes the configured initialization string.

```
switch# config t
switch(config)# line com1
switch(config-com1)# no modem set-string user-input ATE0Q1&D2&C1S0=3\015
```

The following example writes the user-specified initialization string to the modem.

```
switch# config t
switch(config)# line com1
switch(config-com1)# modem init-string user-input
```

Related Commands

Command	Description
line console	Configure primary terminal line.
line vty	Configure virtual terminal line.
show line com1	Displays COM1 information.

line console

To configure a terminal line, use the **line console** command. To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

line console -->
databits *number* |
exec-timeout *minutes* |
modem {**in** | **init-string** | **set-string user-input**} |
parity {**even** | **none** | **odd**} |
speed *speed* |
stopbits {**1** | **2**}

line console -->
no databits *number* |
no exec-timeout *minutes* |
no modem {**in** | **init-string** {**default** | **user-input**} | **set-string user-input** *string*} |
no parity {**even** | **none** | **odd**} |
no speed *speed* |
no stopbits {**1** | **2**}

Syntax Description

databits *number*	Specifies the number of databits per character . The range is 5 to 8.
exec-timeout *minutes*	Configure exec timeout in minutes. The range is 0 to 525,600. To disable, set to 0 minutes.
modem	Enables the modem mode.
in	Enables the COM 1 port to only connect to a modem.
init-string default	Writes the default initialization string to the modem.
set-string user-input *string*	Sets the user-specified initilization string to its corresponding profile. Maximum length is 80 characters.
init-string user-input	Writes the provided initialization string to the modem.
parity	Sets terminal parity.
even	Sets even parity.
none	Sets no parity.
odd	Sets odd parity.
speed *speed*	Sets the transmit and receive speeds. The range is 110 to 115, 200 baud.
stopbits	Sets async line stopbits.
1	Sets one stop bit.
2	Sets two stop bits.

Defaults

9600 Baud

8 databits

1 stopbit

Parity none

Default init string

Command Modes

Configuration mode.

Command History

This command was modified in Cisco MDS SAN-OS Release 1.2(2).

Usage Guidelines

The **line console** command available in **config t** command mode. The **line console** configuration commands are available in `config-console` submode.

Examples

The following example configures a line console and sets the options for that terminal line.

```
switch## config t
switch(config)#
switch(config)# line console
switch(config-console)# databits 60
switch(config-console)# exec-timeout 60
switch(config-console)# flowcontrol software
switch(config-console)# parity even
switch(config-console)# stopbits 1
```

The following example disables the current modem from executing its functions.

```
switch# config t
switch(config)# line console
switch(config-console)# no modem in
```

The following example enables (default) the COM1 port to only connect to a modem.

```
switch# config t
switch(config)# line console
switch(config-console)# modem in
```

The following example Writes the provides initialization string to the modem. This is the default.

```
switch# config t
switch(config)# line console
switch(config-console)# modem init-string default
```

The following example assigns the user-specified initialization string to its corresponding profile.

```
switch# config t
switch(config)# line console
switch(config-console)# modem set-string user-input ATE0Q1&D2&C1S0=3\015
```

The following example deletes the configured initialization string.

```
switch# config t
switch(config)# line console
switch(config-console)# no modem set-string user-input ATE0Q1&D2&C1S0=3\015
```

The following example writes the user-specified initialization string to the modem.

```
switch# config t
switch(config)# line console
switch(config-console)# modem init-string user-input
```

Related Commands

Command	Description
line vty	Configure virtual terminal line.
line com1	Configures the auxiliary COM 1 port
show line consol	Displays console information.

line vty

To configure a virtual terminal line, use the **line vty** command. To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

line vty -->
exec-timeout *minutes* |
session-limit *number*

line vty -->
no exec-timeout |
no session-limit *number*

Syntax Description

exec-timeout *minutes*	Configures timeout in minutes. The range is 0 to 525600. To disable, set to 0 minutes.
session-limit *number*	Configures the number of VSH sessions. The range is 1 to 64.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The **line vty** command available in **config t** command mode. **line vty** configuration commands available in config-line submode.

