T Commands

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

tail

To display the last lines (tail end) of a specified file, use the **tail** command in EXEC mode.

tail *filename* **[***number-of-lines***]**

Syntax Description

filename	The name of the file for which you want to view the last lines.
number-of-lines	(Optional) The number of lines you want to view. If you do not specify the number of lines, the last 10 lines are displayed.

Defaults

None.

Command Modes

EXEC mode.

Command History

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

Usage Guidelines

You need two separate CLI terminals to use this command. In one terminal, execute the run-script or any other desired command. In the other, issue the **tail** command for the mylog file. In the second terminal, you will see the last lines of the mylog file (as it grows) that is being saved in response to the command issued in the first terminal.

If you specify a long file and would like to exit in the middle, enter **Ctrl-c** to exit this command.

Examples

The following example displays the last lines (tail end) of a specified file.

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

In another terminal, issue the **tail** command for the mylog file.

```
switch# tail mylog
config t
```

In the second CLI terminal, you see the last lines of the mylog file (as it grows) that is being saved in response to the command issued in the first terminal.

tcp-connection

To configure the number of TCP connections for the FCIP interface, use the **tcp-connection** option. To revert to the default of two attempts, use the **no** form of the option.

tcp-connection *number*

no tcp-connection *number*

Syntax Description

tcp-connection	Configures the number of TCP connection attempts.
number	Enters the number of attempts (1 or 2).

Defaults

None.

Command Modes

Configuration mode

Command History

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

Usage Guidelines

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

Use the **tcp-connection** option to specify the number of TCP connections from a FCIP link. By default, the switch tries two (2) TCP connections for each FCIP link.

Examples

```
switch# config t
switch(config)# interface fcip 50
switch(config-if)# tcp-connection 1
switch(config-if)# no tcp-connection 1
```

Related Commands

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

tcp cwm

To configure congestion window monitoring (cwm) TCP parameters in a Cisco MDS 9000 Family switch, use the **tcp cwm** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp cwm (burstsize *burstsize***)**

no tcp cwm (burstsize *burstsize***)**

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
cwm	Enables congestion monitoring.
burstsize	Configures TCP burstsize.
burstsize	Specifies the burstsize ranging from 10 to 100 KB.

Defaults

None.

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

Use these TCP parameters to control TCP retransmission behavior in a switch.

Examples

The following example configures a FCIP profile and enables congestion monitoring.

```
switch## config t
switch(config)# fcip profile 5
switch(config-profile)# tcp cwm
```

The following example assigns the burstsize value at 20 KB:

```
switch(config-profile)# tcp cwm burstsize 20
```

The following example disables congestion monitoring.

```
switch(config-profile)# no tcp cwm
```

The following example leaves the CWM feature in an enabled state but changes the burstsize to the default of 10 KB.

```
switch(config-profile)# no tcp cwm burstsize 25
```

tcp keepalive-timeout

To configure the interval between which the TCP connection verifies if the FCIP link is functioning, use the **tcp keepalive-timeout** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp keepalive-timeout *seconds*

no tcp keepalive-timeout *seconds*

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
keepalive-timeout	Specifies the keepalive timeout interval for the TCP connection.
seconds	Specifies the time in seconds.

Defaults

None.

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

The default is 60 seconds. The range is from 1 to 7200 seconds.

This command can be used to detect FCIP link failures.

Examples

The following example configures a FCIP profile:

```
switch## config t
switch(config)# fcip profile 5
```

The following example specifies the keepalive timeout interval for the TCP connection:

```
switch(config-profile)# tcp keepalive-timeout 120
```

tcp maximum-bandwidth

To manage the window size, use the **tcp maximum-bandwidth** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp max-bandwidth-mbps *bandwidth* **min-available-bandwidth-mbps** *threshold* **round-trip-time-ms** *milliseconds* **round-trip-time-us** *microeconds*

no tcp max-bandwidth-mbps *bandwidth* **min-available-bandwidth-mbps** *threshold* **round-trip-time-ms** *seconds* **round-trip-time-us** *microeconds*

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
max-bandwidth-mbps	Configures the maximum available end-to-end bandwidth in the path.
bandwidth	Specifies the Mbps bandwidth.
min-available-bandwidth-mbps	Configures the minimum slow start threshold.
threshold	Specifies the Mbps threshold.
round-trip-time-ms *milliseconds*	Configures the estimated round trip time across the IP network to reach the FCIP peer end point. in milliseconds
round-trip-time-us *microeconds*	Configures the estimated round trip time across the IP network to reach the FCIP peer end point. in microseconds

Defaults

Enabled.

