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CHAPTER 8

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 [“About the CLI Command Modes”](#) section on page 1-3 to determine the appropriate mode for each command. For more information, refer to the *Cisco MDS 9000 Family CLI Configuration Guide*.

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fabric

To add a fabric to the cluster, use the **fabric** command in the Cisco SME cluster configuration submode.

fabric *fabric name*

Syntax Description	<i>fabric name</i>	Specifies the fabric name. The maximum length is 32 characters.
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Defaults	None.
-----------------	-------

Command Modes	Cisco SME cluster configuration submode.
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Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples	The following example adds a fabric named sw-xyz to a cluster:
-----------------	--

```
switch# config terminal
switch(config)# sme cluster c1
switch(config-sme-cl)# fabric sw-xyz
```

Related Commands	Command	Description
	show sme cluster	Displays information about Cisco SME cluster.

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fabric-binding activate

To activate fabric binding in a VSAN, use the **fabric-binding activate** command in configuration mode. To disable this feature, use the **no** form of the command.

fabric-binding activate vsan *vsan-id* [**force**]

no fabric-binding activate vsan *vsan-id*

Syntax Description		
	vsan <i>vsan-id</i>	Specifies the VSAN. The ID of the VSAN is from 1 to 4093.
	force	Forces fabric binding activation.

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Extended support for fabric binding to Fibre Channel VSANs.

Usage Guidelines Fabric binding is configured on a per-VSAN basis and can be implemented in both FICON VSANs and Fibre Channel VSANs.

Examples The following example activates the fabric binding database for the specified VSAN:

```
switch# config terminal
switch(config)# fabric-binding activate vsan 1
```

The following example deactivates the fabric binding database for the specified VSAN.

```
switch(config)# no fabric-binding activate vsan 10
```

The following example activates the fabric binding database for the specified VSAN forcefully—even if the configuration is not acceptable.

```
switch(config)# fabric-binding activate vsan 3 force
```

The following example reverts to the previously-configured state or to the factory default (if no state is configured)

```
switch(config)# no fabric-binding activate vsan 1 force
```

Related Commands

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Command	Description
fabric-binding database	Configures a fabric-binding database.
fabric-binding enable	Enables fabric-binding.

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fabric-binding database copy

To copy from the active fabric binding database to the configuration fabric binding database, use the **fabric-binding database copy** command in EXEC mode.

fabric-binding database copy vsan *vsan-id*

Syntax Description	vsan <i>vsan-id</i>	Specifies the VSAN. The ID of the VSAN is from 1 to 4093.
Defaults	None.	
Command Modes	EXEC mode.	
Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Extended support for fabric binding to Fibre Channel VSANs.
Usage Guidelines	Fabric binding is configured on a per-VSAN basis and can be implemented in both FICON VSANs and Fibre Channel VSANs. If the configured database is empty, this command is not accepted	
Examples	The following example copies from the active database to the config database in VSAN 1. switch# fabric-binding database copy vsan 1	
Related Commands	Command	Description
	fabric-binding diff	Provides the differences between the fabric-binding databases.

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fabric-binding database diff

To view the differences between the active database and the configuration database in a VSAN, use the **fabric-binding database diff** command in EXEC mode.

```
fabric-binding database diff {active | config} vsan vsan-id
```

Syntax Description		
	active	Provides information on the differences in the active database with respect to the configuration database.
	config	Provides information on information on the differences in the configuration database with respect to the active database.
	vsan vsan-id	Specifies the VSAN. The ID of the VSAN is from 1 to 4093.

Defaults None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Extended support of fabric binding to Fibre Channel VSANs.

Usage Guidelines Fabric binding is configured on a per-VSAN basis and can be implemented in both FICON VSANs and Fibre Channel VSANs.

Examples The following example displays the differences between the active database and the configuration database in VSAN 1.

```
switch# fabric-binding database diff active vsan 1
```

The following example displays information on the differences between the configuration database and the active database.

```
switch# fabric-binding database diff config vsan 1
```

Related Commands	Command	Description
	fabric-binding copy	Copies from the active to the config fabric binding database.

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fabric-binding database vsan

To configure a user-specified fabric binding list in a VSAN, use the **fabric-binding database vsan** command in configuration mode. To disable an FC alias, use the **no** form of the command.

```
fabric-binding database vsan vsan-id
    swwn switch-wwn domain domain-id
```

```
fabric-binding database vsan vsan-id
    no swwn switch-wwn domain domain-id
```

```
no fabric-binding database vsan vsan-id
```

Syntax Description		
	<i>vsan-id</i>	Specifies the VSAN. The ID of the VSAN is from 1 to 4093.
	<i>swwn switch-wwn</i>	Configures the switch WWN in dotted hex format.
	<i>domain domain-id</i>	Specifies the specified domain ID. The domain ID is a number from 1 to 239.

Defaults None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Extended support of fabric binding to Fibre Channel VSANs.

Usage Guidelines Fabric binding is configured on a per-VSAN basis and can be implemented in both both FICON VSANs and Fibre Channel VSANs.

In a FICON VSAN, the fabric binding feature requires all sWWNs connected to a switch and their persistent domain IDs to be part of the fabric binding active database. In a Fibre Channel VSAN, only the sWWN is required; the domain ID is optional.

A user-specified fabric binding list contains a list of switch WWNs (sWWNs) within a fabric. If an sWWN attempts to join the fabric, and that sWWN is not on the list or the sWWN is using a domain ID that differs from the one specified in the allowed list, the ISL between the switch and the fabric is automatically isolated in that VSAN and the switch is denied entry into the fabric.

The persistent domain ID must be specified along with the sWWN. Domain ID authorization is required in FICON VSANs where the domains are statically configured and the end devices reject a domain ID change in all switches in the fabric.



Note All switches in a non-FICON VSAN must be running Cisco MDS SAN-OS Release 3.x or later.

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Examples

The following example enters the fabric binding database submode and adds the sWWN and domain ID of a switch to the configured database list.

```
switch# config terminal
switch(config)# fabric-binding database vsan 5
switch(config-fabric-binding)# swwn 21:00:05:30:23:11:11:11 domain 102
```

The following example deletes a fabric binding database for the specified VSAN.

```
switch# config terminal
switch(config)# no fabric-binding database vsan 10
```

The following example deletes the sWWN and domain ID of a switch from the configured database list.

```
switch# config terminal
switch(config)# fabric-binding database vsan 5
switch(config-fabric-binding)# no swwn 21:00:15:30:23:1a:11:03 domain 101
```

Related Commands

Command	Description
fabric-binding activate	Activates fabric-binding.
fabric-binding enable	Enables fabric-binding.

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fabric-binding enable

To enable fabric binding in a VSAN, use the **fabric-binding enable** command. To disable fabric binding, use the **no** form of the command.

fabric-binding enable

no fabric-binding enable

Syntax Description This command has no other arguments or keywords.

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Extended support of fabric binding to Fibre Channel VSANs.

Usage Guidelines Fabric binding is configured on a per-VSAN basis and can be implemented in both both FICON VSANs and Fibre Channel VSANs.

The fabric binding feature must be enabled in each switch in the fabric that participate in the fabric binding.

Examples The following examples enables fabric binding on that switch.

```
switch# config t
switch(config)# fabric-binding enable
```

The following example disables fabric binding on that switch.

```
switch# config t
switch(config)# no fabric-binding enable
```

Related Commands	Command	Description
	fabric-binding activate	Activates fabric-binding.
	fabric-binding database	Configures a fabric-binding database.

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fabric-membership

To configure a node to a fabric, use the **fabric-membership** command. To remove the node from the fabric, use the **no** form of the command,

```
fabric-membership fabric name
```

```
no fabric-membership fabric name
```

Syntax Description	<i>fabric name</i>	Specifies the fabric name. The maximum length is 32 characters.
---------------------------	--------------------	---

Defaults	None.
-----------------	-------

Command Modes	Cisco SME cluster node configuration submode.
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Command History	Release	Modification
	3.2(2)	This command was introduced.

Usage Guidelines	Use the fabric-membership command to put a node in a fabric. This command has to be configured before the interface sme slot/port [force] can be accepted. It also cannot be removed if the interface sme slot/port [force] command is enabled.
-------------------------	--

Examples	The following example specifies a fabric to which the node belongs :
-----------------	--

```
switch# config t
switch(config)# sme cluster clustername1
switch(config-sme-cl)# node local
switch(config-sme-cl-node)# fabric-membership f1
```

Related Commands	Command	Description
	interface sme slot/port [force]	Configures the Cisco SME interface to a cluster.
	shutdown	Enables or disables an interface.
	show interface sme	Displays interface information.

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fcalias clone

To clone a Fibre Channel alias, use the **fcalias clone** command.

```
fcalias clone origFcalias-Name cloneFcalias-Name vsan vsan-id
```

Syntax Description		
<i>origFcalias-Name</i>		Clones a Fibre Channel alias from the current name to a new name.
<i>cloneFcalias-Name</i>		Maximum length of names is 64 characters.
vsan		The clone Fibre Channel alias 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	Release	Modification
	2.1(1a)	This command was introduced.

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

Examples The following examples show how to clone a fcalias named origAlias to cloneAlias on VSAN 45.

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcalias clone origAlias cloneAlias vsan 45
```

Related Commands	Command	Description
	show fcalias	Displays the member name information in a Fibre Channel alias (fcalias).

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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 the command.

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

no 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	Release	Modification
	1.0(2)	This command was introduced.

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

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

```
switch# config terminal
switch(config)# fcalias name AliasSample vsan 3
switch(config-fcalias)#
```

Related Commands	Command	Description
	member (fcalias configuration mode)	Configures alias member for a specified zone.

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fcalias rename

To rename a Fibre Channel alias (fcalias), use the **fcalias rename** command.

fcalias rename *current-name new-name vsan vsan-id*

Syntax Description		
	<i>current-name</i>	Specifies the current fcalias name. The maximum length is 64.
	<i>new-name</i>	Specifies the new fcalias name. The maximum length is 64.
	<i>vsan vsan-id</i>	Specifies the VSAN ID. The range is 1 to 4093.

Defaults None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to rename an fcalias.

