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CHAPTER

1

## CLI Overview

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This chapter prepares you to configure switches from the CLI (command-line interface). It also lists the information you need to have before you begin, and it describes the CLI command modes.

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## About the Cisco MDS 9000 Family Switch Prompt

When the switch boots for the first time, you see the following output if you are connected to the console port:



### Note

Refer to the *Cisco MDS 9200 Series Hardware Installation Guide* or the *Cisco MDS 9500 Series Hardware Installation Guide* for installation and connection instructions.

```
Auto booting bootflash:/boot-279 bootflash:/isan-279;...
Booting kickstart image:bootflash:/boot-279...
.....Image verification OK

Starting kernel...
INIT:version 2.78 booting
Checking all filesystems..... done.
Loading system software
Uncompressing system image:bootflash:/isan-279
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
INIT:Entering runlevel:3

<<<<<<SAN OS bootup log messages>>>>>>

      ---- Basic System Configuration Dialog ----

This setup utility will guide you through the basic configuration of
the system. Use ctrl-c to abort configuration dialog at any prompt.

Basic management setup configures only enough connectivity for
management of the system.

Would you like to enter the basic configuration dialog (yes/no):yes

<<<<<<after configuration>>>>>>

MDS Switch
switch login:
```

When the switch boots each subsequent time, you see the following output if you are connected to the console port:

```
Auto booting bootflash:/boot-279 bootflash:/isan-279;...
Booting kickstart image:bootflash:/boot-279...
.....Image verification OK

Starting kernel...
INIT:version 2.78 booting
Checking all filesystems..... done.
Loading system software
Uncompressing system image:bootflash:/isan-279
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
INIT:Entering runlevel:3

MDS Switch
switch login:
```

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Once the switch is powered on successfully, you see the default switch prompt (`switch#`). You can perform embedded CLI operations, access command history, and access command parsing functions at this prompt. The switch gathers the command string upon detecting an **Enter** (CR). It accepts commands from a terminal, from a file (input redirection), or from the piped output from another program.

## About the CLI Command Modes

Switches in the Cisco MDS 9000 Family have two main command modes—user EXEC mode and configuration mode. The commands available to you depend on the mode you are in. To obtain a list of available commands in either mode, type a question mark (?) at the system prompt.

[Table 1-1](#) lists and describes the two commonly used modes, how to enter the modes, and the resulting system prompts. The system prompt helps you identify which mode you are in and hence, which commands are available to you.

**Table 1-1** Frequently Used Switch Command Modes

Mode	Description of Use	How to Access	Prompt
EXEC	Enables you to temporarily change terminal settings, perform basic tests, and display system information.  <b>Note</b> Changes made in this mode are generally not saved across system resets.	At the switch prompt, enter the required EXEC mode command.	switch#
Configuration mode	Enables you to configure features that affect the system as a whole.  <b>Note</b> Changes made in this mode are saved across system resets if you save your configuration. See the <a href="#">“Saving the Running Configuration”</a> section on page 1-18.	From EXEC mode, enter the <b>configure terminal</b> command.	switch(config)#