Examples

The following example configures a virtual terminal line and sets the timeout for that line.

```
switch## config t
switch(config)# line vty
switch(config-line)# exec-timeout 60
```

Related Commands

Command	Description
line console	Configure primary terminal line.
line com1	Confgiures the auxiliary COM 1 port

logging console

To set console logging, use the **logging console** command. To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

logging console [*severity-level*]

no logging console [*severity-level*]

Syntax Description

severity-level	Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.

Defaults

Disabled.

The default severity level is 2.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The switch logs messages at or above the configured severity level.

Examples

The following example reverts console logging to the factory set default severity level of 2 (critical). Logging messages with a severity level of 2 or above will be displayed on the console.

```
switch# config t
switch(config)# logging console 2
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

logging level

To modify message logging facilities, use the **logging level** command. To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

logging level *facility-name severity-level*

no logging level *facility-name severity-level*

Syntax Description

facility-name	Specifies the required facility name (for example **acl**, or **ivr**, or **port**, etc.)
severity-level	Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.

Defaults

Disabled

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The switch logs messages at or above the configured severity level.

Examples

Configures Telnet or SSH logging for the kernel facility at level 4 (warning). As a result, logging messages with a severity level of 4 or above will be displayed.

```
switch# config t
switch(config)# logging level kernel 4
```

logging logfile

To set message logging for logfile, use the **logging logfile** command.To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

logging logfile *filename severity-level* [**size** *filesize*]

no logging logfile

Syntax Description

filename	Specifies the log filename. Maximu length is 80 characters.
severity-level	Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.
size *filesize*	Specifies the log file size. The range is 4096 to 4194304 bytes.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The switch logs messages at or above the configured severity level.

Examples

The following example configures logging information for errors or events above a severity level of 3 (errors) to be logged in a file named ManagerLogFile. By configuring this limit, the file size is restricted to 3,000,000 bytes.

```
switch# config t
switch(config)# logging logfile ManagerLogFile 3 size 3000000
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

logging module

To set message logging for linecards, use the **logging module** command. To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

logging module [*severity-level*]

no logging module [*severity-level*]

Syntax Description

severity-level	Specifies the maximum severity of messages logged. The range is 0 to 7, where 0 is emergency, 1 is alert, 2 is critical, 3 is error, 4 is warning, 5 is notify, 6 is informational, and 7 is debugging.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example sets message logging for modules at level 7.

```
switch## config t
switch(config)# logging module 7
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

logging monitor

To set monitor message logging, use the **logging monitor** command. To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

logging monitor *severity level*

Syntax Description

logging monitor	Sets message logging.
severity level	0-7 0-emerg;1-alert;2-crit;3-err;4-warn;5-notif;6-inform;7-debug

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example sets terminal line (monitor) message logging at level 2.

```
switch## config t
switch(config)# logging monitor 2
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

logging server

To set message logging for the remote server, use the **logging server** command. To negate the previously issued command or to revert to factory defaults, use the **no** form of the command.

logging server [*hostname* **|** *ip address severity_level* **| facility auth | authpriv | cron | daemon | ftp | kernel | local0 | local1 | local2 | local3 | local4 | local5 | local6 | local7 | lpr | mail | news | syslog | user | uucp]**

Syntax Description

logging server	Sets message logging for remote server.
hostname	Enters host name for remote server.
ip address	Enters the IP address for the remote server.
severity_level	Enter severity level of message. 0-emerg;1-alert;2-crit;3-err;4-warn;5-notif;6-inform;7-debug
facility	Facility to use when forwarding to server
auth	Use auth facility
authpriv	Use authpriv facility
cron	Use Cron/at facility
daemon	Use daemon facility
ftp	Use file transfer system facility
kernel	Use kernel facility
local0	Use local0 facility
local1	Use local1 facility
local2	Use local2 facility
local3	Use local3 facility
local4	Use local4 facility
local5	Use local5 facility
local6	Use local6 facility
local7	Use local7 facility
lpr	Use lpr facility
mail	Use mail facility
news	Use USENET news facility
syslog	Use syslog facility
user	Use user facility
uucp	Use Unix-to-Unix copy system facility

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

Enable message logging to the specified remote server for level 7 messages.

```
switch## config t
switch(config)# logging sever sanjose 7
```

Related Commands

Command	Description
show logging	Displays logging configuration information.

M Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- mkdir, page 14-2
- modem connect line, page 14-3
- move, page 14-4

mkdir

To create a directory in the Flash file system, use the **mkdir** command in EXEC mode.

mkdir *directory*

Syntax Description

directory	Name of the directory to create.

Defaults

None.

Command Modes

EXEC

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

This command is only valid on Class C Flash file systems.

You can specify whether to create the directory on bootflash:, slot0, or volatile:. If you do not specify the device, the switch creates the directory on the current directory.

Examples

The following example creates a directory called test in the slot0: directory.

```
switch# mkdir slot0:test
```

The following example creates a directory called test at the current directory level. If the current directory is slot0:mydir, this command creates a directory called slot0:mydir/test.

```
switch# mkdir test
```

Related Commands

Command	Description
dir	Displays a list of files on a file system.
rmdir	Removes an existing directory in the Flash file system.

modem connect line

To enable a modem connection when the switch is already in operation, use the **modem connect line** command in EXEC mode.

modem connect line {**com1** | **console**}

Syntax Description

com1	Connects the modem through a COM1 line connection
console	Connects the modem through a console line connection

Defaults

Disabled.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(2).

Usage Guidelines

If the switch is already in operation when the modem is connected, issue this command to notify the software that a modem is going to be added.

You must issue the **modem connect line** command before setting the user-input string for initialization.

Examples

The following example announces a modem connection from the line console.

```
switch# modem connect line console
```

The following example announces a modem connection from the COM1 port.

```
switch# modem connect line com1
```

move

To remove a file from the source file and place it in the destination file, use the **move** command in EXEC mode.

move {bootflash: | slot0: | volatile:}[*directory*/]*filename*
{bootflash: | slot0: | volatile:}[*directory*/]*filename*

Syntax Description

bootflash:	Source or destination location for internal bootflash memory.
slot0:	Source or destination location for the CompactFlash memory or PCMCIA card.
volatile:	Source or destination location for volatile memory.
directory	Specifies the name of the directory.
filename	Specifies the name of the file to move or create.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

If you do not specify the directory name in the command line, the switch prompts you for it.

Examples

The following example moves the file called samplefile from the slot0 directory to the mystorage directory.

```
switch# move slot0:samplefile slot0:mystorage/samplefile
```

Related Commands

Command	Description
dir	Displays a list of files on a file system.
mkdir	Creates a directory in the Flash file system.
rmdir	Removes an existing directory in the Flash file system.

CHAPTER 15

N Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- ntp, page 15-2

ntp

To configure NTP settings on the switch, use the **ntp** command in configuration mode.

ntp {peer *hostname* **| server | tstamp-check}**

Syntax Description

peer *hostname*	The hostname/IP address of the NTP peer (Max Size - 80).
server	The hostname/IP address of the NTP server (Max Size - 80).
tstamp-check	Enables or disables the Timestamp Check.

Defaults

This command has no default settings.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

This example forms a server association with a server.

```
switch(config)# ntp server 10.10.10.10
switch(config)#
```

This example forms a peer association with a peer. You can specify multiple associations.

```
switch(config)# ntp peer 10.20.10.0
switch(config)#
```

CHAPTER 16

P Commands

The commands in this chapter apply to the Cisco MDS 9000 Family of multilayer directors and fabric switches. All commands are shown here in alphabetical order regardless of command mode. See the "Command Modes" section to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family Configuration Guide*.

