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# Chapter 2

## Using the Command Line Interface

The CLI is a text-based interface for configuring and monitoring HP switches and routing switches. You can access the CLI can through either a direct serial connection to the switch or routing switch or through a Telnet session.

The commands in the CLI are organized into the following levels:

- User EXEC – Lets you display information and perform basic tasks such as pings and trace routes.
- Privileged EXEC – Lets you use the same commands as those at the User EXEC level plus configuration commands that do not require saving the changes to the system-config file.
- CONFIG – Lets you make configuration changes to the device. To save the changes across reboots, you need to save them to the system-config file. The CONFIG level contains sub-levels for individual ports, for VLANs, for routing protocols, and other configuration areas.

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**NOTE:** By default, any user who can open a serial or Telnet connection to the HP device can access all these CLI levels. To secure access, you can configure Enable passwords or local user accounts, or you can configure the device to use Access Control Lists (ACLs), a RADIUS server, or a TACACS/TACACS+ server for authentication. See the “Route Health Injection” chapter of the Advanced Configuration and Management Guide.

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To display a list of available commands or command options, enter “?” or press Tab. If you have not entered part of a command at the command prompt, all the commands supported at the current CLI level are listed. If you enter part of a command, then enter “?” or press Tab, the CLI lists the options you can enter at the point in the command string.

The CLI supports command completion, so you do not need to enter the entire name of a command or option. As long as you enter enough characters of the command or option name to avoid ambiguity with other commands or options, the CLI understands what you are typing.

The CLI supports the following line editing commands. To enter a line-editing command, use the CTRL-key combination for the command by pressing and holding the CTRL key, then pressing the letter associated with the command.

**Table 2.1: CLI Line-Editing Commands**

Ctrl-Key Combination	Description
Ctrl-A	Moves to the first character on the command line.
Ctrl-B	Moves the cursor back one character.
Ctrl-C	Escapes and terminates command prompts and ongoing tasks (such as lengthy displays), and displays a fresh command prompt.
Ctrl-D	Deletes the character at the cursor.
Ctrl-E	Moves to the end of the current command line.
Ctrl-F	Moves the cursor forward one character.
Ctrl-K	Deletes all characters from the cursor to the end of the command line.
Ctrl-L; Ctrl-R	Repeats the current command line on a new line.
Ctrl-N	Enters the next command line in the history buffer.
Ctrl-P	Enters the previous command line in the history buffer.
Ctrl-U; Ctrl-X	Deletes all characters from the cursor to the beginning of the command line.
Ctrl-W	Deletes the last word you typed.
Ctrl-Z	Exits to the CLI level above.

## EXEC Commands

There are two different levels of EXEC commands, the **User Level** and the **Privileged Level**. The User level commands are at the top of the CLI hierarchy. These are the first commands that you have access to when connected to the switch or routing switch through the CLI. At this level, you can view basic system information and verify connectivity but cannot make any changes to the switch or routing switch configuration. To make changes to the configuration, you must move to other levels of the CLI hierarchy. This is accomplished by the User EXEC level command **enable** at initial log-on. This command takes you to the Privileged EXEC level, from which you can reach the configuration command levels.

### Privileged Level

The Privileged EXEC level commands primarily enable you to transfer and store switch or routing switch software images and configuration files between the network and the system, and review the configuration.

You reach this level by entering **enable [<password>]** or **enable <username> <password>** at the User EXEC level.

## CONFIG Commands

CONFIG commands modify the configuration of an HP switch or routing switch. This reference describes the following CONFIG CLI levels.

### Global Level

The global CONFIG level allows you to globally apply or modify parameters for ports on the switch or routing switch. You reach this level by entering **configure terminal** at the privileged EXEC level.

The interface level allows you to assign or modify specific port parameters on a port-by-port basis. You reach this level by entering **interface ethernet** <portnum>, **interface loopback** <num>, **interface ve** <num>, or **interface pos** <portnum> at the global CONFIG level.

### IP Tunnel Level (routing switches only)

The IP tunnel level allows you to define parameters for IP-in-IP tunnels to pass data through non-DVMRP and non-PIM IP multicast routing switches.

You reach this level by entering the **ip tunnel...** command at the interface CONFIG level.

### Broadcast Filter Level

The broadcast filter level allows you to assign broadcast filters to specific ports. You reach this level by entering **broadcast filter...** at the global CONFIG level.

