



F Commands

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

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fcalias name

To configure an FC alias, use the **fcalias name** command. To disable an FC alias, use the **no** form of this command.

fcalias name *alias name* **vsan** *vsan-id*

Syntax Description		
	<i>alias-name</i>	The name of the fcalias. Maximum length is 64 characters.
	vsan	The fcalias is for a VSAN.
	<i>vsan-id</i>	The ID of the VSAN is from 1 to 4093.

Defaults None.

Command Modes Configuration mode.

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

Usage Guidelines To include multiple members in any alias, use the FC ID, fWWN, or pWWN values.

Examples The following examples show how to configure an fcalias called AliasSample on VSAN 3.

```
switch# config t
switch(config)# fcalias name AliasSample vsan 3
switch(config-fcalias)#
switch(config-fcalias)# member fcid 0x222222
switch(config-fcalias)#
switch(config-fcalias)# member pwwn 10:00:00:23:45:67:89:ab
switch(config-fcalias)#
switch(config-fcalias)# member fwwn 10:01:10:01:10:ab:cd:ef
switch(config-fcalias)#
```

Related Commands	Command	Description
	member fcid	Configures alias member for a specified zone.
	member pwwn	Configures alias members based on the specified port WWN type and value.
	member fwwn	Configures alias members based on the specified fWWN type and value.

fcanalyzer

To configure the Cisco Fabric Analyzer use the **fcanalyzer** command in configuration mode.

```
fcanalyzer [local | local brief | display-filter | limit-frame-size | limit-captured-frames write]
[remote ip-address active port-number]
```

Syntax Description		
	local	Begins capturing the frames locally (supervisor module).
	local brief	Displays the protocol summary in a brief format.
	display-filter	Displays the filtered frames.
	limit-frame-size	Limits the size of the frame capture to the first 64 bytes. The allowed range is 64 to 65536 bytes.
	limit-captured-frames	Limits the number of frames captured to 10. The allowed range is 0 to 2147483647 frames and the default is 100 frames. Use 0 if you do not want to limit the captures frames.
	write	Saves the captured frames to a specified file.
	remote	Configures the remote IP address to which the captured frames will be sent.
	<i>ip-address</i>	Specifies IP address or hostname. Maximum length is 1024 characters.
	active	Enables active mode (passive is the default) with the remote host.
	<i>port-number</i>	Specifies port number

Defaults None.

Command Modes Configuration mode.

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

Usage Guidelines You can capture Fibre Channel control traffic from a switch and decode it without having to disrupt connectivity and without having to be local to the point of analysis.

Examples

The following examples shows how to configure the Cisco Fabric Analyzer.

```
switch# config t
switch(config)# fcanalyzer local
Capturing on eth2
switch(config)#
switch(config)# fcanalyzer local brief
Capturing on eth2
switch(config)#
switch(config)# fcanalyzer local display-filter SampleF
Capturing on eth2
switch(config)# fcanalyzer local limit-frame-size 64
Capturing on eth2
switch(config)#
switch(config)# fcanalyzer local limit-captured-frames 10
Capturing on eth2
switch(config)#
switch(config)# fcanalyzer local write SampleFile
Capturing on eth2
switch(config)#
switch(config)# fcanalyzer remote 10.21.0.3
Capturing on eth2
switch(config)#
switch(config)# fcanalyzer remote 10.21.0.3 active
Capturing on eth2
```

Related Commands

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

fcc

To assign Fibre Channel Congestion Control priority, use the **fcc priority** command in configuration mode.

fcc [*priority number*]

Syntax Description	Parameter	Description
	fcc	Enables FCC for the entire switch.
	priority	Assigns FCC priority for the entire switch.
	<i>number</i>	The FCC priority threshold, with 0 being the lowest and 7 being the highest.

Defaults Disabled.

Command Modes Configuration mode.

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

Usage Guidelines FCC reduces the congestion in the traffic without interfering with standard Fibre Channel protocol.

Examples The following example shows the FCC priority threshold configured as 2.

```
switch# config t
switch(config)# fcc priority 2
```

Related Commands	Command	Description
	show fcc	Displays FCC settings.

fcdomain

To configure the Fibre Channel domain feature, use the **fcdomain** command. The **no** form of this command, disables the FC domain.

```
fcdomain [auto-reconfigure vsan vsan-id] [contiguous-allocation vsan vsan-id] [domain id
preferred | static vsan vsan-id | static c] [fabric-name name] [fcid database vsan vsan-id |
persistent vsan vsan-id] [priority value vsan vsan-id] [restart disruptive vsan vsan-id] [vsan
vsan-id] [restart vsan vsan-id] [vsan vsan-id]
```

