CHAPTER 9

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 in the Cisco MDS 9000 Family of switches, use the **in-order-guarantee** command in configuration mode. To disable in-order delivery, use the **no** form of the command.

in-order-guarantee

no in-order-guarantee

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

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.

```
switch## config t
switch(config)##
switch(config)# in-order-guarantee
switch(config)#
switch(config)# no in-order-guarantee
switch(config)#
```

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 system *URL* **kickstart** *URL*

Syntax Description

install all	Upgrades the system.
system	Upgrades the system 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 introduced in Cisco MDS SAN-OS Release 1.0(3).

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.

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 system bootflash:system_image kickstart bootflash:kickstart_image

Image verification is in progress, please wait.
This command is going to install system image system_image
and kickstart image kickstart_image on this system
The command will:
 - Install the Loader, if required
 - Install the BIOS, if required
 - Update boot variables
 - Save configuration
 - Reload the standby supervisor
 - Perform a HA Switchover
 - Perform a hitless upgrade of module 1, 2, 3, 4, 7, 8, 9

Do you want to continue y/n ? [n] : y


Image synchronization is in progress, please wait.

Installing Loader, please wait.
Installing Loader on module 5 ...  successful
Installing Loader on module 6 ...  successful

Installing BIOS, please wait.
Installing BIOS on module 1 ... not required (same version)
Installing BIOS on module 2 ... not required (same version)
Installing BIOS on module 3 ... not required (same version)
Installing BIOS on module 4 ... not required (same version)
Installing BIOS on module 5 ... not required (same version)
Installing BIOS on module 6 ... not required (same version)
Installing BIOS on module 7 ... not required (same version)
Installing BIOS on module 8 ... not required (same version)
Installing BIOS on module 9 ... not required (same version)

Updating boot variables .. successful
Saving configuration, please wait.
Reload of the standby supervisor is in progress, please wait
Success, the standby supervisor is online and ready to takeover
```

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@171.71.00.000:/home/user/golden-sanity/system_image
kickstart scp://user@171.71.00.000:/home/user/golden-sanity/kickstart_image
Copying
scp://user@171.71.00.000/home/user/golden-sanity/system_image to
bootflash:/system_image
..
Copying
scp://user@171.71.00.000/home/user/golden-sanity/kickstart_image to
bootflash:/kickstart_image
aharihar@171.71.00.000's password:

system_image-3u           100% |*****************************| 19941 KB
00:24

Image verification is in progress, please wait.
This command is going to install system image system_image
and kickstart image kickstart_image on this system
```

```
The command will:
 - Install the Loader, if required
 - Install the BIOS, if required
 - Update boot variables
 - Save configuration
 - Reload the standby supervisor
 - Perform a HA Switchover
 - Perform a hitless upgrade of module 1, 2, 3, 4, 7, 8, 9

Do you want to continue y/n ? [n] : y

Image synchronization is in progress, please wait.

Installing Loader, please wait.
Installing Loader on module 5 ...  successful
Installing Loader on module 6 ...  successful

Installing BIOS, please wait.
Installing BIOS on module 1 ... not required (same version)
Installing BIOS on module 2 ... not required (same version)
Installing BIOS on module 3 ... not required (same version)
Installing BIOS on module 4 ... not required (same version)
Installing BIOS on module 5 ... not required (same version)
Installing BIOS on module 6 ... not required (same version)
Installing BIOS on module 7 ... not required (same version)
Installing BIOS on module 8 ... not required (same version)
Installing BIOS on module 9 ... not required (same version)

Updating boot variables .. successful
Saving configuration, please wait.
Reload of the standby supervisor is in progress, please wait
Success, the standby supervisor is online and ready to takeover
```

This example displays the file output on the console of the standby supervisor module:

```
Installation procedure in progress, please wait.
The login will be disabled until the installation is completed.
Switchover to this supervisor is successful
Install of module 1 is in progress, please wait.
Install of module 2 is in progress, please wait.
Install of module 3 is in progress, please wait.
Install of module 4 is in progress, please wait.
Install of module 7 is in progress, please wait.
Install of module 8 is in progress, please wait.
Install of module 9 is in progress, please wait.

The installation procedure has completed successfully.

MDS Switch
switch login:
```

Related Commands

Command	Description
install module bios	Upgrades the supervisor or switching module BIOS.
install module image	Upgrades the supervisor or switching module image.
install module loader	Upgrades the bootloader on the active or standby supervisor or modules.