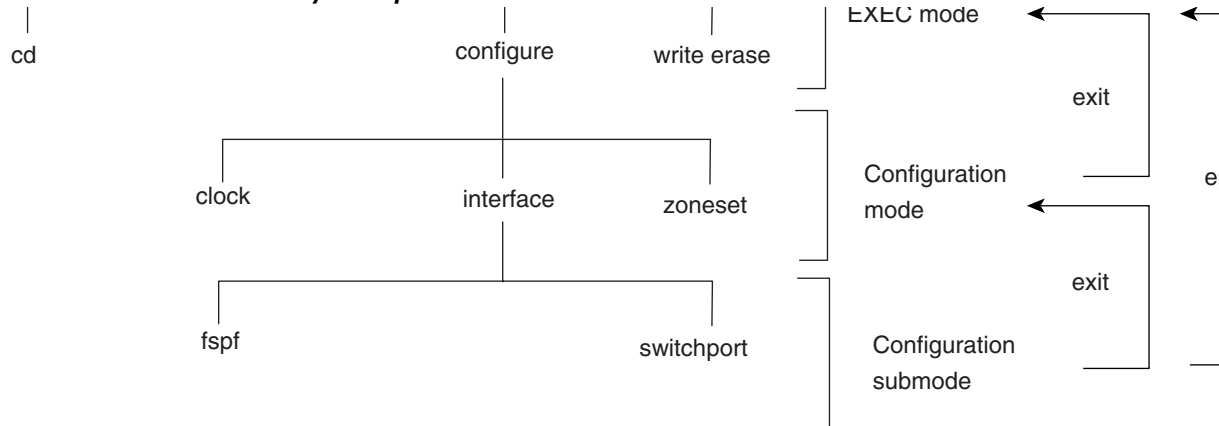
You can abbreviate commands and keywords by entering just enough characters to make the command unique from other commands. For example, you can abbreviate the **configure terminal** command to **conf t**.

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## Understanding CLI Command Hierarchy

The CLI commands are organized hierarchically, with commands that perform similar functions grouped under the same level. For example, all commands that display information about the system, configuration, or hardware are grouped under the **show** command, and all commands that allow you to configure the switch are grouped under the **config** command. Figure 1-1 illustrates a portion of the **config terminal** command hierarchy.

Figure 1-1 CLI Command Hierarchy Example



To execute a command, you enter the command by starting at the top level of the hierarchy. For example, to configure a Fibre Channel interface, use the **config terminal** command. Once you are in configuration mode, issue the **interface** command. When you are in the interface submenu, you can query the available commands there.

```

switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface fc1/1
switch(config-if)# ?
Interface configuration commands:
  channel-group  Add to/remove from a port-channel
  exit           Exit from this submenu
  fcdomain      Enter the interface submenu
  fspf          To configure FSPF related parameters
  no            Negate a command or set its defaults
  shutdown      Enable/disable an interface
  switchport    Configure switchport parameters
  
```

When in configuration mode, you can enter an EXEC mode command followed by a **Ctrl-z**. In response, the EXEC mode command is executed. After the command is executed, you continue to remain in EXEC mode. The following example executes the **copy running-config startup-config** command from configuration mode, if you press **Ctrl-z**, instead of **Enter**.

```

switch#
[#####] 100%
switch#
  
```

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## EXEC Mode Options

When you start a session on the switch, you begin in EXEC mode. Based on the role or group to which you belong, you have access to limited commands or to all commands. From the EXEC mode, you can enter configuration mode. Most of the EXEC commands are one-time commands, such as **show** commands, which display the current configuration status. Here is a list of EXEC mode commands:

```
switch# ?
Exec Commands:
  attach      Connect to a specific module
  callhome    Callhome commands
  cd          Change current directory
  clear       Reset functions
  clock       Manage the system clock
  config      Enter configuration mode
  copy        Copy from one file to another
  debug       Debugging functions
  delete      Remove files
  dir         Directory listing for files
  discapp     Discover NPORT parameters
  discover    Discover information
  exit        Exit from this submode
  fcping      Ping an N-Port
  fctrace     Trace the route for an N-Port.
  find        Find a file
  format      Format Disks: Slot 0, Slot1,or  Bootflash
  init        Initialize internal flash
  install     Upgrade for the system-image
  lc-upgrade  Upgrade LC image
  ltt         Enter LTT submode
  mkdir       Create new directory
  move        Move files
  mping       Run mping
  msniff      Run mts_sniffer
  no          Disable debugging functions
  ping        Send echo messages
  reload      Reboot the entire box
  rmdir       Remove existing directory
  run-script  Run shell scripts
  setup       Run the basic SETUP command facility
  show        Show running system information
  sleep       Sleep for the specified number of seconds
  sprom       Set SPROM contents should be done very carefully
  spromupdate Update all SPROM contents
  system      System management commands
  tail        Display the last part of a file
  telnet      Telnet to another system
  terminal    Set terminal line parameters
  test        Test command
  traceroute  Trace route to destination
  undebg      Disable Debugging functions (See also debug)
  write       Write current configuration
  zone        Zone Server Exec commands
```

