



## Before You Begin

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This chapter prepares you to configure switches from the CLI. 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 CLI Command Modes, page 2-3](#)
  - [CLI Command Hierarchy, page 2-4](#)
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  - [About Flash Devices, page 2-20](#)
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# About the Switch Prompt



## Note

*Cisco MDS 9200 Series Hardware Installation Guide*

*Cisco MDS 9500 Series*

*Hardware Installation Guide*

Once the switch is powered on successfully, you see the default switch prompt (switch#) as shown in [Example 2-1](#).

### Example 2-1 Output When Switch Boots Up

```
Auto booting bootflash:/boot-279 bootflash:/system_image;...
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:/system_image
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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>>>>>>

switch login:admin101
Password:*****
Cisco Storage Area Networking Operating System (SAN-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2004, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained herein are owned by
Cisco Systems, Inc. and/or other third parties and are used and
distributed under license. Some parts of this software are covered
under the GNU Public License. A copy of the license is available
at http://www.gnu.org/licenses/gpl.html.
switch#
```

You can perform embedded CLI operations, access command history, and use command parsing functions at this prompt. The switch gathers the command string upon detecting an **Enter** (CR) and accepts commands from a terminal.

# Default Switch Roles

By default, two roles exist in all switches:

Network operator—Has permission to view the configuration.

Network administrator—Has permission to perform all functions and to set up to 64 permission 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. see [Chapter 26, “Configuring Users and Common Roles.”](#)

# 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 2-1](#) 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 2-1** Frequently Used Switch Command Modes

Mode	Description of Use	How to Access	Prompt
	Note		
	Note		

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 **config terminal** **conf t**



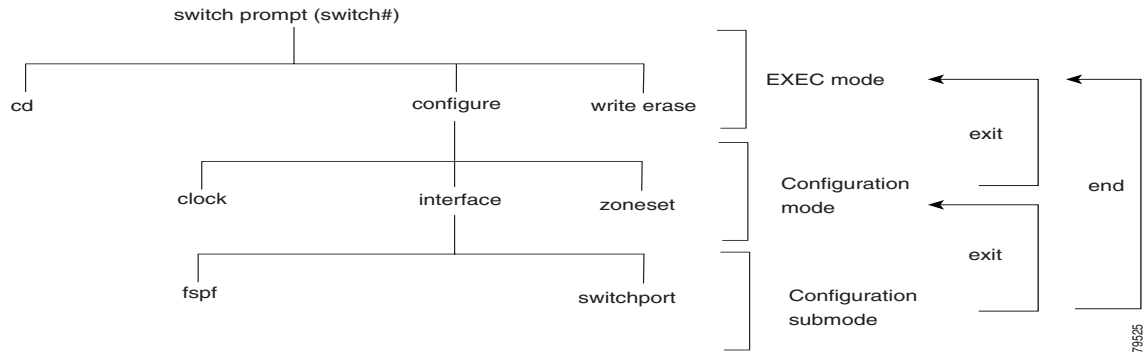
Do not enter percent ( % ), pound ( # ), ellipsis ( ... ), vertical bar ( | ), less than or great than ( < > ), brackets ( [ ] ), or braces ( { } ) in command lines. These characters have special meaning in Cisco SAN-OS text strings.

# 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**

**config terminal**

**Figure 2-1 CLI Command Hierarchy Example**



## config t

Enter configuration commands, one per line. End with CNTL/Z.

```
switch(config)# interface fcl/1
?
```

do	EXEC command
exit	Exit from this submode
fcdomain	Configure fcdomain parameters
fspf	Configure FSPF parameters
no	Negate a command or set its defaults
rspan-tunnel	Configure remote span tunnel interface
shutdown	Enable/disable an interface
switchport	Configure switchport parameters

## EXEC Mode Options

clear	Reset functions
clock	Manage the system clock
config	Enter configuration mode
copy	Copy from one file to another
crypto	Act on crypto associations
debug	Debugging functions
delete	Delete a file
dir	List files in a directory
discover	Discover information
exit	Exit from the EXEC
fcping	Ping an N-Port
fctrace	Trace the route for an N-Port.
find	Find a file below the current directory
format	Format disks
gunzip	Uncompresses LZ77 coded files
gzip	Compresses file using LZ77 coding
install	Upgrade software
ips	Various sbyte module related commands
ivr	IVR exec commands
mkdir	Create new directory
modem	Modem commands
move	Move files
no	Disable debugging functions
ping	Send echo messages
port-channel	Port-Channel related commands
purge	Deletes unused data
pwd	View current directory
reload	Reboot the entire box
rmdir	Delete a directory
run-script	Run shell scripts
send	Send message to open sessions
setup	Run the basic SETUP command facility
show	Show running system information
sleep	Sleep for the specified number of seconds
ssh	SSH to another system
system	System management commands
tac-pac	Save tac information to a specific location
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
undebug	Disable Debugging functions (See also debug)
update	Update license
write	Write current configuration
zone	Execute Zone Server commands
zoneset	Execute zoneset commands