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 image

To program the supervisor or switching module image, use the **install module image** command.

install module *module-number* **image kickstart [bootflash: | slot0: | volatile: |** *system-image***]**

Syntax Description

install module	Upgrades the BIOS for a supervisor or switching module.
module-number	Switching modules: From slot 1 to 4 and 7 to 9 in a Cisco MDS 9500 Series switch. For slot 2 in a Cisco MDS 9200 Series switch. Supervisor modules: Slot 5 or 6—only on the active supervisor module in a Cisco MDS 9500 Series switch. Slot 1—upgrades both the supervisor and switching parts of the module in a Cisco MDS 9200 Series switch.
image	Configures the running image if **system** is not specified.
kickstart	Specifies the kickstart image to use (optional). If the image 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 image.

Defaults

None.

Command Modes

EXEC mode.

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.0(3).

Usage Guidelines

The **install module** command only upgrades the system image on any module (other than the standby supervisor module). If error occur for any switching module, the module is reset and the new image is downloaded for that module.

If you are issuing this command on the supervisor module, follow these requirements:

- Update the environment variables before issuing this command.
- If any errors occur during this process, the switch is reset to guarantee that the system does not continue with a half installed image. In this case, the switch uses the image that was saved in the SYSTEM environment variable prior to this installation procedure.
- Specify the slot number of the active supervisor module. The following example assumes the active supervisor module is in slot 5.

Examples

The following example shows how to perform a non disruptive upgrade for the system.

```
switch# install module 5 image system bootflash:system.img
Beginning the install check...
    bootflash:/system.img and kickstart image...is compatible.
    bootflash:/system.img image...can be upgraded non-disruptively from current.
Preliminary install check done.
Beginning the install process.
    Parsing of versioning database successful.
    Preparing file system plan now...Done.
    Preparing upgrade group plan now...Done.
    Executing pre-uninstall scripts...Done.
    Updating the File System for installation...Done.
    Executing post-install scripts...Done.
    System Manager will restart the services according to upgrade plan..Done.
Installation completed successfully.
```

Related Commands

Command	Description
show version compatibility	Shows the system software that is currently running on the switch

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. To disable an interface, use the **no** form of the command.

interface fc | mgmt | port-channel | sup-fc | vsan

no interface fc | mgmt | port-channel | sup-fc | vsan

Syntax Description

fc	Fiber Channel interface. Slot number range is from 1 to 9.
mgmt	Management interface. Management interface number range is 0-0.
port-channel	PortChannel interface.
sup-fc	Inband interface
vsan	IPFC VSAN interface. VSAN number range is from 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

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 displays the options for the interface command.

```
switch## config t
switch(config)# interface ?
  cpp              Virtualization IPFC interface
  fc               Fiber Channel interface
  fc-tunnel        Fc-tunnel interface
  fcip             Fcip interface
  gigabitethernet  Ethernet interface
  iscsi            ISCSI interface
  mgmt             Management interface
  port-channel     Port Channel interface
  sup-fc           Inband Interface
  vsan             IPFC VSAN interface
```

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_number* **[channel-group** *number* **force] exit | fcdomain rcf-reject vsan** *vsan-id* **[fspf cost** *link_cost* **vsan** *vsan-id* **| dead-interval** *seconds* **vsan** *vsan-id* **| hello-interval** *seconds* **vsan** *vsan-id* **| passive vsan** *vsan-id* **| retransmit-interval** *seconds* **vsan** *vsan-id***] no | shutdown | switchport**

no interface fc *slot_number* **[channel-group** *number* **force] exit | fcdomain rcf-reject vsan** *vsan-id* **[fspf cost** *link_cost* **vsan** *vsan-id* **| dead-interval** *seconds* **vsan** *vsan-id* **| hello-interval** *seconds* **vsan** *vsan-id* **| passive vsan** *vsan-id* **| retransmit-interval** *seconds* **vsan** *vsan-id***] no | shutdown | switchport**