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## Configuration Mode

Configuration mode allows you to make changes to the existing configuration. When you save the configuration, these commands are preserved across switch reboots. Once you are in configuration mode, you can enter interface configuration mode, zone configuration mode, and a variety of protocol-specific modes.

Configuration mode is the starting point for all configuration commands. When you are in configuration mode, the switch expects configuration commands from the user.

```
switch# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)#
```

## Configuration Mode Commands and Submodes

The following is a list of configuration mode commands:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# ?
Configure commands:
  aaa                Configure AAA
  arp                [no] remove an entry from the ARP cache
  boot              Configure boot variables
  bootmode          Set bootmode for all modules in the switch
  callhome          Enter the callhome configuration mode
  clock             Configure time-of-day clock
  end               Exit to Exec mode
  exit             Exit from the EXEC
  fcalias           Fcalias configuration commands
  fcanalyzer        FC Analyzer configuration
  fcc               Configure FC Congestion Control
  fcdomain          Enter the fcdomain configuration mode
  fcdroplateness    Configure switch or network latency
  fcinterop         Interop commands.
  fcns              Name server configuration
  fcroute           Configure FC routes
  fcs               Fabric Config Server Configurations
  fctimer           Configure Fibre Channel timers
  fspf              Fspf config command
  in-order-guarantee Set in-order delivery guarantee
  interface         Select an interface to configure
  ip                Configure IP features
  line              Configure a terminal line
  logging           Modify message logging facilities
  ltt               LTT Trace Tool
  no                Negate a command or set its defaults
  ntp               NTP Configuration
  poweroff          Poweroff a module in the switch
  qos               Configure priority of FC control frames
  radius-server     Configure RADIUS related parameters
  role              Configure roles
  snmp-server       Config commands for snmp
  snmpv3-password-sync Enable SNMPv3 password update
  span              Enter SPAN configuration mode
  ssh               Configure SSH parameters
  switchname        This system's network name
  system            System config command
  telnet            Enable telnet
  trunk             Switch wide trunk protocol configuration
```

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username	Configure User Information.
vsan	Enter the vsan configuration mode
wwn	Set secondary base MAC addr and range for additional WWNs
zone	Zone configuration commands
zoneset	Zoneset configuration commands

Configuration mode, also known as terminal configuration mode, has several submodes. Each of these submodes places you deeper in the prompt hierarchy. When you type **exit**, the switch backs out one level and returns you to the previous level. When you type **end**, the switch backs out to the user EXEC level. You can also type **Ctrl-Z** in configuration mode as an alternative to typing **end**.



**Note**

When in configuration mode, you can enter an EXEC mode command followed by a Ctrl-Z. In response, the EXEC mode command is executed. After the command is executed, you continue to remain in EXEC mode. The following example executes the **copy running-config startup-config** command from configuration mode, if you press **Ctrl-Z** instead of **Enter**.