# Configuration Mode

`config terminal`

## Configuration Mode Commands and Submodes

<code>arp</code>	[no] remove an entry from the ARP cache
<code>asm</code>	Configure ASM Modules
<code>banner</code>	Configure banner message
<code>boot</code>	Configure boot variables
<code>callhome</code>	Enter the callhome configuration mode
<code>cdp</code>	CDP Configuration parameters
<code>cfs</code>	CFS configuration commands
<code>cimserver</code>	Modify cimserver configuration
<code>clock</code>	Configure time-of-day clock
<code>crypto</code>	Set crypto settings
<code>device-alias</code>	Device-alias configuration commands
<code>do</code>	EXEC command
<code>dpvm</code>	Configure Dynamic Port Vsan Membership
<code>end</code>	Exit from configure mode
<code>exit</code>	Exit from configure mode
<code>fabric-binding</code>	Fabric Binding configuration
<code>fc-tunnel</code>	Configure fc-tunnel
<code>fcalias</code>	Fcalias configuration commands
<code>fcanalyzer</code>	Configure cisco fabric analyzer
<code>fcc</code>	Configure FC Congestion Control
<code>fcdomain</code>	Enter the fcdomain configuration mode
<code>fcdroplateny</code>	Configure switch or network latency
<code>fcflow</code>	Configure fcflow
<code>fcid-allocation</code>	Add/remove company id(or OUIs) from auto area list
<code>fcinterop</code>	Interop commands
<code>fcip</code>	Enable/Disable FCIP
<code>fcns</code>	Name server configuration
<code>fcroute</code>	Configure FC routes
<code>fcrxbbcredit</code>	Enable extended rx b2b credit configuration
<code>fcs</code>	Configure Fabric Config Server
<code>fcsp</code>	Config commands for FC-SP
<code>fc timer</code>	Configure fibre channel timers
<code>fdmi</code>	Config commands for FDMI
<code>ficon</code>	Configure ficon information
<code>fspf</code>	Configure fspf
<code>in-order-guarantee</code>	Set in-order delivery guarantee
<code>interface</code>	Select an interface to configure
<code>ip</code>	Configure IP features
<code>iscsi</code>	Enable/Disable iSCSI

qos	QoS Configuration commands
radius	Configure RADIUS configuration distribution
radius-server	Configure RADIUS related parameters
rib	Configure RIB parameters
rmon	Remote Monitoring
role	Configure roles
rscn	Config commands for RSCN
san-ext-tuner	Enable/Disable San Extension Tuner tool
santap	Enter SanTap configuration
scheduler	Config commands for scheduler
scsi-flow	SCSI Flow configuration
snmp-server	Configure snmp server
span	Enter SPAN configuration mode
ssh	Configure SSH parameters
ssm	Config commands for SSM (Storage Services Module)
switchname	Configure system's network name
system	System config command
tacacs+	Enable tacacs+
telnet	Enable telnet
tlport	Configure TL Port information
trunk	Configure Switch wide trunk protocol
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
zone-attribute-group	Zone attribute group commands
zoneset	Zoneset configuration commands

**exit**

**end**

**Ctrl-Z**

**end**




---

— **Ctrl-Z**            **end**  
 — **Ctrl-G**            **exit**

---

**do**

**do terminal session-timeout 0**

**terminal session-timeout**

**do**

? Tab do

*Useful Command Key Description*

Command	Description
Ctrl-P	
Ctrl-N	
Ctrl-R	
Ctrl-X H	
Alt-P	Tab Alt-P Alt-N Tab
Alt-N	
Ctrl-G	
Ctrl-Z	
Ctrl-L	

## CLI Command Navigation

Up Arrow      Up Arrow      Down Arrow  
 Right Arrow Left Arrow Delete

## Getting Help



Tip

## Command Completion

```
ro <Tab>  
role <Tab>  
role name
```

```
fc <Tab>
```

```
fcd <Tab>
```

```
fcdo <Tab>  
fcdomain
```