### Multicast Filter Level

The multicast filter level allows you to assign multicast filters to specific ports. You reach this level by entering **multicast filter...** at the global CONFIG level.

### BGP Level (routing switches only)

The BGP level allows you to configure routing switches for Border Gateway Protocol version 4 (BGP4). You reach this level by entering the **router bgp** command at the global CONFIG level.

### Router DVMRP Level (routing switches only)

The DVMRP level allows you to configure details for the DVMRP multicast protocol. You reach this level by entering the **router dvmrp** command at the global CONFIG level.

### Router OSPF Level (routing switches only)

The OSPF level allows you to configure parameters for the OSPF routing protocol. You reach this level by entering the **router ospf** command at the global CONFIG level.

### Router PIM Level (routing switch only)

The PIM level allows you to configure parameters for the Protocol Independent Multicast (PIM) routing protocol. You reach this level by entering the **router pim** command at the global CONFIG level.

### Router RIP Level (routing switch only)

The RIP level allows you to configure parameters for the RIP routing protocol. You reach this level by entering the **router rip** command at the global CONFIG level.

### Real Server Level (routing switch only)

The Real Server level allows you to configure routing switch-based health check parameters for a routing switch to assist with third-party server load balancing. See the "Route Health Injection" chapter of the *Advanced Configuration and Management Guide*. You reach this level by entering the **server real...** command at the global CONFIG level.

### Application Port Level (routing switch only)

The Application Port level allows you to configure health check parameters for a TCP HTTP port. The commands at this level apply only when you are configuring a routing switch to assist with third-party server load balancing. See the “Route Health Injection” chapter of the Advanced Configuration and Management Guide. You reach this level by entering the **server port http | <tcp/udp-portnum>** command at the global CONFIG level.

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**NOTE:** If you enter **server port ?**, numerous well-known port names are listed. The current software release supports only HTTP ports.

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### Route Map Level (routing switch only)

The Route Map level allows you to configure parameters for a BGP4 route map. You reach this level by entering the **route-map <name>** command at the global CONFIG level.

### Router VRRP Level (routing switch only)

The VRRP level allows you to configure parameters for the Virtual Router Redundancy Protocol (VRRP). You reach this level by entering the **router vrrp** command at the global CONFIG level.

### VLAN Level

Policy-based VLANs allow you to assign VLANs on a protocol (IP, IPX, Decnet, AppleTalk, NetBIOS, Others), sub-net (IP sub-net and IPX network), AppleTalk cable, port, or 802.1q tagged basis.

You reach this level by entering the **vlan <vlan-id> by port** command at the Global CONFIG Level.

## Accessing the CLI

The CLI can be accessed through both serial and Telnet connections. For initial log on, you must use a serial connection. Once an IP address is assigned, you can access the CLI through Telnet.

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**NOTE:** When accessing the CLI through Telnet, you are prompted for a password. By default, the password required is the password you enter for general access at initial setup. You also have the option of assigning a separate password for Telnet access with the **enable telnet password <password>** command, found at the Global Level.

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**NOTE:** At initial log on, all you need to do is type **enable** at the prompt, then press Return. You only need to enter a password after a permanent password is entered at the Global CONFIG Level of the CLI.

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Once connectivity to the switch or routing switch is established, you will see one of the following prompts:

```
HP9304>
HP9308>
HP6308>
HP6208>
```

At this prompt ( > ), you are at the user EXEC level of the CLI command structure.

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**NOTE:** Throughout this reference, CLI prompts for the HP 9304M or HP 9308M are shown as HP9300 for simplicity.

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To reach the Global CONFIG Level, the uppermost level of the CONFIG commands, enter the following commands:

```
HP9300> enable                User Level-EXEC commands
HP9300# configure terminal    Privileged Level-EXEC commands
HP9300(config)#              Global Level-CONFIG commands
```

You can then reach all other levels of the CONFIG command structure from this point.

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**NOTE:** Switch configuration is done using the following CLI levels: global, interface, VLAN port and protocol.

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**NOTE:** Routing switch configuration is done using the following CLI levels: global, interface, IP tunnel, VLAN, and router levels.