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

The **maximum-bandwidth** option and the **round-trip-time** option together determine the window size.

The **minimum-available-bandwidth** option and the **round-trip-time** option together determine the threshold below which TCP aggressively increases its size. After it reaches the threshold the software uses standard TCP rules to reach the maximum available bandwidth. The defaults are max-bandwidth = 1G, min-available-bandwidth = 2 Mbps, and round-trip-time is 10ms

Examples

The following example configures a FCIP profile:

```
switch## config t
switch(config)# fcip profile 5
```

The following example configures the maximum available bandwidth at 900 Mbps, the minimum slow start threshold as 300 Mbps, and the round trip time as 10 milliseconds:

```
switch(config-profile)# tcp max-bandwidth-mbps 900 min-available-bandwidth-mbps 300
round-trip-time-ms 10
```

The following example reverts to the factory defaults. The defaults are max-bandwidth = 1G, min-available-bandwidth = 2 Mbps and round-trip-time is 10ms:

```
switch(config-profile)# no tcp max-bandwidth-mbps 900 min-available-bandwidth-mbps 300
round-trip-time-ms 10
```

The following example configures the maximum available bandwidth at 2000 Kbps, the minimum slow start threshold as 2000 Kbps, and the round trip time as 200 microseconds:

```
switch(config-profile)# tcp max-bandwidth-kbps 2000 min-available-bandwidth-kbps 2000
round-trip-time-us 200
```

tcp max-retransmissions

To specify the maximum number of times a packet is retransmitted before TCP decides to close the connection, use the **tcp max-retransmissions** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp max-retransmissions *number*

no tcp max-retransmissions *number*

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
max-retransmissions	Configures the maximum number of retransmissions
number	Specifies the maximum number.

Defaults

Enabled

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

The default is 4 and the range is from 1 to 8 retransmissions.

Examples

The following example configures a FCIP profile:

```
switch## config t
switch(config)# fcip profile 5
```

The following example specifies the maximum number of retransmissions :

```
switch(config-profile)# tcp max-retransmissions 6
```

tcp minimum-retransmit time

To control the minimum amount of time TCP waits before retransmitting, use the **tcp minimum-retransmit-time** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp minimum-retransmit-time *milliseconds*

no tcp minimum-retransmit-time *milliseconds*

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
minimum-retransmit-time	Controls the retransmit time for the TCP connection.
milliseconds	Specifies the time in milliseconds.

Defaults

None.

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

The default is 300 milliseconds and the range is from 250 to 5000 milliseconds.

Examples

The following example configures a FCIP profile:

```
switch## config t
switch(config)# fcip profile 5
```

The following example specifies the minimum TCP retransmit time for the TCP connection:

```
switch(config-profile)# tcp min-retransmit-time 500
```

tcp pmtu-enable

To configure path MTU (PMTU) discovery, use the **tcp pmtu-enable** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp pmtu-enable [reset-timeout *seconds* **]**

no tcp pmtu-enable [reset-timeout *seconds* **]**

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
pmtu-enable	Configures PMTU discovery with the default value of 3600 seconds.
reset-timeout	Specifies the PMTU reset timeout.
seconds	Specifies the reset timeout seconds.

Defaults

Enabled

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

The default is 3600 seconds and the range is from 60 to 3600 seconds.

Examples

The following example configures a FCIP profile:

```
switch## config t
switch(config)# fcip profile 5
```

The following example disables PMTU discovery:

```
switch(config-profile)# no tcp pmtu-enable
```

The following example enables PMTU discovery with a default of 3600 seconds:

```
switch(config-profile)# tcp pmtu-enable
```

The following example specifies the PMTU reset timeout to 90 seconds:

```
switch(config-profile)# tcp pmtu-enable reset-timeout 90
```

The following example leaves the PMTU in an enabled state but changes the timeout to the default of 3600 seconds:

```
switch(config-profile)# no tcp pmtu-enable reset-timeout 600
```

tcp qos control

To specify the differentiated services code point (DSCP) value to mark all IP packets (type of service—TOS field in the IP header), use the **tcp qos control** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp qos control *value* **data** *value*

no tcp qos control *value* **data** *value*

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
qos control *value*	Applies the control DSCP value to all FCIP frames in the control TCP connection.
data *value*	Applies the data DSCP value applies to all FCIP frames in the data connection.