```
switch# config terminal
switch(config)# fcalias rename oldalias newalias vsan 10
```

Related Commands	Command	Description
	fcalias name	Configures fcalias names.
	show fcalias	Displays fcalias information.

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fcanalyzer

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

```
fcanalyzer {local [brief] [display-filter expression] [limit-captured-frames number]
  [limit-frame-size bytes] [write {slot: | volatile:}] | remote ip-address [active [port-number]]}
```

Syntax Description

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

Defaults

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

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 terminal
switch(config)# fcanalyzer local
Capturing on eth2
switch(config)# fcanalyzer local brief
Capturing on eth2
switch(config)# fcanalyzer local display-filter SampleF
Capturing on eth2
```

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

Related Commands

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

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fcc enable

To enable Fibre Channel Congestion Control (FCC), use the **fcc enable** command in configuration mode. To disable this feature, use the **no** form of the command.

fcc enable

no fcc enable

Syntax Description This command has no other arguments or keywords.

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following example shows how to enable FCC.

```
switch# config terminal
switch(config)# fcc enable
```

Related Commands	Command	Description
	show fcc	Displays FCC settings.

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fcc priority

To assign the FCC priority to the entire switch, use the **fcc priority** command in configuration mode. To revert to the default, use the **no** form of the command.

fcc priority *number*

no fcc priority *number*

Syntax Description	<i>number</i>	The FCC priority threshold. The range is 0 to 7, where 0 is the lowest priority and 7 the highest priority.
--------------------	---------------	---

Defaults	The default priority is 4.
----------	----------------------------

Command Modes	Configuration mode.
---------------	---------------------

Command History	Release	Modification
	1.0(2)	This command was introduced.

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



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples	The following example shows how to configure the FCC priority threshold as 2.
----------	---

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

Related Commands	Command	Description
	show fcc	Displays FCC settings.

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fcdomain

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

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

```
no fcdomain { allowed domain vsan vsan-id |
  auto-reconfigure vsan vsan-id |
  contiguous-allocation vsan vsan-id |
  domain id { preferred | static } vsan vsan-id |
  fabric-name name vsan vsan-id |
  fcid persistent vsan vsan-id |
  optimize fast-restart vsan vsan-id |
  priority value vsan vsan-id |
  vsan vsan-id }
```

Syntax Description

allowed <i>domain</i>	Configures the allowed domain ID list ranging from 1 to 239.
vsan <i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.
auto-reconfigure	Configures autoreconfigure.
contiguous-allocation	Configures contiguous allocation.
domain <i>id</i>	Configures the domain ID and its type. The range is 0 to 239.
preferred	Configures the domain ID as preferred. By default, the local switch accepts the domain ID assigned by the principal switch and the assigned domain ID becomes the runtime domain ID.
static	Configures the domain ID as static. The assigned domain ID is discarded, all local interfaces are isolated, and the local switch assigns itself the configured domain ID, which becomes the runtime domain ID.
fabric-name <i>name</i>	Specifies the fabric name. The name format is <i>hh:hh:hh:hh:hh:hh:hh:hh</i> .
fcid	Configures FC domain persistent FC IDs.
database	Enters persistent FC IDs submenu.
persistent	Enables or disables FC domain persistent FC IDs.
optimize fast-restart	Enables a domain manager fast restart on a specified VSAN.
priority <i>value</i>	Specifies the FC domain priority. The range is 1 to 254.
restart	Starts a disruptive or nondisruptive reconfiguration.
disruptive	Forces the disruptive fabric reconfiguration.

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Defaults Enabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.1(1)	This command was introduced.
	2.0(1)	The global-enable keyword was deprecated.
	3.0(2)	Added the optimize fast-restart option.

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

We recommend using the **optimize fast-restart** option on most fabrics, especially those with a large number of logical ports (3200 or more), where a logical port is an instance of a physical port in a VSAN.

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

```
switch# config terminal

switch(config)# fcdomain domain 3 preferred vsan 87

switch(config)# no fcdomain domain 3 preferred vsan 87

switch(config)# fcdomain domain 2 static vsan 237

switch(config)# no fcdomain domain 2 static vsan 237

switch(config)# fcdomain restart vsan 1

switch(config)# fcdomain restart disruptive vsan 1

switch(config)# fcdomain optimize fast-restart vsan 3

switch(config)# fcdomain optimize fast-restart vsan 7 - 10

switch(config)# fcdomain priority 25 VSAN 99

switch(config)# no fcdomain priority 25 VSAN 99

switch(config)# fcdomain auto-reconfigure vsan 10

switch(config)# fcdomain contiguous-allocation vsan 81-83

switch(config)# no fcdomain contiguous-allocation vsan 1030

switch(config)# fcdomain fabric-name 20:1:ac:16:5e:0:21:01 vsan 3

switch(config)# no fcdomain fabric-name 20:1:ac:16:5e:0:21:01 vsan 3010

switch(config)# fcdomain allowed 50-110 vsan 4

switch(config)# no fcdomain allowed 50-110 vsan 5
```

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

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fcdomain abort vsan

To flush cached data without committing and release the lock, use the **fcdomain abort vsan** command.

```
fcdomain abort vsan vsan-id |
```

Syntax Description	<i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.
---------------------------	----------------	--

Defaults	Enabled.
-----------------	----------

Command Modes	Configuration mode.
----------------------	---------------------

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines	None.
-------------------------	-------

Examples The following examples show how to flush cached data.

```
switch# config terminal
switch(config)# fcdomain abort vsan 10
```

Related Commands	Command	Description
	fcdomain	Configures Fibre Channel domain features.
	fcdomain commit vsan	Commits cached data and releases the lock.
	show fcdomain	Displays global information about the FC domain configurations.

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fcdomain commit vsan

To commit cached data and release the lock, use the **fcdomain commit vsan** command.

```
fcdomain commit vsan vsan-id |
```

Syntax Description	<i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.
---------------------------	----------------	--

Defaults	Enabled.	
-----------------	----------	--

Command Modes	Configuration mode.	
----------------------	---------------------	--

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines	None.	
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Examples	The following examples show how to commit cached data.	
	<pre>switch# config terminal switch(config)# fcdomain commit vsan 10</pre>	

Related Commands	Command	Description
	fcdomain	Configures Fibre Channel domain features.
	fcdomain abort vsan	Flushes cached data without committing and releases the lock.
	show fcdomain	Displays global information about the FC domain configurations.

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fcdomain distribute

To enable fabric distribution using Cisco Fabric Services (CFS), use the **fcdomain distribute** command. To disable fabric distribution using CFS, use the **no** form of the command.

fcdomain distribute

no fcdomain distribute

Syntax Description This command has no arguments or keywords

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines None.

Examples The following example enables fabric distribution using CFS.

```
switch# config terminal
switch(config)# fcdomain distribute
```

The following example disables fabric distribution using CFS.

```
switch(config)# no fcdomain distribute
```

Related Commands	Command	Description
	fcdomain	Configures Fibre Channel domain features.
	show fcdomain	Displays global information about the FC domain configurations.

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fcdomain rcf-reject

To enable the RCF reject flag for a Fibre Channel or FCIP interface, use the **fcdomain** option. To disable this feature, use the **no** form of the command.

fcdomain rcf-reject vsan *number*

no fcdomain rcf-reject vsan *number*

Syntax Description	vsan <i>vsan-id</i> Specifies a VSAN ID. The range is 1 to 4093.						
Defaults	Enabled.						
Command Modes	Interface configuration submode.						
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>1.1(1a)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	1.1(1a)	This command was introduced.		
Release	Modification						
1.1(1a)	This command was introduced.						
Usage Guidelines	<p>Access this command from the <code>switch(config-if)#</code> submode.</p> <p>Use this option to configure the RCF reject option for the selected Fibre Channel or FCIP interface.</p>						
Examples	<p>The following examples show how to configure the FCIP RCF reject fcdomain feature.</p> <pre>switch# config terminal switch(config)# interface fcip 1 switch(config-if)# fcdomain rcf-reject vsan 1</pre>						
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>show fcdomain</td> <td>Displays global information about the FC domain configurations.</td> </tr> <tr> <td>show interface fcip</td> <td>Displays an interface configuration for a specified FCIP interface.</td> </tr> </tbody> </table>	Command	Description	show fcdomain	Displays global information about the FC domain configurations.	show interface fcip	Displays an interface configuration for a specified FCIP interface.
Command	Description						
show fcdomain	Displays global information about the FC domain configurations.						
show interface fcip	Displays an interface configuration for a specified FCIP interface.						

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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 the command.

fcdroplateny {**network** *milliseconds* [**vsan** *vsan-id*] | **switch** *milliseconds*}

no fcdroplateny {**network** *milliseconds* [**vsan** *vsan-id*] | **switch** *milliseconds*}

Syntax Description	network <i>milliseconds</i>	Specifies network latency. The range is 500 to 60000.
	vsan <i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.
	switch <i>milliseconds</i>	Specifies switch latency. The range is 0 to 60000 milliseconds.

Defaults	2000 millisecond network latency. 500 millisecond switch latency.
----------	--

Command Modes	Configuration mode.
---------------	---------------------

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines	None.
------------------	-------

Examples The following example shows how to configure the network latency to 5000 milliseconds.

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

The following example shows how to revert to the default network latency.

```
switch(config)# no fcdroplateny network 5000
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 revert to the default switch latency.