- passive-mode, page 16-2
- peer-info ipaddr, page 16-3
- ping, page 16-5
- port, page 16-6
- portaddress, page 16-7
- port-security, page 16-9
- port-security database, page 16-12
- power redundancy-mode, page 16-14
- poweroff module, page 16-16
- purge fcdomain fcid, page 16-17
- purge module, page 16-18
- pwd, page 16-19

passive-mode

To configure the required mode to initiate an IP connection, use the **passive-mode** command. To enable passive mode for the FCIP interface, use the **no** form of the command.

passive-mode

no passive-mode

Syntax Description

This command has no keywords or arguments.

Defaults

Disabled

Command Modes

Interface configuration submode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

By default, the active mode is enabled to actively attempt an IP connection.

If you enable the passive mode, the switch does not initiate a TCP connection and merely waits for the peer to connect to it.

Examples

The following example enables passive mode on an FCIP interface.

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# passive-mode
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

peer-info ipaddr

To configure the peer information for the FCIP interface, use the **peer-info ipaddr** command. To remove the peer information for the FCIP interface, use the **no** form of the command.

peer-info ipaddr *address* **[port** *number*]

no peer-info ipaddr *address* **[port** *number*]

Syntax Description

ipaddr *address*	Configures the peer IP address.
port *number*	Configures a peer port. The range is 1 to 65535.

Defaults

None.

Command Modes

Interface configuration submode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Access this command from the `switch(config-if)#` submode.

The basic FCIP configuration uses the peer's IP address to configure the peer information. You can also use the peer's port number, port profile ID, or port WWN to configure the peer information. If you do not specify a port, the default 3225 port number is used to establish connection.

Examples

The following command assigns an IP address to configure the peer information. Since no port is specified, the default port number, 3225, is used.

```
switch# config t
switch(config)# interface fcip 10
switch(config-if)# peer-info ipaddr 10.1.1.1
```

The following command deletes the assigned peer port information.

```
switch(config-if)# no peer-info ipaddr 10.10.1.1
```

The following command assigns the IP address and sets the peer TCP port to 3000. The valid port number range is from 0 to 65535.

```
switch(config-if)# peer-info ipaddr 10.1.1.1 port 3000
```

The following command deletes the assigned peer port information.

```
switch(config-if)# no peer-info ipaddr 10.1.1.1 port 2000
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

ping

To diagnose basic network connectivity, use the **ping** (packet internet groper) command in EXEC mode.

ping {*host-name* | *system-address*}

Syntax Description

host-name	Host name of system to ping. Maximum length is 64 characters.
system-address	Address of system to ping.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

The ping program sends an echo request packet to an address, and then awaits a reply. The ping output can help you evaluate path-to-host reliability, delays over the path, and whether the host can be reached or is functioning.

Verify connectivity to the TFTP server using the **ping** command.

To abnormally terminate a ping session, type the **Ctrl-C** escape sequence

Examples

The following example pings system 192.168.7.27.

```
switch# ping 192.168.7.27
PING 192.168.7.27 (192.168.7.27): 56 data bytes
64 bytes from 192.168.7.27: icmp_seq=0 ttl=255 time=0.4 ms
64 bytes from 192.168.7.27: icmp_seq=1 ttl=255 time=0.2 ms
64 bytes from 192.168.7.27: icmp_seq=2 ttl=255 time=0.2 ms
64 bytes from 192.168.7.27: icmp_seq=3 ttl=255 time=0.2 ms

--- 192.168.7.27 ping statistics ---
13 packets transmitted, 13 packets received, 0% packet loss
round-trip min/avg/max = 0.2/0.2/0.4 ms
```

port

To assign the port number of a Gigabit Ethernet interface to the FCIP profile, use the **port** command. Use the **no** form of the command to negate the command or revert to factory defaults.

port *number*

no port *number*

Syntax Description

port *number*	Configures a peer port. The range is 1 to 65535.

Defaults

Disabled

Command Modes

Fcip profile configuration submode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

Associates the profile with the assigned local port number. If a port number is not assigned for a FCIP profile, the default TCP port 3225 is used.

Examples

The following example configures port 5000 on FCIP interface 5.