Defaults

Enabled

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

Use these TCP parameters to control TCP retransmission behavior in a switch.

Examples

The following example configures a FCIP profile:

```
switch## config t
switch(config)# fcip profile 5
```

The following example configures the control TCP connection and data connection to mark all packets on that DSCP value:

```
switch(config-profile)# tcp qos control 3 data 5
```

tcp sack-enable

To configure selective acknowledgment (SACK) to overcome the limitations of multiple lost packets during a TCP transmission, use the **tcp** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp sack-enable *burstsize*

no tcp sack-enable *burstsize*

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
sack-enable	Configures the SACK mechanism.

Defaults

Enabled

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

The receiving TCP sends back SACK advertisements to the sender. The sender can then retransmit only the missing data segments.

Examples

The following example configures a FCIP profile:

```
switch## config t
switch(config)# fcip profile 5
```

The following example enables the SACJ mechanism on the switch:

```
switch(config-profile)# tcp sack-enable
```

tcp send-buffer-size

To define the required additional buffering—beyond the normal send window size —that TCP allows before flow controlling the switch's egress path for the FCIP interface, use the **tcp send-buffer-size** command. Use the **no** form of this command to disable this feature or revert to its factory defaults.

tcp send-buffer-size *buffer-size*

no tcp send-buffer-size *buffer-size*

Syntax Description

tcp	Configures TCP parameters for the FCIP profile.
send-buffer-size	Defines required additional buffering allowed by TCP.
buffer-size	Specifies the buffer size in KB.

Defaults

Enabled

Command Modes

Configuration mode—fcip profile submode

Command History

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

Usage Guidelines

The default buffer size is 0 and the valid range is from 0 to 8192 KB.

Examples

The following example configures a FCIP profile:

```
switch## config t
switch(config)# fcip profile 5
```

The following example configure the advertised buffer size to 5000 KB :

```
switch(config-profile)# tcp send-buffer-size 5000
```

telnet

To log in to a host that supports Telnet, use the **telnet** command in EXEC mode.

telnet [hostname | ip-address]

Syntax Description

hostname	(Optional) Host name. Maximum length is 64 characters.
ip-address	(Optional) IP address Maximum length is 64 characters.

Defaults

None.

Command Modes

EXEC mode.

Command History

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

Usage Guidelines

None.

Examples

The following example establishes a Telnet session to the specified IP address.

```
switch# telnet 172.22.91.153
Trying 172.22.91.153...
Connected to 172.22.91.153.
Login:xxxxxxxx
Password:xxxxxxxxx
switch#
```

telnet server enable

To enable the Telnet server if you wish to return to a Telnet connection from a secure SSH connection, use the **telnet server enable** command. To disable the Telnet server, use the **no** form of this command

telnet server enable

no telnet server enable

Syntax Description

This command has no arguments or keywords.

Defaults

Enabled.

Command Modes

Configuration mode.

Command History

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

Usage Guidelines

None.

Examples

The following example enables the Telnet server.

```
switch(config)# telnet server enable
updated

switch(config)# no telnet server enable
updated
```

Related Commands

Command	Description
telnet	Logs in to a host that supports Telnet.

terminal

To configure terminal attributes, use the **terminal** command in EXEC mode. To stop the display of syslog output, use the **no** form of the command.

terminal [length *number-of-lines* **| monitor | terminal-type | unlock | width** *integer*]

Syntax Description

length	(Optional) Sets the number of lines on the screen.
number-of-lines	(Optional) Specifies the number of lines on the screen from 0 to 512. Enter 0 to scroll continuously.
monitor	(Optional) Displays syslog output for the current terminal and session.
terminal-type	(Optional) Sets the terminal type.
width	(Optional) Sets the width of the display terminal, from 0 to 80.
integer	Sets the width of the display terminal, from 0 to 80.

Defaults

The default number of lines for the length is 24. The default width is 80 lines.

Command Modes

EXEC

Command History

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

Usage Guidelines

Remember that all terminal parameter-setting commands are set locally and do not remain in effect after a session is ended. You must perform this task at the EXEC prompt at each session to see the debugging messages.