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**NOTE:** The CLI prompt will change at each level of the CONFIG command structure, to easily identify the current level:

HP9300>	User Level EXEC Command
HP9300#	Privileged Level EXEC Command
HP9300(config)#	Global Level CONFIG Command
HP9300(config-if-e1000-5/1)#	Interface Level CONFIG Command
HP9300(config-lbif-1)#	Loopback Interface CONFIG Command
HP9300(config-ve-1)#	Virtual Interface CONFIG Command
HP9300(config-if-tunnel)#	IP Tunnel Level CONFIG Command
HP9300(config-bcast-filter-id-1)#	Broadcast Filter Level CONFIG Command
HP9300(config-mcast-filter-id-1)#	Multicast Filter Level CONFIG Command
HP9300(config-bgp-router)#	BGP Level CONFIG Command
HP9300(config-dvmrp-router)#	DVMRP Level CONFIG Command
HP9300(config-ospf-router)#	OSPF Level CONFIG Command
HP9300(config-pim-router)#	PIM Level CONFIG Command
HP9300(config-rip-router)#	RIP Level CONFIG Command
HP9300(config-rs-realsevername)#	Real Server Level CONFIG Command
HP9300(config-port-80)#	Application Port CONFIG Command
HP9300(config-bgp-routemap Map_Name)#	Route Map Level CONFIG Command
HP9300(config-vrrp-router)#	VRRP Level CONFIG Command
HP9300(config-vlan-1)#	VLAN Port-based Level CONFIG Command
HP9300(config-vlan-ataalk-proto)#	VLAN Protocol Level CONFIG Command

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The CLI prompt at the interface level includes the port speed. The speed is one of the following:

- e100 – The interface is a 10/100 port.
- e1000 – The interface is a Gigabit port.

For simplicity, the port speeds are not shown in example Interface level prompts in this manual.

## Navigating Among Command Levels

To reach other CLI command levels, you need to enter certain commands. At each level there is a launch command that allows you to move either up or down to the next level.

### CLI Command Structure

Many CLI commands may require textual or numeral input as part of the command. These fields are either required or optional depending on how the information is bracketed. For clarity, a few CLI command examples are explained below.

#### EXAMPLE:

```
deny redistribute <value> all | bgp | rip | static address <ip-addr> <ip-mask>
[match-metric <value> | set-metric <value>]
```

When an item is bracketed with “< >” symbols, the information requested is a variable and required.

When an item is not enclosed by “< >” or “[ ]” symbols, the item is a required keyword.

When an item is bracketed with “[ ]” symbols, the information requested is optional.

When two or more options are separated by a vertical bar, “|”, you must enter one of the options as part of the command.

**EXAMPLE:**

```
snmp-server community <string> ro | rw
```

 means enter either **ro** or **rw**

For example, the command syntax above requires that either **ro** or **rw** be entered as part of the command.

To get a quick display of available options at a CLI level or for the next option in a command string, enter a question mark (?) at the prompt or press TAB.

**EXAMPLE:**

To view all available commands at the user EXEC level, enter the following or press TAB at the User EXEC CLI level:

```
HP9300> ? <return>
enable
exit
fastboot
ping
show
stop-trace-route
traceroute
```

You also can use the question mark (?) with an individual command, to see all available options or to check context.

**EXAMPLE:**

To view possible **copy** command options, enter the following:

```
HP9300# copy ?
  flash
  running-config
  startup-config
  tftp
HP9300# copy flash ?
  tftp
```

## Syntax Shortcuts

A command or parameter can be abbreviated as long as enough text is entered to distinguish it from other commands at that level. For example, given the possible commands **copy tftp...** and **config tftp...**, possible shortcuts are **cop tftp** and **con tftp** respectively. In this case, **co** does not properly distinguish the two commands.

## Saving Configuration Changes

You can make configuration changes while the switch or routing switch is running. The type of configuration change determines whether or not it becomes effective immediately or requires a save to flash (**write memory**) and reset of the system (**reload**), before it becomes active.

This approach in adopting configuration changes:

- allows you to make configuration changes to the operating or running configuration of the switch or routing switch to address a short-term requirement or validate a configuration without overwriting the permanent configuration file, the startup configuration, that is saved in the system flash, and;
- ensures that dependent or related configuration changes are all cut in at the same time.

In all cases, if you want to make the changes permanent, you need to save the changes to flash using the **write memory** command. When you save the configuration changes to flash, this will become the configuration that is initiated and run at system boot.

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**NOTE:** The majority of configuration changes are dynamic in nature. Those changes that require a reset of the system are highlighted in the specific configuration chapters in the *Installation and Getting Started Guide* and *Advanced Configuration and Management Guide* in the CLI command descriptions in this reference.

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