```
switch# config t
switch(config)# fcip profile 5
switch(config-profile)# port 5000
```

Related Commands

Command	Description
show fcip profile	Displays information about the FCIP profile.
interface fcip *interface_number* **use-profile** *profile-id*	Configures the interface using an existing profile ID from 1 to 255.
show interface fcip	Displays an interface configuration for a specified FCIP interface.

portaddress

To enable the FICON feature in a specified VSAN, use the **ficon vsan** command in configuration mode. To disable the feature or to revert to factory defaults, use the **no** form of the command.

portaddress *portaddress*
block
name *string*
prohibit portaddress *portaddress*

portaddress *portaddress*
no block
no name *string*
no prohibit portaddress *portaddress*

Syntax Description

portnumber	Specifies the FICON port number for this interface. The range is 0 to 254.
block	Blocks a port address.
name *string*	Configures a name for the port address. Maximum length is 24 characters.
prohibit portaddress	Prohibit communication with a portaddress.

Defaults

None.

Command Modes

FICON configuration submode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.3(1).

Usage Guidelines

The **shutdown/no shutdown** port state is independent of the **block/no block** port state. If a port is shutdown, unblocking that port will not initialize the port.

You cannot block or prohibit CUP port (0XFE).

If you prohibit ports, the specified ports are prevented from communicating with each other. Unimplemented ports are always prohibited.

Examples

The following example disables a port address and retains it in the operationally down state.

```
switch# config t
switch(config)# ficon vsan 2
switch(config-ficon)# portaddress 1
switch(config-ficon-portaddr)# block
```

The following example enables the selected port address and reverts to the factory default of the port address not being blocked.

```
switch(config-ficon-portaddr)# no block
```

The following example prohibits port address 1 in VSAN 2 from talking to ports 3.

```
switch(config-ficon-portaddr)# prohibit portaddress 3
```

The following example removes port address 5 from a previously-prohibited state.

```
switch(config-ficon-portaddr)# no prohibit portaddress 5
```

The following example assigns a name to the port address.

```
switch(config-ficon-portaddr)# name SampleName
```

The following example deletes a previously configured port address name.

```
switch(config-ficon-portaddr)# no name SampleName
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

port-security

To configure port security features and reject intrusion attempts, use the **port-security** command in configuration mode. Use the **no** form of the command to negate the command or revert to factory defaults.

port-security
{**activate vsan** *vsan-id* [**force** | **no-auto-learn**] |
auto-learn vsan *vsan-id* |
database vsan *vsan-id* [{**any-wwn** | **pwwn** *wwn* | **nwwn** *wwn* | **swwn** *wwn*} [**fwwn** *wwn* |
interface *slot/port* | **swwn** *wwn*]] |
enable}

no port-security
{**activate vsan** *vsan-id* [**force** | **no-auto-learn**] |
auto-learn vsan *vsan-id* |
database vsan *vsan-id* [{**any-wwn** | **nwwn** *wwn* | **pwwn** *wwn* | **swwn** *wwn*} [**fwwn** *wwn* |
interface *slot/port* | **swwn** *wwn*]] |
enable}

Syntax Description

activate	Activates a port security database for the specified VSAN and automatically enables auto-learn.
auto-learn	Enables auto-learning for the specified VSAN.
database	Enters the port security database configuration mode for the specified VSAN.
enable	Enable port security.
any-wwn	Specifies any WWN to login to the switch.
nwwn *wwn*	Specifies the node WWN as the Nx port connection.
pwwn *wwn*	Specifies the port WWN as the Nx port connection.
swwn *wwn*	Specifies the switch WWN as the xE port connection.
fwwn *wwn*	Specifies a fabric WWN login.
interface *slot/port*	Specifies the device or switch port interface through which each device is connected to the switch.
port-channel *number*	Specifies a PortChannel login.
vsan *vsan-id*	Specifies the VSAN ID. The range is 1 to 4093.
force	Forces the database activation.
no-auto-learn	Disables the auto-learn feature for the port security database.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

When you activate the port security feature, the **auto-learn** option is also automatically enabled. You can choose to activate the port-security feature and disable **auto-learn** using the **port-security activate vsan** *number* **no-auto-learn** command. In this case, you need to manually populate the port security database by individually securing each port.

