CHAPTER 1

Using the Command-Line Interface

This chapter describes the command-line interface (CLI) and CLI command modes. It includes the following sections:

- Accessing the Command Line Interface, page 1-1
- Using the CLI, page 1-2
- Using Commands, page 1-6
- Using CLI Variables, page 1-9
- Using Command Aliases, page 1-10
- Defining Command Aliases, page 1-11
- Command Scripts, page 1-11

Accessing the Command Line Interface

You can connect to the switch using a terminal plugged into the console port. See Console Settings, page 1-3 for information on how to set console port parameters.

You can also connect to the switch with Telnet or SSH. The switch supports up to eight simultaneous Telnet and SSH connections. To connect with Telnet or SSH, you need to know the hostname or IP address of the switch.

To make a Telnet connection to the switch, perform these steps:

	Command	Purpose
Step 1	**telnet** {*hostname* | *ip_addr*}	Makes a Telnet connection from your host to the switch that you want to access.
Step 2	Login: **admin** Password: ***password***	Initiates authentication. **Note** If no password has been configured, press **Return**.
Step 3	switch# **exit**	Exits the session when finished.

Alternatively, to make an SSH connection to the switch, use the following command:

Command	Purpose
ssh {*hostname* | *ip_addr*}	Makes an SSH connection from your host to the switch that you want to access.

Using the CLI

The section includes the following topics:

- Using CLI Command Modes, page 1-2
- CLI Command Hierarchy, page 1-3
- EXEC Mode Commands, page 1-4
- Configuration Mode Commands, page 1-5

Using CLI Command Modes

Switches in the Cisco Nexus 5000 Series 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 the commands that are available to you in that mode.

Table 1-1 Frequently Used Switch Command Modes

Mode	Description	How to Access	Prompt
EXEC	Enables you to temporarily change terminal settings, perform basic tests, and display system information. **Note** 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. **Note** Changes made in this mode are saved across system resets if you save your configuration.	From EXEC mode, enter the **configure terminal** 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**.

Changing Command Modes

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

Listing the Commands Used with Each Command Mode

You can display the commands available in any command mode by typing a question mark (**?**) at the switch prompt.

CLI Command Hierarchy

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 **configure terminal** command.

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

The following example shows how to query the available command in the interface submode:

```
switch# configure terminal
switch(config)# interface ethernet 1/1
switch(config-if)# ?
  bandwidth               Set bandwidth informational parameter
  cdp                     Configure CDP interface parameters
  channel-group           Add to/remove from a port-channel
  delay                   Specify interface throughput delay
  description             Enter description of maximum 80 characters
  exit                    Exit from command interpreter
  fcoe                    Fibre channel over ethernet configuration
  fex                     Configure FEX fabric
  flowcontrol             Configure interface flowcontrol
  ip                      Configure IP features
  ipv6                    Configure IPv6 features
  lacp                    Configure LACP parameters
  link                    Configure link
  lldp                    Configure Interface LLDP parameters
  logging                 Configure logging for interface
  mac                     MAC configuration commands
  no                      Negate a command or set its defaults
  priority-flow-control   Configure interface priority-flowcontrol
  service-policy          Configure QoS service policy
  shutdown                Enable/disable an interface
  snmp                    Modify SNMP interface parameters
  spanning-tree           Spanning Tree Subsystem
  speed                   Enter the port speed
  storm-control           Configure Interface storm control
```

```
  switchport            Configure switchport parameters
  untagged              default to use for untagged packets on interface
```

EXEC Mode Commands

When you start a session on the switch, you begin in EXEC mode. From 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.