Syntax	Description
auto-reconfigure	Configures autoreconfigure.
vsan	Specifies a VSAN.
<i>vsan-id</i>	The ID of the VSAN is from 1 to 4093.
contiguous-allocation	Configures contiguous allocation.
domain	Configures the domain ID and its type.
<i>id</i>	Specifies the domain ID, which is from 0 to 239.
preferred	Configures the domain ID as preferred (default—the local switch accepts the domain ID assigned by the principal switch and the assigned domain ID becomes the runtime domain ID).
static	Configures the domain ID as static (the assigned domain ID is discarded, all local interfaces are isolated, and the local switch assigns itself the configured domain ID, which becomes the runtime domain ID.).
fabric-name	Configures the fabric name.
<i>name</i>	Specifies the fabric name.
fcid	Configures FC domain persistent FCIDs.
database	Enters persistent FCIDs submenu.
persistent	Enables or disables FC domain persistent FCIDs.
priority	Configures the FC domain priority.
<i>value</i>	Specifies the FC domain priority, which is from 1 to 254.
restart disruptive	Forces the disruptive fabric reconfiguration.
restart	Starts a disruptive or nondisruptive reconfiguration.

Defaults Enabled.

Command Modes Configuration mode.

Usage Guidelines You can use this command to select the principle switch, domain ID distribution, reconfigure fabric, and allocate FC IDs.

Examples

The following examples show how to configure the Fibre Channel domain feature.

```
switch# config t
switch(config)#
switch(config)# fcdomain domain 3 preferred vsan 87
switch(config)#
switch(config)# no fcdomain domain 3 preferred vsan 87
switch(config)# fcdomain domain 2 static vsan 237
switch(config)# no fcdomain domain 2 static vsan 237
switch(config)# fcdomain restart vsan 1
switch(config)#
switch(config)# fcdomain restart disruptive vsan 1
switch(config)#
switch(config)# fcdomain priority 25 VSAN 99
switch(config)# no fcdomain priority 25 VSAN 99
switch(config)#
switch(config)# fcdomain auto-reconfigure vsan 10
switch(config)#
switch(config)# fcdomain contiguous-allocation vsan 81-83
switch(config)#
switch(config)# no fcdomain contiguous-allocation vsan 1030
switch(config)#
switch(config)# fcdomain fabric-name 20:1:ac:16:5e:0:21:01 vsan 3
switch(config)#
switch(config)# no fcdomain fabric-name 20:1:ac:16:5e:0:21:01 vsan 3010
switch(config)#
```

Related Commands

Command	Description
show fcdomain	Displays global information about the FC domain configurations.

fcdomain rcf-reject

To configure the domain features for a Fibre Channel or FCIP interface, use the **fcdomain** option. The **no** form of this option, disables the FC domain.

fcdomain rcf-reject vsan *number*

no fcdomain rcf-reject vsan *number*

Syntax Description	Command	Description
	fcdomain	Enters the fcdomain mode for this FCIP interface
	rcf-reject	Configures the RCF reject option.
	vsan	Specifies a VSAN.
	<i>vsan-id</i>	Specifies the VSAN ID, which is from 1 to 4093.

Defaults Enabled

Command Modes Configuration mode

Usage Guidelines Access this command from the `switch(config-if)#` submode.
Use this option to configure the RCF reject option for the selected FCIP interface.

Examples The following examples show how to configure the FCIP rcf-reject fcdomain feature.

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fcdomain rcf-reject vsan 1
```

Related Commands	Command	Description
	show fcdomain	Displays global information about the FC domain configurations.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

fcdroplateny

To configure the network and switch FC drop latency time, use the **fcdroplateny** command in configuration mode. To disable the FC latency time, use the **no** form of this command.

fcdroplateny [**network** *milliseconds*] [**switch** *milliseconds*]

Syntax Description		
	network <i>milliseconds</i>	Configures network latency.
	switch	Configures switch latency.
	<i>milliseconds</i>	Specifies latency from 0 to 2147483647 milliseconds.

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 shows how to configure the network latency to 5000 milliseconds.

```
switch# config t
switch(config)#
switch(config)# fcdroplateny network 5000
switch(config)#
```

The following example shows how to disable network latency.

```
switch(config)# no fcdroplateny network
switch(config)#
```

The following example shows how to configure the switch latency to 4000 milliseconds.

```
switch(config)# fcdroplateny switch 4000
switch(config)#
```

The following example shows how to disable switch latency.