## File System Completion

```
cd bootflash:<Tab>
```

```
bootflash://module-5/    bootflash://sup-active/  
bootflash://module-6/    bootflash://sup-local/
```

```
switch#  
switch# bootflash://module-6/
```

## The no and Default Forms of Commands

•

### zone member

```
zone name test vsan 1  
member pwnn 12:12:12:12:12:12:12:12  
no member pwnn 12:12:12:12:12:12:12:12
```

```
zone name test vsan 1
  exit
no zone name test vsan 1
```

## CLI Command Configuration Options

You can configure the software in one of two ways:

- 
- 

[Files” section on page 7-1\).](#)

## Displaying the Switch Configuration

**show startup**

**copy run start**

**show**

commands. Configurations are displayed based on a specified feature, interface, module, or VSAN. Available commands for each feature are briefly described in this section and listed at the end of each chapter.

Examples 2-2 to 2-8 display a few command examples.

```
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
```

---

***Example 2-3 Displays the Software and Hardware Version***

***Example 2-4 Displays the Running Configuration***

***Example 2-5 Displays the Difference Between the Running and Startup Configuration***

---

```
! iscsi import target fc
  iscsi virtual-target name vt
    pWWN 21:00:00:04:cf:4c:52:c1
  all-initiator-permit
--- 1,20 ----
  fcip enable
+ aaa accounting logsize 500
+
+
+
  ip default-gateway 172.22.91.1
  iscsi authentication none
  iscsi enable
! iscsi initiator name junk
  iscsi virtual-target name vt
    pWWN 21:00:00:04:cf:4c:52:c1
  all-initiator-permit
```

**Example 2-6** *Displays the Configuration for a Specified Interface*

```
show running interface fc2/9
```



---

**Example 2-7** *Displays the Configuration for all Interfaces in a 16-Port Module*

**Example 2-8** *Displays the Configuration Per VSAN*

## Saving a Configuration

## Clearing a Configuration

command to clear a startup configuration. Once this command is issued, the switch's startup configuration reverts to factory defaults. The running configuration is not affected.



Caution

---

---

## Displaying Users

```
admin pts/7 Jan 12 20:56 (10.77.202.149)
admin pts/9 Jan 12 23:29 (modena.cisco.com)
admin pts/11 Jan 13 01:53 (dhcp-171-71-49-49.cisco.com)
```

## Sending Messages to Users

```
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.
```

<host or ip address>.

```
ping 198.133.219.25
```

```
64 bytes from 198.133.219.25: icmp_seq=1 ttl=245 time=0.856 ms
64 bytes from 198.133.219.25: icmp_seq=2 ttl=245 time=1.02 ms
```

```
--- 198.133.219.25 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 999ms
rtt min/avg/max/mdev = 0.856/0.941/1.027/0.090 ms
```

## Using the Extended ping Command

Option	Description	Default
		5 packets
Datagram size	The size of each ping packet in bytes.	100 bytes
Timeout in seconds	The timeout interval before the command is terminated.	2 seconds
Extended commands	Specifies if a series of additional commands appear.	No
Sweep range of sizes	The sizes of the echo packets being sent. This option determines the minimum sizes of the MTUs configured on the nodes along the path to the destination address. You can then reduce packet fragmentation performance problems. (see the <a href="#">“Configuring the MTU Frame Size”</a> section on page 37-6).	No
Source address or interface	The numeric IP address or the name of the source interface.	Not applicable
Type of service	The Quality of Service (QoS) in Internet Control Message Protocol (ICMP) datagrams (see the <a href="#">“QoS”</a> section on page 47-3).	0

***Options and Defaults for the ping Command (continued)***

Set DF bit in IP header	The Path MTU Discovery strategy (see the <a href="#">“Configuring the MTU Frame Size”</a> section on page 37-6).	No
Data pattern	You may specify up to 16 bytes to pad the outgoing packet. This padding is useful when diagnosing data-dependent problems in a network. For example,   fills the outgoing packet with all ones.	0xABCD

The syntax for this command is as follows:

To abnormally terminate a ping session, type the       escape sequence.