Syntax Description

slot-number	Specifies a slot number and port number.
channel-group	Adds to or removes from a PortChannel.
number	Specify a PortChannel number from 1 to 128.
force	Forcefully adds a port.
exit	Exits from submode.
fcdomain	Enters the interface submode.
rcf-reject	Configures the rcf-reject flag.
vsan	Configures the VSAN range.
vsan-id	The ID of the VSAN is from 1 to 4093.
fspf	Configures FSPF parameters.
cost	Configures FSPF link cost.
link-cost	Enters FSPF link cost 1-65535.
dead-interval	Configures FSPF dead interval.
seconds	Specifies interval in seconds from 1 to 65535.
hello-interval	Configures FSPF hello-interval.
passive	Enables or disables FSPF on the interface.
retransmit-interval	Configures FSPF retransmit interface.
no	Negates a command or sets its defaults.
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 space fc1/1space-space5space,spacefc2/5space-space7

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)# int fc9/1 - 4
```

Related Commands

Command	Description
show interface	Displays an interface configuration for a specified interface.

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] exit | fcdomain rcf-reject vsan** *vsan-id* | **[fspf cost** *link_cost* **vsan** *vsan-id* | **dead-interval** *seconds* **vsan** *vsan-id* | **hello-interval** *seconds* **vsan** *vsan-id* | **passive vsan** *vsan-id* | **retransmit-interval** *seconds* **vsan** *vsan-id***] | no | passive-mode | [peer-info ipaddress** *address* | **port** *number***] | shutdown | special-frame peer-wwn** *pwwn-id* | **switchport | tcp-connection** *number* | **[time-stamp | acceptable-diff** *number***] | use-profile** *profile-id*

no interface fcip *interface_number* **bport | bport-keepalives | [channel-group** *number* | **force] exit | fcdomain rcf-reject vsan** *vsan-id* **[fspf cost** *link_cost* **vsan** *vsan-id* | **dead-interval** *seconds* **vsan** *vsan-id* | **hello-interval** *seconds* **vsan** *vsan-id* | **passive vsan** *vsan-id* | **retransmit-interval** *seconds* **vsan** *vsan-id***] | no | passive-mode | [peer-info ipaddress** *address* | **port** *number***] | shutdown | special-frame peer-wwn** *pwwn-id* | **switchport | tcp-connections** *number* | **[time-stamp | acceptable-diff** *number***] | use-profile** *profile-id*

Syntax Description

interface fcip	Selects the FCIP interface to configure.
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	Adds to or removes from a PortChannel.
number	Specifies a PortChannel number from 1 to 128.
force	Forcefully adds a port.
exit	Exits from submode.
fcdomain	Enters the fcdomain mode for this FCIP interface
rcf-reject	Configures the rcf-reject flag.
vsan	Configures the VSAN.
vsan-id	Specifies a VSAN ID from 1 to 4093.
fspf	Configures FSPF parameters.
cost	Configures FSPF link cost.
link-cost	Enters FSPF link cost from 1 to 65535.
dead-interval	Configures FSPF dead interval.
seconds	Specifies interval in seconds from 1 to 65535.
hello-interval	Configures FSPF hello-interval.
passive	Enables or disables FSPF on the interface.
retransmit-interval	Configures FSPF retransmit interface.
vsan *vsan-id*	Enters FSPF global configuration mode for the specified VSAN or range of VSANs from 1 to 4096. If no VSAN ID is specified, the default VSAN is selected.
no	Negates a command or sets its defaults.
passive-mode	Configures a passive connection.
peer-info	Configures the peer information.

ipaddress	Configures the peer IP address.
address	Enters the IP address.
port	Configures a peer port.
number	Enters the peer port number from 1 to 65535.
shutdown	Enables or disables an interface.
special-frame	Configures special frames.
peer-wwn	Configures the peer WWN for special frames.
pwwn-id	Enters the peer pWWN ID.
switchport	Configures switchport parameters.
tcp-connections	Configures the number of TCP connection attempts.
number	Enters the number of attempts (1 or 2).
time-stamp	Configures time-stamp.
acceptable-diff	Configures the acceptable time difference for time-stamps.
number	Enters the acceptable time from 1 to 60000.
use-profile	Configures the interface using an existing profile.
profile-id	Enters the profile ID to be used from 1 to 255.

Defaults

Disabled

Command Modes

Configuration mode

Command History

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

Usage Guidelines

You can specify a range of interfaces by issuing a command with the following example format:

interface space fcip space1space-space5space,spacefc2/5space-space7

Examples

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fcip 1
switch(config-if)#
```