```
switch(config)# no fcdroplateny switch
switch(config)#
```

Related Commands	Command	Description
	show fcdroplateny	Displays the configured FC drop latency parameters.

fcflow stats

To configure fcflow statistics, use the **fcflow stats** command in configuration mode. To disable the counter, use the **no** form of this command.

fcflow stats {**aggregated module** *module-number* **index** *flow-number* **vsan** *vsan-id* | **module** *module-number* **index** *flow-number* *destination-fcid* *source-fcid* *netmask*}

no fcflow stats {**aggregated module** *module-number* **index** *flow-number* **vsan** *vsan-id* | **module** *module-number* **index** *flow-number* *destination-fcid* *source-fcid* *netmask*}

Syntax Description		
	aggregated	Configures aggregated fcflow statistics.
	index	Specifies the flow index.
	<i>flow-number</i>	Specifies a flow number from 0-2147483647.
	vsan	Specifies a VSAN.
	<i>vsan-id</i>	The ID of the VSAN is from 1 to 4093.
	module	Clear fcflow statistics on a module.
	<i>module-number</i>	Specifies a module number from 1 to 9.
	<i>destination-fcid</i>	Enters the destination FC ID in hex format.
	<i>source-fcid</i>	Enters the source FC ID in hex format.
	<i>netmask</i>	Enters the mask for the source and destination FC ID (restricted to 6 characters ranging from 000000 to ffffff).

Defaults None.

Command Modes Configuration mode.

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

Usage Guidelines If you enable flow counters, you can enable a maximum of 1K entries for aggregate flow and flow statistics. Be sure to assign an unused flow index to a module for each new flow. Flow indexes can be repeated across modules. The number space for flow index is shared between the aggregate flow statistics and the flow statistics.

Examples The following example shows how to configure aggregated fcflow statistics for module 1.

```
switch-config# fcflow stats aggregated module 1
switch-config#
```

The following example enables the aggregated flow counter.

```
switch(config)# fcflow stats aggregated module 1 index 1005 vsan 1
```

The following example disables the aggregated flow counter.

```
switch(config)# no fcflow stats aggregated module 1 index 1005 vsan 1
```

The following example enables the flow counter for module 1.

```
switch(config)# fcflow stats module 1 index 1 0x145601 0x5601 ffff vsan 1
```

The following example disables the flow counter for module 1.

```
switch(config)# no fcflow stats aggregated module 2 index 1001 vsan 2
```

fcinterop fcid-allocation

To allocate FC IDs on the switch, use the **fcinterop fcid-allocation** command in configuration mode. To disable FC IDs on the switch, use the **no** form of the command.

fcinterop [fcid-allocation auto | flat | none]

no fcinterop [fcid-allocation auto | flat | none]

Syntax Description	Command	Description
	fcid-allocation	Sets single FCID interop mode.
	auto	Assigns single FCID to compatible HBAs.
	flat	Assign single FCID.
	none	Assigns FCID range.

Defaults The default is **fcinterop fcid-allocation auto**.

Command Modes Configuration mode.

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

Usage Guidelines This command defines how the switch assigns FC IDs.

Examples

```
switch# config t
switch(config)#
switch(config)# fcinterop fcid-allocation none
switch(config)#
switch(config)# fcinterop fcid-allocation flat
switch(config)#
switch(config)# fcinterop fcid-allocation auto
switch(config)#
```

Related Commands	Command	Description
	show flogi database	Displays the fabric login (FLOGI) table.

fcinterop loop-monitor

To monitor removal of discs from a loop port, use the **fcinterop loop-monitor** command in configuration mode. To disable loop monitoring, use the **no** form of this command.

fcinterop loop-monitor

no fcinterop loop-monitor

Syntax Description	loop-monitor	Configures monitoring of NL ports in a loop.
Defaults	Disabled.	
Command Modes	Configuration mode.	
Command History	This command was introduced in Cisco MDS SAN-OS Release 1.0(2).	
Usage Guidelines	This command detects devices that are removed from a looped port.	
Examples	<p>The following example configures monitoring of NL ports in a loop.</p> <pre>switch# config t switch(config)# switch(config)# fcinterop loop-monitor switch(config)# no fcinterop loop-monitor</pre>	
Related Commands	Command	Description
	show flogi database	Verify if a storage device is displayed in the Fabric login (FLOGI) table.

fcip profile

To configure the FCIP profile, provide the local IP address to determine the Gigabit Ethernet port where the FCIP links terminates.

fcip profile *profile-id*

no fcip profile *profile-id*

Syntax Description	Command	Description
	fcip profile	Configures the FCIP profile.
	<i>profile-id</i>	Specifies a ID range 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 spacefcipspace1space-space5space,spacefc2/5space-space7

Examples

```
switch## config t
switch(config)# fcip ?
  profile  Configure fcip profile

switch(config)# fcip profile 5
switch(config-profile)# ?
Submode Commands:
  exit  Exit from this submode
  ip    Config ip to profile
  no    Negate a command or set its defaults
  port  Config local port to profile
  tcp   Config TCP Parameters for the Profile
```

Related Commands	Command	Description
	show fcip profile	Displays information about the FCIP profile.
	interface fcip <i>interface_number</i> use-profile <i>profile-id</i>	Configures the interface using an existing profile ID from 1 to 255.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

fcns proxy-port

To register a name server proxy, use the **fcns proxy-port** command in configuration mode.