```
switch (config)# copy run start
[#####] 100%
switch#
```

Table 1-2 displays the commonly used configuration submodes.

**Table 1-2 Submodes within the Configuration Mode**

Submode Name	From Configuration Mode Enter	Submode Prompt	Configured Information
Call Home	<b>callhome</b>	switch(config-callhome)#	Contact, destination, and e-mail
FCS registration	<b>fcs register</b>	switch(config-fcs-register)#	FCS attribute registration
	From FCS registration submode: <b>platform name vsan number</b>	switch(config-fcs-register-attrrib)#	Platform name and VSAN ID association
Fibre Channel alias	<b>fcalias name name vsannumber</b>	switch(config-fcalias)#	Alias member
FSPF	<b>fspf config vsannumber</b>	switch(config-(fspf-config))#	Static SPF computation, hold time, and autonomous region
Interface configuration	<b>interface type slotport</b>	switch(config-if)#	Channel groups, Fibre Channel domains, FSPF parameters, switchport trunk and beacon information, and IP address
	From the VSAN or mgmt 0 (management) interface configuration submode: <b>vrrp number</b>	switch(config-if-vrrp)#	Virtual router
Line console	<b>line console</b>	switch(config-console)#	Primary terminal console
VTY	<b>line vty</b>	switch(config-line)#	Virtual terminal line
Role	<b>role name</b>	switch(config-role)#	Rule

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<b>Submode Name</b>	<b>From Configuration Mode Enter</b>	<b>Submode Prompt</b>	<b>Configured Information</b>
SPAN	<b>span session <i>number</i></b>	switch(config-span)#	SPAN source, destination, and suspend session information
VSAN database	<b>vsan database</b>	switch(config-vsan-db)#	VSAN database
Zone	<b>zone name <i>string</i> vsan<i>number</i></b>	switch(config-zone)#	Zone member
Zone set	<b>zoneset name <i>string</i> vsan<i>number</i></b>	switch(config-zoneset)#	Zone set member



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## Navigating Through CLI Commands

To redisplay a command you previously entered, press the **Up Arrow** key. You can continue to press the **Up Arrow** key to see more previously issued commands. Similarly, you can press the **Down Arrow**, **Right Arrow**, **Left Arrow**, and **Delete** keys to navigate through the command history and to modify an existing command string.

## Getting Help

In any command mode, you can get a list of available commands by entering a question mark (?).

```
switch# ?
```

To obtain a list of commands that begin with a particular character sequence, type in those characters followed immediately by the question mark (?). Do not include a space.

```
switch# co?
configure copy
```

To list keywords or arguments, enter a question mark in place of a keyword or argument. Include a space before the question mark. This form of help is called command syntax help, because it reminds you which keywords or arguments are applicable based on the commands, keywords, and arguments you have already entered.

```
switch# config ?
terminal Configure the system from the terminal
```



### Tip

If you are having trouble entering a command, check the system prompt and enter the question mark (?) for a list of available commands. You might be in the wrong command mode or using incorrect syntax.

## Command Completion

In any command mode, you can begin a particular command sequence and immediately press the **Tab** key to complete the rest of the command.

```
switch (config)# ro<Tab>
switch (config)# role <Tab>
switch (config)# role name
```

This form of help is called command completion, because it completes a word for you. If several options are available for the typed letters, all options that match those letters are presented:

```
switch(config)# fc<Tab>
fcalias          fcdomain          fcs
fcalyzer         fcdroplateness   fcns              fctimer
fcc              fcinterop         fcroute
```

```
switch(config)# fcd<Tab>
fcdomain         fcdroplateness
```

```
switch(config)# fcdo<Tab>
switch(config)# fcdomain
```

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## Using the no and Default Forms of Commands

You can issue the **no** form of any command to perform the following actions:

- Undo a wrongly issued command.

If you issue the **zone member** command, you can undo the results:

```
switch(config)# zone name test vsan 1
switch(config-zone)# member pwwn 12:12:12:12:12:12:12:12
switch(config-zone)# no member pwwn 12:12:12:12:12:12:12:12
WARNING: Zone is empty. Deleting zone test. Exit the submode.
switch(config-zone)#
```

- Delete a created facility

If you want to delete a zone that you created:

```
switch(config)# zone name test vsan 1
switch(config-zone)# exit
switch(config)# no zone name test vsan 1
switch(config)#
```

You cannot delete a zone facility called test while residing in it. You must first exit the zone submode and return to configuration mode.

## Entering CLI Commands

You can configure the software in one of two ways:

- You can create the configuration for the switch interactively, working at the CLI prompt.
- You can create an ASCII file containing a switch configuration and then load this file on the required system. You can then use the CLI to edit and activate the file.

## Viewing a Configuration

You can view the ASCII form of the configuration file when required. To view the current configuration tree from the EXEC prompt, issue the **show running-config** command. If the running configuration is different from the startup configuration, issue the **show startup-config** command to view the ASCII version of the current startup configuration that was used to boot the switch.

You can gather specific information on the entire switch configuration by issuing the relevant **show** commands. Available **show** commands for each feature are listed at the end of each chapter. This section provides a few **show** command examples.

This example displays the specified interface.

```
switch# show interface fc1/1
fc1/1 is up
  Hardware is Fibre Channel, 20:01:ac:16:5e:4a:00:00
  vsan is 1
  Port mode is E
  Speed is 1 Gbps
  Beacon is turned off
  FCID is 0x0b0100
    0 frames input, 0 bytes, 0 discards
    0 runts, 0 jabber, 0 too long, 0 too short
    0 input errors, 0 CRC, 0 invalid transmission words
    0 address id, 0 delimiter
```

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```
0 EOF abort, 0 fragmented, 0 unknown class
0 frames output, 0 bytes, 0 discards
Received 0 OLS, 0 LRR, 0 NOS, 0 loop inits
Transmitted 0 OLS, 0 LRR, 0 NOS, 0 loop inits
```

This example displays the software and hardware version.

```
switch# show version
Cisco Storage Area Networking Operating System (SAN-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.

Software
  kickstart: version 1.0(2a) [gdb]
  system:    version 1.0(2a) [gdb]

Hardware
  RAM 1027636 kB

  bootflash: 1000944 blocks (block size 512b)
  slot0:      125440 blocks (block size 512b)

  kickstart compile Time: 10/25/2002 17:00:00

  system compile Time: 10/25/2002 17:00:00
```

This example displays the running configuration.

```
switch# show running-config
switch# show run
Building Configuration ...
  interface fc1/1
  interface fc1/2
  interface fc1/3
  interface fc1/4
  interface mgmt0
ip address 172.22.95.112 255.255.255.0
no shutdown
vsan database
boot system bootflash:system-237; sup-1
boot kickstart bootflash:boot-237 sup-1
callhome
ip default-gateway 172.22.95.1
switchname switch
trunk protocol enable
username admin password 5 /AFDAMD4B2xK2 role network-admin
```

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## Using the File System

The file system on a switch in the Cisco MDS 9000 Family supervisor module provides a number of useful commands to help you manage software image files and configuration files.

You can type **Ctrl-c** at any time to exit any of these commands.

## Setting the Current Directory

The **cd** command changes the current directory level to a specified directory level. This command expects a directory name input.

The syntax for this command is:

```
cd directory name
```

This example changes the current directory to the mystorage directory that resides in the slot0 directory:

```
switch# cd slot0:mystorage
```

This example changes the current directory to the mystorage directory that resides in the current directory.

```
switch# cd mystorage
```

If the current directory is slot0:mydir, this command changes the current directory to slot0:mydir/mystorage.

## Displaying the Current Directory

The **pwd** command displays the current directory location.

This example changes the directory and displays the current directory.

```
switch# cd bootflash:logs
switch# pwd
bootflash:/logs
```

## Listing the Files in a Directory

The **dir** command displays the contents of the current directory or the specified directory.

The syntax for this command is:

```
dir directory or file name
```

This example shows how to list the files on the bootflash directory:

```
switch# dir
-rw-r----- 1 root      22691542 Wed Jan 16 05:02:47 1980 system-244
-rw-r--r-- 1 root          0 Thu Jan 03 05:36:53 1980 system-img
drwxr-xr-x 2 root      3072 Wed Jan 16 05:11:21 1980 logs
-rw-r--r-- 1 root         64 Tue Jan 01 13:08:05 1980 outhdr
-rw-r--r-- 1 root         42 Thu Jan 10 09:56:14 1980 test_tftp.txt
159330304 bytes total used
43127808 bytes free
213480448 bytes available
```

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## Creating a New Directory

The **mkdir** command creates a directory at the current directory level or at a specified directory level.