Related Commands

Command	Description
show interface fcip	Displays an interface configuration for a specified FCIP interface.

interface fc switchport

To configure an interface on the Cisco MDS 9000 Family of switches, use the **interface** command in configuration mode.

interface fc *slot-number* **{switchport beacon | description** *text* **| encap eisl | [fcrxbbcredit** *credit* **mode E | Fx] fcrxbbcredit default | switchport [fcrxbufsize** *size* **| mode auto (E | F | FL | Fx | SD | TL) | speed (1000 | 2000 | auto) | trunk allowed vsan** *vsan-id***] | add [vsan** *number* **| all] | mode [auto | off | on]}**

no interface fc *slot-number* **{switchport beacon | description** *text* **| encap eisl | [fcrxbbcredit** *credit* **mode E | Fx] fcrxbbcredit default | switchport [fcrxbufsize** *size* **| mode auto (E | F | FL | Fx | SD | TL) | speed (1000 | 2000 | auto) | trunk allowed vsan** *vsan-id***] | add [vsan** *number* **| all] | mode [auto | off | on]}**

Syntax Description

interface	Selects an interface to configure.
fc	Fiber Channel interface. Slot number range is 1-9.
slot-number	Specifies a slot number and port number.
switchport	**Configure switchport parameters**
beacon	**Disable/enable the beacon for an interface**
description	**Enter description of maximum 80 characters**
text	Description text of maximum 80 characters (Max Size - 80)
encap	**Configure encapsulation for the port**
eisl	**EISL encapsulation**
fcrxbbcredit	**Configure receive BB_credit for the port**
credit	**Enter receive BB_credit 1-255**
mode	**Configure receive BB_credit for specific mode**
E	**Configure receive BB_credit for E or TE mode**
Fx	**Configure receive BB_credit for F or FL mode**
default	**Default receive BB_credit**
fcrxbufsize	**Configure receive data field size for the port**
size	**Enter receive data field size 256-2112**
mode	**Enter the port mode**
auto	**Autosense mode**
E	**E port mode**
F	**F port mode**
FL	**FL port mode**
Fx	**Fx port mode**
SD	**SD port mode**
TL	**TL port mode**
speed	**Enter the port speed**
1000	**1000 Mbps speed**
2000	**2000 Mbps speed**

auto	**Autosense speed**
trunk	**Configure trunking parameters on an interface**
allowed	**Configure allowed list for interface(s)**
add	**Give VSAN id range to add to allowed vsan list**
all	**Add all the VSANs to allowed VSAN list**
mode	**Configure trunking mode**
auto	**Autosense trunking for an interface**
off	**Disable trunking for an interface**
on	**Enable trunking for an interface**

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 space fc1/1space-space5space,spacefc2/5space-space7

Examples

The following example changes to Configuration mode, configures a Fibre Channel interface, and configures switchport mode E for the specified BB credit.

```
switch## config t
switch(config)# interface fc1/1
switch(config-if)# switchport fcrxbbcredit 2 mode E
```