```
switch(config)# no fcdroplateny switch 4000
switch(config)#
```

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Related Commands

Command	Description
show fdroplateny	Displays the configured FC drop latency parameters.

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fcflow stats

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

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

no fcflow stats { **aggregated module** *module-number* **index** *flow-number* | **module** *module-number* **index** *flow-number* }

Syntax Description		
aggregated		Configures aggregated fcflow statistics.
module		Configure fcflow statistics on a module.
<i>module-number</i>		
index <i>flow-number</i>		Specifies a flow index. The range is 1 to 2147483647.
vsan <i>vsan-id</i>		Specifies a VSAN ID. The range is 1 to 4093.
<i>destination-fcid</i>		Enters the destination FCID in hexadecimal format.
<i>source-fcid</i>		Enters the source FCID in hexadecimal format.
<i>netmask</i>		Enters the mask for the source and destination FCID (restricted to 6 hexadecimal characters ranging from 0xff0000 to 0xfffff).

Defaults None.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

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.

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

The following example enables the flow counter for module 1.

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

The following example disables the flow counter for module 1.

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

Related Commands

Command	Description
show fcflow stats	Displays the configured FC drop latency parameters.

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fcid-allocation

Use the **fcid-allocation** command to manually add a FCID to the default area company ID list. Use the **no** form of the command to remove a FCID from the default area company ID list.

fcid-allocation area company-id *company-id*

no fcid-allocation area company-id *company-id*

Syntax Description

area	Modifies the auto area list of company IDs.
company-id <i>company-id</i>	Configures the company IDs.

Defaults

None.

Command Modes

Configuration mode.

Command History

Release	Modification
2.0	This command was introduced.

Usage Guidelines

Fibre Channel standards require a unique FCID to be allocated to an N port attached to a Fx port in any switch. To conserve the number of FCIDs used, Cisco MDS 9000 Family switches use a special allocation scheme.

Some HBAs do not discover targets that have FCIDs with the same domain and area. Prior to Cisco MDS SAN-OS Release 2.0, the Cisco MDS SAN-OS software maintained a list of tested company ID (also known as Organizational Unit Identifier, or OUI) which do not exhibit this behavior. These Host Bus Adapters (HBAs) were allocated with single FCIDs, and for others a full area was allocated.

The FCID allocation scheme available in Release 1.3 and earlier, allocates a full area to these HBAs. This allocation isolates them to that area and are listed with their pWWN during a fabric login. The allocated FCIDs are cached persistently and are still available in Cisco MDS SAN-OS Release 2.0 (see the "FCID Allocation for HBAs" section on page 38-22).

As of Cisco MDS SAN-OS Release 2.0, to allow further scalability for switches with numerous ports, the Cisco MDS SAN-OS software is maintaining a list of HBAs exhibiting this behavior. Each HBA is identified by its company ID used in the pWWN during a fabric log in. Hence a full area is allocated to the N ports with company IDs that are listed and for the others, a single FCID is allocated. Irrespective of the kind (whole area or single) of FCID allocated, the FCID entries remain persistent.

Examples

The following example adds a new company ID to the default area company ID list.

```
switch# config terminal
switch(config)# fcid-allocation area company-id 0x003223
```

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Related Commands	Command	Description
	show fcid-allocation	Displays the configured company IDs.

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fcid-last-byte

Use the **fcid-last-byte** command to allocate the last byte FCID for the fabric address. To disable the configuration or to revert to factory defaults, use the **no** form of the command.

fcid-last-byte *last-byte-id*

no fcid-last-byte *last-byte-id*

Syntax Description	<i>last-byte-fcid</i> Specifies the last-byte FCID range from 0 to 250.
---------------------------	---

Defaults	None.
-----------------	-------

Command Modes	FICON configuration submode.
----------------------	------------------------------

Command History	Release	Modification
	1.3(1)	This command was introduced.
3.0(1)	This command was deprecated.	

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

Examples	The following example assigns the last byte FCID for the fabric address.
-----------------	--

```
switch# config terminal
switch(config)# ficon vsan 2
switch(config-ficon)# fcid-last-byte 12
```

The following example removes the configured last byte FCID for the fabric address and reverts to the default.

```
switch# config terminal
switch(config)# ficon vsan 2
switch(config-ficon)# no fcid-last-byte 3
```

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

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fcinterop fcid-allocation

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

fcinterop fcid-allocation {auto | flat | none}

no fcinterop fcid-allocation {auto | flat | none}

Syntax Description	auto	Assigns single FCID to compatible HBAs.
	flat	Assign single FCID.
	none	Assigns FCID range.

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

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This command defines how the switch assigns FCIDs.

Examples

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

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

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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 the command.

fcinterop loop-monitor

no fcinterop loop-monitor

Syntax Description This command has no other arguments or keywords.

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines This command detects devices that are removed from a looped port.

Examples The following example shows how to enable monitoring of NL ports in a loop.

```
switch# config terminal
switch(config)# fcinterop loop-monitor
```

The following example shows how to disable monitoring of NL ports in a loop.

```
switch# config terminal
switch(config)# no fcinterop loop-monitor
```

Related Commands	Command	Description
	show flogi database	Verify if a storage device is displayed in the Fabric login (FLOGI) table.

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fcip enable

To enable the FCIP feature in any switch in the Cisco MDS Family, issue the **fcip enable** command.

fcip enable

no fcip enable

Syntax Description This command has no other arguments or keywords.

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines The configuration and verification commands for the iSCSI feature are only available when FCIP is enabled on a switch. When you disable this feature, all related configurations are automatically discarded.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following command enables the FCIP feature.

```
switch(config)# fcip enable
```

The following command disables the FCIP feature (default).

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

Related Commands	Command	Description
	show fcip	Displays FCIP information.

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fcip profile

To create and configure an FCIP profile, use the **fcip profile** command. To remove an FCIP profile, use the **no** form of the command.

fcip profile *profile-id*

no fcip profile *profile-id*

Syntax Description	<i>profile-id</i>	Specifies a ID range from 1 to 255.
--------------------	-------------------	-------------------------------------

Defaults	None.
----------	-------

Command Modes	Configuration mode.
---------------	---------------------

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines	When you perform this command, the CLI enters FCIP profile configuration mode.
------------------	--



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples	The following example shows how to configure an FCIP profile.
----------	---

```
switch## config terminal
switch(config)# fcip profile 5
switch(config-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.

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fcns proxy-port

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

fcns proxy-port *wwn-id vsan vsan-id*

no fcns proxy-port *wwn-id vsan vsan-id*

Syntax Description

wwn-id	Specifies the port WWN, with the format <i>hh:hh:hh:hh:hh:hh:hh:hh</i> .
vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Defaults

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.

Usage Guidelines

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

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

Examples

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

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

Related Commands

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

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fcns reject-duplicate-pwwn vsan

To reject duplicate Fibre Channel name server (FCNS) proxies on a VSAN, use the **fcns reject-duplicate-pwwn vsan** command in configuration mode.

```
fcns reject-duplicate-pwwn vsan vsan-id
```

```
no fcns reject-duplicate-pwwn vsan vsan-id
```

Syntax	Description
<i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.

Defaults	Description
	Enabled.

Command Modes	Description
	Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines	Description
	None.

Examples The following example rejects duplicate FCNS pWWNs for VSAN 2.

```
switch# config terminal
switch(config)# fcns reject-duplicate-pwwn vsan 2
```

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

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fcping

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

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

Syntax Description

device-alias <i>aliasname</i>	Specifies the device alias name. Maximum length is 64 characters.
fcid	The FCID of the destination N port.
fc-port	The port FCID, with the format <i>0xhhhhhh</i> .
domain-controller-id	Verifies connection to the destination switch.
pwwn <i>pwwn-id</i>	Specifies the port WWN of the destination N port, with the format <i>hh:hh:hh:hh:hh:hh:hh:hh</i> .
vsan <i>vsan-id</i>	Specifies the VSAN ID of the destination N port. The range is 1 to 4093.
count <i>number</i>	Specifies the number of frames to send. A value of 0 sends forever. The range is 0 to 2147483647.
timeout <i>value</i>	Specifies the timeout value in seconds. The range is 1 to 10.
usr-priority <i>priority</i>	Specifies the priority the frame receives in the switch fabric. The range is 0 to 1.

Defaults

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
1.2(1)	Allowed the domain controller ID as an FCID.
2.0(x)	Added the device-alias <i>aliasname</i> option.

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
```

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```
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
```

The following example displays fcping operation for the device alias of the specified destination.

```
switch# fcping device-alias x vsan 1
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 358 usec
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 226 usec
28 bytes from 21:01:00:e0:8b:2e:80:93 time = 372 usec
```

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fc-redirect version2 enable

To enable the version2 mode in FC-Redirect, use the **fc-redirect version2 enable** command in configuration mode.

fc-redirect version2 enable

Syntax Description

This command has no arguments or keywords.

Defaults

None.

Command Modes

Configuration mode.

Command History

Release	Modification
3.3(1a)	This command was introduced.

Usage Guidelines

This command is used to increase scalability of FC-Redirect.

Disabling version2 mode after it is enabled in the fabric is not recommended. However, if you want to disable version2 mode, you cannot disable it until all FC-Redirect configurations are deleted. FC-Redirect configurations can be deleted only by deleting all corresponding application configurations.

The SAN-OS 3.2.x switches cannot be added to the fabric after the version2 mode is enabled. If the switches are added, all further FC-Redirect configuration changes will fail across the fabric. This could lead to traffic disruption for applications such as SME and DMM.

Use the **show fc-redirect configs** command to see the list of applications that create FC-Redirect configurations.

If version2 mode is enabled in the fabric and you want to move a switch to a different fabric, use the **clear fc-redirect decommission-switch** command before moving the switch to a different fabric. If not, all switches in the new fabric will be converted to version2 mode automatically.



Note

All switches in the fabric should be running San-OS version 3.3.x or higher. Ensure that there are no fabric changes or upgrades in progress. Use the **show fc-redirect peer-switches** command (UP state) to see all the switches in the fabric.

Examples

The following example shows how to enable version2 mode in FC-Redirect.

```
switch# fc-redirect version2 enable
Please make sure to read and understand the following implications
before proceeding further:
```

- 1) This is a Fabric wide configuration. All the switches in the fabric will be configured in Version2 mode. Any new switches

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added to the fabric will automatically be configured in version2 mode.

