Using the Command-Line Interface

This chapter describes how to use the command-line interface of the Cisco Nexus 5000 Series switch. It contains the following sections:

Accessing the Command Line Interface

You can connect to the switch using a terminal plugged into the console port.

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.

Telnet Connection

You can make a Telnet connection to a Cisco Nexus 5000 Series switch.

Before You Begin

Correctly set the console port parameters.

SUMMARY STEPS

1. Make a Telnet connection from your host to the switch that you want to access.
2. At the switch login prompt, enter your username and password.
3. Exit the session when finished.

DETAILED STEPS

Step 1   Make a Telnet connection from your host to the switch that you want to access.

```
host$ telnet {hostname | ip-addr}
```

Step 2   At the switch login prompt, enter your username and password.
The Cisco Nexus 5000 Series switch initiates authentication.

> **Note**   If no password has been configured, press
> **Return**.

Step 3   Exit the session when finished.

```
switch# exit
```

This example shows how to make a Telnet connection to a switch:

```
host$ telnet 10.0.13.42
Trying 10.0.13.42...

Connected to 10.0.13.42
 Escape character is '^]'.
switch Login: admin
Password: password
...
switch# exit
```

SSH Connection

You can make an SSH connection to a Cisco Nexus 5000 Series switch.

Before You Begin

Correctly set the console port parameters.

SUMMARY STEPS

1. Make an SSH connection from your host to the switch that you want to access.
2. At the switch login prompt, enter your username and password.
3. Exit the session when finished.

DETAILED STEPS

Step 1   Make an SSH connection from your host to the switch that you want to access.

```
host$ ssh [-D port] {[user@] hostname | ip_addr}
```

Step 2   At the switch login prompt, enter your username and password.
The Cisco Nexus 5000 Series switch initiates authentication.

> **Note**   If no password has been configured, press
> **Return**.

Step 3 Exit the session when finished.

```
switch# exit
```

This example shows how to make an SSH connection to a switch:

```
host$ ssh 10.0.13.42
The authenticity of host '(10.0.13.42)' can't be established.
RSA key fingerprint is 53:b4:ad:c8:51:17:99:4b:c9:08:ac:c1:b6:05:71:9b.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.0.13.42' (RSA) to the list of known hosts.
switch Login: admin
Password: password
...
switch# exit
```

Using the CLI

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.

The following table 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: 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
```

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, and 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, enter the following commands:

  ```
  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
```

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

The following table lists some useful command keys that can be used in both EXEC and configuration modes.

Table 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.

Command	Description
Alt-N	History search forwards
Ctrl-G	Exit
Ctrl-Z	End
Ctrl-L	Clear session

The following table describes the commonly used configuration submodes.

Table 3: Common Configuration Submodes

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

- Passed as command line arguments to the **run-script** command.

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

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 icon]

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 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 a 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 -- -- -- \
```

Related Topics

- Using Command Aliases ,

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 and then you execute the 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.

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