Related Commands

Command	Description
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. Use the **no** form of this command to negate the command or return it to its factory defaults.

interface mgmt *number* | **ip | shutdown** *force* | **switchport description** *text* **[vrrp** *vrrp_id***]**

nointerface mgmt *number* | **ip | shutdown** *force* | **switchport description** *text* **[vrrp** *vrrp_id***]**

Syntax Description

number	Specifies the management interface number which is 0.
ip	IP address of the interface.
shutdown	Enables the interface.
force	Forces the management 0 interface to shutdown without a confirmation.
switchport	Configure switchport parameters
description	Enter description of maximum 80 characters
text	Description text of maximum 80 characters (Max Size - 80)
vrrp	Configure vrrp on this interface
vrrp_id	Enters VRRP id.

Defaults

Disabled.

Command Modes

Configuration mode. Issue **interface mgmt** commands from the config-interface (config-if) 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)# ?
Interface configuration commands:
  exit        Exit from this submode
  ip          [no] ip address
  no          Negate a command or set its defaults
  shutdown    Enable/disable an interface
  switchport  Configure switchport parameters
  vrrp        [no] vrrp vr_id: Configure vrrp on this interface
```

```
switch(config-if)# exit
switch(config)#
```

The following example shuts down the interface without using the **force** option:

```
switch# conf t
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# conf t
switch(config-if)# shutdown force
```

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* | **hello-interval** *seconds* | **passive** | **retransmit-interval** *seconds***] | shutdown** | **switchport**

no interface port-channel *number* **[fcdomain rcf-reject vsan** *vsan-id***]** | **fspf [cost** *link_cost* | **dead-interval** *seconds* | **hello-interval** *seconds* | **passive** | **retransmit-interval** *seconds***] | shutdown** | **switchport**

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
hello-interval	Configure FSPF hello-interval
seconds	Enter hello interval (in sec) 1-65535
passive	Enable/disable FSPF on the interface
retransmit-interval	Configure FSPF retransmit interface
seconds	Enter retransmit interval (in sec) 1-65535
no	Negate a command or set its defaults
shutdown	Enable/disable an interface
switchport	Configure 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

None.

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)#
```

Related Commands

Command	Description
show interface	Displays interface configuration for specified interface.

interface sup-fc

To configure Fibre Channel interface on the supervisor module on the Cisco MDS 9000 Family of switches, use the **interface sup-fc** command.

interface sup-fc *number* **exit** | **no**

Syntax Description

interface	Selects an interface to configure.
sup-fc	Inband Interface
number	Inband interface number.
exit	Exit from submode
no	Negate a command or set its defaults

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 configures the Fibre Channel interface on the supervisor module.

```
switch(config)# interface sup-fc 0
switch(config-if)#
```

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.

interface vsan *vsan-id* **exit [ip | no ip] no | shutdown | [vrrp | no vrrp** *vr_id***]**

Syntax Description

interface	Selects an interface to configure.
vsan	IPFC VSAN interface. VSAN number range is 1-4093.
vsan-id	VSAN id range 1-4093
no	Negate a command or set its defaults
shutdown	Enable/disable an interface
ip	ip address
shutdown	Enable/disable an interface
vrrp	Configure vrrp on this interface
vr_id	Enter vrrp id

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 configures a VSAN interface.

```
switch(config)# interface vsan 1
switch(config-if)#
```

Related Commands

Command	Description
show interface	Displays interface configuration for specified interface.

ip address

To assign the local IP address of a Gigabit Ethernet interface to the FCIP profile, use the **ip address** command.

ip address *address*

no ip address *address*

Syntax Description

ipaddress	Configures the peer IP address.
address	Enters the IP address.

Defaults

Disabled

Command Modes

Configuration mode—fcip profile submode

Command History

This command was introduced in Cisco MDS SAN-OS Release 1.1(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 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*

no ip default-gateway *destination-ip-address*

Syntax Description

destination-ip-address	Specifies the IP address,

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)##
switch(config)# ip default-gateway 1.1.1.4
switch(config)#
```

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)##
switch(config)# ip default-network 1.1.1.4
switch(config)#
```

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.