- 2) SanOS 3.2.x switches CANNOT be added to the Fabric after Version2 mode is enabled. If any 3.2.x switch is added when Version2 mode is enabled, all further FC-Redirect Configuration changes will Fail across the fabric. This could lead to traffic disruption for applications like SME.
- 3) If enabled, Version2 mode CANNOT be disabled till all FC-Redirect configurations are deleted. FC-Redirect configurations can be deleted ONLY after all the relevant application configurations are deleted. Please use the command 'show fc-redirect configs' to see the list of applications that created FC-Redirect configurations.
- 4) 'write erase' will NOT disable this command. After 'write erase' on ANY switch in the fabric, the user needs to do:
 'clear fc-redirect decommission-switch'
 on that switch. Without that, if the user moves the switch to a different fabric it will try to convert all the switches in the fabric to Version2 mode automatically. This might lead to Error conditions and hence Traffic disruption.

Do you want to continue? (Yes/No) [No]Yes

Before proceeding further, please check the following:

- 1) All the switches in the fabric are seen in the output of 'show fc-redirect peer-switches' command and are in 'UP' state.
- 2) All switches in the fabric are running SanOS version 3.3.x or higher.
- 3) Please make sure the Fabric is stable ie.,
 No fabric changes/upgrades in progress

Do you want to continue? (Yes/No) [No] Yes

Related Commands=

Command	Description
no fc-redirect version2 enable mode	Disables version2 mode in FC-Redirect.

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fcroute

To configure Fibre Channel routes and to activate policy routing, use the **fcroute** command. To remove a configuration or revert to factory defaults, use the **no** form of the command.

fcroute {*fcid network-mask* **interface** {**fc** *slot/port* | **port-channel** *port*} **domain** *domain-id* {**metric** *number* | **remote** | **vsan** *vsan-id*} | **policy** *fcroute-map vsan vsan-id* [*route-map-identifier*]}

no fcroute {*fcid network-mask* **interface** {**fc** *slot/port* | **port-channel** *port*} **domain** *domain-id* {**metric** *number* | **remote** | **vsan** *vsan-id*} | **policy** *fcroute-map vsan vsan-id* [*route-map-identifier*]}

Syntax Description

<i>fcid</i>	Specifies the FC ID. The format is 0xhhhhhh .
<i>network-mask</i>	Specifies the network mask of the FC ID. The format is 0x0 to 0xffffffff .
interface	Specifies an interface.
fc <i>slot/port</i>	Specifies a Fibre Channel interface.
port-channel <i>port</i>	Specifies a PortChannel interface.
domain <i>domain-id</i>	Specifies the route for the domain of the next hop switch. The range is 1 to 239.
metric <i>number</i>	Specifies the cost of the route. The range is 1 to 65535. Default cost is 10.
remote	Configures the static route for a destination switch remotely connected.
vsan <i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.
policy <i>fcroute-map</i>	Activates policy routing.
<i>route-map-identifier</i>	Specifies the route map identifier. The range is 1 to 65535.

Defaults

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.0(2)	This command was introduced.
3.0(3)	Added the policy option.

Usage Guidelines

Use this command to assign forwarding information to the switch and to activate a preferred path route map.

Examples

The following example specifies the Fibre Channel interface and the route for the domain of the next hop switch for VSAN 2.

```
switch# config terminal
switch(config)# fcroute 0x111211 interface fc1/1 domain 3 vsan 2
```

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The following example removes this configuration.

```
switch(config)# no fcroute 0x111211 interface fc1/1 domain 3 vsan 2
```

The following example specifies the PortChannel interface and the route for the domain of the next hop switch for VSAN 4.

```
switch# config terminal
switch(config)# fcroute 0x111211 interface port-channel 1 domain 3 vsan 4
```

The following example removes this configuration.

```
switch(config)# no fcroute 0x111211 interface port-channel 1 domain 3 vsan 4
```

The following example specifies the Fibre Channel interface, the route for the domain of the next hop switch, and the cost of the route for VSAN 1.

```
switch# config terminal
switch(config)# fcroute 0x031211 interface fc1/1 domain 3 metric 1 vsan 1
```

The following example removes this configuration.

```
switch(config)# no fcroute 0x031211 interface fc1/1 domain 3 metric 1 vsan 1
```

The following example specifies the Fibre Channel interface, the route for the domain of the next hop switch, the cost of the route, and configures the static route for a destination switch remotely connected for VSAN 3.

```
switch# config terminal
switch(config)# fcroute 0x111112 interface fc1/1 domain 3 metric 3 remote vsan 3
```

The following example removes this configuration.

```
switch(config)# no fcroute 0x111112 interface fc1/1 domain 3 metric 3 remote vsan 3
```

Related Commands

Command	Description
show fcroute	Displays Fibre Channel routes.
fcroute-map	Specifies a preferred path Fibre Channel route map.
show fcroute-map	Displays the preferred path route map configuration and status.
fcroute policy fcroute-map	Activates the preferred path Fibre Channel route map.

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fcrxbbcredit extended enable

To enable Fibre Channel extended buffer-to-buffer credits (BB_credits), use the **fcrxbbcredit extended enable** command in **configuration mode**. To disable the feature, use the **no** form of the command.

fcrxbbcredit extended enable

no fcrxbbcredit extended enable

Syntax Description This command has no other arguments or keywords.

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines Performing the **fcrxbbcredit extended enable** command enables the **switchport fcrxbbcredit extended** command.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following example shows how to enable Fibre Channel extended BB_credits.

```
switch# config terminal
switch(config)# fcrxbbcredit extended enable
```

The following example shows how to disable Fibre Channel extended BB_credits.

```
switch# config terminal
switch(config)# no fcrxbbcredit extended enable
```

Related Commands	Command	Description
	switchport fcrxbbcredit extended	Configures Fibre Channel extended BB_credits on an interface.
	show interface	Displays interface information and status.

Send documentation comments to mdsfeedback-doc@cisco.com

fcs plat-check-global vsan

To enable FCS platform and node name checking fabric wide, use the **fcs plat-check-global vsan** command in configuration mode. To disable this feature, use the **no** form of the command.

fcs plat-check-global vsan *vsan-id*

no fcs plat-check-global vsan *vsan-id*

Syntax Description	vsan-id	Specifies the VSAN ID for platform checking, which is from 1 to 4096.
Defaults	None.	
Command Modes	Configuration mode.	
Command History	Release	Modification
	1.0(2)	This command was introduced.
Usage Guidelines	None.	
Examples	<pre>switch# config terminal switch(config)# fcs plat-check-global vsan 2</pre>	
Related Commands	Command	Description
	show fcs	Displays fabric configuration server information.

Send documentation comments to mdsfeedback-doc@cisco.com

fcs register

To register FCS attributes, use the **fcs register** command in configuration mode. To disable this feature, use the **no** form of the command.

```
fcs register
  platform name name vsan vsan-id
```

```
fcs register
  no platform name name vsan vsan-id
```

Syntax Description	
platform name <i>name</i>	Specifies name of the platform to register. Maximum size is 255 characters.
vsan <i>vsan-id</i>	Specifies the VSAN ID. The range is 1 to 4096.

Defaults	None.
----------	-------

Command Modes	Configuration mode.
---------------	---------------------

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines	None.
------------------	-------

Examples	The following example shows how to register FCS attributes.
----------	---

```
switch# config terminal
switch(config)# fcs register
switch(config-fcs-register)# platform Platform1 vsan 10
```

Related Commands	Command	Description
	show fcs	Displays fabric configuration server information.

Send documentation comments to mdsfeedback-doc@cisco.com

fcs virtual-device-add

To include a virtual device in a query about zone information from an FCS, use the **fcs virtual-device-add** command in configuration mode. To remove a virtual device, use the **no** form of the command.

```
fcs virtual-device-add [vsan-ranges vsan-ids]
```

```
no fcs virtual-device-add [vsan-ranges vsan-ids]
```

Syntax Description

vsan-ranges vsan-ids Specifies one or multiple ranges of VSANs. The range is 1 to 4093.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
3.1(2)	This command was introduced.

Usage Guidelines

VSAN ranges are entered as *vsan-ids-vsan-ids*. When you specify more than one range, separate each range with a comma. If no range is specified, the command applies to all VSANs.

Examples

The following example shows how to add to one range of VSANs.

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcs virtual-device-add vsan-ranges 2-4
```

The following example shows how to add to more than one range of VSANs.

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# fcs virtual-device-add vsan-ranges 2-4,5-8
```

Related Commands

Command	Description
show fcs	Displays fabric configuration server information.

Send documentation comments to mdsfeedback-doc@cisco.com

fcsp

To configure an Fibre Channel Security Protocol (FC-SP) authentication mode for a specific interface in a FC-SP-enabled switch, use the **fcsp** command. To disable an FC-SP on the interface, use the **no** form of the command.

```
fcsp { auto-active | auto-passive | on | off } [timeout-period]
```

```
no fcsp
```

Syntax Description

auto-active	Configures the auto-active mode to authenticate the specified interface.
auto-passive	Configures the auto-passive mode to authenticate the specified interface.
on	Configures the auto-active mode to authenticate the specified interface.
off	Configures the auto-active mode to authenticate the specified interface.
<i>timeout-period</i>	Specifies the time out period to reauthenticate the interface. The time ranges from 0 (default—no authentication is performed) to 100,000 minutes.

Defaults

Auto-passive.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

To use this command, FC-SP must be enabled using the **fcsp enable** command.

Examples

The following example turns on the authentication mode for ports 1 to 3 in Fibre Channel interface 2.

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc 2/1 - 3
switch(config-if)# fcsp on
switch(config-if)#
```

The following example reverts to the factory default of auto-passive for these three interfaces.

```
switch(config-if)# no fcsp
```

The following example changes these three interfaces to initiate FC-SP authentication, but does not permit reauthentication.