*minutes.*

## Displaying VTY Sessions

```
          default : ATE0Q1&D2&C1S0=1\015
Statistics: tx:5558511    rx:5033958    Register Bits:RTS|CTS|DTR|DSR|CD|RI
line Aux:
Speed:          9600 bauds
Databits:       8 bits per byte
Stopbits:       1 bit(s)
Parity:         none
Modem In: Disable
Modem Init-String -
          default : ATE0Q1&D2&C1S0=1\015
Hardware Flowcontrol: ON
Statistics: tx:35    rx:0    Register Bits:RTS|DTR
```

```
switch# clear line Aux
```

```
switch# terminal session-timeout 600
```

---

*terminal-type.*

*terminal-type*

*lines.*

## Setting the Terminal Width

*columns.*

## Displaying Terminal Settings

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

---

# Configuring the Switch Banner Message

**banner motd** [*delimiting-character message delimiting-character*]

```
banner motd # Testing the MOTD Feature. #
```

```
show banner motd
```

*Testing the MOTD Feature*

" %

You can include tokens in the form \$ (token) in the message text. Tokens will be replaced with the corresponding configuration variable. For example:

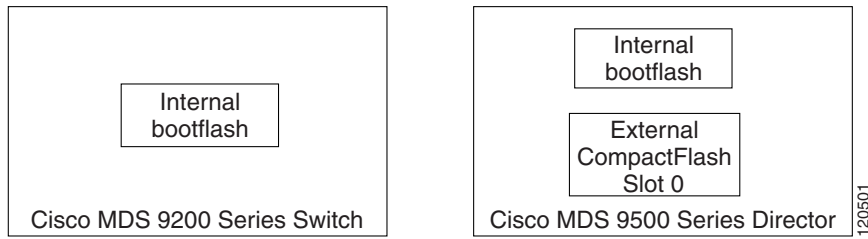
```
$(hostname)
```

```
$(line)
```

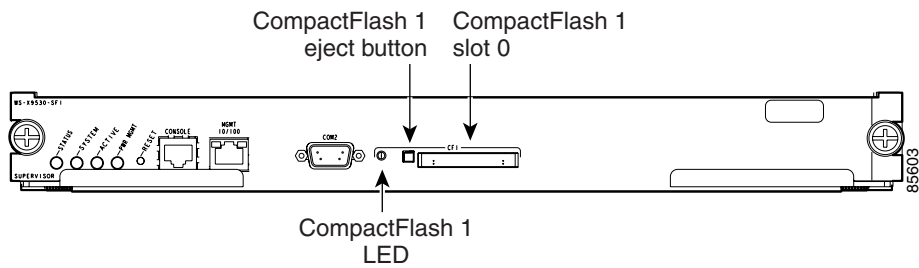
```
switch#  
switch(config)#  
Enter TEXT message. End with the character '#'.  
Welcome to switch $(hostname).  
Your tty line is $(line).  
#
```

# About Flash Devices

*Flash Devices in the Cisco MDS 9000 Supervisor Module*



**Figure 2-3** *External CompactFlash in the Cisco MDS 9000 Supervisor Module*



## Internal bootflash:

- 
- 

## External CompactFlash (Slot0:)

# Formatting Flash Devices and File Systems

## Initializing Internal bootflash:



Note

---

---



Caution

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---

---

```
format bootflash:  
bootflash:
```

```
format
```

```
format bootflash:
```

## Formatting External CompactFlash

```
dir slot0:
```

```
format slot0:
```



```
slot0:mydir/mystorage.
```

The `pwd` command displays the current directory location. This example changes the directory and displays the current directory.



---

If you issue this command from the active supervisor module in a Cisco MDS 9500 Series (for example, `slot0`), then you cannot change the current working directory to the bootflash: of `slot0`. See the “Supervisor Modules” section on page 10-2.

---

## Displaying File Checksums

```
file md5sum
```

```
show file cksum
```

```
show file
```

```
show file bootflash://sup-1/ultimate_file.tar cksum
```

```
show file bootflash://sup-1/ultimate_file.tar md5sum
```

```
dir
```

---

**mkdir slot0:test**

**mkdir test**

**rmdir slot0:test**

This is a directory. Do you want to continue (y/n)? [y]

switch#

This is a directory. Do you want to continue (y/n)? [y]

**move**

---

**copy**

**copy**

**delete**



---

**delete**

---

**show file**

**show file** *file\_name*

**show interface > samplefile**

>

**dir**



---

	volatile:	slot0:
<b>pwd</b>	bootflash:	
	<b>cd</b>	

---

**gzip** command compresses (zips) the specified file using LZ77 coding.

This example directs the output of the show tech-support command to a file (Samplefile) and then zips the file and displays the difference in the space used up in the volatile: directory:

The **gunzip** command uncompresses (unzips) LZ77 coded files.

This example unzips the file that was compressed in the previous example:

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

The syntax for this command is `<file name> [<number of lines>]`



---

---

*file\_name*

<seconds>