```
fcns [proxy-port wwn-id | [vsan vsan-id]
```

Syntax Description		
<i>wwn-id</i>		The port WWN, with the format <i>hh:hh:hh:hh:hh:hh:hh:hh</i> .
vsan		Configures a proxy port for the specified VSAN.
<i>vsan-id</i>		The ID of the VSAN is from 1 to 4093.

Defaults None.

Command Modes Configuration mode.

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

Usage Guidelines One name server can be configured to proxy another name server and name server information can be displayed using the CLI. The name server can be viewed using the CLI or the Cisco Fabric Manager.

All name server registration requests come from the same port whose parameter is registered or changed. If it doesn't, then the request is rejected.

Examples The following example shows registering a name server proxy.

```
switch# config t
switch(config)#
switch(config)# fcns proxy-port 21:00:00:e0:8b:00:26:d
switch(config)#
```

The following example shows configuring a proxy port for VSAN 2.

```
switch(config)# fcns proxy-port 21:00:00:e0:8b:00:26:d vsan 2
switch(config)#
```

Related Commands	Command	Description
	show fcns	Displays the name server database and statistical information for a specified VSAN or for all VSANs.

fcping

To ping an N port with a specified FC ID, use the **fcping fcid** command in EXEC mode.

```
fcping {fcid [fc-port | domain-controller-id] vsan vsan-id [count number | timeout value |
usr-priority] | pwwn wwn-id}
```

Syntax Description	Parameter	Description
	fc id	The FC ID of the destination N port.
	<i>fc-port</i>	The port FC ID, with the format <i>0xhhhhhh</i> .
	<i>domain-controller-id</i>	Verifies connection to the destination switch.
	pwwn	The port WWN of the destination N port.
	<i>wwn-id</i>	The port WWN, with the format <i>hh:hh:hh:hh:hh:hh:hh:hh</i> .
	vsan	Configures the VSAN ID of the destination N port.
	<i>vsan-id</i>	The ID of the VSAN is from 1 to 4093.
	count	Configure the frames to send.
	<i>number</i>	Specifies the number of frames to send. A value of 0 sends forever.
	timeout	The timeout value.
	usr-priority	The priority the frame receives in the switch fabric.

Defaults None.

Command Modes EXEC mode.

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

Usage Guidelines To obtain the domain controller address, concatenate the domain ID with **FFFC**. For example, if the domain ID is **0xda(218)**, the concatenated ID is **0xffcda**.

Examples The following example shows a fcping operation for the specified pWWN or the FCID of the destination. By default, five frames are sent.

```
switch# fcping fcid 0xd70000 vsan 1
28 bytes from 0xd70000 time = 730 usec
28 bytes from 0xd70000 time = 165 usec
28 bytes from 0xd70000 time = 262 usec
28 bytes from 0xd70000 time = 219 usec
28 bytes from 0xd70000 time = 228 usec

5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 165/270/730 usec
```


The following example shows the setting of the number of frames to be sent using the count option. The range is from 0 through 2147483647. A value of 0 will ping forever.

```
switch# fcping fcid 0xd70000 vsan 1 count 10
28 bytes from 0xd70000 time = 730 usec
28 bytes from 0xd70000 time = 165 usec
28 bytes from 0xd70000 time = 262 usec
28 bytes from 0xd70000 time = 219 usec
28 bytes from 0xd70000 time = 228 usec
28 bytes from 0xd70000 time = 230 usec
28 bytes from 0xd70000 time = 230 usec
28 bytes from 0xd70000 time = 225 usec
28 bytes from 0xd70000 time = 229 usec
28 bytes from 0xd70000 time = 183 usec

10 frames sent, 10 frames received, 0 timeouts
Round-trip min/avg/max = 165/270/730 usec
```

The following example shows the setting of the timeout value. The default period to wait is 5 seconds. The range is from 1 through 10 seconds.