The syntax for this command is:

```
mkdir directory name
```

This example creates a directory called test in the slot0 directory.

```
switch# mkdir slot0:test
```

This example creates a directory called test at the current directory level.

```
switch# mkdir test
```

If the current directory is slot0:mydir, this command creates a directory called slot0:mydir/test.

## Deleting an Existing Directory

The **rmdir** command deletes an existing directory at the current directory level or at a specified directory level. The directory must be empty to be deleted.

The syntax for this command is:

```
rmdir directory name
```

This example deletes the directory called test in the slot0 directory.

```
switch# rmdir slot0:test
```

This example deletes the directory called test at the current directory level.

```
switch# rmdir test
```

If the current directory is slot0:mydir, this command deletes the slot0:mydir/test directory.

## Moving Files

The **move** command removes a file from the source directory and places it in the destination directory. If a file with the same name already exists in the destination directory, that file will be overwritten by the moved file.

This example moves the file called samplefile from the slot0 directory to the mystorage directory.

```
switch# move slot0:samplefile slot0:mystorage/samplefile
```

This example moves a file from the current directory level.

```
switch# move samplefile mystorage/samplefile
```

If the current directory is slot0:mydir, this command moves slot0:mydir/samplefile to slot0:mydir/mystorage/samplefile.

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## Copying Files

The **copy** command copies a file.

This example copies the file called samplefile from the slot0 directory to the mystorage directory.

```
switch# copy slot0:samplefile slot0:mystorage/samplefile
```

This example copies a file from the current directory level.

```
switch# copy samplefile mystorage/samplefile
```

If the current directory is slot0:mydir, this command copies slot0:mydir/samplefile to slot0:mydir/mystorage/samplefile.

You can also use the **copy** command to upload and download files from the slot0: or bootflash: file system to or from a FTP, TFTP, SFTP, to a SCP server.

## Displaying File Contents

The **show file** command displays the contents of a specified file in the file system.

The syntax for this command is:

```
show file file name
```

This example displays the contents of the test file that resides in the slot0 directory.

```
switch# show file slot0:test
config t
Int fc1/1
no shut
end
show int
```

This example displays the contents of a file residing in the current directory.

```
switch# show file myfile
```

## Displaying Disk Usage

The **show flash** command displays the disk usage of various devices.

```
switch# show flash
Filesystem          1k-blocks      Used Available Use% Mounted on
none                409600         37024   372576   10% /system
none                204800         39816   164984   20% /var
none                102400          2084   100316    3% /dev/shm
none                 20480            0    20480    0% /volatile
/dev/hd-cfg0         19976          1699    17246    9% /mnt/cfg/0
/dev/hd-cfg1         19976          1699    17246    9% /mnt/cfg/1
/dev/hd-pss          20005          1473    17499    8% /mnt/pss
/dev/hd-bootflash   422162        172576  227788   44% /bootflash
```

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## Displaying Users

The **show users** command displays all users currently accessing the switch.

```
switch# show users
admin pts/7 Jan 12 20:56 (10.77.202.149)
admin pts/9 Jan 12 23:29 (modena.cisco.com)
admin pts/10 Jan 13 03:05 (dhcp-171-71-58-120.cisco.com)
admin pts/11 Jan 13 01:53 (dhcp-171-71-49-49.cisco.com)
```

## Executing Commands Specified in a Script

The **run-script** command executes the commands specified in a file.