If the **auto-learn** option is enabled on a VSAN, you cannot activate the database for that VSAN without the **force** option.

Examples

The following example activates the port security database for the specified VSAN, and automatically enables auto-learn.

```
switch# config t
switch(config)# port-security activate vsan 1
```

The following example deactivates the port security database for the specified VSAN, and automatically disables auto-learn.

```
switch# config t
switch(config)# no port-security activate vsan 1
```

The following example disables the auto-learn feature for the port security database in VSAN 1.

```
switch# config t
switch(config)# port-security activate vsan 1 no-auto-learn
```

The following example enables auto-learning so the switch can learn about any device that is allowed to access VSAN 1. These devices are logged in the port security active database.

```
switch# config t
switch(config)# port-security auto-learn vsan 1
```

The following example disables auto-learning and stops the switch from learning about new devices accessing the switch. Enforces the database contents based on the devices learnt up to this point.

```
switch# config t
switch(config)# no port-security auto-learn vsan 1
```

The following example enters the port security database mode for the specified VSAN.

```
switch# config t
switch(config)# port-security database vsan 1
switch(config-port-security)#
```

The following example configures any WWN to login through the specified interfaces.

```
switch(config-port-security)# any-wwn interface fc1/1 - fc1/8
```

The following example configures the specified pWWN to only log in through the specified fWWN.

```
switch(config-port-security)# pwwn 20:11:00:33:11:00:2a:4a fwwn 20:81:00:44:22:00:4a:9e
```

The following example deletes the specified pWWN configured in the previous step.

```
switch(config-port-security)# no pwwn 20:11:00:33:11:00:2a:4a fwwn 20:81:00:44:22:00:4a:9e
```

The following example configures the specified nWWN to log in through the specified fWWN.

```
switch(config-port-security)# nwwn 26:33:22:00:55:05:3d:4c fwwn 20:81:00:44:22:00:4a:9e
```

The following example configures the specified pWWN to login through any port on the local switch.

```
switch(config-port-security)# pwwn 20:11:33:11:00:2a:4a:66
```

The following example configures the specified sWWN to only login through PortChannel 5.

```
switch(config-port-security)# swwn 20:01:33:11:00:2a:4a:66 interface port-channel 5
```

The following example configures any WWN to log in through the specified interface.

```
switch(config-port-security)# any-wwn interface fc3/1
```

The following example deletes the wildcard configured in the previous step.

```
switch(config-port-security)# no any-wwn interface fc2/1
```

The following example deletes the port security configuration database from the specified VSAN.

```
switch# config t
switch(config)# no port-security database vsan 1
switch(config)#
```

The following example forces the VSAN 1 port security database to activate despite conflicts.

```
switch(config)# port-security activate vsan 1 force
```

Related Commands

Command	Description
show port-security database	Displays configured port security information.

port-security database

To copy the port security database or to view the difference within the port security database, use the **port-security database** command in EXEC mode.

port-security database {copy | diff {active | config}} vsan *vsan-id*

Syntax Description

port-security	Activates a port security database for the specified VSAN and automatically enables auto-learn.
database	Enters the port security database configuration mode for the specified VSAN.
copy	Copies the active database to the configuration database.
diff	Provides the difference between the active and configuration port security database.
active	Writes the active database to the configuration database.
config	Writes the configuration database to the active database.
vsan *vsan-id*	Specifies the VSAN ID. The ranges is 1 to 4093.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.2(1).

Usage Guidelines

If the active database is empty, the port-security database is empty.

Use the **port-security database diff active** command to resolve conflicts.