```
switch# fcping fcid 0xd500b4 vsan 1 timeout 10
28 bytes from 0xd500b4 time = 1345 usec
28 bytes from 0xd500b4 time = 417 usec
28 bytes from 0xd500b4 time = 340 usec
28 bytes from 0xd500b4 time = 451 usec
28 bytes from 0xd500b4 time = 356 usec

5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 340/581/1345 usec
```

This command shows the No response from the N port message even when the N port or NL port is active. This is due to resource exhaustion at the N port or NL port. Retry the command a few seconds later.

```
switch# fcping fcid 0x010203 vsan 1
No response from the N port.

switch# fcping pwwn 21:00:00:20:37:6f:db:dd vsan 1
28 bytes from 21:00:00:20:37:6f:db:dd time = 1454 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 471 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 372 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 364 usec
28 bytes from 21:00:00:20:37:6f:db:dd time = 1261 usec

5 frames sent, 5 frames received, 0 timeouts
Round-trip min/avg/max = 364/784/1454 usec
```

fcroute

To configure Fibre Channel routes, use the **fcroute** command.

```
fcroute FCID [network_mask] interface type [domain domain-id] metric number | remote | vsan
vsan-id]
```

Syntax Description		
	<i>network_mask</i>	Configures the FCID network mask.
	interface	Configures the route for the specified Fibre Channel interface.
	<i>type</i>	Specifies the Fibre Channel number or the PortChannel number.
	domain	Configures the route for the domain of the next hop switch.
	<i>domain-id</i>	Specifies the domain ID.
	metric	Assigns the cost of the route.
	<i>number</i>	Specifies the cost of the route. Default cost is 10.
	vsan	Configures the static route for a specific VSAN.
	<i>vsan-id</i>	The ID of the VSAN is from 1 to 4093.
	remote	Configures the static route for a destination switch remotely connected.

Defaults None.

Command Modes Configuration mode.

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

Usage Guidelines Use this command to assign forwarding information to the switch.

Examples

```
switch# config t
switch(config)#
switch(config)# fcroute 0x111211 interface fc1/1 domain 3 vsan 2
switch(config)#
switch(config)# fcroute 0x111211 interface port-channel 1 domain 3 vsan 4
switch(config)#
switch(config)# fcroute 0x031211 interface fc1/1 domain 3 metric 1 vsan 1
switch(config-if)#
switch(config)# fcroute 0x111112 interface fc1/1 domain 3 metric 3 remote vsan 3
```

Related Commands	Command	Description
	show fcroute	Displays Fibre Channel routes.

fcs

To perform platform and node name checking fabric wide, and register FCS attributes, use the **fcs** command in configuration mode.

fcs {plat-check-global vsan *vsan-id* | register [exit | no | platform] *name*}

Syntax Description

plat-check-global vsan	Configures platform name or node name checking.
<i>vsan-id</i>	Specifies the VSAN ID for platform checking, which is from 1 to 4096.
register	Registers FCS attributes.
exit	Exits submenu.
no	Negates a command or sets its defaults.
platform	Configures platform object registration.
<i>name</i>	Specifies name of the platform.

Defaults

None.

Command Modes

Configuration mode.

Command History

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

Usage Guidelines

None.

Examples

```
switch## config t
switch(config)##
switch(config)# # fcs plat-check-global vsan 2
switch (config)# fcs register
switch (config-fcs-register)# platform Platform1
```

Related Commands

Command	Description
show fcs	Displays fabric configuration server information.

fctimer

To change the default Fibre Channel timers, use the **fctimer** command in configuration mode.

fctimer {**D_S_TOV** *milliseconds* | **E_D_TOV** *milliseconds* | **R_A_TOV** *milliseconds*}

Syntax Description	Parameter	Description
	D_S_TOV	The distributed services time out value ranges from 5000 to 100000 ms.
	E_D_TOV	The error detect time out value ranges from 1000 to 100000, with a default of 2000.
	R_A_TOV	The resolution allocation time out value ranges from 5000 to 100000, with a default of 10000.
	<i>milliseconds</i>	Number of milliseconds

Command Modes Configuration mode.

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

Usage Guidelines The Cisco MDS 9000, Brocade, and McData FC Error Detect (ED_TOV) and Resource Allocation (RA_TOV) timers default to the same values. They can be changed if needed. In accordance with the FC-SW2 standard, these values must be the same on each switch within in the fabric.

Examples The following examples show how to change the default Fibre Channel timers.

```
switch# config t
switch(config)#
switch(config)# fctimer e_d_tov ?
 <1000-100000> E_D_TOV in milliseconds(1000-100000)
switch(config)# fctimer r_a_tov ?
 <5000-100000> R_A_TOV in milliseconds(5000-100000)
```

Related Commands	Command	Description
	show fctimer	Displays the configured Fibre Channel timer values.

fctrace

To trace the route to an N port, use the **fctrace** command in EXEC mode.