```
switch(config-if)# fcsp auto-active 0
```

The following example changes these three interfaces to initiate FC-SP authentication and permits reauthentication within two hours (120 minutes) of the initial authentication attempt.

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```
switch(config-if)# fcsp auto-active 120
```

Related Commands

Command	Description
fcsp enable	Enable FC-SP.
show interface	Displays an interface configuration for a specified interface.

[Send documentation comments to mdsfeedback-doc@cisco.com](mailto:mdsfeedback-doc@cisco.com)

fcsp dhchap

To configure DHCHAP options in a switch, use the **fcsp dhchap** command in configuration mode. This command is only available when the FC-SP feature is enabled. Use the **no** form of the command to revert to factory defaults.

```
fcsp dhchap { devicename switch-wwn password [0 | 7] password |
dhgroup [0 | 1 | 2 | 3 | 4] |
hash [md5 | sha1] |
password [0 | 7] password [wwn wwn-id]
```

```
no fcsp dhchap { devicename switch-wwn password [0 | 7] password |
dhgroup [0 | 1 | 2 | 3 | 4] |
hash [md5 | sha1] |
password [0 | 7] password [wwn wwn-id]
```

Syntax Description

<i>devicename</i>	Configures a password of another device in the fabric
<i>switch-wwn</i>	Provides the WWN of the device being configured
dhgroup	Configures DHCHAP Diffie-Hellman group priority list.
0	Null DH—no exchange is performed (default).
1 2 3 4	Specifies one or more of the groups specified by the standards.
hash	Configures DHCHAP Hash algorithm priority list in order of preference.
md5	Specifies the MD5 Hash algorithm.
sha1	Specifies the SHA-1 Hash algorithm
password	Configures DHCHAP password for the local switch.
0	Specifies a clear text password.
7	Specifies a password in encrypted text.
<i>password</i>	Provides the password with a maximum of 64 alphanumeric characters
<i>wwn-id</i>	The WWN ID with the format hh:hh:hh:hh:hh:hh:hh:hh.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

You can only see the **fcsp dhchap** command if you issue the **fcsp enable** command.

Using SHA-1 as the hash algorithm may prevent RADIUS or TACACS+ usage.

If you change the DH group configuration, ensure to change it globally for all switches in the fabric.

Send documentation comments to mdsfeedback-doc@cisco.com**Examples**

The following example enables FC-SP.

```
switch## config terminal
switch(config)# # fcsp enable
switch (config)#
```

The following example configures the use of only the SHA-1 hash algorithm.

```
switch(config)# fcsp dhchap hash sha1
```

The following example configures the use of only the MD-5 hash algorithm.

```
switch(config)# fcsp dhchap hash md5
```

The following example defines the use of the default hash algorithm priority list of MD-5 followed by SHA-1 for DHCHAP authentication.

```
switch(config)# fcsp dhchap hash md5 sha1
```

The following example reverts to the factory default priority list of the MD-5 hash algorithm followed by the SHA-1 hash algorithm.

```
switch(config)# no fcsp dhchap hash sha1
```

The following example prioritizes the use of DH group 2, 3, and 4 in the configured order.

```
switch(config)# fcsp dhchap group 2 3 4
```

The following example reverts to the DHCHAP factory default order of 0, 4, 1, 2, and 3 respectively.

```
switch(config)# no fcsp dhchap group 0
```

The following example configures a clear text password for the local switch.

```
switch(config)# fcsp dhchap password 0 mypassword
```

The following example configures a clear text password for the local switch to be used for the device with the specified WWN.

```
switch(config)# fcsp dhchap password 0 mypassword 30:11:bb:cc:dd:33:11:22
```

The following example removes the clear text password for the local switch to be used for the device with the specified WWN.

```
switch(config)# no fcsp dhchap password 0 mypassword 30:11:bb:cc:dd:33:11:22
```

The following example configures a password entered in an encrypted format for the local switch.

```
switch(config)# fcsp dhchap password 7 sfsfdf
```

The following example configures a password entered in an encrypted format for the local switch to be used for the device with the specified WWN.

```
switch(config)# fcsp dhchap password 7 sfsfdf 29:11:bb:cc:dd:33:11:22
```

The following example removes the password entered in an encrypted format for the local switch to be used for the device with the specified WWN.

```
switch(config)# no fcsp dhchap password 7 sfsfdf 29:11:bb:cc:dd:33:11:22
```

The following example configures a clear text password for the local switch to be used with any connecting device.

```
switch(config)# fcsp dhchap password mypassword1
```

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The following example configures a password for another switch in the fabric which is identified by the Switch WWN device name.

```
switch(config)# fcsp dhchap devicename 00:11:22:33:44:aa:bb:cc password NewPassword
```

The following example removes the password entry for this switch from the local authentication database.

```
switch(config)# no fcsp dhchap devicename 00:11:22:33:44:aa:bb:cc password NewPassword
```

The following example configures a clear text password for another switch in the fabric which is identified by the Switch WWN device name.

```
switch(config)# fcsp dhchap devicename 00:11:55:66:00:aa:bb:cc password 0 NewPassword
```

The following example configures a password entered in an encrypted format for another switch in the fabric which is identified by the Switch WWN device name.

```
switch(config)# fcsp dhchap devicename 00:11:22:33:55:aa:bb:cc password 7 asdf1kjh
```

Related Commands

Command	Description
fcsp enable	Enable FC-SP.
show fcsp	Displays configured FC-SP information.

Send documentation comments to mdsfeedback-doc@cisco.com

fcsp enable

To enable the Fibre Channel Security Protocol (FC-SP) in a switch, use the **fcsp enable** command in configuration mode. Further FC-SP commands are available when the FC-SP feature is enabled. To disable FC-SP, use the **no** form of the command.

fcsp enable

no fcsp enable

Syntax Description	Command	Description
	fcsp	Specifies the FC-SP feature in the switch.
	enable	Enables the FC-SP feature in this switch.

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines None.

Examples The following example enables FC-SP.

```
switch# config terminal
switch(config)# fcsp enable
switch(config)#
```

Related Commands	Command	Description
	show fcsp	Displays configured FC-SP information.

Send documentation comments to mdsfeedback-doc@cisco.com

fcsp timeout

To configure the timeout value for FC-SP message, use the **fcsp timeout** command in configuration mode. Use the **no** form of the command to revert to factory defaults.

fcsp timeout *timeout-period*

no fcsp timeout *timeout-period*

Syntax Description	<i>timeout-period</i>	Specifies the time out period. The time ranges from 20 to 100 seconds. The default is 30 seconds.
Defaults	30 seconds.	
Command Modes	Configuration mode.	
Command History	Release	Modification
	1.3(1)	This command was introduced.
Usage Guidelines	You can only see the fcsp timeout command if you issue the fcsp enable command.	
Examples	The following example configures the FCSP timeout value.	
	<pre>switch# config terminal switch(config)# fcsp enable switch(config)# fcsp timeout 60</pre>	
Related Commands	Command	Description
	fcsp enable	Enable FC-SP.
	show fcsp	Displays configured FC-SP information.

Send documentation comments to mdsfeedback-doc@cisco.com

fctimer

To change the default Fibre Channel timers, use the **fctimer** command in **configuration mode**. To revert to the default values, use the **no** form of the command.

```
fctimer {d_s_tov milliseconds [vsan vsan-id] | e_d_tov milliseconds [vsan vsan-id] | r_a_tov
milliseconds [vsan vsan-id]}
```

```
no fctimer {d_s_tov milliseconds [vsan vsan-id] | e_d_tov milliseconds [vsan vsan-id] | r_a_tov
milliseconds [vsan vsan-id]}
```

Syntax Description		
d_s_tov <i>milliseconds</i>	Specifies the distributed services time out value. The range is 5000 to 100000 milliseconds.	
e_d_tov <i>milliseconds</i>	Specifies the error detect time out value. The range is 1000 to 100000 milliseconds, with a default of 2000.	
r_a_tov <i>milliseconds</i>	Specifies the resolution allocation time out value. The range is 5000 to 100000 milliseconds, with a default of 10000.	
vsan <i>vsan-id</i>	Specifies the VSAN ID. The range is 1 to 4096.	

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

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

Use the **vsan** option to configure different TOV values for VSANs with special types of links like FC or IP tunnels.

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

```
switch# config terminal
switch(config)# fctimer e_d_tov 5000
switch(config)# fctimer r_a_tov 7000
```

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

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fctimer abort

To discard a Fibre Channel timer (fctimer) Cisco Fabric Services (CFS) distribution session in progress, use the **fctimer abort** command **in configuration mode**.

fctimer abort

Syntax Description This command has no other arguments or keywords.

Defaults None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to discard a CFS distribution session in progress.

```
switch# config terminal
switch(config)# fctimer abort
```

Related Commands	Command	Description
	fctimer distribute	Enables CFS distribution for fctimer.
	show fctimer	Displays fctimer information.

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fctimer commit

To apply the pending configuration pertaining to the Fibre Channel timer (fctimer) Cisco Fabric Services (CFS) distribution session in progress in the fabric, use the **fctimer commit** command in **configuration mode**.

fctimer commit

Syntax Description This command has no other arguments or keywords.

Defaults None.

Command Modes Configuration mode.

Command History	Release	Modification
	2.0(x)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to commit changes to the active Fibre Channel timer configuration.

```
switch# config terminal
switch(config)# fctimer commit
```

Related Commands	Command	Description
	fctimer distribute	Enables CFS distribution for fctimer.
	show fctimer	Displays fctimer information.

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fctimer distribute

To enable Cisco Fabric Services (CFS) distribution for Fibre Channel timer (fctimer), use the **fctimer distribute** command. To disable this feature, use the **no** form of the command.

fctimer distribute

no fctimer distribute

Syntax Description This command has no other arguments or keywords.

Defaults Disabled.