If the length is not 24 and the width is not 80, then you need to set a length and width.

Examples

The following example displays debug command output and error messages during the current terminal session.

```
switch# terminal monitor
Aug  8 10:32:42 sup48 % LOG_PLATFORM-5-PLATFORM_MOD_CFG_PWRDN: Module 1 powered down
Aug  8 10:32:42 sup48 % LOG_PLATFORM-5-PLATFORM_MOD_PWRDN: Module 1 powered down
Aug  8 10:32:42 sup48 % LOG_PLATFORM-5-PLATFORM_MOD_INSERT: Module 1 has been inserted
Aug  8 10:33:12 sup48 % LOG_PLATFORM-5-PLATFORM_MOD_PWRON: Module 1 powered up
Aug  8 10:33:13 sup48 % LOG_MODULE-5-MOD_REG_OK: LCM - Registration succeeded for module 1
Aug  8 10:38:15 sup48 % LOG_PLATFORM-5-PLATFORM_MOD_CFG_PWRDN: Module 1 powered down
Aug  8 10:38:15 sup48 % LOG_PLATFORM-5-PLATFORM_MOD_INSERT: Module 1 has been inserted
Aug  8 10:38:45 sup48 % LOG_MODULE-5-MOD_REG_OK: LCM - Registration succeeded for module 1
Aug  8 10:43:10 sup48 % LOG_PLATFORM-5-PLATFORM_MOD_CFG_PWRDN: Module 1 powered down
Aug  8 10:43:10 sup48 % LOG_PLATFORM-5-PLATFORM_MOD_PWRDN: Module 1 powered down
......
```

The following example stops the current terminal monitoring session.

```
switch# terminal no monitor
```

time-stamp

To enable FCIP time stamps on a frame, use the **time-stamp** option. To disable this option for the selected interface, use the **no** form of the option.

time-stamp | acceptable-diff *number*

no time-stamp | acceptable-diff *number*

Syntax Description

time-stamp	Configures time-stamp.
acceptable-diff	Configures the acceptable time difference for time-stamps.
number	Enters the acceptable time from 1 to 60000.

Defaults

Disabled.

Command Modes

Configuration mode

Command History

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

Usage Guidelines

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

The **time-stamp** option instructs the switch to discard frames that are older than a specified time.

Examples

```
switch# config t
switch(config)# interface fcip 50
switch(config-if)# time-stamp
switch(config-if)# time-stamp acceptable-diff 4000
```

Related Commands

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

traceroute

To print the route an IP packet takes to a network host, use the **traceroute** command in EXEC mode.

traceroute {*hostname* **|** *ip-address***}**

Syntax Description

host name	The host name.
ip-address	The IP address.

Defaults

None.

Command Modes

EXEC mode.

Command History

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

Usage Guidelines

This command traces the route an IP packet follows to an internet host by launching UDP probe packets with a small TTL (time to live) then listening for an ICMP (Internet Control Message Protocol) “time exceeded” reply from a gateway.

Note Probes start with a TTL of one and increase by one until encountering an ICMP “port unreachable.” This means that the host was accessed or a maximum flag was hit. A line is printed showing the TTL, address of the gateway and round trip time of each probe. If the probe answers come from different gateways, the address of each responding system is printed.

Examples

The following example prints the route IP packets take to the network host www.cisco.com.

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

trunk protocol enable

To configure the trunk protocol, use the **trunk protocol enable** command in configuration mode. To disable the trunk protocol, use the **no** form of the command.

trunk protocol enable

no trunk protocol enable

Syntax Description

This command has no other arguments or keywords.

Command Modes

Configuration mode

Command History

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

Usage Guidelines

If the trunking protocol is disabled on a switch, no port on that switch can apply new trunk configurations. Existing trunk configurations are not affected—the TE port continues to function in trunking mode, but only supports traffic in VSANs that it negotiated previously (when the trunking protocol was enabled). Also, other switches that are directly connected to this switch are similarly affected on the connected interfaces. In some cases, you may need to merge traffic from different port VSANs across a non-trunking ISL. If so, you need to disable the trunking protocol.

Examples

The following example shows how to enable and disable the trunk protocol feature.

```
switch# config t
switch(config)# trunk protocol enable
switch(config)# no trunk protocol enable
```