Examples

The following example copies the active to the configured database.

```
switch# port-security database copy vsan 1
```

The following example provides the differences between the active database and the configuration database.

```
switch# port-security database diff active vsan 1
```

The following example provides information on the differences between the configuration database and the active database.

```
switch# port-security database diff config vsan 1
```

Related Commands

Command	Description
port-security database	Copies and provides information on the differences within the port security database.
show port-security database	Displays configured port security information.

power redundancy-mode

To configure the capacity of the power supplies on the Cisco MDS 9500 Family of switches, use the **power redundancy-mode** command in configuration mode. Use the **no** form of the command to negate the command or revert to factory defaults.

power redundancy-mode {combined [force] | redundant}

no power redundancy-mode {combined [force] | redundant}

Syntax Description

combined	Configures power supply redundancy mode as combined.
force	Forces combined mode without prompting.
redundant	Configures power supply redundancy mode as redundant.

Defaults

Redundant mode.

Command Modes

Configuration mode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

- If power supplies with different capacities are installed in the switch, the total power available differs based on the configured mode:
- In redundant mode, the total power is the lesser of the two power supply capacities. This reserves enough power to keep the system powered on in case of a power supply failure. This is the recommended or default mode.
- In combined mode, the total power is twice the lesser of the two power supply capacities. In case of a power supply failure, the entire system could be shut down, depending on the power usage at that time.
- When a new power supply is installed, the switch automatically detects the power supply capacity. If the new power supply has a capacity that is lower than the current power usage in the switch and the power supplies are configured in redundant mode, the new power supply will be shut down.
- When you change the configuration from combined to redundant mode and the system detects a power supply that has a capacity lower than the current usage, the power supply is shut down. If both power supplies have a lower capacity than the current system usage, the configuration is not allowed.

Examples

The following examples demonstrate how the power supply redundancy mode could be set.

```
switch(config)# power redundancy-mode combined
WARNING: This mode can cause service disruptions in case of a power supply failure.
Proceed ? [y/n] y
switch(config)# power redundancy-mode redundant
```

Related Commands

Command	Description
show environment power	Displays status of power supply modules, power supply redundancy mode, and power usage summary.
copy running-config startup-config	Copies all running configuration to the startup configuration.

poweroff module

To power off individual modules in the system, use the **poweroff module** command in configuration mode. Use the **no** form of this command to power up the specified module.

poweroff module *slot*

no poweroff module *slot*

Syntax Description

slot	Specifies the slot number for the module.

Defaults

None.

Command Modes

Configuration mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

Use the **poweroff module** command to power off individual modules. The **poweroff module** command cannot be used to power off supervisor modules.

Examples

The following example powers off and powers up module 1.

```
switch# config t
switch(config)# poweroff module 1
switch(config)#
switch(config)# no poweroff module 1
switch(config)#
```

Related Commands

Command	Description
show module	Displays information for a specified module.
copy running-config startup-config	Copies all running configuration to the startup configuration.

purge fcdomain fcid

To purge persistent FCIDs, use the **purge fcdomain fcid** command in EXEC mode.

purge fcdomain fcid vsan *vsan-id*

Syntax Description

vsan *vsan-id*	Indicates that FCIDs are to be purged for a VSAN ID. The range is 1 to 4093.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example shows how to purge all dynamic, unused FC IDs in VSAN 4

```
switch# purge fcdomain fcid vsan 4
switch#
```

The following example shows how to purge all dynamic, unused FC IDs in VSANs 4, 5, and 6.

```
switch# purge fcdomain fcid vsan 3-5
switch#
```

purge module

To delete configurations in the running configuration for nonexistent modules, use the **purge module** command in EXEC mode.

purge module *slot* **running-config**

Syntax Description

slot	Specifies the module slot number.
running-config	Purges the running configuration from the specified module.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines

This command cannot be issued on a supervisor module.

Examples

The following example displays the output of the **purge module** command issued on the module in slot 8.

```
switch# purge module 8 running-config
switch#
```

pwd

To display the current directory location, use the **pwd** command in EXEC mode.

pwd

Syntax Description

This command has no keywords or arguments.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(2).

Usage Guidelines

None.

Examples

The following example changes the directory and displays the current directory.

```
switch# cd bootflash:logs
switch# pwd
bootflash:/logs
```

Related Commands

Command	Description
cd	Changes the current directory to the specified directory.
dir	Displays the contents of a directory.