The following commands are available in EXEC mode:

```
switch# ?
  attach            Connect to a specific linecard
  callhome          callhome commands
  cd                Change current directory
  check             run consistency check on external storage device
  clear             Reset functions
  cli               CLI commands
  clock             Manage the system clock
  configure         Enter configuration mode
  copy              Copy from one file to another
  debug             Debugging functions
  debug-filter      Enable filtering for debugging functions
  delete            delete a file
  dir               list files in a directory
  discover          discover information
  echo              echo argument back to screen (usefull for run script)
  end               Exit configuration mode
  ethanalyzer       Configure cisco fabric analyzer
  exit              Exit from command interpreter
  fcping            Ping an N-Port
  fctrace           Trace the route for an N-Port.
  fex               FEX control commands
  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
  license           Enter the license configuration mode
  mkdir             Create new directory
  move              Move files
  no                Negate a command or set its defaults
  ntp               Execute NTP commands
  ping              Test network reachability
  ping6             Test IPv6 network reachability
  purge             Deletes unused data
  pwd               View current directory
  reload            Reboot the entire box
  rmdir             Delete a directory
  routing-context   Set the routing context
  run-script        Run shell scripts
  san-port-channel  Port-Channel related commands
  send              Send message to open sessions
  session           Configure session preferences
  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
  ssh6              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
  telnet6           Telnet6 to another system
  terminal          Set terminal line parameters
  terminate         Terminates a config session
  test              test command
  traceroute        Traceroute to destination
  traceroute6       Traceroute6 to destination
  undebug           Disable Debugging functions (See also debug)
  unmount           unmount compact flash disk or usb drive
  update            Update license
  where             shows the cli context you are in
  write             Write current configuration
  xml               xml agent
  zone              Execute Zone Server commands
  zoneset           Execute zoneset commands
```

Configuration Mode Commands

Configuration mode allows you to make changes to the existing configuration. When you save the configuration, these commands are saved 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.

The following commands are available in configuration mode:

```
switch# configure terminal
switch(config)# ?
  aaa                 Configure aaa functions
  banner              Configure banner message
  boot                Configure boot variables
  callhome            Enter the callhome configuration mode
  cdp                 Configure CDP parameters
  cfs                 CFS configuration commands
  class-map           Configure class-map
  cli                 Configure CLI aliases
  clock               Configure time-of-day clock
  device-alias        Device-alias configuration commands
  diagnostic          Diagnostic commands
  end                 Exit configuration mode
  exit                Exit from command interpreter
  fabric-binding      Fabric Binding configuration
  fcalias             Fcalias configuration commands
  fcdomain            Enter the fcdomain configuration mode
  fcdroplatency       configure switch or network latency
  fcflow              Configure fcfloww
  fcid-allocation     Add/remove company id(or OUIs) from auto area list
  fcinterop           Interop commands
  fcns                name server configuration
  fcroute             Configure FC routes
  fcs                 Configure Fabric Config Server
  fcsp                Config commands for FC-SP
  fctimer             configure fibre channel timers
  fdmi                config commands for FDMI
  feature             Command to enable/disable features
  fex                 FEX configuration
  fspf                Configure fspf
  hostname            Configure system's host name
  hw-module           Enable/Disable OBFL information
  in-order-guarantee  set in-order delivery guarantee
  interface           Configure interfaces
```

```
ip                  Configure IP features
ipv6                Configure IPv6 features
lacp                Configure LACP parameters
license             Modify license features
line                Configure a terminal line
lldp                Configure global LLDP parameters
logging             Modify message logging facilities
mac                 MAC configuration commands
mac-address-table   MAC Address Table
monitor             Ethernet SPAN
no                  Negate a command or set its defaults
npiv                Nx port Id Virtualization (NPIV) feature enable
npv                 Config commands for FC N_port Virtualizer
ntp                 NTP Configuration
policy-map          Configure policy-map
port-channel        Configure port channel parameters
port-security       Configure Port Security
port-track          Configure Switch port track config
privilege           Command privilege parameters
radius-server       Configure RADIUS related parameters
resequence          Resequence a list with sequence numbers
rib                 Configure RIB parameters
rlir                config commands for RLIR
rmon                Remote Monitoring
role                Configure roles
rscn                config commands for RSCN
scsi-target         scsi-target configuration
show                Show running system information
snmp-server         Configure snmp server
spanning-tree       Spanning Tree Subsystem
ssh                 Configure SSH parameters
switchname          Configure system's host name
system              system config command
system              System management commands
tacacs+             Enable tacacs+
telnet              Enable telnet
track               Object tracking configuration commands
trunk               Configure Switch wide trunk protocol
username            Configure user information.
vlan                Vlan commands
vrf                 Configure VRF parameters
vsan                Enter the vsan configuration mode
wwn                 Set secondary base MAC addr and range for additional WWNs
xml                 xml agent
zone                Zone configuration commands
zoneset             Zoneset configuration commands
```

Using Commands

You can configure the CLI to function in two ways: configure it interactively by entering commands at the CLI prompt or create an ASCII file containing switch configuration information (use the CLI to edit and activate the file).