Command Modes Configuration mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines Before distributing the Fibre Channel timer changes to the fabric, the temporary changes to the configuration must be committed to the active configuration using the **fctimer commit** command.

Examples The following example shows how to change the default Fibre Channel timers.

```
switch# config terminal
switch(config)# fctimer distribute
```

Related Commands	Command	Description
	fctimer commit	Commits the Fibre Channel timer configuration changes to the active configuration.
	show fctimer	Displays fctimer information.

[Send documentation comments to mdsfeedback-doc@cisco.com](mailto:mdsfeedback-doc@cisco.com)

fctrace

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

```
fctrace {device-alias aliasname | fcid fcid vsan vsan-id [timeout value] | pwwn pwwn-id [timeout seconds]}
```

Syntax Description	
device-alias <i>aliasname</i>	Specifies the device alias name. Maximum length is 64 characters.
fcid <i>fcid</i>	The FCID of the destination N port, with the format 0xhhhhh
pwwn <i>pwwn-id</i>	The PWWN of the destination N port, with the format hh:hh:hh:hh:hh:hh:hh:hh .
vsan <i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.
timeout <i>seconds</i>	Configures the timeout value. The range is 1 to 10.

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

Command Modes EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	2.0(x)	Added the device-alias <i>aliasname</i> option.

Usage Guidelines None.

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

```
switch# fctrace fcid 0x660000 vsan 1
Route present for : 0x660000
20:00:00:05:30:00:5f:1e(0xfffc65)
Latency: 0 msec
20:00:00:05:30:00:61:5e(0xfffc66)
Latency: 0 msec
20:00:00:05:30:00:61:5e(0xfffc66)
```

The following example traces a route to the specified device alias in VSAN 1.

```
switch# fctrace device-alias x vsan 1
Route present for : 21:01:00:e0:8b:2e:80:93
20:00:00:05:30:00:4a:e2(0xfffc67)
```

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fc-tunnel

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

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

```
no fc-tunnel { enable | explicit-path name | tunnel-id-map tunnel-id }
```

Syntax Description

enable	Enables the FC tunnel feature
explicit-path <i>name</i>	Specifies an explicit path. Maximum length is 16 characters.
next-address <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 <i>tunnel-id</i>	Specifies fc-tunnel id to outgoing interface. The range is 1 to 255.
interface fc <i>slot/port</i>	Configures the Fiber Channel interface in the destination switch.

Defaults

None.

Command Modes

Configuration mode.

Command History

Release	Modification
1.2(1)	This command was introduced.

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.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example enables the FC tunnel feature.

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

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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 terminal
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

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ficon enable

To enable the FICON feature on a switch, use the **ficon enable** command in configuration mode. To disable the feature or to revert to factory defaults, use the **no** form of the command.

ficon enable

no ficon enable

Syntax Description This command has no arguments or keywords.

Defaults Disabled.

Command Modes Configuration mode.

Command History

Release	Modification
3.0(1)	This command was introduced.

Usage Guidelines

The effects of enabling the FICON feature in a Cisco MDS switch are as follows:

- You cannot disable in-order delivery for the FICON-enabled VSAN.
- You cannot disable fabric binding or static domain ID configurations for the FICON-enabled VSAN.
- The load balancing scheme is changed to Source ID (SID)—Destination ID (DID). You cannot change it back to SID—DID—OXID.
- The IPL configuration file is automatically created.

When FICON is enabled on a VSAN, it is implicitly enabled everywhere. However, when FICON is disabled on a VSAN, it remains globally enabled. You must explicitly disable FICON to disable it throughout the fabric.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example enables FICON on the switch.

```
switch(config)# ficon enable
```

The following example disables FICON on the switch.

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

Related Commands

Send documentation comments to mdsfeedback-doc@cisco.com

Command	Description
show ficon	Displays configured FICON details.

[Send documentation comments to mdsfeedback-doc@cisco.com](mailto:mdsfeedback-doc@cisco.com)

ficon logical-port assign port-numbers

To reserve FICON port numbers for logical interfaces on the switch, use the **ficon logical-port assign port-numbers** command in configuration mode. To release the port numbers, use the **no** form of the command.

ficon logical-port assign port-numbers [*port-numbers*]

no ficon logical-port assign port-numbers [*port-numbers*]

Syntax Description	<i>port-numbers</i>	Specifies the range of port numbers to assign. The range can be 0 through 153 or 0x0 through 0x99.
---------------------------	---------------------	--

Defaults	None.
-----------------	-------

Command Modes	Configuration mode.
----------------------	---------------------

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines You must reserve port numbers for logical interfaces, such as FCIP and PortChannels, if you plan to use them.

You cannot change or release port numbers for interfaces that are active. You must disable the interfaces using the **shutdown** command.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following example reserves port numbers 230 through 249 for FCIP and PortChannel interfaces.

```
switch(config)# ficon logical-port assign port-numbers 230-249
```

The following example reserves port numbers 0xe6 through 0xf9 for FCIP and PortChannel interfaces.

```
switch(config)# ficon logical-port assign port-numbers 0xe6-0xf9
```

The following example releases the port numbers.

```
switch(config)# no ficon logical-port assign port-numbers 230-249
```

Related Commands	Command	Description
	show ficon	Displays configured FICON details.

[Send documentation comments to mdsfeedback-doc@cisco.com](mailto:mdsfeedback-doc@cisco.com)

ficon port default-state prohibit-all

To set the FICON port default state to prohibit all, use the **ficon port default-state prohibit-all** command in configuration mode. To disable the feature or to revert to factory defaults, use the **no** form of the command.

ficon port default-state prohibit-all

no ficon port default-state prohibit-all

Syntax Description

This command has no arguments or keywords.

Defaults

Disabled.

Command Modes

Configuration mode.

Command History

Release	Modification
3.0(2)	This command was introduced.

Usage Guidelines

You can change the default port prohibiting state to enabled in VSANs that you create and then selectively disable port prohibiting on implemented ports, if desired. Only the FICON configuration files created after you change the default have the new default setting.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example enables port prohibiting as the default for all implemented interfaces on the switch.

```
switch(config)# ficon port default-state prohibit-all
```

The following example disables port prohibiting as the default for all implemented interfaces on the switch.

```
switch(config)# no port default-state prohibit-all
```

Related Commands

Command	Description
show ficon port default-state	Displays default FICON port prohibit state.

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ficon slot assign port-numbers

To reserve FICON port numbers for a slot on the switch, use the **ficon slot assign port-numbers** command in configuration mode. To release the port numbers, use the **no** form of the command.

ficon slot slot assign port-numbers [*port-numbers*]

no ficon slot slot assign port-numbers [*port-numbers*]

Syntax Description	slot	Specifies the slot number, 1 through 6.
	<i>port-numbers</i>	Specifies the range of port numbers to assign. The range can be 0 through 153, or 0x0 through 0x99. For 9513, the port numbers can be between 0 through 249, or 0x0 through 0xf9.

Defaults None.

Command Modes Configuration mode.

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines A range of 255 port numbers are available for you to assign to all the ports on a switch. You can have more than 255 physical ports on a switch and the excess ports do not have ports numbers in the default numbering scheme. When you have more than 255 physical ports on your switch, you can assign unimplemented port numbers to the ports, or assign duplicate port numbers if they are not used in the same FICON VSAN. For example, you can configure port number 1 on interface fc1/1 in FICON VSAN 10 and fc10/1 in FICON VSAN 20.

FICON port numbers are not changed for ports that are active. You must first disable the interfaces using the **shutdown** command.

You can configure port numbers even when no module is installed in the slot, and before FICON is enabled on any VSAN.

For more information on assigning port numbers, refer to “FICON Port Numbering” in the *Cisco MDS 9000 Family CLI Configuration Guide* or the *Cisco MDS 9000 Family Fabric Manager Configuration Guide*.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following example reserves FICON port numbers 0 through 15 and 48 through 63 for up to 32 interfaces in slot 3.

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```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ficon slot 3 assign port-numbers 0-15, 48-63
```

The following example reserves FICON port numbers 0 through 15 for the first 16 interfaces and 0 through 15 for the second 32 interfaces in slot 3.

```
switch(config)# ficon slot 3 assign port-numbers 0-15, 0-15
```

The following example changes the reserved FICON port numbers for up to 24 interfaces in slot 3.

```
switch(config)# ficon slot 3 assign port-numbers 0-15, 56-63
```

The following example releases the port numbers.

```
switch(config)# no ficon slot 3 assign port-numbers 0-15, 56-63
```

The following example shows the switch output when there are duplicate port numbers.

```
switch(config)
switch(config)# no ficon slot 1 assign port-numbers
switch(config)# ficon slot 1 assign port-numbers 0-14, 0
WARNING: fcl/16 and fcl/1 have duplicated port-number 0 in port VSAN 99
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

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ficon swap

To enable the FICON feature in a specified VSAN, use the **ficon swap** command in configuration mode.

ficon swap {**interface fc** *slot fc slot* | **portnumber** *port-number port-number*} [**after swap noshut**]

Syntax Description		
interface		Configures the interfaces to be swapped.
fc		Specifies the Fibre Channel interface.
slot		Specifies the slot number, 1 through 6.
portnumber		Configures the FICON port number for this interface.
port-number		Specifies the port numbers that must be swapped
after swap noshut		Initializes the port shut down after the ports are swapped.

Defaults None.

Command Modes EXEC mode.

Command History	Release	Modification
	1.3(1)	This command was introduced.
	3.0(1)	Added the interface option.

Usage Guidelines The **ficon swap portnumber** *old-port-number new port-number* command causes all configuration associated with *old-port-number* and *new port-number* to be swapped, including VSAN configurations. This command is only associated with the two ports in concerned. You must issue this VSAN-independent command from the EXEC mode.

If you specify the **ficon swap portnumber after swap noshut** command, the ports are automatically initialized.

The **ficon swap interface** *old-interface new-interface* command allows you to swap physical Fibre Channel ports, including port numbers, when there are duplicate port numbers on the switch.