The syntax for this command is:

```
run-script file name
```

This example executes the CLI commands specified in the testfile that resides in the slot0 directory.

```
switch# show file slot0:testfile
conf t
interface fc 1/1
no shutdown
end
sh interface fc1/1
```

In response to the **run-script** command, the file output is displayed here:

```
switch# run-script slot0:testfile
'conf t'
Enter configuration commands, one per line. End with CNTL/Z.

'interface fc 1/1'

'no shutdown'

'end'

'sh interface fc1/1'
fc1/1 is down (Fcot not present)
  Hardware is Fibre Channel
  Port WWN is 20:01:00:05:30:00:48:9e
  Admin port mode is auto, trunk mode is on
  vsan is 1
  Beacon is turned off
  Counter Values (current):
    0 frames input, 0 bytes, 0 discards
    0 runts, 0 jabber, 0 too long, 0 too short
    0 input errors, 0 CRC, 0 invalid transmission words
    0 address id, 0 delimiter
    0 EOF abort, 0 fragmented, 0 unknown class
    0 frames output, 0 bytes, 0 discards
    Received 0 OLS, 0 LRR, 0 NOS, 0 loop inits
    Transmitted 0 OLS, 0 LRR, 0 NOS, 0 loop inits
  Counter Values (5 minute averages):
    0 frames input, 0 bytes, 0 discards
    0 runts, 0 jabber, 0 too long, 0 too short
    0 input errors, 0 CRC, 0 invalid transmission words
    0 address id, 0 delimiter
```

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```
0 EOF abort, 0 fragmented, 0 unknown class
0 frames output, 0 bytes, 0 discards
Received 0 OLS, 0 LRR, 0 NOS, 0 loop inits
Transmitted 0 OLS, 0 LRR, 0 NOS, 0 loop inits
```

To use this command, be sure to create the file and specify commands in the required order.

## Displaying the Last Few Lines in a File

The **tail** command displays the last lines (tail end) of a specified file.

The syntax for this command is:

```
tail <file name> [<number of lines>]
```

```
switch# tail mylog 10
```

You will see the last 10 lines of the mylog file.

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

## Setting the Shell Timeout for a Switch

Use the **exec-timeout** command in EXEC mode to configure the lifetime of a single terminal session. When the time limit configured by this command is exceeded, the shell exits and closes that session.

The syntax for this command is:

```
exec-timeout minutes
```

The default is 30 minutes. You can configure different timeout values for a console or a virtual terminal line (VTY) session.

- From the console:

```
switch(config)# line console
switch(config-console)# exec-timeout 60
```

Specifies the current console shell timeout to be 60 minutes.

- From a VTY session (Telnet or SSH):

```
switch(config)# line vty
switch(config-line)# exec-timeout 60
```

Specifies the current console shell timeout to be 60 minutes.



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## Setting the Terminal Type for a Switch

Use the **terminal terminal-type** command in EXEC mode to specify the terminal type for a switch:

The syntax for this command is:

```
terminal terminal-type terminal-type
```

```
switch# terminal terminal-type vt100
```

Specifies the terminal type (for example vt100 or xterm). Any string is accepted for the *terminal-type* argument. If a Telnet or SSH session specifies an unknown terminal type, the switch uses the vt100 terminal by default.

## Setting the Terminal Length for a Switch

To set the terminal screen length for the current session, use the **terminal length** command in EXEC mode:

The syntax for this command is:

```
terminal length lines
```

```
switch# terminal length 20
```

Sets the screen length for the current session to 20 lines. The default is 24 lines.

This command is specific to only the console port. Telnet and SSH sessions set the length automatically.

## Setting the Terminal Width for a Switch

To set the terminal screen width for the current session, use the **terminal width** command in EXEC mode:

The syntax for this command is:

```
terminal width columns
```

```
switch# terminal width 86
```

Sets the screen length for the current session to 86 columns. The default is 80 columns.

This command is specific to only the console port. Telnet and SSH sessions set the width automatically.

## Displaying Terminal Settings

The **show terminal** command displays the terminal settings for the current session:

```
switch# show terminal  
TTY: Type: "vt100"  
Length: 24 lines, Width: 80 columns  
Session Timeout: 525600 minutes
```

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## Saving Command Output to a File

You can force all screen output to go to a file by appending `> filename` to any command. For example, enter **show interface > samplefile** at the EXEC mode switch prompt to save the interface configuration to *samplefile* — a file created at the same directory level. At the EXEC mode switch prompt, issue a **dir** command to view all files in this directory, including the recently saved *samplefile*.

**Note**

---

Redirection is allowed only if the current directory is on the `volatile:` or `slot0:` filesystems. Redirection is not allowed if the current directory is on the `bootflash:` filesystem. The current directory can be viewed using the **pwd** command and changed using the **cd** command.

---

## Sending Messages to Users

The **send** command sends a message to all active CLI users currently using the switch. This message is restricted to 80 alphanumeric characters with spaces.

This example sends a warning message to all active users about the switch being shut down.

```
switch# send Shutting down the system in 2 minutes. Please log off.
```

```
Broadcast Message from admin@excal-112  
(/dev/pts/3) at 16:50 ...
```

```
Shutting down the system in 2 minutes. Please log off.
```

```
switch>
```

## Saving the Running Configuration

To save the currently running configuration, enter the **copy running-config startup-config** command from the EXEC mode prompt to save the current configuration into nonvolatile storage. Once this command is issued, the running and the startup copies of the configuration are identical.

## Clearing the Stored Startup Configuration

To completely clear the currently stored startup configuration, issue the **write erase** command from the EXEC mode prompt. Once this command is issued, the existing stored configuration is cleared and the switch reverts to factory defaults when the switch is restarted.

**Note**

---

This does not affect the currently running configuration.

---

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## Using Valid Formats and Ranges

Some commands require a MAC address, IP address, or IDs that must be designated in a standard format or given a range. See [Table 1-3](#).

**Table 1-3 Valid Formats and Ranges**

Address	Description	Valid Format Example	Range
MAC address	Six bytes in hexadecimal format separated by colons (not case-sensitive)	00:00:0c:24:d2:Fe	—
IP address	32 bits, written as 4 octets separated by periods (dotted decimal format) that are made up of a network section, an optional netmask section, and a host section.	126.2.54.1	—
VSAN	Integer that specifies the VSAN.	7	1 to 4093
port WWN (pWWN)	Eight hexadecimal numbers separated by colons (not case-sensitive).	12:34:56:78:9A:BC:dE:F1	—
node WWN (nWWN)	Eight hexadecimal numbers (00-FF) separated by colons (not case-sensitive).	12:34:56:78:9A:BC:dE:F1	—
LUN	64 bits in hexadecimal format separated by colons. A minimum of two hex characters are acceptable. The valid format is hhhh[:hhhh[:hhhh[:hhhh]]]	64 (100d = 64h)	—
FCID	Six character hexadecimal value prepended by 0x.	0xabc123	—
Domain ID	Integer that specifies the domain.	7	1 to 239
Timers	Integer that specifies timers in milliseconds for latency, FC time out values (TOV).	100	0 to 2147483647
Switching module	The slot in which the applicable switching module resides.	1	1 to 15
Switch priority	Integer specifying switch priority.	5	1 and 254
Channel group	Integer that specifies a PortChannel group.	1	1 to 100
Fabric Shortest Path First (FSPF)	Integer that specifies the hold time (in milliseconds) before making FSPF computations.	1000	0 to 65535
Fabric Analyzer frame size limit	The allowed range in bytes.	64	64 to 65536
Fabric Analyzer captures frame limit	Limits the number of frames captured to 10. Fabric Analyzer captured frame limit	10	0 to 2147483647

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## Role-Based CLI

By default, two roles exist in all switches:

- Network operator — Has permission to view the configuration.
- Network administrator — Has permission to execute all commands and to set up to 64 levels based on user roles and groups.

When you execute a command, perform command completion, or obtain context sensitive help, the switch software allows the operation to progress if you have the correct permission as specified in the description of the command.