Listing Commands and Syntax

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

```
switch# ?
```

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

```
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# # configure ?
  <CR>
  terminal  Configure the system from terminal input
```

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.

Entering Command Sequences

In any command mode, you can begin a particular command sequence, then 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 displayed.

Undoing or Reverting to Default Values or Conditions

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

- Undo an incorrectly entered command.

  If you enter 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 still in zone configuration submode. You must first exit the zone submode and return to configuration mode.

- Revert to the default value.

  If you enter the **zone merge-control restrict vsan** command, you can undo the results:

```
switch(config)# zone merge-control restrict vsan 10
switch(config)# no zone merge-control restrict vsan 10
switch(config)#
```

Using Keyboard Shortcuts

You can execute an EXEC mode command from a configuration mode or submode prompt. You can enter this command from any submode within the configuration mode. The command is executed at the EXEC level, and the prompt resumes its current mode level, as in the following example:

```
switch(config)# terminal session-timeout 0
switch(config)#
```

In this example, **terminal session-timeout** is an EXEC mode command.

Table 1-2 lists some useful command keys that can be used in both EXEC and configuration modes.

Table 1-2 Useful Command Keys

Command	Description
Ctrl-P	Up history
Ctrl-N	Down history
Ctrl-X-H	List history
Alt-P	History search backwards **Note** The difference between **Tab** completion and **Alt-P** or **Alt-N** is that pressing **Tab** completes the current word, while **Alt-P** and **Alt-N** completes a previously entered command.
Alt-N	History search forwards
Ctrl-G	Exit
Ctrl-Z	End
Ctrl-L	Clear session

Table 1-3 describes the commonly used configuration submodes.

Table 1-3 Common Configuration Submodes

Submode Name	From Configuration Mode, Enter:	Submode Prompt
Call home	**callhome**	switch(config-callhome)#

Table 1-3 Common Configuration Submodes (continued)

Submode Name	From Configuration Mode, Enter:	Submode Prompt
FCS Registration	**fcs register**	switch(config-fcs-register)#
	From FCS registration submode: **platform name** *name* **vsan** *vsan-id*	switch(config-fcs-register-attrib)#
Fibre Channel alias	**fcalias name** *name* **vsan** *vsan-id*	switch(congif-fcalias)#
FSPF	**fspf config vsan** *vsan-id*	switch(config-(fspf-config))#
Interface configuration	**interface** *type slot/port*	switch(config-if)#
Line console	**line console**	switch(config-console)
Virtual terminal line	**line vty**	switch(config-line)#
Role	**role name**	switch(config-role)#
VLAN	**vlan**	switch(config-vlan)#
VSAN database	**vsan database**	switch(config-vsan-db)#
Zone	**zone name** *string* **vsan** *vsan-id*	switch(config-zone)#
Zone set	**zoneset name** *name* **vsan** *vsan-id*	switch(config-zoneset)#

Using CLI Variables

The Cisco Nexus 5000 Series CLI parser supports the definition and use of variables in CLI commands. CLI variables can be used as follows:

- Entered directly on the command line.
- Passed to the child script initiated using the **run-script** command.

  The variables defined in the parent shell are available for use in the child **run-script** command process (see the "Executing Commands Specified in a Script" section on page 1-11).
- Passed as command line arguments to the **run-script** command (see the "Executing Commands Specified in a Script" section on page 1-11).

CLI variables have the following characteristics:

- You cannot reference a variable through another variable using nested references.
- You can define persistent variables that are available across switch reloads.
- You can reference only one predefined system variable, which is the TIMESTAMP variable.