If you specify the **ficon swap interface** *old-interface new-interface* **after swap noshut** command, the ports are automatically initialized.

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



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples The following example swaps the contents of ports 3 with port 15, shuts them down, and automatically initializes both ports.

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```
switch# ficon swap portnumber 3 15 after swap noshut
```

The following example swaps the contents of ports 3 with port 15 and shuts them down.

```
switch# ficon swap portnumber 3 15
```

The following example swaps port 1 with port 6.

```
switch# ficon swap interface fc1/1 fc1/6
```

Related Commands

Command	Description
show ficon	Displays configured FICON details.

[Send documentation comments to mdsfeedback-doc@cisco.com](mailto:mdsfeedback-doc@cisco.com)

ficon-tape-accelerator vsan

To enable FICON tape acceleration for the FCIP interface, use the **ficon-tape-accelerator vsan** command in interface configuration submode. To disable FICON tape acceleration for the FCIP interface, use the **no** form of the command.

ficon-tape-accelerator vsan *vsan-id*

no ficon-tape-accelerator vsan *vsan-id*

Syntax Description	<i>vsan-id</i>	Specifies the VSAN ID. The range is 1 to 4093.
---------------------------	----------------	--

Defaults	Disabled.	
-----------------	-----------	--

Command Modes	Interface configuration submode.	
----------------------	----------------------------------	--

Command History	Release	Modification
	3.0(1)	This command was introduced.

Usage Guidelines	Cisco MDS SAN-OS software provides acceleration for FICON tape write operations over FCIP for the IBM VTS and tape libraries that support the 3490 command set. FICON tape read acceleration over FCIP is not supported.
-------------------------	--

FICON tape acceleration will not work if multiple inter-switch links (ISLs) are present in the VSAN. FICON write acceleration and tape acceleration can be enabled at the same time on the FCIP interface.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples	The following example enables FICON tape acceleration on the FCIP interface.
-----------------	--

```
switch# config terminal
switch(config)# interface fcip 2
switch(config-if)# ficon-tape-accelerator vsan 100
This configuration change will disrupt all traffic on the FCIP interface in all
VSANs. Do you wish to continue? [no] y
```

The following example disables FICON tape acceleration on the FCIP interface.

```
switch(config-if)# no ficon-tape-accelerator vsan 100
This configuration change will disrupt all traffic on the FCIP interface in all
VSANs. Do you wish to continue? [no] y
```

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Related Commands	Command	Description
	write-accelerator	Enables write acceleration and tape acceleration for the FCIP interface.
	show fcip	Displays FCIP profile information.

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ficon vsan (EXEC mode)

To configure FICON related parameters in EXEC mode, use the **ficon vsan** command. To remove the configuration or revert to the default values, use the **no** form of the command.

ficon vsan *vsan-id* | **apply file** *file-name* | **copy file** *old-file-name new-file-name* | **offline** | **online** }

Syntax Description

<i>vsan-id</i>	Enters the FICON configuration mode for the specified VSAN (from 1 to 4096).
apply file <i>file-name</i>	Specifies the existing FICON configuration file name after switch initialization. Maximum length is 80 characters.
copy file	Makes a copy of the specified FICON configuration file.
<i>old-file-name</i>	Specifies the old (existing) FICON configuration file name
<i>new-file-name</i>	Specifies the new name for the copied file.
offline	Logs out all ports in the VSAN that needs to be suspended.
online	Removes the offline condition and to allow ports to log on again.

Defaults

None.

Command Modes

EXEC mode.

Command History

Release	Modification
1.3(1)	This command was introduced.

Usage Guidelines

When an MDS switch is booting up with saved configuration, if FICON is enabled on a VSAN, the IPL configuration file is applied automatically by the SAN-OS software after the switch initialization is completed.

Use the **ficon vsan** *vsan-id* **copy file** *existing-file-name save-as-file-name* command to copy an existing FICON configuration file. You can see the list of existing configuration files by issuing the **show ficon vsan** *vsan-id* command.



Note

This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.

Examples

The following example applies the configuration from the saved files to the running configuration.

```
switch# ficon vsan 2 apply file SampleFile
```

The following example copies an existing FICON configuration file called IPL and renames it to IPL3.

```
switch# ficon vsan 20 copy file IPL IPL3
```


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Related Commands	Command	Description
	show ficon	Displays configured FICON details.


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ficon vsan (configuration mode)

To enable the FICON feature in a specified VSAN, use the **ficon vsan** command in configuration mode. To disable the feature or to revert to factory defaults, use the **no** form of the command.

ficon vsan *vsan-id*

no ficon vsan *vsan-id*

Syntax Description	vsan <i>vsan-id</i> Enters the FICON configuration mode for the specified VSAN (from 1 to 4096).				
Defaults	None.				
Command Modes	Configuration mode.				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>1.3(1)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	1.3(1)	This command was introduced.
Release	Modification				
1.3(1)	This command was introduced.				
Usage Guidelines	<p>An IPL configuration file is automatically created</p> <p>Once you enable FICON, you cannot disable in-order delivery, fabric binding, or static domain ID configurations.</p> <p>When you disable FICON, the FICON configuration file is also deleted.</p>				
 Note	This command is not supported on the Cisco MDS 9124 switch, the Cisco Fabric Switch for HP c-Class BladeSystem, and the Cisco Fabric Switch for IBM BladeCenter.				
Examples	<p>The following example enables FICON on VSAN 2.</p> <pre>switch(config)# ficon vsan 2</pre> <p>The following example disables FICON on VSAN 6.</p> <pre>switch(config)# no ficon vsan 6</pre>				
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>show ficon</td> <td>Displays configured FICON details.</td> </tr> </tbody> </table>	Command	Description	show ficon	Displays configured FICON details.
Command	Description				
show ficon	Displays configured FICON details.				

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file

To access FICON configuration files in a specified VSAN, use the **file** command. To disable the feature or to revert to factory defaults, use the **no file** form of the command.

file *file-name*

no file *file-name*

Syntax Description	file <i>file-name</i> Creates or accesses the FICON configuration file in the specified VSAN
---------------------------	---

Defaults	None.
-----------------	-------

Command Modes	FICON configuration submode.
----------------------	------------------------------

Command History	Release	Modification
	1.3(1)	This command was introduced.

Usage Guidelines	The configuration file submode allows you to create and edit FICON configuration files. If a specified file does not exist, it is created. Up to 16 files can be saved. Each file name is restricted to 8 alphanumeric characters.
-------------------------	--

Examples	The following example accesses the FICON configuration file called IplFile1 for VSAN 2. If this file does not exist, it is created.
-----------------	---

```
switch# config terminal
switch(config)# ficon vsan 2
switch(config-ficon)# file IplFile1
switch(config-ficon-file)#
```

The following example deletes a previously-created FICON configuration file.

```
switch(config-ficon)# no file IplFileA
```

Related Commands	Command	Description
	ficon vsan	Enable FICON for a VSAN.
	show ficon	Displays configured FICON details.

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find

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

find *filename*

Syntax Description	filename	Specifies a search string to match to the files in the default directory. Maximum length is 64 characters.
--------------------	----------	--

Defaults	None.
----------	-------

Command Modes	EXEC mode.
---------------	------------

Command History	Release	Modification
	1.0(2)	This command was introduced.

Usage Guidelines	Use the find (Flash file system) command to display more detail about the files in a particular file system.
------------------	---

Examples	The following example is sample output of all files that begin with the letter <i>a</i> :
	<pre>switch# find a ./accountingd ./acl ./ascii_cfg_server ./arping</pre>

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

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flex-attach virtual-pwwn

To map the real port WWN (pWWN) and a user-specific virtual pWWN, use the **flex-attach virtual-pwwn** command. To disable the mapping, use the **no** form of the command.

```
flex-attach virtual-pwwn vpwwn pwwn pwwn
```

```
no flex-attach virtual-pwwn vpwwn pwwn pwwn
```

Syntax Description		
	<i>vpwwn</i>	Specifies the virtual pWWN chosen by the user.
	pwwn <i>pwwn</i>	Specifies the pWWN to be mapped to the user-specific virtual pWWN.
	Note	pWWN must not be logged in.

Defaults None.

Command Modes Configuration mode

Command History	Release	Modification
	3.3(1a)	This command was introduced.

Usage Guidelines None.

Examples The following example shows how to map the real pWWN and a user-specific virtual pWWN on an interface.

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch# (config) flex-attach virtual-pwwn 20:04:00:a0:b8:16:92:18 pwwn
21:03:00:a0:b9:16:92:16
```

Related Commands	Command	Description
	flex-attach virtual-pwwn auto	Enables the FlexAttach virtual pWWN on a specific interface.
	flex-attach virtual-pwwn interface	Sets the user-specific FlexAttach virtual pWWN.

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flex-attach virtual-pwwn auto

To enable the FlexAttach virtual port WWN (pWWN) on a specific interface, use the **flex-attach virtual-pwwn auto** command. To disable the virtual pWWN, use the **no** form of the command.

flex-attach virtual-pwwn auto [**interface auto** *interface-list*]

no flex-attach virtual-pwwn auto [**interface auto** *interface-list*]

Syntax Description	<p>interface auto <i>interface-list</i></p> <p>Specifies the interface list on which FlexAttach virtual pWWN should be enabled.</p> <p>Note All interfaces in the <i>interface-list</i> value must be in the shut mode. If the <i>interface-list</i> value is not provided, then all ports must be in the shut mode.</p>				
Defaults	None.				
Command Modes	Configuration mode				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>3.3(1a)</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	3.3(1a)	This command was introduced.
Release	Modification				
3.3(1a)	This command was introduced.				
Usage Guidelines	The NPV switch assigns the virtual pWWNs to the interface on which FlexAttach is enabled.				
Examples	<p>The following example shows how to enable FlexAttach virtual pWWN on a interface.</p> <pre>switch# config Enter configuration commands, one per line. End with CNTL/Z. switch#(config)# flex-attach virtual-pwwn auto interface fc 1/1</pre>				
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>flex-attach virtual-pwwn interface</td> <td>Sets the user-specific FlexAttach virtual pWWN.</td> </tr> </tbody> </table>	Command	Description	flex-attach virtual-pwwn interface	Sets the user-specific FlexAttach virtual pWWN.
Command	Description				
flex-attach virtual-pwwn interface	Sets the user-specific FlexAttach virtual pWWN.				