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)#
switch(config)# ip domain domain name
switch(config)#
```

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

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 domain name.

```
switch## config t
switch(config)##
switch(config)# ip domain-lookup
switch(config)#
```

ip domain-name

To configure a domain name, use the **ip domain-name** command in configuration mode.

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)##
switch(config)# ip domain-name domain name
switch(config)#
```

ip name-server

To configure a name server, use the **ip name-server** command in configuration mode.

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 (mgmt 0 | vsan** *number)* **]**
[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.
mgmt 0	Specifies the managment interface (mgmt 0).
vsan	Specifies a VSAN interface.
number	Specifies the VSAN interface number.
distance	Configures the distance metric for this route.
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)##
switch(config)# IP route 10.0.0.0 255.0.0.0 20.20.20.10 distance 10 interface vsan 1
switch(config)#
```

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.

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)##
switch(config)# ip routing
switch(config)#
```

iscsi authentication

Use the **iscsi authentication** command to configure the default authentication method for iSCSI.

iscsi authentication chap | none

no iscsi authentication chap | none

Syntax Description

iscsi	Configures iSCSI parameters.
authentication	Configures the global iSCSI authentication level.
chap	Configures the Challenge Handshake Authentication Protocol (CHAP) authentication method.
none	Specifies that no authentication is required for the selected interface

Defaults

CHAP or 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 MDS 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. To change back to the default setting use the **no iscsi authentication** command.

Examples

```
switch## config t

switch(config)# iscsi authentication chap

switch(config)# iscsi authentication none
```

Related Commands

Command	Description
show iscsi global	Displays all iSCSI initiators configured by the user..

iscsi import target fc

To allow dynamic mapping of Fibre Channel targets, use the **iscsi import target fc** command.

iscsi import target fc

no iscsi import target fc

Syntax Description

iscsi	Configures iSCSI parameters.
import	Imports Fibre Channel targets to iSCSI domains.
targets	Configures targets to import to the iSCSI domain.
fc	Specifies Fibre Channel targets.

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

```
switch## config t
switch(config)# iscsi import target fc
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** *wwn-id* **| pwwn** *wwn-id* **) | system-assign** *number* **] | vsan** *vsan-id* **]**

no iscsi initiator ip-address *ipaddress* **[static (nwwn** *wwn-id* **| pwwn** *wwn-id* **) | system-assign** *number***] | vsan** *vsan-id* **]**

Syntax Description

iscsi	Configures iSCSI parameters.
initiator	Configures the iSCSI initiator node name.
ip-address *ipaddress*	Configures the specified initiator IP address.
exit	Exits from submode.
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	Configures the VSAN.
vsan-id	Specifies a VSAN ID from 1 to 4093.

Defaults

Disabled

Command Modes

Configuration mode—iSCSI-initiator submode

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.

iscsi initiator name *name* **[static (nwwn** *wwn-id* **| pwwn** *wwn-id* **) | system-assign] | vsan** *vsan-id* **]**

no iscsi initiator name *name* **[static (nwwn** *wwn-id* **| pwwn** *wwn-id* **) | system-assign] | vsan** *vsan-id* **]**

Syntax Description

iscsi	Configures iSCSI parameters.
initiator	Configures the iSCSI initiator node name.
name	Configures the initiator node name.
name	Enters the initiator name to be used from 1 to 255 characters. The minimum length is 16 characters.
exit	Exits from submode.
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	Generates the nWWN value automatically.
vsan	Configures the VSAN.
vsan-id	Specifies a VSAN ID from 1 to 4093.

Defaults

Disabled

Command Modes

Configuration mode—iSCSI-initiator submode

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 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 virtual-target name

To create a static iSCSI virtual target, use the **iscsi virtual-target** 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**

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**

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 from 1 to 255 characters.
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

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 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.

Don't 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

```
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
```

Related Commands

Command	Description
show iscsi virtual target	Displays information about iSCSI virtual targets.