User-Defined Persistent CLI Variables

You can define CLI session variables to persist only for the duration of your CLI session using the **cli var name** command in EXEC mode. CLI session variables are useful for scripts that you execute periodically.

The following example shows how to create a user-defined CLI session variable:

```
switch# cli var name testinterface fc 1/1
```

You can reference a variable using the syntax **$(variable)**. The following example shows how to reference a user-defined CLI session variable:

```
switch# show interface $(testinterface)
fc2/1 is up
Hardware is Fibre Channel, SFP is short wave laser w/o OFC (SN)
    Port WWN is 20:01:00:0d:ec:0e:1d:00
    Admin port mode is auto, trunk mode is on
    snmp traps are enabled
    Port mode is F, FCID is 0x01000b
    Port vsan is 1
    Speed is 2 Gbps
    Transmit B2B Credit is 7
    Receive B2B Credit is 16
    Receive data field Size is 2112
    Beacon is turned off
    5 minutes input rate 256 bits/sec, 32 bytes/sec, 1 frames/sec
    5 minutes output rate 256 bits/sec, 32 bytes/sec, 1 frames/sec
      232692 frames input, 7447280 bytes
        0 discards, 0 errors
        0 CRC,  0 unknown class
        0 too long, 0 too short
      232691 frames output, 7448692 bytes
        0 discards, 0 errors
      0 input OLS, 0 LRR, 0 NOS, 0 loop inits
      1 output OLS, 1 LRR, 0 NOS, 1 loop inits
      16 receive B2B credit remaining
      7 transmit B2B credit remaining
```

Use the **show cli variables** command to display user-defined CLI session variables. The following example displays user-defined CLI session variables:

```
switch# show cli variables
VSH Variable List
-----------------
TIMESTAMP="2005-10-24-21.29.33"
testinterface="fc 1/1"
```

Use the **cli no var name** command to remove user-defined CLI session variables. The following example removes a user-defined CLI session variable:

```
switch# cli no var name testinterface
```

Using Command Aliases

Command alias support has the following characteristics:

- Command aliases are global for all user sessions.
- Command aliases are saved across reboots.
- Commands being aliased must be typed in full without abbreviation.
- Command alias translation always takes precedence over any keyword in any configuration mode or submode.
- Command alias support is only available on the supervisor module, not the switching modules.
- Command alias configuration takes effect for other user sessions immediately.
- You cannot override the default command alias **alias**, which aliases the **show cli alias** command.

- Nesting of command aliases is permitted to a maximum depth of 1. One command alias can refer to another command alias that must refer to a valid command, not to another command alias.
- A command alias always replaces the first command keyword on the command line.
- You can define command aliases for commands in any configuration submode or the EXEC mode.

Defining Command Aliases

You can define command aliases using the **cli alias name** command in configuration mode.

This following example shows how to define command aliases:

```
switch# configure terminal
switch(config)# cli alias name eth interface ethernet
switch(config)# cli alias name shintbr show interface brief
switch(config)# cli alias name shfcintup shintbr | include up | include fc
```

You can display the command aliases defined on the switch using the **alias** default command alias.

The following example shows how to display the command aliases defined on the switch:

```
switch# alias
CLI alias commands
==================
alias      :show cli alias
gigint     :interface gigabitethernet
shintbr    :show interface brief
shfcintup  :shintbr | include up | include fc
```

Command Scripts

This section includes the following topics:

- Executing Commands Specified in a Script, page 1-11
- Using CLI Variables in Scripts, page 1-12
- Setting the Delay Time, page 1-13

Executing Commands Specified in a Script

The **run-script** command executes the commands specified in a file. To use this command, be sure to create the file and specify commands in the required order.

Note You cannot create the script file at the switch prompt. You can create the script file on an external machine and copy it to the bootflash: directory. This section assumes that the script file resides in the bootflash: directory.

The syntax for this command is **run-script** *filename*.