```
fctrace {fcid fcid vsan vsan-id [timeout value] | pwwn pwwn-id [timeout value]}
```

Syntax Description	Parameter	Description
	fcid	The FCID of the destination N port.
	<i>fcid</i>	The port FCID, with the format <i>0xhhhhhh</i> .
	pwwn	The PWWN of the destination N port.
	<i>pwwn-id</i>	The port WWN, with the format <i>hh:hh:hh:hh:hh:hh:hh:hh</i> .
	vsan	Configures the VSAN ID of the destination N-port.
	<i>vsan-id</i>	Specifies the VSAN ID of the destination N-port, which is from 1 to 4096.
	timeout	Configures the timeout value.
	<i>value</i>	Specifies the timeout value, which is from 1 to 10 seconds.

Defaults By default, the period to wait before timing out is 5 seconds.

Command Modes EXEC mode.

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

Usage Guidelines None.

Examples The following example traces a route to the specified *fcid* in VSAN 1.

```
switch# fctrace fcid 0x660000 vsan 1
Route present for : 0x660000
20:00:00:05:30:00:5f:1e(0xffffc65)
Latency: 0 msec
20:00:00:05:30:00:61:5e(0xffffc66)
Latency: 0 msec
20:00:00:05:30:00:61:5e(0xffffc66)
```

fc-tunnel

To terminate a Fibre Channel tunnel in a destination switch, use the **fc-tunnel** command. To remove a configuration or revert it to factory defaults, use the **no** form of the command.

fc-tunnel enable | **explicit-path** *name* [**next-address** *ip-address* **loose** | **strict**] | **tunnel-id-map** *tunnel-id* **interface fc** *slot-number*

no fc-tunnel enable | **explicit-path** *name* [**next-address** *ip-address* **loose** | **strict**] | **tunnel-id-map** *tunnel-id* **interface fc** *slot-number*

Syntax Description		
enable		Enables the FC tunnel feature
explicit-path		Configure an explicit path.
<i>name</i>		Assigns a path for the explicit path.
next-address		Configures the IP address of the next hop switch.
<i>ip-address</i>		Specifies the IP address of the next hop switch.
loose		Specifies that a direct connection to the next hop is not required.
strict		Specifies that a direct connection to the next hop is required.
tunnel-id-map		Configure fc-tunnel id to outgoing interface.
interface fc		Configures the Fiber Channel interface in the destination switch.
<i>slot-number</i>		Specifies the slot number and port number.

Defaults None.

Command Modes Configuration mode.

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

Usage Guidelines All VSANs with RSPAN traffic must be enabled. If a VSAN containing RSPAN traffic is not enabled, it will be dropped.

The FC tunnel can only be configured in the same subnet as the VSAN interface.

The Fibre Channel tunnel feature must be enabled (the **interface fc-tunnel** command) on *each* switch in the end-to-end path of the Fibre Channel fabric in which RSPAN is to be implemented

Examples

The following example enables the FC tunnel feature.

```
switch# config t
switchS(config)# fc-tunnel enable
```

The following example places you at the explicit path prompt for the path named Path 1 and specifies that the next hop VSAN interface IP addresses.

```
switch# config t
switchS(config)# fc-tunnel explicit-path Path1
switchS(config-explicit-path)# next-address 10.10.10.2 strict
switchS(config-explicit-path)# next-address 10.10.10.3 strict
switchS(config-explicit-path)# next-address 10.10.10.4 strict
```

The following example places you at the explicit path prompt for the path named Path 3 and configures a minimum cost path in which this IP address exists.

```
switchS(config)# fc-tunnel explicit-path Path3
switchS(config-explicit-path)# next-address 10.10.10.3 loose
```

The following example configures the FC tunnel (100) in the destination switch (switch D).

```
switchD(config)# fc-tunnel tunnel-id-map 100 interface fc2/1
```

The following example creates two explicit paths and configures the next hop addresses for each path in the source switch (switch S).

```
switchS# config t
switchS(config)# fc-tunnel explicit-path Path1
switchS(config-explicit-path)# next-address 10.10.10.2 strict
switchS(config-explicit-path)# next-address 10.10.10.3 strict
switchS(config-explicit-path)# next-address 10.10.10.4 strict
switchS(config-explicit-path)# exit
switchS(config)# fc-tunnel explicit-path Path3
switchS(config-explicit-path)# next-address 10.10.10.3 loose
```

The following example references the configured path in the source switch (switch S).

