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

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
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCC
INIT: Entering runlevel: 3
```

The following example displays the file output continuation of the **install all** command on the console of the standby supervisor module.

```
Hacienda(standby)#

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
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCC
INIT: Entering runlevel: 3


Continue on installation process, please wait.
The login will be disabled until the installation is completed.

Module 6: Waiting for module online.
Jan 18 23:43:02 Hacienda %PORT-5-IF_UP: Interface mgmt0 is up
Jan 18 23:43:19 Hacienda %LICMGR-3-LOG_LIC_NO_LIC: No license(s) present for feature
FM_SERVER_PKG. Application(s) shutdown in 53 days.
```

```
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.