This example displays the CLI commands specified in a test file that resides in the bootflash: directory.

```
switch# show file bootflash:testfile
configure terminal
interface fc 3/1
no shutdown
end
show interface fc 3/1
```

This file output is in response to the **run-script** command executing the contents in the test file:

```
switch# run-script bootflash:testfile
'configure terminal'
Enter configuration commands, one per line. End with CNTL/Z.
'interface fc 3/1'
'no shutdown'
'end'
'show interface fc 3/1'
fc3/1 is trunking
    Hardware is Fibre Channel, SFP is short wave laser w/o OFC (SN)
    Port WWN is 20:81:00:0d:ec:6b:cd:c0
    Peer port WWN is 20:01:00:0d:ec:0d:d0:00
    Admin port mode is auto, trunk mode is on
    snmp link state traps are enabled
    Port mode is TE
    Port vsan is 1
    Speed is 2 Gbps
    Transmit B2B Credit is 255
    Receive B2B Credit is 16
    Receive data field Size is 2112
    Beacon is turned off
    Trunk vsans (admin allowed and active) (1)
    Trunk vsans (up)                       (1)
    Trunk vsans (isolated)                 ()
    Trunk vsans (initializing)             ()
    5 minutes input rate 96 bits/sec, 12 bytes/sec, 0 frames/sec
    5 minutes output rate 64 bits/sec, 8 bytes/sec, 0 frames/sec
      77423 frames input, 6708868 bytes
        0 discards, 0 errors
        0 CRC,  0 unknown class
        0 too long, 0 too short
      77302 frames output, 4184976 bytes
        0 discards, 0 errors
      1 input OLS, 2 LRR, 0 NOS, 0 loop inits
      1 output OLS, 0 LRR, 1 NOS, 0 loop inits
      16 receive B2B credit remaining
      255 transmit B2B credit remaining
```

Using CLI Variables in Scripts

You can use CLI variables defined by the **cli var** command (see the "Using CLI Variables" section on page 1-9) or passed as arguments in the **run-script** command.

The following example shows how to use CLI session variables in a script file used by the **run-script** command:

```
switch# cli var name testinterface fc 1/1
switch# show file bootflash:test1.vsh
show interface $(testvar)
switch# run-script bootflash:test1.vsh
`show interface $(testvar)`
```

```
fc2/1 is down (SFP not present)
Hardware is Fibre Channel
Port WWN is 20:01:00:05:30:00:8e:1e
Admin port mode is auto, trunk mode is on
Port vsan is 1
Receive data field Size is 2112
Beacon is turned off
5 minutes input rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
5 minutes output rate 0 bits/sec, 0 bytes/sec, 0 frames/sec
1 frames input, 128 bytes
0 discards, 0 errors
0 CRC, 0 unknown class
0 too long, 0 too short
1 frames output, 128 bytes
0 discards, 0 errors
0 input OLS, 0 LRR, 0 NOS, 0 loop inits
0 output OLS, 0 LRR, 0 NOS, 0 loop inits
0 receive B2B credit remaining
0 transmit B2B credit remaining
```

The following example shows how you can pass CLI session variable as arguments to a child **run-script** command process:

```
switch# show file bootflash:test1.vsh
show interface $(var1) $(var2)
switch# run bootflash:test2.vsh var1="fc2/1" var2="brief"
`show interface $(var1) $(var2)`
--------------------------------------------------------------------------------
Interface  Vsan   Admin  Admin   Status          SFP    Oper  Oper   Port
                  Mode   Trunk                          Mode  Speed  Channel
                         Mode                                 (Gbps)
--------------------------------------------------------------------------------
fc2/1 1 auto on sfpAbsent -- -- -- \
```

Setting the Delay Time

The **sleep** command delays an action by a specified number of seconds.

The syntax for this command is **sleep** *seconds*.

```
switch# sleep 30
```

You will see the switch prompt return after 30 seconds. This command is useful within scripts. For example, if you create a command script called test-script.

```
switch# show file bootflash:test-script
discover scsi-target remote
sleep 10
show scsi-target disk
switch# run-script bootflash:test-script
```

When you execute the test-script command script, the switch software executes the **discover scsi-target remote** command, and then waits for 10 seconds before executing the **show scsi-target disk** command.