```
switchS# config t
switchS(config)# interface fc-tunnel 100
switchS(config)# explicit-path Path1
```

Related Commands

Command	Description
show span session	Displays all SPAN session information.
show fc-tunnel tunnel-id-map	Displays FC tunnel egress mapping information

find

To display a list of files on a file system, use the **find** command in EXEC mode.

find *filename*

Syntax Description	<i>filename</i>	Filenames with the specified characteristics.
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Defaults	None.
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Command Modes	EXEC mode.
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Command History	This command was introduced in Cisco MDS SAN-OS Release 1.0(2).
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Usage Guidelines	Use the find (Flash file system) command to display more detail about the files in a particular file system.
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Examples	The following example is sample output of all files that begin with the letter <i>a</i> :
-----------------	---

```
switch# find a
./accountingd
./acl
./ascii_cfg_server
./arping
```

Related Commands	Command	Description
	cd	Changes the default directory or file system.
	dir	Displays all files in a given file system.

format

To erase all the information on a module, use the **format** command in EXEC mode.

format {bootflash: | slot0:}

Syntax Description	This command has no arguments or keywords.
Defaults	None.
Command Modes	EXEC mode.
Command History	This command was introduced in Cisco MDS SAN-OS Release 1.0(2).
Usage Guidelines	None.
Examples	The following example erases all information on a module's bootflash. <pre>switch# format bootflash:</pre>

fspf config

To configure an FSPF feature for the entire VSAN, and to enable or disable FSPF, use the **fspf config** command in configuration mode. To delete FSPF configuration for the entire VSAN, and to enable or disable FSPF routing protocols, use the **no** form of the command.

fspf config vsan vsan-id | enable vsan vsan-id

no fspf config vsan vsan-id | enable vsan vsan-id

Syntax Description

vsan vsan-id	Enters FSPF global configuration mode for the specified VSAN or range of VSANs. If no VSAN ID is specified, the default VSAN is selected.
fspfenable vsan	Enables FSPF on the entire VSAN.
<i>vsan-id</i>	The ID of the VSAN is from 1 to 4093.
region	Defines the autonomous region to which the switch belongs.
<i>region-id</i>	Specifies the autonomous region to which the switch belongs. The backbone region has <i>region-id</i> =0. The parameter <i>region-id</i> is an unsigned integer value ranging from 0 to 255.
spf hold-time	Configures the time between two consecutive SPF computations. If the time is small then routing will react faster to changes but CPU usage will be more.
<i>spf-holdtime</i>	Specifies the time between two consecutive SPF computations. The parameter <i>spf-holdtime</i> is an integer (0-65535) specifying time in milliseconds.
min-ls-arrival	Configures the minimum time before a new link state update for a domain will be accepted by switch.
<i>ls-arrival-time</i>	Specifies the minimum time before a new link state update for a domain will be accepted by switch. The parameter <i>ls-arrival-time</i> is an integer (0-65535) specifying time in milliseconds.
min-ls-interval	Configures the minimum time before a new link state update for a domain will be generated by the switch.
<i>ls-interval-time</i>	Specifies the minimum time before a new link state update for a domain will be generated by the switch. The parameter <i>ls-interval-time</i> is an integer (0-65535) specifying time in milliseconds.

Defaults

In Configuration mode, the default is enabled.

In the FSPF configuration mode, the default is dynamic.

If configuring spf hold-time, the default value for FSPF is 0.

If configuring min-ls-arrival, the default value for FSPF is 1000 msec.

If configuring min-ls-interval, the default value for FSPF is 5000 msec.

Command Modes

Configuration mode.

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

Usage Guidelines This command configures FSPF on VSANs globally.
For the commands issued in FSPF configuration mode, you do not have to specify the VSAN number every time. This prevents configuration errors that might result from specifying the wrong VSAN number for these commands.

Examples The following example configures FSPF globally in VSAN 1, deletes the FSPF configured in VSAN 3, disables FSPF in VSAN 5, and enables FSPF in VSAN 7.