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flex-attach virtual-pwwn interface

To set the user-specific FlexAttach virtual port WWN (pWWN) on an interface, use the **flex-attach virtual-pwwn interface** command. To disable the virtual pWWN, use the **no** form of the command.

flex-attach virtual-pwwn *vpwwn* **interface** *interface* [*vsan vsan*]

no flex-attach virtual-pwwn *vpwwn* **interface** *interface* [*vsan vsan*]

Syntax Description

<i>vpwwn</i>	Specifies the virtual pWWN chosen by the user.
<i>interface</i>	Specifies the interface on which the FlexAttach virtual port has to be enabled. Note The interface must be in the shut state.
vsan <i>vsan</i>	Specifies the VSAN on which FlexAttach should be enabled.

Defaults

None.

Command Modes

Configuration mode

Command History

Release	Modification
3.3(1a)	This command was introduced.

Usage Guidelines

None.

Examples

The following example shows how to set the user-specific virtual pWWN on an interface.

```
switch# config
Enter configuration commands, one per line. End with CNTL/Z.
switch# (config) flex-attach virtual-pwwn 20:04:00:a0:b8:16:92:18 interface fc 1/1
```

Related Commands

Command	Description
flex-attach virtual-pwwn auto	Enables the FlexAttach virtual pWWN on a specific interface.

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format

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

```
format { bootflash: | logflash: | slot0: | usb1: | usb2: }
```

Syntax Description		
	bootflash:	Specifies bootflash: memory.
	logflash:	Specifies logflash: memory.
	slot0:	Specifies the flash device in slot 0.
	usb1:	Specifies the USB memory in host1.
	usb2:	Specifies the USB memory in host 2.

Defaults	
	None.

Command Modes	
	EXEC mode.

Command History	Release	Modification
	1.0(2)	This command was introduced.
	3.3(1a)	Added the USB1 and USB 2 parameters.

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

Examples	
	The following example erases all information on the bootflash memory.

```
switch# format bootflash:
This command is going to erase the contents of your bootflash:.
Do you want to continue? (y/n) [n]
```

The following example erases all information on the logflash memory.

```
switch# format logflash:
This command is going to erase the contents of your logflash:.
Do you want to continue? (y/n) [n]
```

The following example erases all information on slot0.

```
switch# format slot0:
This command is going to erase the contents of your slot0:.
Do you want to continue? (y/n) [n]
```

The following example erases all information on usb1:

```
switch# format usb1:
This command is going to erase the contents of your usb1:.
Do you want to continue? (y/n) [n]
```


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The following example erases all information on usb2:.

```
switch# format usb2:  
This command is going to erase the contents of your usb2:.  
Do you want to continue? (y/n) [n]
```

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fspf config vsan

To configure an FSPF feature for the entire VSAN, use the **fspf config vsan** command in configuration mode. To delete FSPF configuration for the entire VSAN, use the **no** form of the command.

```
fspf config vsan vsan-id
  min-ls-arrival ls-arrival-time
  min-ls-interval ls-interval-time
  region region-id
  spf { hold-time spf-holdtime | static }
```

```
fspf config vsan vsan-id
  no min-ls-arrival
  no min-ls-interval
  no region
  no spf { hold-time | static }
```

```
no fspf config vsan vsan-id
```

Syntax Description		
<i>vsan-id</i>		Specifies a VSAN ID. The range is 1 to 4093.
<i>min-ls-arrival</i> <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 specifying time in milliseconds. The range is 0 to 65535.
<i>min-ls-interval</i> <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 specifying time in milliseconds. The range is 0 to 65535.
<i>region</i> <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.
<i>spf</i>		Specifies parameters related to SPF route computation.
<i>hold-time</i> <i>spf-holdtime</i>		Specifies the time between two consecutive SPF computations. If the time is small then routing will react faster to changes but CPU usage will be more. The parameter <i>spf-holdtime</i> is an integer specifying time in milliseconds. The range is 0 to 65535.
<i>static</i>		Forces static SPF computation.

Defaults

In the FSPF configuration mode, the default is dynamic.

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

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

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

Command Modes

Configuration mode.

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Command History	Release	Modification
	1.0(2)	This command was introduced.

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 terminal
switch(config)##
switch(config)# fspf config vsan 1
switch-config-(fspf-config)# spf static
switch-config-(fspf-config)# exit
switch(config)#
switch(config)# no fspf config vsan 3
switch(config)#
```

Related Commands	Command	Description
	show fspf interface	Displays information for each selected interface.
	fspf enable	Enables FSPF routing protocol in the specified VSAN (from the <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).

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fspf cost

To configure FSPF link cost for an FCIP interface, use the **fspf cost** command. To revert to the default value, use the **no** form of the command.

fspf cost *link-cost vsan vsan-id*

no fspf cost *link-cost vsan vsan-id*

Syntax Description	link-cost	Enters FSPF link cost in seconds. The range is 1 to 65535.
	vsan vsan-id	Specifies a VSAN ID. The range is 1 to 4093.

Defaults	1000 seconds for 1 Gbps. 500 seconds for 2 Gbps.
----------	---

Command Modes	Interface configuration submode.
---------------	----------------------------------

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines	Access this command from the <code>switch(config-if)#</code> submode. FSPF tracks the state of links on all switches in the fabric, associates a cost with each link in its database, and then chooses the path with a minimal cost. The cost associated with an interface can be changed using the fspf cost command to implement the FSPF route selection.
------------------	--

Examples	The following example configures the FSPF link cost on an FCIP interface.
----------	---

```
switch# config terminal
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.

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fspf dead-interval

To set the maximum interval for which a hello message must be received before the neighbor is considered lost, use the **fspf dead-interval** command. To revert to the default value, use the **no** form of the command.

fspf dead-interval *seconds vsan vsan-id*

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

Syntax Description		
<i>seconds</i>		Specifies the FSPF dead interval in seconds. The range is 2 to 65535.
vsan <i>vsan-id</i>		Specifies a VSAN ID. The range is 1 to 4093.

Defaults	
	80 seconds.

Command Modes	
	Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines	
	Access this command from the <code>switch(config-if)#</code> submode.



Note

This value must be the same in the ports at both ends of the ISL.



Caution

An error is reported at the command prompt if the configured dead time interval is less than the hello time interval.

Examples	
	The following example configures the maximum interval of 400 seconds for a hello message before the neighbor is considered lost.

```
switch# config terminal
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.

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fspf enable vsan

To enable FSPF for a VSAN, use the **fspf enable** command in configuration mode. To disable FSPF routing protocols, use the **no** form of the command.

fspf enable vsan *vsan-id*

no fspf enable vsan *vsan-id*

Syntax Description	vsan <i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.
Defaults	Enabled.	
Command Modes	Configuration mode.	
Command History	Release	Modification
	1.0(2)	This command was introduced.
Usage Guidelines	This command configures FSPF on VSANs globally.	
Examples	<p>The following example enables FSPF in VSAN 5 and disables FSPF in VSAN 7.</p> <pre>switch## config terminal switch(config)# fspf enable vsan 5 switch(config)# no fspf enable vsan 7</pre>	
Related Commands	Command	Description
	fspf config vsan	Configures FSPF features for a VSAN.
	show fspf interface	Displays information for each selected interface.

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fspf hello-interval

To verify the health of the link, use the **fspf hello-interval** command. To revert to the default value, use the **no** form of the command.

fspf hello-interval *seconds vsan vsan-id*

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

Syntax Description	hello-interval <i>seconds</i>	Specifies the FSPF hello-interval in seconds. The range is 2 to 65535.
	vsan <i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.

Defaults 20 seconds.

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

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



Note This value must be the same in the ports at both ends of the ISL.

Examples The following example configures a hello interval of 3 seconds on VSAN 1.

```
switch# config terminal
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.

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fspf passive

To disable the FSPF protocol for selected interfaces, use the **fspf passive** command. To revert to the default state, use the **no** form of the command.

fspf passive vsan *vsan-id*

no fspf passive vsan *vsan-id*

Syntax Description	vsan <i>vsan-id</i>	Specifies a VSAN ID. The range is 1 to 4093.
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Defaults	FSPF is enabled.
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Command Modes	Interface configuration submode.
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Command History	Release	Modification
	1.1(1)	This command was introduced.

Usage Guidelines	Access this command from the <code>switch(config-if)#</code> submode. By default, FSPF is enabled on all E ports and TE ports. FSPF can be disabled by setting the interface as passive using the fspf passive command.
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Note

FSPF must be enabled on the ports at both ends of the ISL for the protocol to operate correctly.

Examples	The following example disables the FSPF protocol for the selected interface on VSAN 1.
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```
switch# config terminal
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.	

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fspf retransmit-interval

To specify the time after which an unacknowledged link state update should be transmitted on the interface, use the **fspf retransmit-interval** command. To revert to the default value, use the **no** form of the command.

fspf retransmit-interval *seconds vsan vsan-id*

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

Syntax Description		
<i>seconds</i>		Specifies FSPF retransmit interval in seconds. The range is 1 to 65535.
vsan <i>vsan-id</i>		Specifies a VSAN ID. The range is 1 to 4093.

Defaults 5 seconds.

Command Modes Interface configuration submode.

Command History	Release	Modification
	1.1(1)	This command was introduced.

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



Note

This value must be the same in the ports at both ends of the ISL.

Examples The following example specifies a retransmit interval of 6 seconds after which an unacknowledged link state update should be transmitted on the interface for VSAN 1.

```
switch# config terminal
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.

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