```
switch## config t
switch(config)##
switch(config)# fspf config vsan 1
switch-config- (fspf-config)#
switch-config- (fspf-config)# exit
switch(config)##
switch(config)# no fspf config vsan 3
switch(config)#
switch(config)# no fspf enable vsan 5
switch(config)#
switch(config)# fspf enable vsan 7
switch(config)#
```

Related Commands	Command	Description
	show fspf interface	Displays information for each selected interface.
	fspf enable	Enables FSPF routing protocol in the specified VSAN (from the <code>switch(config-if)#</code> prompt).
	fspf cost	Configures the cost for the selected interface in the specified VSAN (from the <code>switch(config-if)#</code> prompt).
	fspf hello-interval	Specifies the hello message interval to verify the health of a link in the VSAN (from the <code>switch(config-if)#</code> prompt).
	fspf passive	Disables the FSPF protocol for the specified interface in the specified VSAN (from the <code>switch(config-if)#</code> prompt).
	fspf retransmit	Specifies the retransmit time interval for unacknowledged link state updates in specified VSAN (from the <code>switch(config-if)#</code> prompt).

fspf cost

To configure FSPF link cost for the entire VSAN, use the **fspf cost** command. To delete this configuration, or negate this feature, use the **no** form of the command.

fspf cost *link_cost* **vsan** *vsan-id*

no fspf cost *link_cost* **vsan** *vsan-id*

Syntax Description	Command	Description
	fspf	Configures FSPF parameters.
	cost	Configures FSPF link cost.
	<i>link-cost</i>	Enters FSPF link cost from 1 to 65535.
	vsan <i>vsan-id</i>	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.

Defaults Enabled.

Command Modes Configuration mode

Command History This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines Access this command from the `switch(config-if)#` submode.
This command configures FSPF for the specified FCIP interface.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf cost 5000 vsan 1
```

Related Commands	Command	Description
	show fspf interface	Displays information for each selected interface.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf dead-interval

To set the maximum interval for which a hello message must be received before the neighbor is considered lost, use the **fspf dead-interval** command. To delete this configuration, or negate this feature, use the **no** form of the command.

fspf dead-interval *seconds vsan vsan-id*

no fspf dead-interval *seconds vsan vsan-id*

Syntax Description		
	fspf	Configures FSPF parameters.
	dead-interval	Configures FSPF dead interval.
	<i>seconds</i>	Specifies interval in seconds from 2 to 65535.
	vsan <i>vsan-id</i>	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.

Defaults Enabled.

Command Modes Configuration mode

Command History This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines Access this command from the `switch(config-if)#` submode.
This command configures FSPF for the specified FCIP interface.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf dead-interval 4000 vsan 1
```

Related Commands	Command	Description
	show fspf interface	Displays information for each selected interface.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf hello-interval

To verify the health of the link, use the **fspf hello-interval** command. To delete this configuration, or negate this feature, use the **no** form of the command.

fspf hello-interval *seconds* **vsan** *vsan-id*

no fspf hello-interval *seconds* **vsan** *vsan-id*

Syntax Description	Command	Description
	fspf	Configures FSPF parameters.
	hello-interval	Configures FSPF hello-interval.
	<i>seconds</i>	Specifies interval in seconds from 2 to 65535.
	vsan <i>vsan-id</i>	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.

Defaults Enabled.

Command Modes Configuration mode

Command History This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines Access this command from the `switch(config-if)#` submode.
This command configures FSPF for the specified FCIP interface.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf hello-interval 3 vsan 1
```

Related Commands	Command	Description
	show fspf interface	Displays information for each selected interface.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf passive

To disable the FSPF protocol for selected interfaces, use the **fspf passive** command. To delete this configuration, or negate this feature, use the **no** form of the command.

fspf passive vsan *vsan-id*

no fspf passive vsan *vsan-id*

Syntax	Description
fspf	Configures FSPF parameters.
passive	Enables or disables FSPF on the interface.
vsan <i>vsan-id</i>	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.

Defaults Enabled.

Command Modes Configuration mode

Command History This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines Access this command from the `switch(config-if)#` submode.
This command configures FSPF for the specified FCIP interface.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf passive vsan 1
```

Related Commands	Command	Description
	show fspf interface	Displays information for each selected interface.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.

fspf retransmit-interval

To specify the time after which an unacknowledged link state update should be transmitted on the interface, use the **fspf retransmit-interval** command. To delete this configuration, or negate this feature, use the **no** form of the command.

fspf retransmit-interval *seconds vsan vsan-id*

no fspf retransmit-interval *seconds vsan vsan-id*

Syntax Description	Command	Description
	fspf	Configures FSPF parameters.
	retransmit-interval	Configures FSPF retransmit interface from 1 to 65535.
	<i>seconds</i>	Specifies interval in seconds from 2 to 65535.
	vsan <i>vsan-id</i>	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.

Defaults Enabled.

Command Modes Configuration mode

Command History This command was modified in Cisco MDS SAN-OS Release 1.1(1).

Usage Guidelines Access this command from the `switch(config-if)#` submode.
This command configures FSPF for the specified FCIP interface.

Examples

```
switch# config t
switch(config)# interface fcip 1
switch(config-if)# fspf retransmit-interval 6 vsan 1
```

Related Commands	Command	Description
	show fspf interface	Displays information for each selected interface.
	show interface fcip	Displays an interface configuration for a specified FCIP interface.